International Journal of Managerial Studies and Research (IJMSR)
Volume 13, Issue 2, February 2025, PP 36-46
ISSN 2349-0330 (Print) & ISSN 2349-0349 (Online)
https://dx.doi.org/10.20431/2349-0349.1302004
www.arcjournals.org

Examining the Role of University Entrepreneurship Ecosystems in Rural Economic Development: A Resource-Based Theory Approach

Michael Tidwell, PhD*

Professor of Management, Soules College of Business, The University of Texas at Tyler, USA

Corresponding Author:** ***Michael Tidwell, PhD, *Professor of Management, Soules College of Business, The University of Texas at Tyler, USA*

Abstract: *This study uses Resource-Based Theory to examine the role of University Entrepreneurship Ecosystems in rural economic development. It is argued that since public universities are anchor institutions, often providing essential agglomeration economies for their rural communities, their entrepreneurship ecosystems will be essential to the production of the human, social, and financial capital necessary for small business growth and economic development. Federal data from 155 American public universities and their rural communities were analyzed using a Repeated Measures Analysis of Variance. Findings confirm that university accelerators and knowledge exchanges play independent and interactive roles in rural economic outcomes. This study serves as an important theoretical and empirical extension of Resource-Based Theory. Rural economies benefit when UEEs share intellectual property and help small businesses shape their business processes and operations through intensive mentoring and training.*

1. Introduction

This study draws on Resource-Based Theory (RBT) to explore the role of University Entrepreneurship Ecosystems (UEE) in rural economic outcomes. Theorists contend that sustainable economic growth occurs when firms have access to value-creating human, social, and financial capital (e.g., Barney, 1991), and that these capital resources are the chief building blocks that explain "the nature and progress of entrepreneurial economic development" (West *et al.*, 2008, p.19). Entrepreneurs thrive in capital-rich environments, so when regional officials want to stimulate economic growth, they often partner with universities to create a capital-intensive UEE to nurture both the entrepreneur and the enterprise. Many researchers emphasize the role of UEEs in the capital creation process that fuels resilient regional economies (e.g., O'Shea *et al.*, 2005). Nevertheless, some suggest that UEEs may only account for a small percentage of total regional economic activity (Bagchi-Sen and Lawton Smith, 2012), particularly in large communities (e.g., Drucker and Goldstein, 2007).

The current study seeks to bring clarity to the field by using RBT frameworks to examine the role of rural UEEs in rural economic development for three reasons: (1) Rural communities report vast disparities when compared to urban communities in high-priority outcomes, like economic development. (2) Rural universities tend to be the primary or singular anchor institution of their community, so UEE investments in human, social, and financial capital formation might mean the difference between regional success and regional stagnation (Boyle *et al.*, 2011). (3) Relatedly, since rural communities often lack anchor institutions, the impact of UEEs can be examined with minimal agglomeration effect.

2. Literature Review

Resource-Based Theory is the study of how different types of capital are leveraged to create and sustain economic growth and competitive advantages (Barney, 1991). A firm's performance is drawn from its ability to procure capital, but the sustainability of that performance is dependent upon its ability to extract asset utility that is valuable and rare (Priem and Butler, 2001). Since regional economies rely on multi-firm performance to drive economic development many officials deputize universities to create UEEs as vehicles of capital formation. University Entrepreneurship Ecosystems are often comprised of business accelerators (e.g. incubators, technology transfer offices, and Small Business Development

Centers), knowledge exchange initiatives (e.g. faculty consulting), and relational ties (e.g. advisory board service), each uniquely designed to emphasize varied elements of tactical human, social, and financial capital formation (Somsuk *et al*, 2012).

The UEE and Capital Formation

Human capital is defined as an entrepreneur's accumulated education developed in formal educational settings or in the workplace (Unger *et al.*, 2011). Entrepreneurs with high human capital engage in heightened strategic planning (Brinckmann and Kim, 2015) and deploy best business practices, making them more likely to prosper over the long run (McKenzie and Woodruff, 2017). If an entrepreneur lacks critical knowledge, skills, and abilities prior to business launch, they can build these capabilities through training and/or consulting (Assenova, 2020), thereby improving their chances of success. Since less than 25% of Americans over the age of 25 list a bachelor's diploma as their highest degree (U.S. Census, 2022), UEE's investments in human capital capacity-building initiatives (e.g. training and consulting) can be a significant factor in "economic growth and societal gains" (Gray and Black, 2003, p. 109) and may explain the positive connections between accelerators and firm performance (e.g., Lee and Osteryoung, 2004). Virtually all UEE accelerators seek to help entrepreneurs develop human capital.

For example, when a UEE operates an Incubator (INC), incubated clients have ready access to human capital in the form of university personnel. This access is known to help incubated firms achieve strategic goals (Loganathan and Subrahmanya, 2021) and is particularly beneficial for entrepreneurs because many small business information needs are 'contextual' (Orrensalo *et al.*, 2022, p. 894) and may be needed on a just-in-time basis. Accelerators like Technology Transfer Offices (TTO) use a similar approach and often enjoy comparable results (e.g., O'Shea *et al.*, 2005). The Small Business Development Center (SBDC), however, is renowned for impactful trainings and seminars that build the types of human capital connected to new venture growth (Buffart *et al.*, 2020). As one of the nation's leading small enterprise development organizations, the SBDC's programs don't just accelerate human capital; they also contribute to social capital development.

