

**Extending Alone**

By

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## **Extending Alone**

The discussion in this paper is focused on assessing the future of Extension, and in particular the tenure-track agricultural extension economist. Presented here is a case-study of trends within the University of Missouri Outreach and Extension system, relationship of Extension to the business cycle, and quantitative analysis of factors contributing to per capita state-level Extension funding. The suggestions from this research are obvious. In order to succeed in Extension one will have to become innovative and focus on enhancing social capital as opposed to building a well defined professional-focused research program, if only planning to rely on internal funding.

*keywords:* Extension, social capital

## **Extending Alone**

Extension has a storied history. Beginning with the Smith-Lever Act in 1918 Extension set roots first in rural, and then urban, America. In general, the mission of Extension is to put into action research based information or knowledge, generally in the area of agriculture. However, the mission of Extension has developed beyond this basic mission due to the shift in demographics from rural to urban and the change in clientele needs. Federal and state funding to Extension has steadily declined over time, which has caused necessary changes in the focus and implementation of revenue generating Extension activities. As a young Extension economist – possibly 30 years left in my career – I often ponder the future of Extension. My ponderings are not unlike the ponderings that my seasoned Extension peers had at the beginning of their career. However, Extension is at a point in time where additional downsizing may not be an option. Instead, the issue of critical mass is of great concern. I purposefully chose the title of this paper to reflect my concerns for the future of Extension, i.e., will I be the last Extension economist in the profession? Probably not, but within my institution, I will be left nearly extending alone should I stay on for thirty years. The discussion that follows is used as a platform to raise the issue of the future role of Extension, with particular attention on extension economists. I pull substantially from my own experiences in laying out the story.

Numerous authors have weighed in on the debate regarding the future of the United States Extension Program, e.g., Boehlje and King; King and Boehlje (a); King and Boehlje (b). Others have postulated the importance of the academic institution in aligning with clientele needs, e.g., Levins, and attempted to ascertain the future role of a college of agriculture, e.g., Martin and Ilvento. Boehlje and King contrasted how Extension may be on the brink of

extinction or distinction. Yet, while many have issued hypotheses about the future relevance of extension, none have provided a comprehensive description of what has caused these hypotheses to be constructed. Quite possibly, if we first begin to understand what has brought us to the quandary, “what is the future of extension?,” then answering not only what the future holds, but how will extension need to change to effectively fit into this new mold can be understood. Declaring victory and phasing out may be an option.

The discussion here reflects that of a tenure-track extension economist, while some of the supporting data relates to Extension. I perceive that the similarities between extension and Extension are apparent. The null-hypothesis posed here is,  $H^I_{O:}$  is Extension viewed as an educational tool for practical application of research. The second hypothesis is,  $H^{II}_{O:}$  is Extension viewed more as a social function that is treated as community involvement [a subsidized form of sustaining community involvement than as a research function].

My recent reading of *Bowling Alone* by Robert Putman was my motivation for posing the hypotheses stated above. Every time I read in the text or observed in a figure the decline of social activity in the United States, I could not help but wonder how the trends in social involvement compare to extension contact trends. On my mind, are the observed historical trends in societal involvement directly applicable to the crossroads extension finds itself today? Putnam’s statement suggesting that community is much like the stock market in that past performance is no guarantee of future performance may well ring true for extension. Extension’s traditional involvement in social activities indicates the traditional extension model is on the brink of extinction.

Figure 1 shows the relationship between state-level per capita Extension funding and an associational social capital index developed by Putnam. A positive relationship is apparent,

however, what is the relationship when accounting for other factors? A quantitative analysis of factors influencing state level Extension funding is carried out using multivariate regression analysis to test the hypotheses laid out above.

I also show that extension's life cycle mimics that of a businesses life cycle. The business life-cycle model also suggests extension is in the maturity stage of its life cycle, or maybe beyond. Possibly, extension economists can take a lesson from the business world in rejuvenating their product.

Figure 2 is used to graphically depict the historical timeline of Extension. The United States Extension Program was founded in 1918. The beginning of the U.S. Extension system occurred during a high-growth period of U.S. Contemporary Associations (e.g., Kiawanas membership as outlined in Figure 3). Subsequently, an expansive growth in civic involvement occurred. This level of involvement was sustained into the 1960s.<sup>1</sup> However, since the 1960s there has been a dramatic decline in overall civic involvement. What about extension involvement?

The case for some aspects of the extension system sustaining involvement could be made. For instance, involvement in 4-H grew exponentially with the beginning of extension and, relatively speaking, 4-H involvement has been sustained relative to many other social activities. Many have been involved with 4-H, including myself. Yet, one has to wonder whether extension has sustained 4-H involvement or has 4-H involvement been spurred by societies agrarian ties and affection for agriculture - I use "affection" by association of taxpayer willingness to dole out over \$170 billion for a new government farm program. As society becomes further removed

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<sup>1</sup> Aggregate civic membership indicates a subtle decline in membership after the mid 1960s (Putnam).

from agriculture will sustained involvement in agrarian type activities, such as 4-H, continue? This is posed as a point in a research agenda and not as a question of the relevance of extension programs such as 4-H.

Through the discussion in this article, and accompanying figures and analysis, I hope to quantitatively and qualitatively argue that traditional extension has acted as a subsidized community activity that now faces extinction. Furthermore, applying the business life-cycle methodology to extension suggests that a new extension philosophy is needed to target a new market for enhancing social capital. The data collected to build this story was abstracted from *Bowling Alone*, various annual Extension reports, and various other sources. For simplicity, I use data collected from the University of Missouri Outreach and Extension program from which to make comparisons between social and extension trends. Though the level of impact may vary by state, I assume the trends between Missouri Outreach and Extension and other state Extension programs are similar. Throughout this manuscript I pull from personal experiences and programs to better enable the Extension story to be understood by non-Extension persons. For all practical purposes I use myself as a case study from which to generate discussion.

