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## CHAPTER 3 CONCEPTUAL FRAMEWORK AND REVIEW OF THE LITERATURE

Given the breadth and diversity of investment activity undertaken by ARC as part of the EI, the evaluation team began by reviewing the actual operating realities of the initiative. The ARC set general guidelines for programs, but each state responded to these guidelines in a unique manner. Similarly, each project was quite unique. It is easy to understand that a grant for high school entrepreneurship summer camps will have different metrics than those of a revolving loan fund. Yet, great diversity also existed within single program categories. For example, investments in business incubation might fund a feasibility study, build a new incubator, or provide technical assistance to new sets of customers. As will be seen in Chapter 4, building a set of consensus metrics for such a diverse set of program interventions proved quite challenging.

At the outset of the EI, ARC convened four advisory committees charged with identifying best practices and key insights into four areas ARC had identified as critical for building an entrepreneurial region – access to capital, entrepreneurship education, technical assistance, and sectoral strategies. As an outgrowth of the work undertaken by these committees, ARC eventually identified five strategic areas for investment - access to capital and financial assistance, technical and managerial assistance, technology transfer, entrepreneurial education and training, and entrepreneurial networks. However, after an initial review of the portfolio of projects receiving ARC investments from 1997-2005, the evaluation team identified five program categories that captured the actual range of projects implemented:

- **Capital Access** – provision of services and technical assistance to connect entrepreneurs and businesses to appropriate levels and types of debt and equity capital
- **Entrepreneurship Education** – structured experiential opportunities in and out of school for young people (K-16) to learn entrepreneurial skills and attributes and to understand business basics with the aim of encouraging young people to consider entrepreneurship as a career sooner or later
- **Incubators** – provision of opportunities for acquiring information, skills, resources within (often subsidized) workspace settings
- **Technical Assistance and Training** – provision of expert and/or peer one-on-one mentoring and consulting services on technical and managerial matters and provision of information and skills in formal classroom or laboratory settings to adult entrepreneurs
- **Sectors** – packaging of some combination of training, incubating, technical assistance, and capital access services targeted at a single, specific business sector.

Another category, **Community Capacity**, facilitating visioning, leadership development, asset-mapping and community engagement activities intended to make the community more supportive of and attractive to entrepreneurs, was also identified. This category actually cuts across the other programmatic areas as initial ARC investments were often designed to build capacity for supporting entrepreneurs, with follow on investments supporting program implementation.

The program categories defined by the evaluation team differ somewhat from the five strategic areas originally defined by the Appalachian Regional Commission. After reviewing actual investments made by the EI, the team determined that investments had not been made in the technology transfer area, while actual investments in entrepreneurial networks were more accurately described as investments in either sector-specific activities or incubation activities, such as investment in Virginia’s sustainable wood products industry or Ohio’s food sector. As an example, ARC’s investments in commercial kitchen incubators, while focused on a specific sector, were coded as incubators. Table 3.1 lists ARC’s strategic areas and describes how and why they were modified and repackaged into the five program categories used as the basis for this evaluation. All of these changes were made after a review of the actual projects in which ARC invested and represent the adaptation of the ARC investment process to the needs of communities as reflected by their proposed project activities.

**Table 3.1: Comparison of ARC Strategic Areas and Evaluation Program Categories**

ARC Strategic Areas	Comments
Access to capital and financial assistance	<b>Capital Access</b> – no change
Technical and managerial assistance	Split into <b>Technical Assistance and Training</b> and <b>Incubators</b> to reflect different modes of entrepreneurial support
Technology transfer	Not implemented
Entrepreneurial education and training	Split between <b>Entrepreneurship Education</b> for youth and <b>Training (in Technical Assistance)</b> for adults
Entrepreneurial networks	Actually implemented as <b>Sector</b> or <b>Incubator</b> initiatives
	<b>Community Capacity</b> – added to capture the place-based and cultural dimensions of the initiative; a category that cuts across program categories and strategic areas

## DEVELOPMENT OF A CONCEPTUAL FRAMEWORK

The origins of the Appalachian Regional Commission’s Entrepreneurship Initiative were rooted in the challenge for states and communities throughout the region – a challenge that is shared across rural America – of how to foster the economic and cultural conditions that give birth to entrepreneurs, support innovation, and assist in the development and expansion of successful enterprises. These desired outcomes were, and still are, considered critical to

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Appalachia's future economic vitality. Moreover, they were seen as essential to reducing the region's dependence upon extractive industries and branch plant manufacturing, to replacing the long-term practice of asset-stripping with asset accumulation and value-addition, and to creating a more entrepreneurial and outward-looking culture.

Given these expectations, the evaluation team chose to approach its charge by establishing at the outset a conceptual framework that required a sharp focus on the essence of the initiative and reduced the temptation to explore interesting but tangential avenues that would perhaps make the evaluation richer but less useful as a guide to future policy and action. Three fundamental goals were identified which best reflect the primary purposes of the EI. While the following goals were not articulated specifically by ARC, they reflect the mission and purpose of the EI as understood through ARC publications and interviews with key leaders:

- **More entrepreneurs** – To increase the number of entrepreneurs establishing businesses in Appalachia
- **Stronger entrepreneurs** – To increase the survival rate of entrepreneurial ventures in Appalachia
- **More high growth entrepreneurs** – To increase the proportion of entrepreneurial ventures that achieve rapid growth rates, thus providing jobs and wealth within and increasing the competitiveness of Appalachia.

These fundamental goals then were operationalized by the evaluation team into six programmatic goals:

- **More entrepreneurs in the pipeline** – increasing the number of people, youth and adults, who are actively considering setting up their own businesses
- **More entrepreneurs staying** – creating the conditions in which entrepreneurs wish to stay and grow their businesses in their community
- **Better informed entrepreneurs** – providing entrepreneurs with the information and tools they need to establish and grow their businesses
- **Better skilled entrepreneurs** – providing entrepreneurs with the technical and managerial skills they need to sustain and grow their businesses
- **More job creating businesses** – providing the tools and resources to encourage entrepreneurs to expand and employ others
- **Greater business productivity** – providing the tools and resources to enable entrepreneurs to operate efficient and competitive businesses.

While this conceptual framework proved useful as an organizing framework for the evaluation, the team needed to align this framework with the stated goals and operational practice of the EI. The program categories that grew out of the evaluation team's review of ARC's investment portfolio map well onto the set of programmatic goals articulated in the conceptual model. Each category was identified as contributing to the attainment of at least one of these programmatic

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goals. Table 3.2 shows how the program categories and programmatic goals intersect. It is certainly possible to argue for additional Xs in this table. Indeed, one might argue that all project types could have a long-term impact on every programmatic goal. However, we have chosen to focus on the primary goal(s) of each program type. For example, while entrepreneurship education programs ideally, in the long run, lead to more youth creating businesses and/or staying in the region, the primary goal of these educational efforts is to expose young people to entrepreneurial concepts and possibilities, with the ultimate goal of having more youth pursue entrepreneurship as a career path, leading to more entrepreneurs in the pipeline.

The conceptual framework developed to provide context for the ARC Entrepreneurship Initiative and to ground the evaluation was also used to inform the review of the literature related to entrepreneurship development.

## REVIEW OF THE LITERATURE

Entrepreneurship and efforts to promote entrepreneurship as an economic development strategy have emerged as important topics for both research and policy discussion. The literature is vast and seems to be growing larger every day. The majority of this research focuses on questions directly related to entrepreneurs and their companies by examining questions such as appropriate business development strategies, the qualities of successful entrepreneurs, or the role of various management practices in producing business success or failure. Very few studies address the measurement of program impacts or community outcomes. This section presents a review of both current trends in economic development performance measurement and of the limited evaluation literature.