Social capital is defined as any relationship or social network tie that can be used as an asset for personal development or gain (Tsai and Ghoshal, 1998). When entrepreneurs possess social capital, they are more likely to achieve their goals because, in the absence of funding, founders often rely on social networks for cheap consulting and labor as they "bootstrap the development and growth of a firm" (Hmieleski *et al.*, 2015, p. 306). In some fields, like the tech sector, entrepreneurs with high social capital also tend to have access to privileged resources that promote venture growth, such as innovation networks and early-stage funding (Mosey and Wright, 2007).

Social capital is an important personal resource, but collective social capital is a public resource existing for the advancement of all members within a community or social network (Nahapiet and Ghoshal, 1998). Due to factors like personal relationships, group memberships, or even socio-economic status, some entrepreneurs have greater pre-venture social capital than others (Assenova, 2020), thereby improving their chances of successfully launching a new venture. Many INCs and SBDCs expose entrepreneurs to networks where industry professionals consultants congregate to improve outcomes for all new business owners. These networks are so influential that many contend they can help an entrepreneur overcome educational, financial, and experiential deficiencies (e.g., Coleman, 1988). When businesses have access to social capital through consultants and broader networks, pre-ventures are more likely to launch and achieve profitability (Davidsson and Honig, 2003). While those with high social capital often have greater access to funding networks (Fini *et al.*, 2017), those with low social capital may lack similar opportunities. As a result, they must seek financial capital using alternative means.

Financial capital is any monetary asset used to establish or grow a new venture. When a founder is well-capitalized, they are more likely to start their business and have success (Cooper *et al.*, 1994). Most small businesses, however, have limited access to capital (Baumann and Kritikos, 2016) or are compelled to limit the scale or scope of their plans because of the costs of capital (Guariglia *et al.*, 2011). Accelerators can help catalyze growth by reducing early start-up costs (Smilor and Gill, 1986) and introducing entrepreneurs to funding networks. For example, in addition to underwriting an assortment of Small Business Administration loans and grants, the SBDC often acts as a clearinghouse for various types of national, state, and local capital, including debt, equity, and grants (SBDCnet,

2024). Managers of university INCs or TTOs are also influential 'gatekeepers' who connect internal clients to financial networks (Siegel *et al.*, 2003). When there is a gap between governmental grants and traditional sources of debt or equity financing, universities are increasingly stepping in to provide early-stage proof of concept and seed funding to stimulate the continued development of commercializable products or services (Munari *et al.*, 2018).

Resource-Based Theory's capital formation frameworks structure our understanding of how UEEs create, cultivate, and disseminate capital endowments to give their communities a distinct economic development advantage. Nevertheless, while most universities continue to fund such UEE economic development initiatives at rates that outpace the growth of general institutional revenues (IPEDS), empirical explorations have been largely limited to major research universities in metropolitan or urban communities (e.g., Kenney and Goe, 2004). When metropolitan communities are surveyed excessively, the field is subjected to the agglomeration effect, making it difficult to parse the impact of UEE investments from those of other economic development organizations.

Large communities have a consortium of university, governmental, nonprofit, and private organizations. Since these organizations work collaboratively to promote economic development, each serving as a piece of the human, social, and financial network puzzle, some contend that UEE accelerators in large communities only represent a small percentage of total regional economic development activity (e.g., Drucker and Goldstein, 2007). Others call the impact of UEEs "limited" (Bagchi-Sen and Lawton Smith, 2012) and "minimal" (Siegel *et al.*, 2003). University ecosystems may be more important to smaller rural regions, where university size, expertise, and influence make them anchor institutions. This line of reasoning was confirmed when Goldstein and Renault (2004) found that universities in small towns had a significant impact on regional economic outcomes, suggesting they might supply many of the same benefits as urban agglomerations.

Compared to urban communities, we know very little about the impacts of UEEs on rural economic outcomes. This line of inquiry is important because "the economic benefits of the business cycle are not distributed evenly across communities, particularly rural communities" (*Rural Community and Economic Development*, 2023). This makes it imperative to explore whether UEE economic development investments in rural communities are worthwhile. Since universities in rural communities tend to be anchor institutions, their role in economic development and community outcomes should be empirically adjudicated, especially since entrepreneurship provides a strong path toward economic independence.

The UEE and Rural Economic Development

In alignment with the tenets of RBT, exposing early-stage firms to resource-rich UEEs might enhance the type of success that contributes to regional economic expansion (Haltiwanger *et al.*, 2013). University accelerators like SBDCs, INCs, and TTOs are designed to enlarge the human, social, and financial capital of new entrepreneurs. Entrepreneurs with high human capital are more likely to develop companies with expansive growth potential (Eesley, 2016), less likely to fail (Batjargal, 2007), and more likely to grow their businesses over time (Sambasivan, 2010). However, not all entrepreneurs have the same pre-venture access to human or social capital (Anderson and Miller, 2003). This scarcity of access often hinders enterprise growth and increases the chance of failure (McKenzie and Woodruff, 2017).