### **A Case Study of Missouri Extension**

The University of Missouri Outreach and Extension (referred to as UO/E from here forward) is somewhat unique relative to the typical land grant based Extension service. UO/E is part of the five-campus University of Missouri System, Extension essentially is treated as a sixth campus.

Regional agricultural specialists (field faculty) are titled relative to their subject matter area, e.g., farm management, agricultural business, agronomy, and livestock. Field faculty hold, at a minimum have, a M.S. degree in their subject matter area. Each field faculty is a subject

matter specialist for a four to six county area, but headquartered in a particular county. There are approximately 110 agricultural specialists. These field faculty serve a dual role as county agent and subject matter specialist. Therefore, the role of the field faculty is the frontline of interaction with clientele. Field faculty look to state faculty for informational support and professional development training.

State agricultural faculty are primarily located on the Columbia campus. State faculty have two distinct clientele, constituents and field faculty. Campus faculty are administrated through the Columbia campus. Most state agriculture faculty located on the Columbia campus are within the College of Agriculture, Food, and Natural Resources (CAFNR). Thus, salary and program dollars are passed to the Columbia campus, and Columbia campus administrators allocate monies accordingly – UO/E has little input after the initial transfer of dollars to campus to create a position.<sup>2</sup> Three categories of state Extension faculty exist. First, there is the traditional tenure track faculty member. Second, there is the non-tenure (non-regular) faculty member. Third, there is the professional track, e.g., extension associate, faculty member. Non-regular faculty primarily members of the Commercial Agriculture Program, which is a series of commodity related multi-disciplinary teams that assist producers whom make a living from farming and agribusinesses. This program was established independently from CAFNR. Professional track faculty support program areas that are directed by a tenure or a non-tenure track faculty member.

Figure 4 is used to graphically represent the changes in Extension staffing patterns over the past seventeen years in CAFNR. IN 1989 nearly 90 Extension FTEs were associated with CAFNR, while in 2001 only 50 FTEs remained. Furthermore, there has been a switch from

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<sup>2</sup> The exception here would be E&E dollars allocated on an annual basis

tenure track funded positions to non-tenure and professional track funded positions. This shift in paradigm allows for more flexibility in shifting program emphasis, i.e., easy to shift money to areas of clientele need.

On a departmental level, tenure-track extension economists in the Department of Agricultural Economics have been decimated over time. In the early 1970s there were as many as 17 agricultural economics extension FTE. Today there are 2 FTE, yet, the expectations for meeting the breadth of field faculty needs as not declined.<sup>3</sup> Clearly, there is little left to downsize.

Individual state-level programming activities vary greatly by subject area and individual. As one measure of Extension activity, programming, I have provided a synopsis of my travel activities for the 1998 through 2001 period, see figure 6. Travel consumes a significant amount of time, and travel for Extension programming is seasonal. The issue surrounding travel is, is traveling to and from meetings an economically viable use of one's time given the demand for meeting program needs?

### **Associational Social Capital**

Social capital associations help gauge the level of cohesion within a community. Community is any group with commonalities, which may or may not refer to a location. Social capital acts to enhance the production of other goods and services (Robinson, Schmid, and Barry). Thus, people interacting through associations can enhance their productivity in the production of other goods and services. For example, involvement, and interaction with members in an extension

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<sup>3</sup> Currently, there are 32 field faculty positions with either the title farm management or agricultural business specialist.

marketing club may not only enhance the persons ability to market their commodities but also enhance their ability to manage costs. The learned activity of better managing for costs was caused by the creation of an activity for persons to interact. Community cohesions occur through horizontal and vertical associations.

Horizontal associations are associations within similar social networks within the community. Subcategories within horizontal associations are referred to as bonding and bridging. Bonding refers to strong ties within a social network, and bridging refers to weak ties within a social network. Bonding type social capital may occur by four local cattle producers exchanging information offer coffee at the local restaurant. Bridging type social capital may occur through a regional forage field day in which the four local cattle producer interact with producers from across a relatively large geographic area.

Vertical associations are associations across different social networks within the community. The term linking is often used to describe vertical social capital associations. Linking type social capital is the four local cattle producers going to statewide cattle producer conference in which the producers have the opportunity to interact with state and national experts from other universities and governmental agencies.

Bridging and linking type social capital need not to occur face-to-face. The use of technologies may incubate and enhance people's ability to interact between similar social networks and across different social networks. The use of technologies has provided a significant reduction in the cost of acquiring social capital through bridging and bonding type activities. Furthermore, as with any type of capital any investment made today takes away from what one could have today in exchange for what will have in the future. So, technologies that

reduce the costs of acquiring social capital today are more appealing to persons because they give up less for the potential of greater gains in the future.

So, what does all this terminology mean in extension lingo? A graphical example may help. Figure 7 is used to describe vertical and horizontal associations of social capital. For this example, confined animal feeding operations (CAFOs) is used.

Extension has historically been about bonding associations. Now, with the loss of Extension positions, the extension economist is going to have to look at linking and bridging associational social capital opportunities to efficiently and effectively meet a more diverse (both geographically and informational) clientele need and progress toward promotion and tenure.

### **Maturity in the Extension Life Cycle**

The business life cycle literature is relatively thick, and is the basis of every introductory business management course. The primary difference between Extension and business is that Extension operates based on a different set of incentives, i.e., Extension does not attempt to maximize profits. Yet, the business life cycle methodology can be applied to Extension, Figure 8 is the business life cycle adapted for Extension. A sub-set of characteristics and strategies are listed for each phase of the life cycle. The introductory phase of the Extension life cycle can be characterized by low impact, high cost, and few competitors. Rapidly increasing impact, average costs, and growing competitors characterize the growth phase. Peak impact, low costs, and stable competitors characterize maturity phase. Declining sales, low costs, and declining competitors characterize the decline phase. There is no time frame for the time period of each phase.