### **Evaluation Research by Program Category and Objective**

The following sections summarize recent research and thinking about performance measurement in the five ARC program evaluation categories: Capital Access, Sectors, Entrepreneurship Education, Business Incubation, and Technical Assistance and Training. Appendix A contains a more complete review of the literature. As Table 3.2 indicates, each of the five program categories seeks to achieve multiple goals. Yet, many of the efforts can be categorized according to a predominant objective. For example, entrepreneurship education, with its heavy emphasis on youth empowerment, is most concerned with the objective of creating more entrepreneurs. Meanwhile, capital access programs, especially those equity programs emphasized by the ARC, are largely focused on creating more high-growth entrepreneurs.

**Table 3.2: Intersection of Program Categories and Programmatic Goals**

	Capital Access	Entrepreneurial Education	Incubators	Sectors	Technical Assistance and Training	Community Capacity
More entrepreneurs in pipeline		X			X	X
More entrepreneurs staying	X		X	X		X
Better informed entrepreneurs			X	X	X	X
Better skilled entrepreneurs			X	X	X	X
More job creating businesses	X			X	X	X
Greater business productivity	X		X	X	X	X

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## Creating More Entrepreneurs

Within ARC's program categories, entrepreneurship education is most concerned with feeding the pipeline with new entrepreneurs – exposing youth to entrepreneurship as a potential career path and to entrepreneurial ways of thinking that can be applied to working for oneself or for someone else. An ultimate or long-term goal is to have these new entrepreneurs create new enterprises that remain in the region and produce jobs and wealth.

**Entrepreneurship Education.** Evaluations of entrepreneurship education efforts vary across different levels of the educational system. For programs targeting youth, a host of different evaluation methodologies have been deployed. In general, most of these measures stress student performance and outcomes as opposed to community outcomes. The programs operate on an implicit assumption that by empowering and providing skills to young people (especially at-risk youth), positive community outcomes will emerge over the long-term.

Studies of youth entrepreneurship programs indicate that these efforts have a strong impact on program participants. While some programs, including ARC-funded efforts, provide training for primary school students, most existing programs targeted middle and high school students. Studies sponsored by the National Foundation for Teaching Entrepreneurship (NFTE) find that NFTE program participants had more interest in attending college and had more ambitious career aspirations.<sup>36</sup> A study of the EnterprisePrep curriculum used in Philadelphia found that program participants had lower drop out rates and improved performance in science, math and English. Studies of the Junior Achievement curriculum identify similar positive outcomes in terms of youth attitudes toward entrepreneurship.<sup>37</sup>

Evaluations of entrepreneurship training at the college and graduate level place more emphasis on outcomes in terms of new business formation. A detailed study of the University of Arizona's Berger Entrepreneurship program found that program graduates were three times more likely to start a business than their student counterparts. Program graduates also enjoyed higher average incomes.<sup>38</sup> A whole host of other studies provide similar results.<sup>39</sup>

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<sup>36</sup> Michael Nakkula, Expanded Explorations into the Psychology of Entrepreneurship: Findings from the 2001-2002 Study of NFTE in two Boston Public High Schools, Working Paper, Harvard University Graduate School of Education, 2003.

<sup>37</sup> Junior Achievement, The Impact on Students of Participation in Junior Achievement: Selected Cumulative and Longitudinal Findings, Monograph, January 26, 2004.

<sup>38</sup> Alberta Charney and Gary Libecap, The Impact of Entrepreneurship Education: An Evaluation of the Berger Entrepreneurship Program at the University of Arizona, 1985-1999, Final Report to the Kauffman Center for Entrepreneurial Leadership, 2000.

<sup>39</sup> Lena Lee, Entrepreneurship Education: A Compendium of Related Issues, Working Paper, NUS Entrepreneurship Centre, National University of Singapore, 2005.

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In general, entrepreneurship education programs are not expected to provide direct community impacts in terms of new job or wealth creation. Instead, they help produce intermediate outcomes, which may then translate into positive economic development outcomes. Analysts contend that entrepreneurship education efforts change attitudes toward entrepreneurship, increase awareness of key business concepts, and build necessary skills for starting and operating a business. These claims are generally confirmed in surveys of participants in major programs. These attitudinal and skill changes may lead to new business starts, which are then expected to generate positive community outcomes.

Based on this logic chain, most entrepreneurship education programs emphasize program output and student performance measures. While most programs do track new business starts by students, they place greater emphasis on more short-term measures of student performance and attitudinal change. In contrast, many technical assistance programs, such as trainings sponsored by Small Business Development Center programs, are evaluated according to their capacity to generate new business starts.

### **Creating Stronger Entrepreneurs**

Three of the ARC's program interventions – technical assistance and training, business incubation, and sectors/networks – were primarily concerned with supporting the mission of stronger entrepreneurs, i.e. to increase the survival rate of local entrepreneurial ventures. These three initiatives operate according to similar rationales. They seek to create more skilled and better informed entrepreneurs through the provision of:

- New information (via trainings and workshops)
- Access to mentors and peer support (via networks)
- Access to subsidized facilities or equipment (via incubators)
- Access to potential new markets (via networks or training).

The research literature for each of the program categories emphasizes different evaluation methodologies, but they all share some common characteristics. First, they seek to assess general customer satisfaction with the provided assistance. Second, they seek to assess whether this support led to improved knowledge or skills for the entrepreneur. Finally, they seek to assess whether this new knowledge has led to changes in behavior; specifically, has the intervention led to improved performance by the company or its management team?

**Technical and Managerial Assistance.** Since business incubators often provide technical and managerial assistance as part of their program operations, incubators and technical assistance often use similar measurement tools and methodologies. Efforts to track and measure the effects of business assistance programs have been underway for a long time. Many Federal programs, such as

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the Small Business Development Center program and the Manufacturing Extension Partnerships, have invested significant resources into evaluation efforts.

Most technical assistance evaluations begin with calculations of traditional economic development impacts such as job creation or the leveraging of outside investments. As noted earlier, many state-level programs have become quite sophisticated in their evaluation efforts. For example, Pennsylvania's Ben Franklin Technology Partners (BFTP) tracks its customers by company size and sector; they also compare their client companies to state averages in terms of average wages. This latter metric offers a useful measure of job quality. BFTP tracks the public return on investment and impact on state gross product via calculations of job creation, new investment, and newly generated tax revenues.<sup>40</sup> BFTP is also one of the few programs to utilize a control group methodology in its assessments. This costly but effective method compares the performance of program clients to comparable firms who did not utilize BFTP services. This comparison indicates that BFTP-supported firms employed three more people in each year after the program investment.

In addition to basic measures of job creation and customer satisfaction, the Oklahoma Center for the Advancement of Science and Technology (OCAST) tracks outside research investments, Small Business Innovation Research (SBIR) funds per capita (compared to national benchmarks), and company financing by stage. OCAST's partner, I2E, utilizes some other specialized measures such as growth in number of companies positioned for financing, creation of commercialization road maps for customers, and a host of activity measures, such as creation of new partnerships, number of events, and so on. Both OCAST and I2E also provide breakouts (via pie charts) of customers by industrial sector and by region.<sup>41</sup>

The Maine Technology Institute (MTI) utilizes university researchers to assess its program operations and the impact of its grants.<sup>42</sup> The MTI's performance has been tracked using four categories of measures: economic impact, effects on company finances, intellectual property development, and relationships. Within these categories, several unique measures are used. These include sources of material and service inputs (used to assess in-state purchasing) and relationships. This latter measure tracks usage of other service providers, such as SBDCs, and measures related to customer satisfaction and impact.