Strengthening social capital via a UEE accelerator could be a necessary lifeline for business owners because the types of small businesses that tend to populate rural communities tend to have limited access to financial capital (Baumann and Kritikos, 2016), resulting in the constriction of their business plans. Compared to metropolitan communities, rural towns also have deficient knowledge networks (Charles, 2016), so the need for professional help is heightened. Acting as gatekeepers, UEE personnel can open funding pipelines so business owners can access a diversity of capital resources needed to spur economic expansion, including debt, equity, or governmental financing.

Accelerators spur the development of new firms while also helping existing entrepreneurs build capacity. Since universities tend to be regional anchors, and UEEs deliver much-needed capital formation, UEE accelerators should improve rural economic outcomes. The following is hypothesized:

H1: Rural economic outcomes will be higher in communities where there is a UEE accelerator.

It is broadly accepted that public university faculty and their intellectual property should be made available to enhance economic development (Agasisti *et al.*, 2019), but there is no consensus regarding a preferred approach. While many UEEs invest in accelerators to exploit faculty talents, other ecosystems promote economic development through highly customizable knowledge exchanges. These knowledge exchanges can include community and public service engagements like faculty consultations (Bagchi-Sen and Lawton Smith, 2012), informal networking (Mansfield, 1991), contracted research, or other R&D affiliations. Regional economic stakeholders increasingly seek UEE knowledge exchanges because the spillover of human capital is an 'intrinsic' outcome of any faculty-led initiative (Drucker and Goldstein, 2007).

In fact, public service and research knowledge exchanges are so prevalent that they might be more commonplace in some UEEs than accelerators (Kitson *et al.*, 2009). The popularity of public service and research engagements is likely driven by (1) industry's ability to take advantage of knowledge spillovers on an ad hoc basis, (2) the university's ability to quickly pivot resources to meet changing regional economic needs, and (3) the university's opportunity to open engagements for a diversity of faculty and staff, though their expertise might sit outside of the typical strategic or operational training offered via UEE accelerators.

Many rural universities are increasingly taking steps to promote regional growth by investing in UEE knowledge exchanges. This is evidenced by recent data suggesting that rural university public service and research expenditures were up by 13% and 5%, respectively, between 2017 and 2021 (IPEDS). Resource Based Theory holds that when ecosystems invest in the promotion of human capital and R&D, they are more likely to see increased economic activity within their community (O'Shea *et al.*, 2005). Rural context matters because rural communities tend to have diminutive access to other knowledge infrastructures, so the spillovers created during knowledge exchanges should be influential in regional economic outcomes. The following is hypothesized:

H2: Rural economic outcomes increase with levels of UEE investment in knowledge exchanges.

3. METHODS

University Selection

All university data was generated by the US Department of Education's Integrated Postsecondary Education Data System (IPEDS). The database was filtered to select universities that meet the following criteria: (1) Public, 4-year or above, (2) Degree-granting, primarily baccalaureate or above, and (3) Rural or Town degree of urbanization.

Urbanization is based on a continuum ranging from "city-large" to "rural-remote." Universities were selected based on their main campus addresses. Institutions from all eight federally designated regions were included, but U.S. Service Schools (e.g., military) and schools from 'Other U.S. jurisdictions' (e.g., American Samoa, Guam, and Puerto Rico) were excluded. Universities were also excluded if they neglected to report public service and/or research expenditures or if their county did not report economic outcomes. Finally, although some institutions met the rural criteria, they are headquartered in large metropolitan counties. Institutions headquartered in counties with more than half a million in population were excluded to limit the effects of agglomeration. One hundred fifty-five (155) universities met all the aforementioned criteria.

Measures

University *public service expenses* were compiled from the IPEDS public service expense data. Public service expenses account for any "noninstructional activity established primarily to provide services beneficial to individuals and groups external to the institution (e.g., community services, cooperative extension services, and public broadcasting services)."

University *research expenses* were measured using the IPEDS research expense data. Research expenses account for any expenses "associated with activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the institution."

University *public service* and *research expenditures* from 2018 to 2021 were summed and then ranked based on how they compared to other rural universities. Schools in the top third percentile for each

expense category were assigned a 3 (*high investment category*), those in the middle third percentile were assigned a 2 (*moderately high investment category*), and those in the bottom third percentile were assigned a 1 (*low investment category*).

Each university's main campus zip code was used to determine whether they hosted a Small Business Development Center. Data were gathered from the https://americassbdc.org/find-your-sbdc/ website. If an SBDC was assigned to the university's zip code, but a connection to the university was unclear, the university website was consulted to assess whether the SBDC was hosted by the institution. University websites were also examined to determine whether institutions hosted a TTO and/or INC. The following codes were used to indicate whether the university invested in any of these programs: 1=NO, 2=YES.

All economic outcomes were compiled from the U.S. Census Bureau (2024). Data were gathered from 2018 and 2021. The university's home county was classified as its regional economic community, and economic outcome variables included each county's annualized *gross domestic product*, *total number of businesses*, *total number of employees*, and *total annual payroll*. A factor analysis was performed using the maximum likelihood method of extraction to assess whether the independent economic outcomes were mutually distinct or a singular economic outcome factor. Results indicated the four 2018 variables loaded into a singular factor (Chi-square=25.437, df=2, p>=000) with communalities ranging from .859 to .999 and over 95% of the total variance explained. The 2021 results confirmed a similar outcome. A singular factor was identified (Chi-square=25.460, df=2, p>=000) with communalities ranging from .850 to .999 and over 95% of the total variance explained. The singular outcome variable is termed *economic performance*.