I postulate extension economist's currently finds themselves at maturity, or beyond maturity, with minimal consideration of repositioning. It is plausible to argue that introduction phase for Extension employees was lengthened due to public support, i.e., subsidized form of enhancing social capital through bonding. The growth phase of Extension was as observed for a typical non-public industry, and now Extension is extending the maturity phase through public support based on an antiquated bonding type model.<sup>4</sup> Whereas a private firm must reposition itself to sustain profitability to make investors happy, Extension has only to develop reports to receive formula funding the next fiscal year. Extension is ill equipped to change to meet changing consumer needs. Why? 1) Extension positions are funded below comparable industry level positions; 2) because of the salary schedule there is a low probability of attracting persons with practical experience; 3) The incentive structure to be proactive and innovative is typically not present; 4) the rigidity of the system does not provide for sufficient support of innovative programs needs; 5) low turn-over and spatial dispersion keeps new ideas from readily flowing in and geographically across locations; 6) extension offices are immobile, but the population is mobile; 7) there exists an equated system for re-tooling extension educators; and 8) academics/extensions are by definition risk averse and repositioning is a risky undertaking.

Figure 4 is used to highlight repositioning options of the four listed, new uses and reposition perception of products seem the least plausible alternatives. As consolidation occurs in the agriculture sector there will continue to be less uses for established information; thus, new uses will be relatively non-existent. Since Extension does not deal in perception, repositioning perception is not an option. New distribution is a viable option. Table 3 highlights the economic

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<sup>4</sup> Though administrators will not admit it, head counts continue to important in assessing impact of Extension or programs within Extension.

costs between three alternative delivery modes: face-to-face interaction, interactive television, and NetMeeting with a teleconference. These three modes are used by the UO/E system for train-the-trainer activities. Also, the Internet offers an opportunity for a new distribution outlet for the extension economist, however, utilizing this to full capacity – revenue generation – is not understood well. Product improvement is occurring, however, it is slow to happen as this typically occurs when replacing an exiting faculty member. Yet, with fewer and fewer resources the expenditures required for product improvement are significantly outpacing allocation of new dollars.

### **Quantitative Assessment**

To empirically test the stated hypothesis ( $H_0^I$ : enhancing social capital has value to extension; and  $H_0^{II}$ : extension is the “put to action” arm of research) a model with per capita state-level extension funding as the dependent variable was developed. The two relevant explanatory variables, used to test the hypotheses, are per capita state-level academic research and development expenditure (National Science Foundation) and the social capital index (Putnam). Three other variables were included to capture other factors contributing to the per capita level of state-level Extension funding. Furthermore, because impacts flow across state boundaries it is plausible that that impacts from Extension in one state flow over to neighboring states. Thus, the model is specified to account for these flows through the inclusion of a spatial autocorrelation variable. The empirical model estimated is:

$$\begin{aligned}
(1) \quad & \text{State per capita extension funding}_i = \omega_0 + \omega_1 \cdot \text{Social capital index}_i \\
& + \omega_2 \cdot \text{Per capita university research \& development}_i + \omega_3 \cdot \text{Per capita income}_i \\
& + \omega_4 \cdot \text{Rural population}_i + \rho \sum_{i=1}^{i=48} w_{ik} \text{State per capita extension funding}_{ik} + \varepsilon_i
\end{aligned}$$

where  $\rho$  is the spatial autocorrelation coefficient,  $w_{ik} = c_{ik} / \sum_{k=1}^{k=48} c_{ik}$ , and matrix  $\mathbf{C}$  is composed of 0 or 1  $c_{ik}$  elements where  $c_{ik} = 1$  when states  $i$  and  $k$  boarder each other. The methodology to correct for spatial autocorrelation was adapted from Griffith.

Summary statistics, definition, and expected impact on the dependent variable are reported in table 1. All selected explanatory variables are expected to have a positive impact on the dependent variable. Increasing the level of social capital (associational linkages within the community) is expected to increase per capita Extension funding as enhanced social capital has been shown to increase economic activity (Knack and Keefer), thus, enhancing per capita Extension funding. Research if of little use without application. Thus, the greater the application of research based information through Extension, the greater the expected level of funding to Extension. A proxy variable, per capita research and development expenditures to land grant institutions, was used to capture this impact. The two other exogenous variables are per capita income and rural population. An increase in per capita income will increase tax payments, thereby, increasing State Extension funding. As extension is predominantly targeted at rural audiences, with less access to information and programs, states with a higher rural population would be expected to allocate more dollars to extension.

The model estimated in equation 1 involved fort-eight observations, one year of cross-sectional data from the lower forty-eight states. The data was corrected for heteroskedasticity,

and the model was estimated using Eviews 4.0. A concern is the presence of simultaneity between the social capital index variable and per capita Extension funding. To test the hypothesis of exogeneity of the social capital index variable, a Hausman endogeneity test was performed. The test indicated a failure to reject the null hypothesis. Thus, the model was estimated using ordinary least squares.

Results of the estimated regression equation are reported in table 2. The chosen explanatory variables explained 52% of the variation in per capita state-level Extension allocation. The spatial autocorrelation was positive and statistically significant. This indicates that there is spillover between boarding states. This result is not surprising since some states have working agreements to share resources and the USDA CSREES mandates twenty-five percent of funding be used for multi-state programming. The social capital index variable was positive and statistically significant, however, per capita research and development expenditures were not statistically significant in explaining variation in per capita state-level Extension allocation. This result further builds the case that Extension should place greater emphasis on enhancing social capital, then on the application of research.