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<sup>40</sup> Nexus Associates, [A Continuing Record of Achievement: The Economic Impact of the Ben Franklin Technology Partners](#), Final Report, March 2003.

<sup>41</sup> Oklahoma Center for the Advancement of Science and Technology, [Impact Report 2006](#) (Oklahoma City, Oklahoma: OCAST, January 2006) 10 November 2006 <<http://www.ocast.state.ok.us/Portals/0/docs/brochures/2006-ImpactReport.pdf>>.

<sup>42</sup> Charles S. Colgan and Bruce Andrews, [Evaluation of Maine Technology Institute Programs](#), University of Southern Maine Center for Business and Economic Research, December 2004, 10 November 2006, <<http://www.usm.maine.edu/cber/activities/MTI%20Final%20Report%202004.pdf>>.

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**Business Incubation.** Because business incubation has been a core economic development strategy for several decades, both practitioners and analysts have developed an array of metrics and tools for measuring the effectiveness of business incubation programs. The National Business Incubation Association (NBIA) has led many of these efforts and was an important ARC partner during this initiative. In addition, ARC has funded incubator programs throughout its existence and has funded several useful studies of the field.<sup>43</sup>

Most studies of business incubation provide reviews of best practices that typically cover the details of program management and facility operations.<sup>44</sup> Many of these reports also include suggestions for assessing the impact of business incubation programs. Lichtenstein and Lyons place a heavy emphasis on effective evaluations that capture both process and outcome measures.<sup>45</sup> Most analysts recommend that traditional economic development metrics, such as job creation, be supplemented with other measures that capture unique aspects of the business incubation process. For example, most business incubators regularly track graduated companies, i.e., firms that have moved from subsidized incubator space to owning or leasing space at market rates. Customer satisfaction surveys are also frequently used. Business performance measures – both during and after residence in the incubator – also offer useful data on an incubator’s regional impacts. For example, a firm’s post-graduation ability to continue growth, to access outside financing, and to enter new markets are all important measures of community economic impacts from business incubation.

**Sectors/Networks.** Economic developers’ thinking about sector/network strategies has undergone an interesting evolution over the past twenty years. Beginning in the 1980s and 1990s, a number of fledgling programs sought to stimulate the development of sector-based networks in industries such as wood products and manufacturing. Much of this initial work was based on successful experiments in Denmark and Italy, with overseas lessons applied to US experience. Several of the first such US-based programs were located in Appalachia. The North Carolina Rural Economic Development Center supported a networks initiative in Western North Carolina, and ACEnet sponsored a similar effort in Appalachian Ohio.

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<sup>43</sup> For example, Greenwood Consulting Group, [A Survey of Business Incubators in Appalachia](http://www.arc.gov/images/programs/entrep/survey2005.pdf) (Washington, DC: ARC, July 2005) 10 November 2006  
<<http://www.arc.gov/images/programs/entrep/survey2005.pdf>>.

<sup>44</sup> See, for example, Louis G. Tornatzky et al., [Incubating Technology Businesses: A National Benchmarking Study](#) (Athens, Ohio: National Business Incubation Association, 2003).

<sup>45</sup> Gregg A. Lichtenstein and Thomas S. Lyons, [Incubating New Enterprises: A Guide to Successful Practice](#) (Washington, DC: Aspen Institute, 1996).

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These initial network building efforts remained limited to networks based on an industrial cluster or sector.<sup>46</sup> More recently, policy makers have sought to support the creation of broader entrepreneurial networks that include participants from a variety of sectors and disciplines. ARC has invested in both types of networks via the Entrepreneurship Initiative. For example, the Team Pennsylvania Foundation sought to use ARC funds to stimulate the creation of several regional entrepreneurship networks across the state. Other ARC investments sought to build sector-based networks in ceramics (New York), arts (Ohio), and aquaculture (Georgia).

While the operations of cluster-based and entrepreneurial networks may differ slightly, both types are evaluated using a similar methodology. Evaluators regularly seek hard quantitative data on the impact of networks, but qualitative measures are also necessary as much of the network impact is qualitative. Relationship building, trust, and increased knowledge are all important outcomes of network activities. In general, research strongly indicates that more networked firms tend to perform better than firms with weak networks and limited strategic alliances.<sup>47</sup>

Networks are typically evaluated using customer surveys, interviews, and case studies.<sup>48</sup> Typical qualitative outcomes would be high rates of customer satisfaction, better awareness of resources and networks, and more openness toward collaboration. Quantitative measures examine the network's ability to help produce changes in business outcomes, such as entry into new markets, revenue growth, job creation, and the ability to access outside financing.

As networking becomes a more important part of a typical economic development portfolio, analysts are searching for new tools that can better assess the role of business support providers as network builders. Social network analysis seeks to map and evaluate the power of networking activities. In the 1980s and 1990s, researchers sought to simply count the number of outside alliances and assess their strength. Today, new software tools allow users to map social networks and assess them according to their diversity, strength, and influence. These maps can be used to diagnose network

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<sup>46</sup> For background, see Stuart A. Rosenfeld, "Networks and Clusters: The Yin and Yang of Rural Development," Proceedings of Federal Reserve Bank of Kansas City Conference on Exploring Policy Options for a New Rural America, (September 2001):103-120.

<sup>47</sup> An excellent review of this literature can be found in Luke Pittaway, Maxine Robertson, Kamal Munir, and David Denyer, Networking and Innovation: A Systematic Review of the Evidence, University of Lancaster Institute for Entrepreneurship and Enterprise Development, Working Paper 016, 2004, 10 November 2006 <[www.lums.lancs.ac.uk](http://www.lums.lancs.ac.uk)>. See also Christopher T. Street and Ann-Frances Cameron, "External Relationships and Small Business: A Review of Small Business Alliance and Network Research," Journal of Small Business Management 45.2 (2007):239-266.

<sup>48</sup> For example, see Peter Witt, "Entrepreneurs' Networks and the Success of Start-Ups," Entrepreneurship and Regional Development 16 (2004):391-412; Philip Shapira, The Evaluation of USNet: Overview of Methods, Results and Implications – Final Report, Georgia Tech Policy Project on Industrial Modernization Working Paper 9805, 1998.

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weaknesses and design interventions to strengthen the network and the quality of company network ties.<sup>49</sup> Social network analysis has also been used as a means to better describe and understand company and industry supply chains.

### **Creating More High-Growth Entrepreneurs**

While all program interventions share the goal of creating high-growth entrepreneurs, very few of the Entrepreneurship Initiative's grantees focused exclusively on this objective. However, a number of grant recipients in the capital category did embrace a mission of supporting gazelle businesses. Because its metrics rely on quantifiable financial measures, evaluations of capital access programs tend to be much more rigorous than other types of entrepreneurship-related policy interventions.

**Capital.** ARC's capital projects tend to fall into two broad categories – support for microenterprise initiatives and investments in more specialized types of financial assistance, such as specialized loan funds or new sources of equity capital. Many of these investment vehicles promote what they refer to as a “double bottom line.” In other words, the funds seek to build strong businesses but also promote other social goals, such as community development or environmental sustainability. In addition, microenterprise programs measure progress along two fronts – traditional business outcomes and measures that capture the empowerment of individual clients. These latter metrics could include movement off of welfare, increases in family income, and length of self-employment periods.