Descriptive statistics and correlation data are provided in Table 1.

4. RESULTS

A Repeated Measures Analysis of Variance was conducted to examine the hypotheses. Results exhibit partial support for Hypothesis 1 (Table 2). Economic outcomes in rural communities with an INC were significantly higher than in rural communities with no accelerator (Graph 1). Economic outcomes in communities with an SBDC or TTO where no different than those without an accelerator.

Hypothesis 2 was partially supported. Rural communities where the university invested in higher levels of public service exhibited significantly higher levels of economic performance relative to those in the low or moderate investment categories (Graph 2). However, rural communities where the university invested in low and moderate levels of research exhibited significantly higher levels of economic performance relative to those in the high research investment category (Graph 3).

5. DISCUSSION AND IMPLICATIONS

This study draws upon Resource-Based Theory to investigate the role of UEEs in rural economic outcomes. Results suggest that while RBT frameworks apply to rural economic development, rural communities have key idiosyncrasies and complexities that reinforce the importance of investigating theory in diverse settings. Several important results were illuminated, but four key outcomes bear in-depth discussion.

First, consistent with RBT's central proposition, this study confirms that rural economic outcomes were statistically better in communities where the UEE made a significant public service investment. Universities are often the sole anchor organization within their rural community, so knowledge exchange is key to economic outcomes. Rural communities face many obstacles to economic growth, so when university leaders invest heavily in knowledge spillovers, rural entrepreneurs can access the type of human and social capital necessary to start and expand a business (Freire-Gibb and Nielsen, 2014).

However, it is worth reiterating that this outcome only occurred when the university made a significant public service investment. Rural economic performance was lackluster in communities where the university invested at a low or moderate level. Entrepreneurs from well-endowed educational and social contexts tend to have access to expansive human and social networks (Anderson and Miller, 2003), so they likely know what they don't know and know where to find the answers. This may only require a small or moderate UEE investment to promote economic outcomes. As universities work to improve

rural economic outcomes, it is important to assess the human and social capital needs of the regional entrepreneurial community.

Second, unlike public service investments, when universities made small or moderate research investments, their rural communities outperformed those that made large research investments. University research contributes human and social capital to rural knowledge infrastructures (Drucker and Goldstein, 2007), but the findings suggest that the outcomes of those investments are bound by the law of diminishing returns. That is, at some point, every additional dollar invested in research will bring a diminishing rural economic development return. Studies have found that the types of small firms that dominate rural communities react positively to university-based research (Mansfield, 1991), but their lack of operational and educational scale may hinder their capacity to absorb large caches of university research (Breznitz and Feldman, 2012). When economic development is the goal, universities need to rethink how they invest in research. In rural communities, large investments may not lead to the intended outcome.

Third, rural communities with an INC experienced economic growth. While some UEEs incubate non-institutional start-ups, most accelerate faculty and staff innovations. Since faculty and staff tend to have the requisite human and social capital needed to start and grow their ideas, it is no surprise that rural communities with an INC have a competitive economic advantage over those without.

Fourth, TTOs were not significant contributors to rural economic growth. Tech transfer offices design and distribute new innovations through knowledge spillovers, but in non-technology intensive regions, they tend to focus on regional economic development and the commercialization of university research (Leitch and Harrison, 2005). Since most rural communities are non-tech intensive regions, the economic benefits of commercialization may exist at the state or national levels. If local firms lack the ability to absorb the knowledge spillover, TTOs will seek to transfer innovations to another region, thereby transferring the economic value as well. This may explain why rural universities that invest heavily in research don't experience a local benefit. Since much of the high-dollar value R&D tends to be scientific or engineering-focused, rural communities may be unable to absorb the knowledge transfer, causing TTOs, when present, to transfer to other communities to maximize economic impact. This can provide challenges for rural local economic development operations and university officials seeking to leverage the intellectual property of faculty and staff through knowledge transfers for the benefit of the local economy.

The central challenge faced by rural TTOs is that they lack a structured mechanism to ensure the absorption of intellectual property within the rural entrepreneurial market. They are built to transfer intellectual property, not to ensure its assimilation. Since most of the innovations within a rural TTO's portfolio are likely to be complex, they might need another agency to teach rural business owners how to strategically and operationally assimilate the new knowledge. Results suggest that the other agency is the SBDC. When the external-facing SBDC aligns their mentoring, training, and capacity-building expertise with the TTO's ability to select the intellectual property most likely to take root and bear fruit, rural entrepreneurs and their regional economies are positioned for success. Neither accelerator adds independent rural economic value, but when coupled, they provide a rich cadre of rural capital and know-how. Similar results emerge when TTOs and SBDCs operate in environments where the UEE has made high public service or moderate research investments. High public service investments and moderate research investments are important individual contributors to rural economic outcomes, and when a UEE couples these investments with a TTO and SBDC, rural economies experience improved competitiveness and economic performance.