### **Implications for Extinction or Distinction of the Tenure Track Extension Economist**

If one associates extension with community involvement, then the traditional tenure-track extension economist may be nearly extinct. Only recently has the agricultural economics profession began to study the implications of social capital, e.g., Robison, Schmid, and Barry. The extension economist could fill a niche within in Extension in assisting persons in assessing the size of the social capital impact from an Extension activity, simultaneously, laying out the ground work for a research program. Those successful extension economists within the

profession have taken a lead in using linking and bridging social capital transfer, while maintaining the bonding social capital roots. This has been possible due to the sheer number of extension economics faculty and the increased use of the Internet. The next generation of extension economists are going to have survive solely on linking and bridging social capital transfer.

Historically, tenure track extension faculty have had the expectation of regular delivery of programs to an extension audience. Publishing in scholarly journals was expected, however, seldom would publishing take precedence over delivering programs. Robison and Coyer reported only a small percentage of authors publishing in scholarly journals held Extension appointments. While, Anderson and Brorsen found that extension economists find information published in scholarly journals not applicable to their programming needs. Furthermore, Parcell et al. reported that extension and research economists rarely co-author journal articles. One hand extension economists find research reported in scholarly journals to be irrelevant, but on the other hand some suggest extension economists are paid less than their research peers. One area of future research is to analyze the impact of extension economists remaining relevant and professionally active when time allocation is spent on so many different emphasis areas.

The level of social capital appears to have a great influence on the level of per capita state-level Extension funding, while the application of research based information has little or no impact. Yet, what does this result suggest for the tenure-track faculty member who's promotion and tenure is based on publications and putting applied research into action? This result suggests that state faculty will have to develop innovative means by which to enhance social capital and simultaneously develop a research program around these areas. Furthermore, failure to attract substantial funding to develop the program will leave the extension economist extending alone.

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Table 1. Description of Variables used in Assessing Relationship between Extension funding, Social Capital, and Research

Variable	Variable Description	Avg.	S.D.	Expected Sign
Per capita level of state-level sourced Extension funding	Total per capita county-level and state-level funding for state $i$ , $i=1 \dots 48$	6.35	3.90	+
University R & D	Per capita academic for research and development expenditures for state $i$ . Captures relevance of extension as putting research to practice.	100.32	43.38	+
Social Capital Index	Index of fourteen social, organizational, and trust variables to proxy the level of social capital in state $i$ . Captures relevance of extension as a social contributor.	0.020	0.781	+
Rural population	Rural population of state $i$ population. As extension tends to serve the rural masses, this variable captures the importance of rural economies to state funding.	1,115,360	730,998	+
Per capita income	2000 per capita income for state $i$ . This variable is used to proxy tax revenues from which extension funding is derived.	27,929	4,422	+

Table 2. Empirical Model Results of Contribution to Per Capita State Extension Allocation (dependent variable is dollars per capita).

	Coefficient	t-statistic
Constant	15.29	4.43***
Social Capital Index	1.65	2.65***
R & D per capita	0.06	0.67
Per capita income	-0.004	4.38***
Rural population	0.27E-07	0.04
Spatial autocorrelation coef.	0.408	2.118**
R-squared ( $R^2$ )	0.523	
Number of observations	48	
Mean of the Dep. variable	\$6.35	

Note, two (\*\*) and three asterisks (\*\*\*) indicate statistically significant at the 0.05 and 0.01 level, respectively.

Table 3. Economic Assessment of Train-the-Trainer Programs using Three Alternative Delivery Modes available to University of Missouri Extension Faculty<sup>1</sup>

	On Campus <sup>2</sup>	ITV <sup>3</sup>	Net Meeting <sup>®4</sup>
<b>Time spent on travel (hours)</b>	66.82	43.08	0
<b>Economic</b>			
Travel reimbursement (\$0.345/mile)	\$1,268	\$818	\$0
Salary forgone on travel <sup>5</sup>	\$1,228	\$792	\$0
Meals	\$130	\$0	\$0
Teleconference <sup>6</sup>	\$0	\$0	\$396
<i>Total Economic Cost</i>	\$2,626	\$1,610	\$396

1. Based on 11 participants and two state extension faculty. State faculty costs only included with meal charges (13 @ \$10/person)

2. One trip (55 mph) to Columbia, MO for one day program (6 hrs.) – assumes no carpooling

3. Two trips (55 mph) to local Interactive Video (ITV) site (3hrs./each) – assumes no carpooling

4. Held for 1.5 hrs. on 4 separate occasions

5. Computed at \$37,500 annually, or \$18.38/hr. No fringe benefits included.

6. Teleconference used because Internet does not allow for adequate audible delivery.

Figure 1. Relationship Between Per Capita State Funding Sources to Extension and Index of Level of Social Capital in State (solid line is the “correlation line”).