Since ARC's Entrepreneurship Initiative investments have focused on regional economic development, this literature review is concerned primarily with how to measure the economic impacts of investments in capital programs. Since the EI first began in 1997, capacity to measure these impacts has greatly improved. At that time, policy makers had very limited experience in creating and operating publicly-sponsored seed or equity capital programs. And, many early programs were shut down due to political controversies.<sup>50</sup>

The intervening decade has been one of great experimentation and innovation in the development of new capital access initiatives and associated evaluation tools. Since 1997, the New Markets Venture Capital Program, the Community Development Financial Institutions program, and revisions to the Small Business Investment Company (SBIC) program have all been put into place. In addition, several new trade associations, including the Community Development Venture Capital Association (CDVCA), the National Association of Seed and Venture

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<sup>49</sup> For example, see <[www.networkweaving.com](http://www.networkweaving.com)>.

<sup>50</sup> An example is Mississippi's Magnolia Fund which operated for only 2 ½ years before being closed due to misappropriation of funds. David L. Barkley, et al., Establishing Nontraditional Venture Capital Institutions: Lessons Learned, Rural Equity Capital Initiative Study of Nontraditional Venture Capital Institutions, RUPRI PB2001-11A, 2001, <[http://www.energizingentrepreneurs.org/content/cr\\_2/2\\_000026.pdf](http://www.energizingentrepreneurs.org/content/cr_2/2_000026.pdf)>.

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Funds, and the Angel Capital Association, have all been established to help professionalize the field.

Meanwhile, more established disciplines, like microenterprise and community development corporations, have become much more rigorous in strengthening professional development programs and creating common performance measurement systems. In the microenterprise field, the Aspen Institute's FIELD (Microenterprise Fund for Innovation, Effectiveness, Learning and Dissemination) program has played a critical role in collecting, developing and disseminating new program ideas and new performance measures and tools.<sup>51</sup> Its MicroTest program provides a useful framework for assessing both program performance and client outcomes. Similar comprehensive efforts are underway at leading organizations in the field. These include the CDFI Data Project, the Opportunity Finance Network's CDFI Assessment and Rating System (CARS), and the CDVCA's Return on Investment Project.<sup>52</sup>

All of these efforts, and other outside analysis, reach a similar conclusion – publicly-sponsored investment programs need to be managed and measured just like private investments. While programs may pursue multiple goals, the programs must be managed and assessed on their capacity to make good business decisions. As a 2000 National Governor's Association guide put it, "The best programs are not afraid to make money."<sup>53</sup> This same study noted: "In the best cases, state leaders take the initiative in getting programs launched and setting long-term direction. They rely on experienced, private-sector managers to make the day-to-day investment decisions."<sup>54</sup>

As seed and equity capital programs have moved in this direction, issues of performance measurement have become more straightforward. At the most basic level, most funds should be expected to produce a reasonable rate of return. A reasonable rate will differ depending on the types of companies in a fund's portfolio. For example, institutional venture capital funds have averaged a 20.3% annual return over the past ten years, but only a 1% return over the past five years. A 2002 study of venture capital rates of return in five countries identified average rates of return that fell anywhere between 26% and 45%.<sup>55</sup> Meanwhile, the CDVCA estimates that its members have enjoyed an average

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<sup>51</sup> An excellent review of effects of microenterprise programs can be found in Signe-Mary McKernan and Henry Chen, Small Business and Microenterprise as an Opportunity and Asset-Building Strategy, Urban Institute Issue Brief No. 3, June 2005.

<sup>52</sup> Community Development Venture Capital Association, Measuring Impacts Toolkit (New York: Community Development Venture Capital Alliance, 2005).

<sup>53</sup> Robert Heard and John Sibert, Growing New Businesses with Seed and Venture Capital: State Experiences and Options (Washington, DC: National Governors Association, 2000) 18.

<sup>54</sup> Heard and Sibert, 17.

<sup>55</sup> Sophie Manigart, et al, "Determinants of Required Return in Venture Capital Investments: A Five Country Study," Journal of Business Venturing 16.6 (July 2002):291-312.

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annual return of 15.5% over a twenty-five year period.<sup>56</sup> Programs that invest in microenterprises or slower growth businesses should be expected to post rates of return much lower than these benchmarks.

In addition to rates of return, funds can also be assessed in terms of program outputs and economic development outcomes. Program outputs refer directly to the activities of the fund or its related programs. They are activity measures that track data such as the number and amount of loans, average loan size or number/amount of financing provided to certain target customer sets.

Outcome measures seek to assess a fund's business and community impacts. In this case, most analysts recognize that many traditional economic development metrics do a good job of measuring community outcomes. Thus, most studies continue to recommend tracking job creation and retention, business performance of portfolio companies, and the leveraging of outside investments.

## IMPLICATIONS FOR PERFORMANCE MEASUREMENT

The conceptual framework presented above seeks to portray entrepreneurial development as an array of programs that serve entrepreneurs at various points in the lifecycle of their business. This "pipeline" model of entrepreneurial development, first described by Lichtenstein and Lyons,<sup>57</sup> recommends multiple policy interventions that help achieve the three broad purposes of creating more entrepreneurs, stronger entrepreneurs, and more high-growth entrepreneurs.

In practice, few program managers have the scope to manage programs that cover the whole pipeline of entrepreneurial development. Instead, they typically manage a single program or a single type of policy intervention, such as training or business financing. This restricted span of control over business outcomes makes it difficult for individual programs to introduce more sophisticated tools for measuring program performance.

In the field, entrepreneurship program managers are beginning to consider alternative performance measurement systems, but they still feel pressured by funders and elected officials to utilize traditional measures of job and firm creation outcomes.<sup>58</sup> By using traditional economic development metrics to

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<sup>56</sup> Amy Simpkins, "Community Development Venture Capital: Producing Results for Entrepreneurs, Investors, and Communities," *Bridges* Summer 2006, 10 November 2006 <<http://stlouisfed.org/publications/br/2006/b/pages/1-article.html>>.

<sup>57</sup> Gregg A. Lichtenstein and Thomas S. Lyons, "The Entrepreneurial Development System: Transforming Business Talent and Community Economies," *Economic Development Quarterly* 15.1 (2001):3-20.

<sup>58</sup> Laura Czohara and Julia Melkers, *Performance Measurement in State Economic Development Agencies: Lessons and Next Steps for GDITT*, Georgia State University Fiscal Research Center Report No. 92, February 2004. See also, Erik R. Pages and Kenneth A. Poole, "Entrepreneurship Promotion as an Economic Development Strategy: Next Steps in

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assess entrepreneurial and innovation-based development, program managers are employing inappropriate performance measures. Building businesses takes patience and resilience. It is unrealistic to expect quick results in terms of traditional economic development outcomes. Program managers need a more thoughtful approach to tracking the performance of their efforts. Moreover, new measures for entrepreneurial development need to be devised that recognize a stream of benefits over an extended period of time. Measuring entrepreneurial development using annual job creation impacts alone is like measuring the success of a loan program solely by the ability of the borrower to repay on a monthly basis. Short-term job creation is simply not the purpose of these programs.

In their quest to “tell a better story,” program managers are considering a host of other metrics, which tend to fall into the following categories:

- Activity/Output Measures (e.g., number of customers served)
- Customer Satisfaction Surveys
- Input Measures (e.g., increase in budget)
- Outcome Measures (e.g., increase in business starts)
- Cost Efficiency (e.g., return on investment).

While some programs use a full range of measures, most economic developers, including ARC grant recipients, use a more limited menu of metrics that is generally limited to job creation and retention and the leveraging of outside investments. These limited metrics can provide a much skewed picture of the impact of entrepreneurial development efforts.