6. CONCLUSION

To understand the role of UEEs in rural economic development, one must first understand the nuances of rural communities. Like all American regions, rural economic development is heavily dependent on the successful establishment and growth of small businesses, but unlike metropolitan regions, rural communities often lack the human, social, and financial capital necessary to start and grow a business. The findings suggest that UEEs can provide agglomeration for rural regions, but traditional knowledge exchanges and accelerators have differential impacts on rural economies.

When considering UEE knowledge exchanges, results show that it takes a significant investment in public service to spark economic growth. Rural communities are under-capitalized environments, so towns benefit when their UEE invests in expansive access to experts and extensive community connectivity. However, results also affirm that significant investments in research may hinder economic growth. When considering research investments, less may be more. These findings provide an important extension to RBT scholarship because they confirm that the road to peak economic development performance is non-linear. Instead, communities must work with their UEE to find the right mix of resources that fit their specific needs. Rural communities are most competitive in capital environments where high levels of public service investments are supplemented, but not supplanted, by moderate research investments.

Finally, the results add to the literature by confirming that rural communities with access to the innovations and know-how provided by TTOs and SBDCs significantly outperform their rural counterparts. Communities benefit when the UEE shares intellectual property while also shaping business processes and operations through intensive mentoring and training. When offered independently, these accelerators have an economic impact resembling non-accelerated communities. When offered simultaneously, the education, information, and application spillovers provide agglomeration effects yielding results far greater than the sum of their parts.

REFERENCES

Agasisti, T., Barra, C., & Zotti, R. (2006). Research, knowledge transfer, and innovation: The effect of Italian universities' efficiency on local economic development 2006− 2012. *Journal of Regional Science*, *59*(5), 819–849.

Anderson, A. R., & Miller, C. J. (2003). 'Class matters': Human and social capital in the entrepreneurial process. *The Journal of Socio-Economics*, *32*(1), 17–36.

Bagchi-Sen, S., & Smith, H. L. (2012). The role of the university as an agent of regional economic development. *Geography Compass*, *6*(7), 439–453.

Batjargal, B. (2007). Internet entrepreneurship: Social capital, human capital, and performance of Internet ventures in China. *Research Policy*, *36*(5), 605–618.

Baumann, J., & Kritikos, A. S. (2016). The link between R&D, innovation and productivity: Are micro firms different?. *Research Policy*, *45*(6), 1263–1274.

Boyle, M. E., Ross, L., & Stephens, J. C. (2011). Who has a stake?: How stakeholder processes influence partnership sustainability. *Gateways: International Journal of Community Research and Engagement*, *4*, 100–118.

Breznitz, S. M., & Feldman, M. P. (2012). The engaged university. *The Journal of Technology Transfer*, *37*, 139–157.

Brinckmann, J. A. N., & Kim, S. M. (2015). Why we plan: The impact of nascent entrepreneurs' cognitive characteristics and human capital on business planning. *Strategic Entrepreneurship Journal*, *9*(2), 153–166.

Buffart, M., Croidieu, G., Kim, P. H., & Bowman, R. (2020). Even winners need to learn: How government entrepreneurship programs can support innovative ventures. *Research Policy*, *49*(10).

Charles, D. (2016). The rural university campus and support for rural innovation. *Science and Public Policy*, *43*(6), 763–773.

COE - Educational Attainment in Rural areas. (n.d.). https://nces.ed.gov/programs/coe/indicator/lbc

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, 95–120.

Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, *9*(5), 371–395.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18*(3), 301–331.

Drucker, J., & Goldstein, H. (2007). Assessing the regional economic development impacts of universities: A review of current approaches. *International Regional Science Review*, *30*(1), 20–46.

Eesley, C. (2016). Institutional barriers to growth: Entrepreneurship, human capital and institutional change. *Organization Science*, *27*(5), 1290–1306.

Fini, R., Fu, K., Mathisen, M. T., Rasmussen, E., & Wright, M. (2017). Institutional determinants of university spin-off quantity and quality: a longitudinal, multilevel, cross-country study. *Small Business Economics*, *48*, 361–391.

Freire-Gibb, L. C., & Nielsen, K. (2014). Entrepreneurship within urban and rural areas: Creative people and social networks. *Regional Studies*, *48*(1), 139–153.

Goldstein, H., & Renault, C. (2004). Contributions of universities to regional economic development: A quasi-experimental approach. *Regional Studies*, *38*(7), 733–746.

Gray, S. R., & Black, J. (2003). Small Business Development Centers: Challenges and Opportunities. *Journal of Small Business Strategy (Archive Only)*, *14*(2), 109–122.

Guariglia, A., Liu, X., & Song, L. (2011). Internal finance and growth: Microeconometric evidence on Chinese firms. *Journal of Development Economics*, *96*(1), 79–94.

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics*, *95*(2), 347–361.

Hmieleski, K. M., Carr, J. C., & Baron, R. A. (2015). Integrating discovery and creation perspectives of entrepreneurial action: the relative roles of founding CEO human capital, social capital, and psychological capital in contexts of risk versus uncertainty. *Strategic Entrepreneurship Journal*, *9*, 289–312.