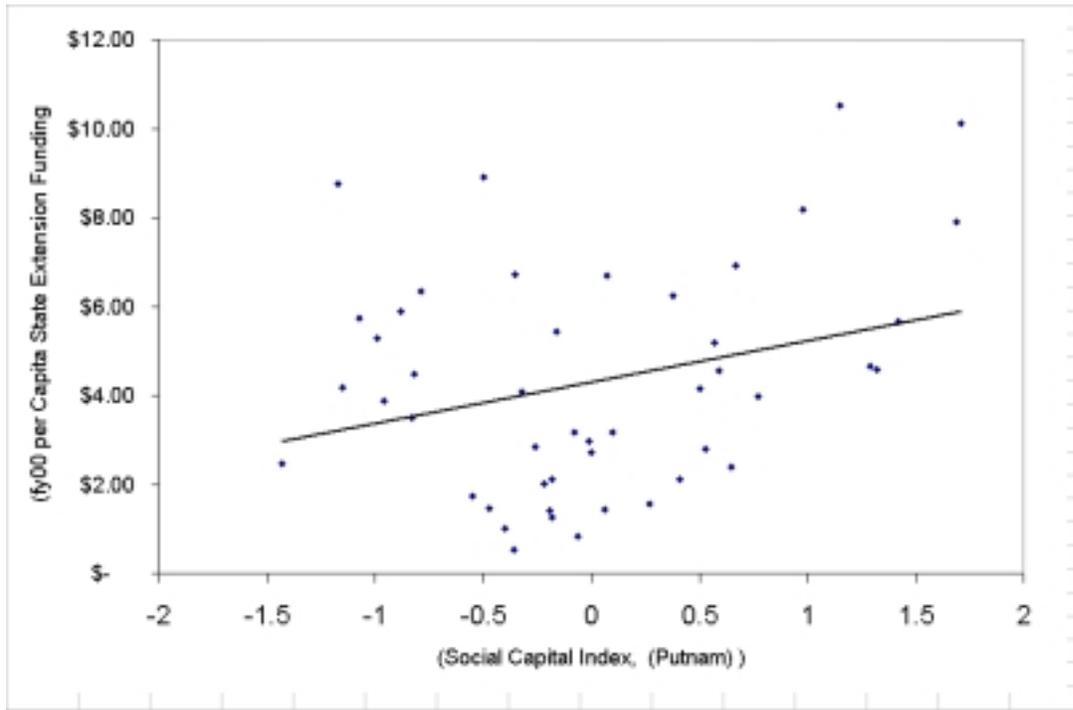


Figure 2. Timeline of the United States Federal Extension Legislation (Twentieth Century)

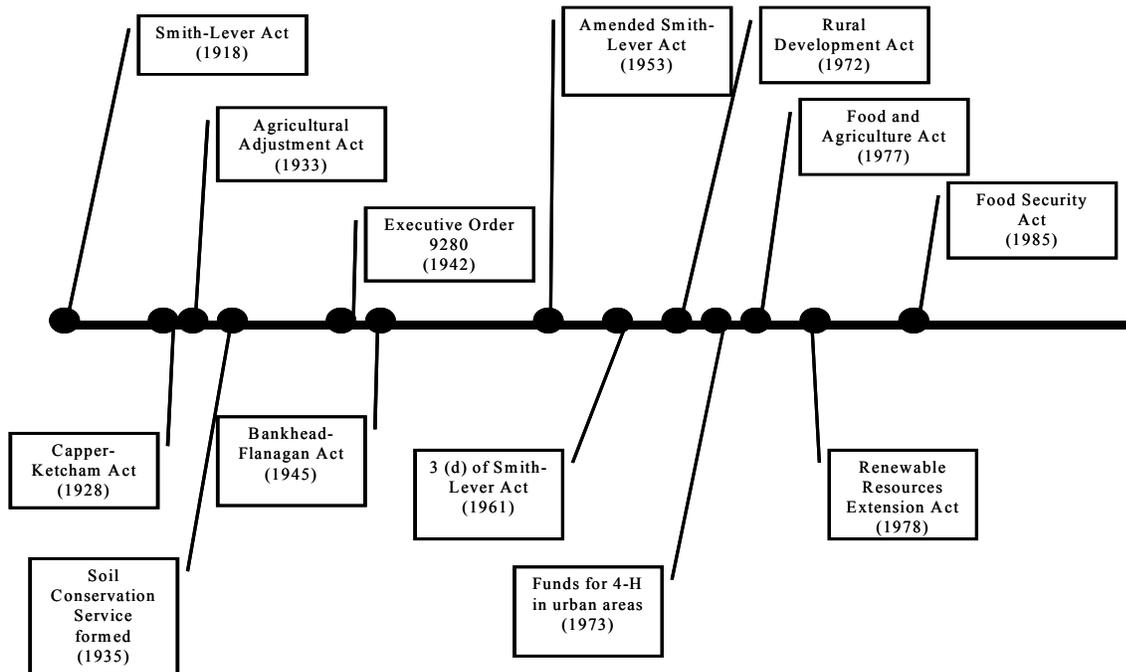
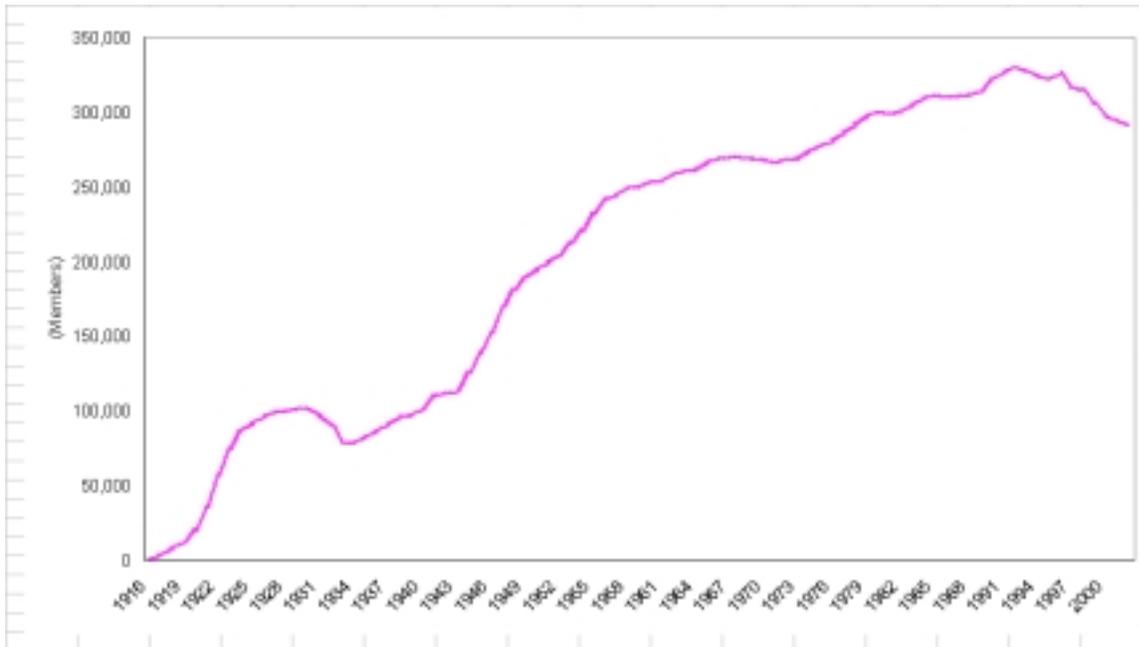