Economic development programs have responded to this challenge in a number of ways. The metrics used by Small Business Development Centers (SBDCs) offer one model. For example, the North Carolina Small Business and Technology Development Centers track outside financing (loans, equity, and SBIR/Small Business Technology Transfer Program funds), state and federal contract awards, customer satisfaction, job creation, firm sales growth, and incremental taxes generated.<sup>59</sup> Florida combines capital formation, business start-ups, jobs created/retained, sales growth, and contract awards to calculate the return on investment (ROI) for its SBDC system.<sup>60</sup> A slightly more sophisticated set of metrics is used by various statewide technology development organizations such as Pennsylvania’s Ben Franklin Partners, the Oklahoma Center for the Advancement of Science and Technology, and the Maine Technology Institute.

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Institutionalizing the Field,” *Applied Research in Economic Development* 3.2 (December 2006):.10-27.

<sup>59</sup> North Carolina Small Business and Technology Development Center, *2005 Annual Report*, <[http://www.sbtcd.org/pdf/annual\\_report.pdf](http://www.sbtcd.org/pdf/annual_report.pdf)>.

<sup>60</sup> See <[www.floridasbdc.com](http://www.floridasbdc.com)>.

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Useful benchmarks for metrics can also be found in the work of various trade associations working in the fields of microenterprise and community development. These groups are seeking to develop industry-wide metrics that can help improve management practices and provide industry benchmarks for effective practice.

Local groups are also experimenting with new methods. For example, Maine's Coastal Enterprises, Inc. has developed a very rigorous and comprehensive set of program measures.<sup>61</sup> Its Social Information System combines a host of measures that provide internal feedback to management and employees, permit assessment of program outcomes, and also generate data and case studies that can be communicated to an outside audience.

These varied initiatives seek similar types of information on client companies. They ask for information on firm growth, performance, and local economic impact. In keeping with their social missions, the organizations also tend to track information on employee benefits, wages, and community and environmental impacts.

At the federal level, the US Department of Agriculture's Rural Business-Cooperative Services (RBS) is implementing a Socio-Economic Benefits Assessment System (SEBAS) developed at the University of Missouri-Columbia.<sup>62</sup> SEBAS provides a means of evaluating performance and effectiveness of RBS' loan and grant programs by measuring the economic and social impacts that these have on rural community environments. Using a multi-regional social accounting matrix model, SEBAS is able to measure both direct and indirect effects of the loans and grants, such as business sales, income, indirect business taxes, employment, household income, public revenues, and distribution of household income and occupations.

Finally, many organizations are seeking new ways to measure "innovation impacts." This work remains relevant to the existing literature on entrepreneurship as many entrepreneurial development programs seek to stimulate innovation-related outcomes, such as improved productivity rates, wider diffusion of new technologies, and improvements in human capital.<sup>63</sup> The US Department of Commerce has created a new "Measuring Innovation in the 21<sup>st</sup> Century Economy Advisory Committee." Commerce's Manufacturing Extension Partnerships and the Advanced Technology Program have probably faced the most rigorous scrutiny of any publicly-funded technology program in the country. The National Institutes of Standards and Technology (NIST) have a

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<sup>61</sup> Coastal Enterprises, Inc., Measuring Impact in Practice (Wiscasset, ME: Coastal Enterprises Inc., February 2006).

<sup>62</sup> Robinson, Dennis and Zuoming Liu, A User Guide to the Socio-Economic Benefits Assessment System: A Rural Business-Cooperative Services Assessment Tool for Economic Development. Community Policy Analysis Center, University of Missouri-Columbia, December 2004.

<sup>63</sup> B.K. Atrostic, "Measuring U.S. Innovative Activity," US Census Bureau Center for Economic Studies Working Paper (07-11), March 2007.

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huge library of resources on this work.<sup>64</sup> Studies of the MEP have generally used industry surveys to assess whether client firms have introduced new processes (such as Total Quality Management or a reconfigured plant layout) as a result of MEP's technical assistance.<sup>65</sup>

Overseas, the European Union, the OECD, and many national and regional programs are developing interesting new ways to measure progress in innovation policy. They have also made major efforts to go beyond studies and to get practitioners to use these tools in the field. For example, the OECD has produced the very detailed Oslo Manual for collecting and interpreting innovation data. The European Union has its own PAXIS Manual that profiles hundreds of effective measurement tools and practices. Many national governments are also doing good work in this area. Britain's Department of Trade and Industry has recently published a useful study of UK innovation indicators.<sup>66</sup> These efforts all share a commitment to regular comprehensive performance measurements that capture both program outputs as well as community outcomes.

These efforts generally propose the use of detailed company surveys to capture data on a wider range of variables related to innovation. In addition to traditional measures such as new patents or licenses, the new survey tools ask questions about education backgrounds of new hires and existing personnel, development of new R&D projects, joint ventures, training expenditures, and the deployment of "high-impact" human resource practices (e.g., equity sharing, team building).

The UK study captures some interesting innovation information via firm surveys.<sup>67</sup> These data are organized around three categories, with several sub-measures under each category:

- Product-Orientated Effects: increased range of goods or services; entry into new markets; improved quality of goods and services
- Process-Orientated Effects: improved flexibility of production or service provision; increased capacity for production or service provision; reduced unit costs
- Other Effects: reduced environmental impact or improved health/safety; met regulatory requirements; improved value added.

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<sup>64</sup> These reports are available at <[http://www.atp.nist.gov/eao/eao\\_pubs.htm](http://www.atp.nist.gov/eao/eao_pubs.htm)>.

<sup>65</sup> See, for example, Eric Oldsman, "Do Manufacturing Extension Programs Matter?" Research Policy 25.2 (March 1996):215-232.

<sup>66</sup> European Commission, Directorate General, Enterprise and Industry, The PAXIS Manual for Innovation Policy Makers and Practitioners (Brussels: European Commission, 2006); Organization for Economic Cooperation and Development, Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data Third Edition (Paris: Organization for Economic Cooperation and Development, 2005); United Kingdom Department of Trade and Industry, Innovation in the UK: Indicators and Insights, DTI Occasional Paper No. 6, July 2006.

<sup>67</sup> United Kingdom Department of Trade and Industry (2006).

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These surveys also ask companies to comment on innovation constraints they face in their region or industry. These data help program managers anticipate future needs or service requirements.

Drawing on this review of literature and insights into performance measurement gained, the evaluation team developed a metrics framework to guide the evaluation, particularly the data collection for the sample of ARC projects. Chapter 4 describes the metrics framework and the overall approach to the evaluation.

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## CHAPTER 4 APPROACH TO THE EVALUATION

In designing the approach to this evaluation, the team was conscious of the charge articulated by ARC in the Request for Proposals for the evaluation. ARC was seeking a “policy impact and program evaluation”<sup>68</sup> of the Entrepreneurship Initiative that would include:

- An examination of the project outcomes of a sample of projects closed since 1997
- An assessment of wider policy impacts informed by input from stakeholders within the region.

Through its Entrepreneurship Initiative, the ARC has invested in a diverse set of projects in a diverse set of communities. Thus, a “one-size-fits-all” approach would not produce an effective and comprehensive evaluation. The evaluation team’s approach to this project was to combine a detailed and rigorous review of a sample set of projects with extensive interviews of key players on the project teams and in the targeted communities. This approach provided us with a strong set of collective program metrics as well as rich detailed case-study-like information on key projects and their outcomes.