IPEDS. (n.d.). https://nces.ed.gov/ipeds/

Kenney, M., & Goe, W. R. (2004). The role of social embeddedness in professorial entrepreneurship: a comparison of electrical engineering and computer science at UC Berkeley and Stanford. *Research Policy*, *33*(5), 691–707.

Kitson, M., Howells, J., Braham, R., & Westlake, S. (2009). The connected university: Driving recovery and growth in the UK economy. *NESTA*.

Koekkoek, A., Van Ham, M., & Kleinhans, R. (2021). Unraveling university-community engagement: a literature review. *Journal of Higher Education Outreach and Engagement*, *25*(1), 3–24.

Lee, S. S., & Osteryoung, J. S. (2004). A comparison of critical success factors for effective operations of university business incubators in the United States and Korea. *Journal of Small Business Management*, *42*(4), 418–426.

Loganathan, M., & Bala Subrahmanya, M. H. (2022). Technological outcome achievements by start-ups at university-based incubators: an empirical analysis in the Indian context. *Technology Analysis & Strategic Management*, *34*(9), 1004–1019.

Mansfield, E. (1991). Academic research and industrial innovation. *Research Policy*, *20*(1), 1–12.

McKenzie, D., & Woodruff, C. (2017). Business practices in small firms in developing countries. *Management Science*, *63*(9), 2967–2981.

Mosey, S., & Wright, M. (2007). From human capital to social capital: A longitudinal study of technology-based academic entrepreneurs. *Entrepreneurship Theory and Practice*, *31*(6), 909–935.

Munari, F., Sobrero, M., & Toschi, L. (2018). The university as a venture capitalist? Gap funding instruments for technology transfer. *Technological Forecasting and Social Change*, *127*, 70–84.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, *23*(2), 242–266.

Orrensalo, T., Brush, C., & Nikou, S. (2022). Entrepreneurs' information-seeking behaviors in the digital age-A systematic literature review. *Journal of Small Business Management*, *62*(2), 892–937.

O'shea, R. P., Allen, T. J., Chevalier, A., & Roche, F. (2005). Entrepreneurial orientation, technology transfer and spinoff performance of US universities. *Research Policy*, *34*(7), 994–1009.

Priem, R., & Butler, J. (2001). Is the Resource-Based View a useful perspective for strategic management research?. *The Academy of Management Review*, *26*(22).

Rural community and economic development. (2023). https://www.federalreserve.gov/consumerscommunities/rural-community-economic-development.htm

Sambasivan, M., Li-Yen, L., Che-Rose, R., & Abdul, M. (2010). Venture performance in Malaysia: Personal initiative, human capital, and competency areas of founding entrepreneurs as critical success factors. *Journal of Small Business & Entrepreneurship*, *23*(3), 315–332.

SBDCNet. (2024). Finance. Retrieved 6 February 2025, from SBDCNet website: https://www.sbdcnet.org/small-business-information-center/finance-small-business-financing/.

Siegel, D. S., Westhead, P., & Wright, M. (2003). Science parks and the performance of new technology-based firms: a review of recent UK evidence and an agenda for future research. *Small Business Economics*, *20*, 177–184.

Siegfried, J. J., Sanderson, A. R., & Mchenry, P. (2007). The economic impact of colleges and universities. *Economics of Education Review*, *26*(5), 546–558.

Smilor, R. W., & Gill, M. D. (1986). *The new business incubator: linking talent, technology, capital, and know-how*. Lexington Books, Lexington.

Somsuk, N., Laosirihongthong, T., & Mclean, M. (2012). Strategic management of university business incubators (UBIs): Resource-based view (RBV) theory". In IEEE 6th International Conference on Management of Innovation and Technology.

Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks". Academy of Management Journal, 41(4), 464–476.

US Census Bureau. (2022). *Census Bureau releases new educational attainment data*. Census.gov. https://www.census.gov/newsroom/press-releases/2022/educational-attainment.html

US Census Bureau. (2024). *County Business Patterns: 2021*. Census.gov. https://www.census.gov/data/datasets/2021/econ/cbp/2021-cbp.html

Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review". *Journal of Business Venturing*, 26(3), 341–358.

West, G. P., Bamford, C. E., & Marsden, J. W. (2008). Contrasting entrepreneurial economic development in emerging Latin American economies: Applications and extensions of resource-based theory". *Entrepreneurship Theory and Practice*, 32(1 1), 5–36.