Figure 3. Historical Membership in Kiwanas (a source of civic engagement)



Source: Kiwanas Membership Office, facsimile, 2002

Figure 4. University of Missouri – Columbia College of Agriculture, Food, and Natural Resources Extension FTEs (source: Gardner).

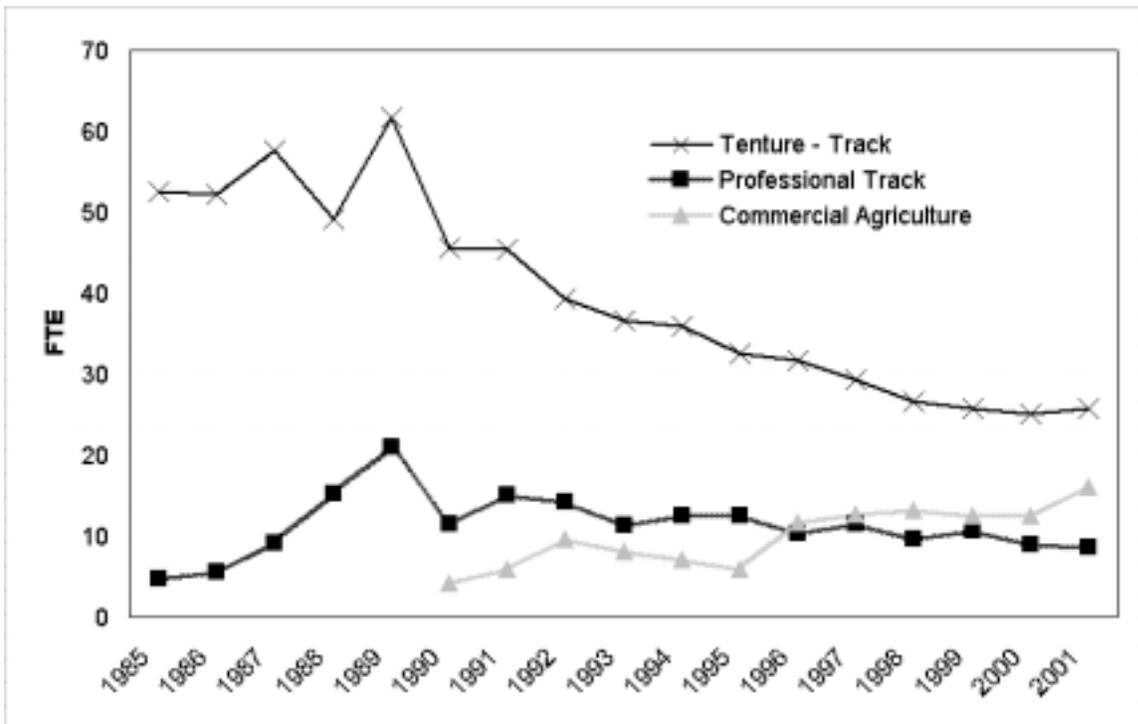


Figure 5. Historical Trend in the Number of Coop Extension Funded Tenure Track FTE in the Department of Agricultural Economics at the University of Missouri.

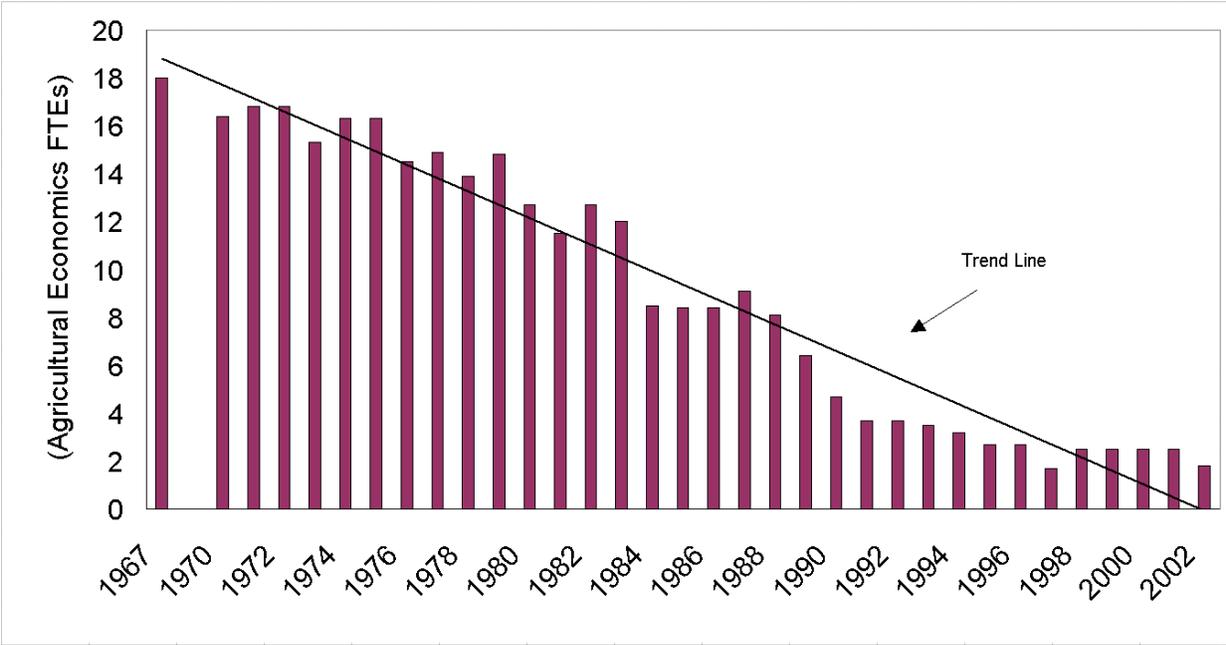


Figure 6. Summary of Travel Activities, July 1998 through Fall 2001.