The ideal evaluation would measure project outcomes relative to the sample programs’ ultimate goals.<sup>69</sup> The ARC evaluation is complicated by the fact that individual projects (those receiving ARC investments) had a set of specific goals each was trying to achieve, i.e., “local” impacts, such as increasing access to equity capital or incorporating entrepreneurship education into high school classrooms. In addition, through investments made in the totality of EI projects, ARC was trying to provide communities with the tools they needed to support homegrown entrepreneurs because they “play an important role in creating self-sustaining local economies and improving the quality of life in Appalachia”<sup>70</sup> – a broader set of regional impacts. While “local” and regional impacts were complementary in most cases, individual projects were evaluated based on their ability to achieve locally articulated goals and not these broader regional impacts. To distinguish between these two levels of impact, the evaluation team chose to couple an assessment of sample projects’ outcomes, as measured by data reported by project leaders, with identification of wider policy impacts as reported

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<sup>68</sup> Request for Proposals for A Program Evaluation of ARC’s Entrepreneurship Initiative, Appalachian Regional Commission, July 28, 2006.

<sup>69</sup> David J. Storey, Six Steps to Heaven: Evaluating the Impact of Public Policies to Support Small Businesses in Developed Economies, Working paper No. 59, Small and Medium Sized Enterprise Centre, Warwick Business School, University of Warwick, September 1998, 3 December 2007 <[http://www2.warwick.ac.uk/fac/soc/wbs/research/csme/research/working\\_papers/wp59-six\\_steps.pdf](http://www2.warwick.ac.uk/fac/soc/wbs/research/csme/research/working_papers/wp59-six_steps.pdf)>.

<sup>70</sup> Appalachian Regional Commission, Entrepreneurship Initiative, 9 August 2006 <<http://www.arc.gov/index.do?nodeId=19#toc>>.

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by key informants – both project leaders and regional stakeholders. A list of non-project stakeholders is included as Appendix B.

Program outcomes for the EI investments can be measured in two ways. One is to compare the levels of outcome measures *before and after* the ARC investment. To be accurate, one must be sure that the metric or outcome measure would not have changed without the ARC-funded program (i.e., the “but for” criterion). Alternatively, one could conduct a *with and without* comparison, estimating what the outcome would be without ARC investment and comparing this measure to the outcome with ARC investment. To be accurate using this strategy, one would need to employ a control group of communities, identical in every way to the communities that housed an ARC-funded program. While employing a control group may make sense when looking at firm-level impacts of public policy, as suggested by Storey, it is more difficult to consider identifying control groups for public policies aimed at bringing about changes in firms, students, educators and even communities. As a result, the *with and without* approach was deemed impractical for this evaluation as it would require identifying at least 88 “control” places – some individual communities, some multi-county regions, some multi-state regions – and collecting comparable data through interviews and secondary data.

Given the scope of the evaluation as articulated by ARC, this latter approach was not used in this evaluation. While neither approach is without criticism (see caveats at the end of this chapter), the evaluation team chose the *before and after* strategy and relied on those administering the programs and respondents to stakeholder interviews to indicate if the “but for” criterion was satisfied.

## RESEARCH QUESTIONS

A number of research questions guided this evaluation effort.

- Have sample projects achieved their stated project objectives?
- How does the performance of ARC projects compare to the performance of similar types of projects in other regions or countries?
- How well do existing performance metrics capture the impact of ARC projects and what additional metrics would improve the usefulness and integrity of evaluation results?
- What broader policy impacts are associated with ARC project investments?
- What innovative practices or lessons learned have relevance for other national and international economic development efforts?

ARC’s Entrepreneurship Initiative is unique in that investments have been made in a diverse project portfolio, varying widely by geography, program type (i.e., access to capital, technical assistance and training, incubators, entrepreneurship education, and sectors), type of lead institution and identified output and outcome

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measures. As such, no single performance measurement or metric would adequately capture the impact of ARC entrepreneurship investments on the region. For example, the performance measures associated with a youth entrepreneurship education project are likely to vary significantly from those associated with a community development venture capital project. The evaluation methodology recognized this uniqueness and created a rigorous and broad set of project metrics that would demonstrate the impact of a wide range of project types on the region.

## METRICS FRAMEWORK

The review of the literature on the state of the art in evaluating entrepreneurial development programs yields one important conclusion: the field has a long way to go in terms of creating rigorous, compelling, and effective techniques and strategies for evaluating programs and communicating their effectiveness to policy makers and community stakeholders. Indeed, much of the literature reflects what Storey would describe as “monitoring” as opposed to rigorous evaluation of performance as compared to the objectives established for a program or investment.<sup>71</sup> Drawing on the lessons from this review and based on the conceptual framework developed to guide the evaluation process (described in Chapter 3), performance measures were defined for each of the program categories that, as far as is practical from the available data, reflect the appropriate programmatic goals. The evaluation team developed a list of metrics that captures key outputs and outcomes for each of the five program categories. This framework is depicted in Table 4.1.

The development of this metrics framework was guided by the literature review and a critical discussion of the need to link outcomes to program goals. For example, while the literature on entrepreneurship education offers a range of metrics related to student outcomes (e.g., higher test scores), the evaluation team chose to focus on those metrics that relate directly to the programmatic goals of the ARC Entrepreneurship Initiative – in the case of entrepreneurship education, the goal is to create more entrepreneurs in the pipeline.

These metrics allow researchers to obtain a good picture of the progress of the various projects funded through the ARC’s Entrepreneurship Initiative. They allow an understanding of the impacts of each program type, and also help identify exemplary practices and programs. They do not yet give a good picture of the overall effects of varied entrepreneurship initiatives across a specific region. Achieving this objective requires that researchers assess programs operated by numerous different organizations (many outside of ARC’s purview) across all types of policy interventions along the business life cycle. This important effort, which falls outside scope of this evaluation, presents an interesting challenge for future research.

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<sup>71</sup> Storey (1998):12.

**TABLE 4.1. PROPOSED METRICS FRAMEWORK**

TYPE OF PROJECT	OUTPUT INDICATORS	OUTCOME INDICATORS
<b>Capital Access</b>	<ul style="list-style-type: none"> <li>▪ Number of loans/year</li> <li>▪ Amount (\$)/year</li> <li>▪ Number of funds created</li> <li>▪ Fund size (\$)</li> <li>▪ Average loan size</li> <li>▪ Percent sectoral distribution of loans (\$)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Amount (\$) funds leveraged (public, private or other)</li> <li>▪ Number of jobs (FTEs) created/retained</li> <li>▪ Percent of funded firms still in business</li> <li>▪ Annual income and benefits/job or average wage/job</li> </ul>
<b>Sectors</b>	<ul style="list-style-type: none"> <li>▪ Number of participants in networking meetings</li> <li>▪ Number of members (change over time)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increase in inter-firm collaborations</li> <li>▪ Number of partnerships created</li> <li>▪ Amount (\$) of increased sales from network participation</li> <li>▪ Number of jobs (FTEs) created/retained</li> <li>▪ Change in total sector sales</li> <li>▪ Number of business starts in targeted sector</li> </ul>
<b>Incubators</b>	<ul style="list-style-type: none"> <li>▪ Number of current clients</li> <li>▪ Number of clients served</li> <li>▪ Number of graduated firms</li> <li>▪ Number of clients still in business</li> <li>▪ Amount (\$) leveraged by incubator (other public/private money)</li> </ul>	<ul style="list-style-type: none"> <li>▪ % businesses retained in service area</li> <li>▪ # of jobs (FTEs) created/retained while in incubator</li> <li>▪ # of jobs (FTEs) created/retained post-graduation</li> <li>▪ Amount (\$) of capital raised by tenants</li> </ul>
<b>Entrepreneurship Education</b>	<ul style="list-style-type: none"> <li>▪ Number of participants enrolled in the program</li> <li>▪ % of local schools offering (pre and post investment)</li> <li>▪ % of participants completing the program</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increase in awareness of business concepts (pre vs. post)</li> <li>▪ Increase in number of participants considering business creation as a career option (pre vs. post)</li> <li>▪ Change in student performance before and after program</li> <li>▪ Number of students starting businesses</li> <li>▪ Number of students that stay within the service area</li> </ul>
<b>Technical Assistance And Training</b>	<ul style="list-style-type: none"> <li>▪ Number of business starts</li> <li>▪ Number of business expansions</li> <li>▪ Number of clients</li> </ul>	<ul style="list-style-type: none"> <li>▪ Number of clients still in business</li> <li>▪ Number of jobs (FTEs) created/retained</li> <li>▪ Private \$ raised by client firm</li> <li>▪ Annual income and benefits/job or average wage/job</li> </ul>

Jobs (FTE) = wage earners and proprietors

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While this broad set of performance metrics provided a useful framework for the evaluation, a “best in class” metrics system as proposed later in this report would require refinement of this list down to those outcome measures that best capture the impacts of entrepreneurship development investments across a range of project types. Recommendations in Chapter 9 include the identification of a set of outcome measures that could result in an operationalized “best in class” metrics system to guide future investments by ARC.