APPENDIX

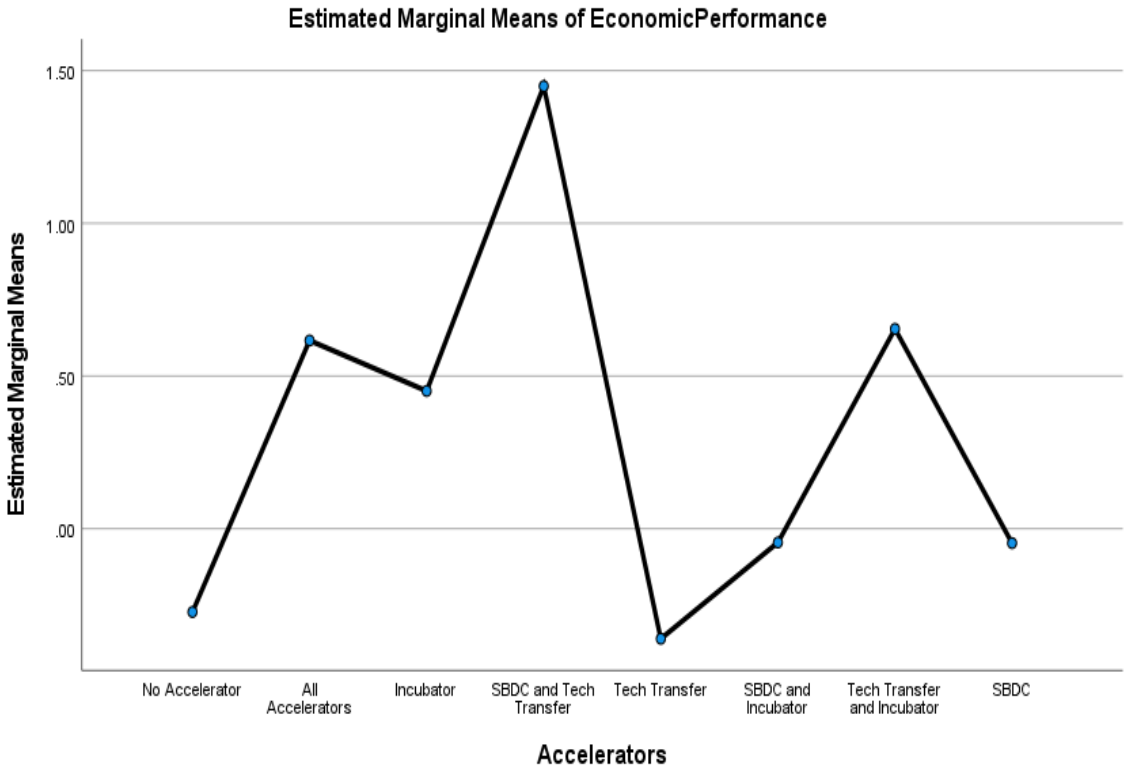
Table 1

Variable	Mean	S.D.	Public Service Investments	Research Investments	SBDC	Tech Transfer	Incubator	Accelerators	Economic Performance 2018	Economic Performance 2021
Public Service Investments	2.013	0.814	--							
Research Investments	2.019	0.818	.361**	--						
SBDC	1.426	0.496	.292**	.204**	--					
Tech Transfer	1.271	0.446	.348**	.377**	.180*	--				
Incubator	1.413	0.494	.261**	.253**	.205**	.432**	--			
Accelerators	3.748	2.767	0.108	.137*	.542**	0.108	.195**	--		
Economic Performance 2018	0.000	1.000	0.066	0.003	0.052	.189**	.138*	0.063	--	
Economic Performance 2021	0.000	0.999	0.071	0.008	0.057	.193**	.137*	0.07	.998**	--
**. Correlation is significant at the 0.01 level (1-tailed).										
*. Correlation is significant at the 0.05 level (1-tailed).										