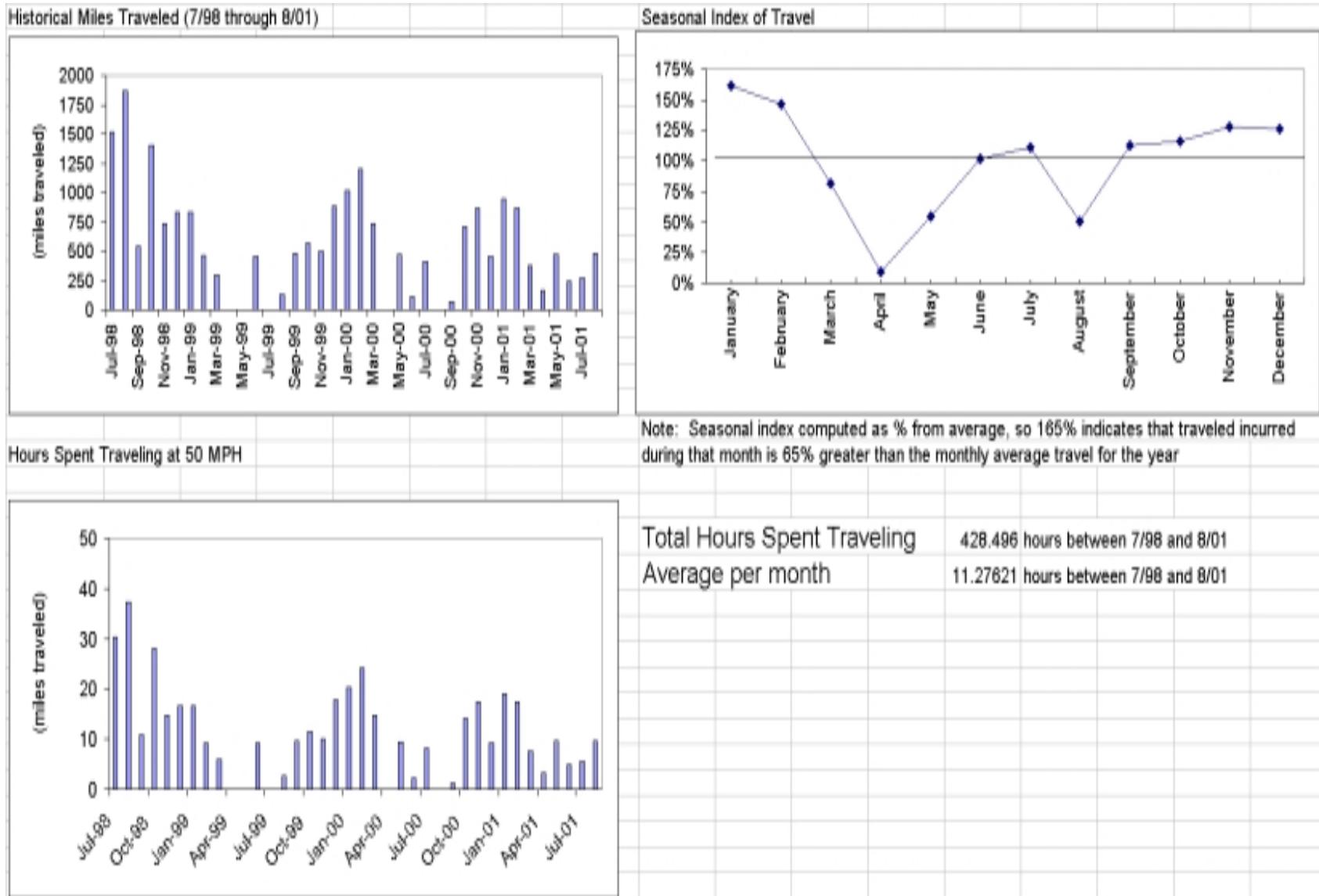




Figure 7. An Example of Types of Social Capital and how they fit into The Extension Community.