## DATA COLLECTION

To gather the data identified in the metrics framework, the evaluation team used a four-part approach:

1. Data for each sample project were gathered from the ARC project file – the program category, funding level, goals (or need addressed), and how the program was implemented.
2. Additional data on project performance were gathered through phone interviews with project directors – outcomes produced (both quantitative and qualitative), value attributed to the project, success in achieving objectives.
3. Data on broader capacity and policy impacts were gathered through phone interviews with both project and non-project stakeholders – policy impacts in the region, other qualitative and quantitative impacts on capacity in the region.
4. Data on place-based and broad policy impacts were gathered through selected site visits in geographic areas where investments in a number of program categories had been made, determined after the previous parts of the data collection process were completed.

To facilitate the collection of data in part two above, a draft protocol for the follow-up phone interviews was developed (see Appendix C).

## DESCRIPTION OF EVALUATION TASKS

A number of specific evaluation tasks were identified and completed. To provide context for the evaluation and to guide the development of the metrics framework, the team completed a literature review of entrepreneurship development project evaluations conducted by organizations such as Organisation for Economic Co-operation and Development (OECD), Small Business Administration (SBA), Economic Development Administration (EDA), US Department of Agriculture (USDA), and National Institute of Standards and Technology (NIST) – Manufacturing Extension Program (MEP) and Advanced Technology Program (ATP), as well as evaluations by private organizations such

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as Community Development Venture Capital Alliance (CDVCA), National Business Incubation Association (NBIA) and other local and state organizations (see Chapter 3 and Appendix A). In addition to guiding development of the metrics framework, this review helped the evaluation team determine whether a comparative analysis of ARC performance relative to other similar types of initiatives was feasible.

Members of the evaluation team conducted phone interviews with non-project stakeholders to identify the broader impacts of ARC Entrepreneurship Initiative projects. These individuals tended to be national or regional experts on economic development and the specific issues and challenges facing the Appalachian region or specific states and localities within the ARC service area (see Appendix B for a list of stakeholders interviewed and Appendix D for the protocol used.) Interviews were also conducted with state program managers to develop an understanding of how the EI was implemented in each state and with other key leaders who had deep experience in the region. Recurring themes from these key informant interviews were identified and reported as qualitative impacts of ARC program investments.

The most significant evaluation task was the team's review of project files provided by ARC for a sample of 114 projects to understand the purpose, goals, objectives, and identified outputs and outcomes. ARC's performance measurement system tracked a number of key performance metrics across projects that were relevant to this evaluation:

- Businesses served
- Jobs created
- Jobs retained
- Project participants
- New businesses created
- Private investment leveraged.

While this common set of metrics facilitates assessment of the impacts of ARC's project portfolio, the evaluation team also used the metrics framework developed from the literature review to collect additional data on the sample projects. The team conducted phone interviews with key staff of each project's lead institution to review and/or collect information and data on both the performance metrics reported to ARC and the broader set of performance metrics identified by the project team in consultation with the advisory group. It is important to note that few project leaders were able to report data for this broad set of metrics. Since these metrics were not necessarily identified as outcomes by the grantees, it was not expected that they would be able to report on all of these metrics. However, the evaluation team wanted to be able to capture as broad a set of performance metrics as possible during these interviews, so the metrics framework was used as a guide.

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Using data obtained from final project reports submitted to ARC and data collected during the phone interviews, the team prepared a descriptive statistical analysis of performance metrics. This analysis allowed the team to evaluate how sample projects had achieved their stated objectives and how additional metrics contribute to understanding the outcomes and impacts of project investment. These interviews provided useful data on project outcomes. As part of the effort to gain a sense of impact beyond individual projects, the project team also conducted site visits to four locations with the region. These site visits were used to conduct personal interviews and/or focus groups with project teams and other community stakeholders. The insights gained through these site visits helped to confirm what the team learned through other interviews and to provide case examples to illustrate specific lessons learned associated with this evaluation.

A final task was to conduct a meta-analysis of the outcomes and impacts associated with ARC projects as compared to any benchmarks identified through the literature review. The purpose of this analysis was to assess the impacts of ARC programs relative to similar investments in economic development activities. As described in Chapter 3, the literature review identified few other evaluations that sought to measure the outcomes of entrepreneurship development investments like ARC – initiatives that are designed to change the culture and economic development direction of a region. Assessments were most often completed for particular programs, such as SBDCs, with a focus on measuring impacts at the individual entrepreneur (customer) level. Most of these assessments have measured outputs from program activities, e.g., number of clients served, dollars invested, as opposed to outcomes on either individual businesses or the overall economy.

It was difficult to use information from these previous assessments for a comparative analysis of the ARC EI since ARC investments were strategically made to demonstrate the potential for entrepreneurship development and to change attitudes about economic development within communities and the broader region. Specific projects were not designed simply to create jobs, but had a broader set of goals including, for example, to:

- Expand use of e-commerce
- Create an angel network
- Double the number of high schools teaching entrepreneurship
- Train teachers to use entrepreneurship curriculum
- Prepare 100 new business plans as part of a competition
- Complete a business incubator feasibility study and strategic plan
- Attract 10,000 visitors in first year of a heritage tourism development.

Even detailed metrics for these types of broader goals tell only part of the story. It is not possible to talk about entrepreneurship development by reporting on any single metric. However, in lieu of a broader meta analysis, it was possible to calculate for the sample projects and for the entire portfolio an estimate of public cost per job created that could be compared to estimates for other similar programs. These comparisons are provided in Chapter 6.

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As a result of these challenges, the evaluation team chose to recognize the embryonic nature of entrepreneurship development evaluation research and to use what had been learned through both the literature review and in-depth assessment of sample projects to suggest what performance metrics would best capture the essence of initiatives like ARC's EI – a “best in class” metrics system. This system is discussed in detail in Chapter 9.

## SAMPLE SELECTION PROCESS

ARC made 448 grants to entrepreneurship-related projects from 1997 through 2005. This evaluation focused on projects whose commitment from ARC had been completed, i.e., “closed” projects between 1997 and 2005; a total of 354 grants were closed at the time of the evaluation. However, since a number of grants were for follow-on investments, the evaluation team further narrowed the universe of eligible projects to a set of 229 unique, closed projects. While most projects were designed to address the specific issues or needs within a community, region or state, some of these investments were in region-wide projects, primarily designed to raise the level of awareness of entrepreneurship generally or to provide an opportunity to explore a specific issue with applicability across the region, such as the role of business incubators or issues related to access to capital for entrepreneurs.

This group of 229 projects represented investments in all types of projects (Table 4.2) and in all states in the region (Table 4.4). It was from this universe of projects that the evaluation sample was drawn. All grants related to a specific project were reviewed as part of the sample analysis.