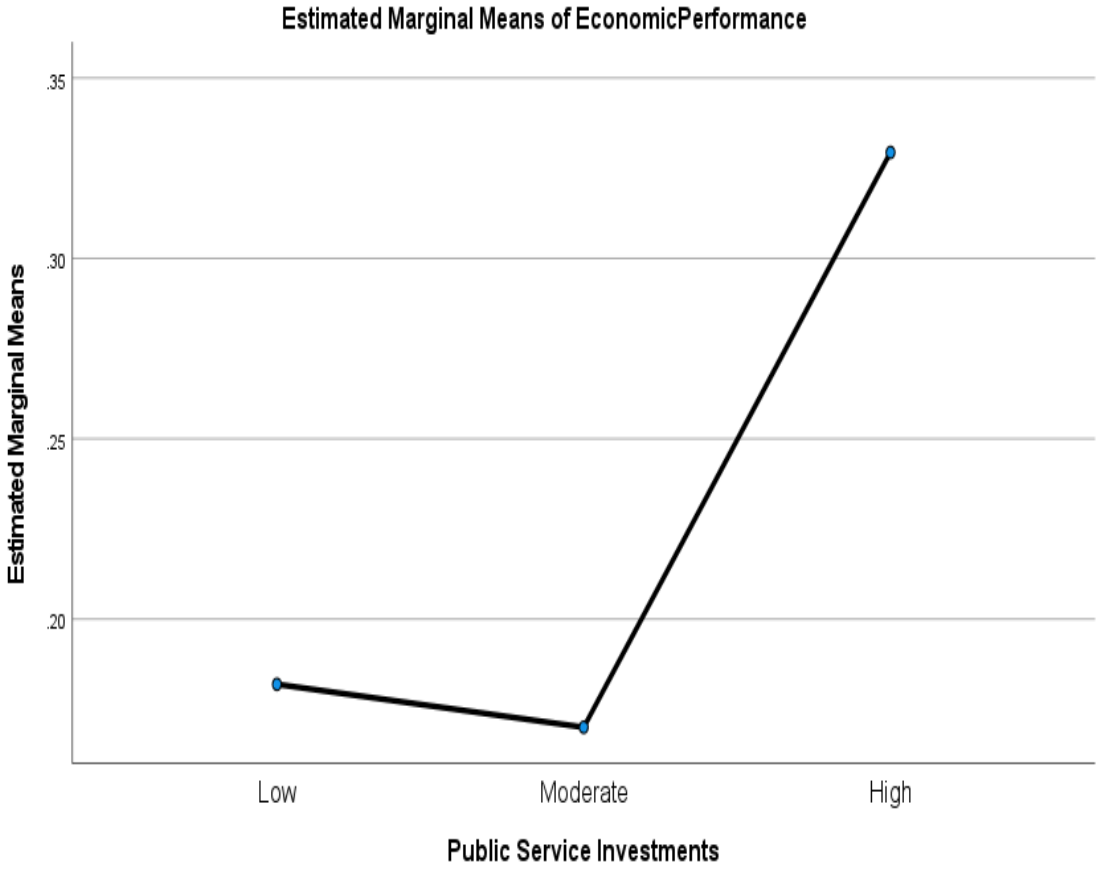
Table 2

Test of Repeated Measures Analysis of Variance								
Measure: Economic Performance								
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power (a)
Intercept	5.416	1	5.416	5.236	0.024	0.049	5.236	0.74
Public Service Investments (PSI)	14.864	2	7.432	7.185	0.001	0.125	14.37	0.96
Research Investments (RSI)	8.765	2	4.383	4.237	0.017	0.077	8.474	0.83
Accelerators	35.365	7	5.052	4.884	<.001	0.253	34.19	1.00
PSI * RSI	4.221	4	1.055	1.02	0.401	0.039	4.081	0.44
PSI * Accelerators	65.734	13	5.056	4.888	<.001	0.386	63.55	1.00
RSI * Accelerators	105.335	12	8.778	8.486	<.001	0.502	101.834	1.00
PSI * RSI * Accelerators	41.848	12	3.487	3.371	<.001	0.286	40.458	1.00
Error	104.472	101	1.034					
(a) Computed using alpha = .10								

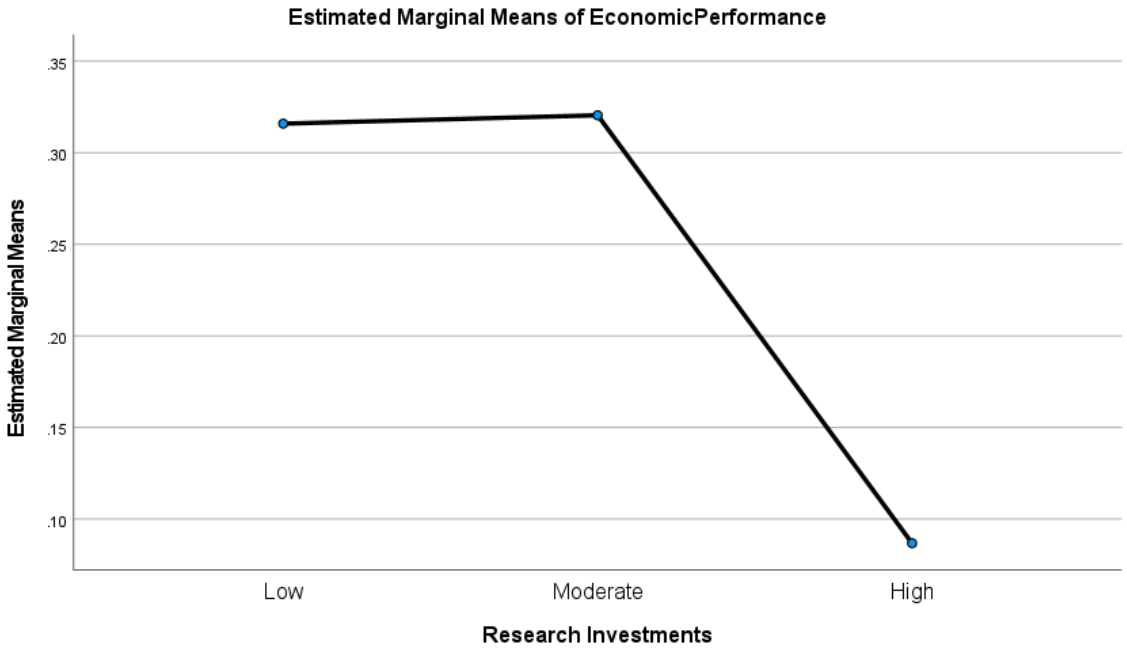
Graph 1



Graph 2



Graph 3



AUTHOR'S BIOGRAPHY

Dr. Michael Tidwell is Professor of Management in The Soules College of Business at The University of Texas at Tyler. Dr. Tidwell has served in the field of higher education for over 20 years, as an administrator and professor. He is an active scholar and his works appear in several scholarly journals including the Journal of Business Communication and the journal of Nonprofit Management and Leadership. In addition to speaking at numerous national and international conferences, he has spent time traveling and working on four continents.

Citation: *Michael Tidwell, Ph, "Examining the Role of University Entrepreneurship Ecosystems in Rural Economic Development: A Resource-Based Theory Approach" International Journal of Managerial Studies and Research (IJMSR), vol 13, no.2, 2025, pp. 36-46. DOI: https://doi.org/10.20431/2349-0349.1302004.*