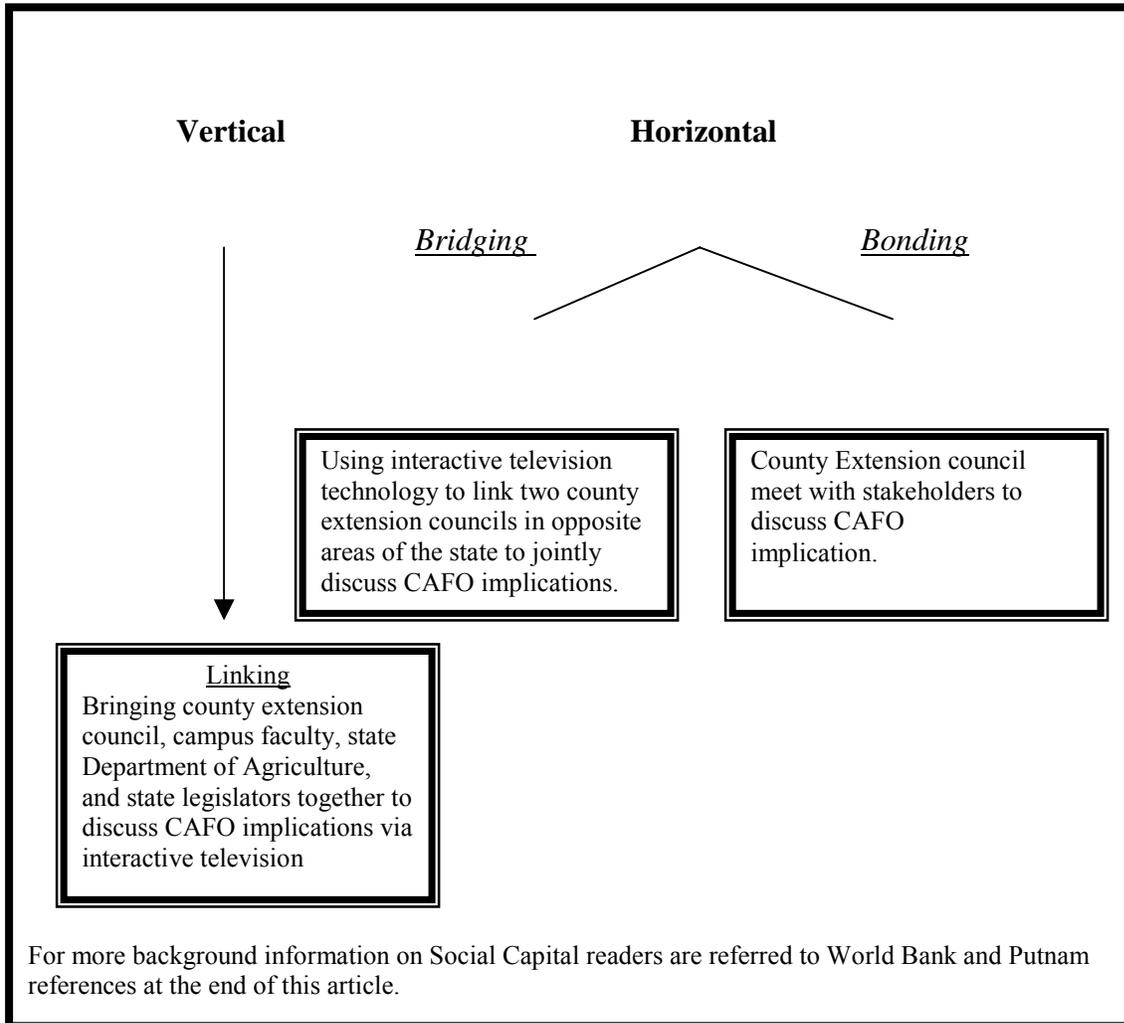
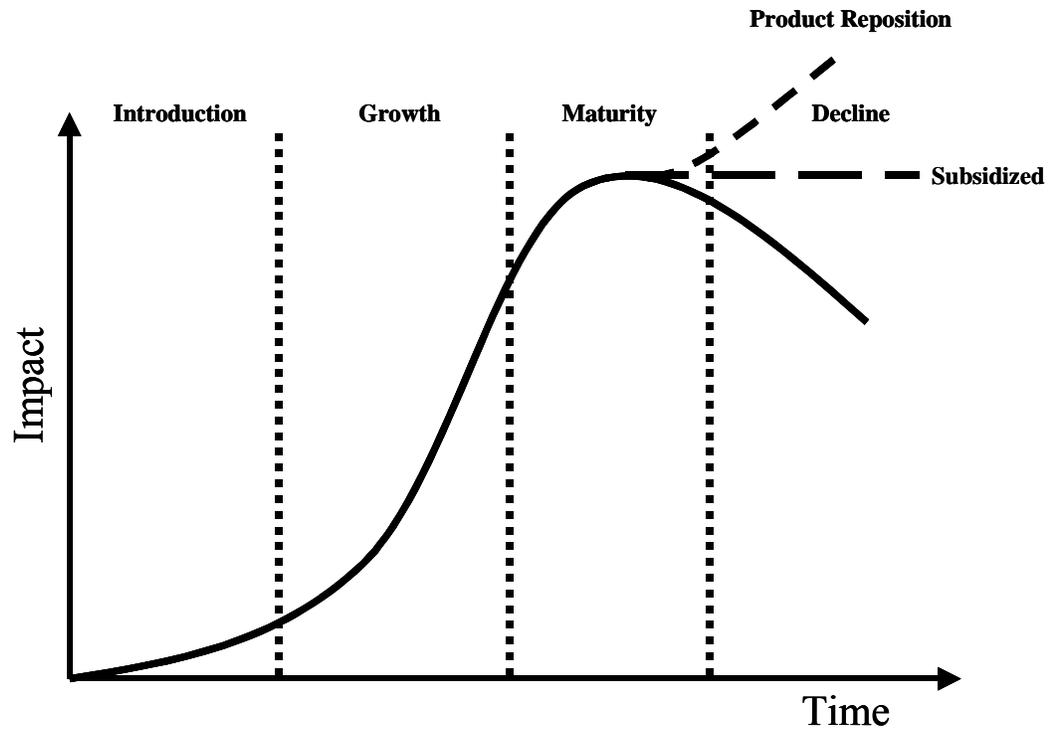


Figure 8. Extension Product Life-Cycle



	↓	↓	↓	↓
<b>Characteristic</b>				
Sales	low	rapidly rising	peak	declining
Costs	high	average	low	low
Customers	innovators	early adopters	middle majority	laggards
Competitors	few	growing	stable	declining
<b>Strategies</b>				
Product	basic	product extensions	diversity brands	phase out
Distribution	selective distribution	intensive distribution	more intensive distribution	phase out unprofitable outlets

Figure 9. Extension Life Cycle after Rejuvenation