Each of the closed, unique projects was assigned to one of five categories by reviewing the title of the project and the description of the project contained in the September 2003 ARC publication, Entrepreneurship Initiative: Program Summary and Approved Projects. Some projects in the database were not in this publication, notably those coded as “Commission” rather than coded by a specific state. These Commission projects were coded according to the titles where possible. The five categories used were:

- Capital Access – any project where loans, grants or equity investments were made in companies
- Entrepreneurship Education– all projects for youth
- Incubator – any project to study the feasibility of, plan, or operate an incubator; virtual incubators included under technical assistance
- Sectors – any project whose aim was to support entrepreneurs in a single sector or type of business; excluding incubator projects
- Technical assistance and training – any project where assistance was given directly to individual entrepreneurs.

Since community capacity was a cross-cutting theme, the evaluation team determined that all projects in the sample would be evaluated for community capacity building. A total of 28 projects were not coded because they did not have a description, the title was vague, or the project was for a conference or similar activity. The distribution of closed, unique projects is shown in Table 4.2. Based on this distribution, the team randomly selected a sample of 114 projects. Then, three projects were discarded and three were added to make the state distribution more even.

**Table 4.2. Distribution by Program Category – Universe of Unique Projects**

<b>Category</b>	<b>Number</b>	<b>Percent</b>
<b>Capital Access</b>	18	7.9
<b>Entrepreneurship Education</b>	42	18.3
<b>Incubators</b>	30	13.1
<b>Sectors</b>	40	17.5
<b>Technical Assistance and Training</b>	71	31.0
<b>Other/Not Coded</b>	28	12.2
<b>Total</b>	229	100

The objective was to choose a representative sample of projects, defined as having the same distribution of projects by category and by state as the universe of unique projects. In addition, the team sought to have a sample that was representative in terms of size of investment by ARC. The team concluded that the sample was representative, but not strictly random, as described below.

Table 4.3 shows the number and percent of projects in each program category in the original sample of 114 and in the final sample of 88.<sup>72</sup> Based on the distribution of the sample projects by program category, the final evaluation sample appears to be representative of ARC’s EI projects as a whole.

The geographic distribution of the sample projects as compared to the distribution by state for the universe of unique projects is shown in Table 4.4 and in Figure 4.1.<sup>73</sup> Note that three states, Georgia, North Carolina and South Carolina, appear in the sample at a rate slightly higher than their actual number

<sup>72</sup> Although 114 projects were included in the original sample, completed interviews were obtained for 88 projects. Project interviews were not completed for a variety of reasons including loss of institutional memory of the project because project leaders had left the organization, inability to schedule interviews after repeated attempts, and the closure of lead organizations.

<sup>73</sup> The map in Figure 4.1 indicates that some grants went to organizations outside the region. This apparent anomaly occurs because, in some cases, the lead organization was located outside the ARC region, although the project was implemented within the region.

of projects. These three states had fewer total projects and, in order to include more than one project from each of these states in the sample, the team chose to over sample to insure more representative findings from these states. The sample appears to be representative of the geographic diversity of EI projects.

In terms of ARC investment, the sample again appears to be representative of the project universe. Average ARC investment per project was \$126,387, while the average amount of ARC investment per project in the sample was \$145,997. The range of ARC investments in the universe was \$2,000 to \$2.2 million; within the sample, the range was \$3,500 to \$2.2 million. The total investment in the ARC projects was \$42,971,688; the total in the sample was \$12,847,733.

**Table 4.3. Distribution by Program Category – Original and Final Sample of Projects**

CATEGORY	ORIGINAL	ORIGINAL %	FINAL	FINAL %
Capital Access	10	8.8	8	9.1
Entrepreneurship Education	23	20.2	17	19.3
Incubators	17	14.9	12	13.6
Sectors	23	20.2	17	19.3
Technical assistance and Training	41	36.0	34	38.6
Other/not coded	---	---	---	---
<b>Total</b>	<b>114</b>	<b>100%</b>	<b>88</b>	<b>100%</b>

#### CAVEATS TO THE EVALUATION APPROACH

Any evaluation must address the potential caveats associated with the proposed methodology. While it is important to acknowledge and, to the extent possible, mitigate these shortcomings, the methodology used in this project was as rigorous as possible given the diverse set of individual projects, each with its own set of self-defined performance measures that characterize the ARC Entrepreneurship Initiative.

The first caveat to the selected methodology was its reliance on self-reporting of outcomes and other performance metrics. In many circumstances, this would be a severe constraint on the integrity and objectivity of the data and conclusions. In this case, however, the grantee organizations were required to submit final reports as part of their contractual agreement with ARC and these reports could be, and often were, subject to audit. In addition, ARC’s Regional Planning and Research division made quasi-random validation field visits to project leaders.

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The goal of these visits was to validate that the activities proposed under the grant were actually taking place. The evaluation team took the view that the project reports could legitimately be regarded as binding and accurate depictions of the impacts associated with each project. It was beyond the scope of this evaluation to independently verify the data reported by individual projects as part of their reporting to ARC or as part of the data collection process associated with this evaluation.

To develop insights into the broader policy impacts associated with ARC investments, we chose to rely on interviews with key stakeholders, an adaptation of the key informant research approach. Since these broader impacts related to such things as changes in attitudes toward entrepreneurship and economic development in the region, renewed hope for the future, and the elevation of a new set of leaders, the best means of gaining insight into these changes in regional or community capacity was to question those who had deep appreciation for the culture of Appalachia, extensive experience working in economic development in the region, and expertise in particular project areas in which ARC invested. Recognizing the inherent bias in relying on interviews with individuals to assess overall change in a region, the evaluation team chose to identify a broad group of stakeholders and to report recurring themes and observations that were widely held within this group.

Another caveat relates to what might be called a “bias toward success.” If the universe of closed projects does not include both “successful” and “failed” projects, the evaluation results will be biased toward success, i.e., the evaluation will not capture the insights and outcomes (or lack thereof) associated with projects that were not successful. Indeed, failed projects may provide insights that are helpful in addressing some of the research questions articulated in this proposal. Based on the outcome of the project interviews, it was clear that the sample included projects that were successful and sustainable, as well as those that were not.

The final caveat relates to the rigor of statistical analysis permitted as part of this evaluation. The small sample size and the diverse types of projects included in the sample prevent the use of sophisticated statistical models or methods. However, the descriptive statistical methods used allowed us to address the critical research questions outlined above and to provide recommendations for ARC’s consideration in guiding the entrepreneurship investments in the future.

**Table 4.4: Distribution of ARC Projects by State – Universe of Unique Projects, Original Sample and Final Sample\***

	# UNIVERSE	# ORIGINAL SAMPLE	# FINAL SAMPLE	% UNIVERSE	% ORIGINAL SAMPLE	% FINAL SAMPLE
Alabama	20	11	8	10	10	9
Georgia	7	5	4	3	4	4
Kentucky	14	8	6	7	7	7
Maryland	11	5	5	5	4	6
Mississippi	14	8	5	7	7	6
New York	16	9	7	8	8	8
North Carolina	3	3	3	1	3	3
Ohio	26	14	12	13	12	14
Pennsylvania	12	7	6	6	6	7
South Carolina	3	3	3	1	3	3
Tennessee	10	6	4	5	5	4
Virginia	38	21	14	19	18	16
West Virginia	21	11	10	10	10	11
ARC Commission	6	3	1	3	3	1
	201	114	88	100	100	100

\* A total of 28 projects were not coded as described in the text.

Figure 4.1. Map of Sample and Total EI Projects, by State

