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Queen's University
Belfast

Regional Development: The Role of the University in Exploiting its Research

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Structure of Presentation

The continued belief in the importance of university-industry interactions

The entrepreneurial system (and the role of the University within it)

Review dynamics of spin-off development in the entrepreneurial system in Northern Ireland

Consideration of findings

University-Industry Interaction

Long established relationship between universities and economic growth

Focus initially on development of human capital, now research and associated activities has gained more importance

Policy level - focus on link between economic, industrial and technology policy discussions and wealth creation and competitiveness

Underlying Assumption

UK – increased commercialisation activities to provide a third stream of HE activity and income

Premised on the assumption that university-industry interaction is beneficial

BUT

as university-industry collaboration has been under way for nearly 30 years, necessary to examine universities' experience relative to actual benefits

Modes of Commercialisation

Patenting, licensing research collaboration, training and development and spin-outs

BUT

“[there are] *growing doubts* surrounding university spinouts, the 1000 or so new businesses set up to commercialise university research...[There are] *no figures...to prove the costs* – including public investment – were less than the sales of products, intellectual property or spin-out equity. The businesses could as easily have been *destroying value as creating it*. [There is] *a need for better measurement of the returns produced by university spin-outs*”

(Guthrie, 2004: 13)

The Entrepreneurial System (Spilling, 1996)

- New venture creation is a function of interdependencies within a system
- Importance which individual components may have on the overall economic development is acknowledged
- Entrepreneurial event – individual actions and processes can be analyzed and take place within existing economic and socio-cultural structures
- Problem of transference of practice, either within or between countries
- Economic impact of spin-offs enhanced when embedded in a strong entrepreneurial ecosystem

Universities in the Entrepreneurial System

- The 'silver bullet' for regional economic development
- Enhancers of human capital stock AND source of knowledge capital
- Shift in role – conservator of knowledge to originator and exploiter of knowledge *for local economic development*
- Increasing attention to business-university interaction which is now more strategic, formalized and with a focus on commercialization
- The entrepreneurial university (Etzkowitz, 1998; Etzkowitz et al, 2000) teaching, research and regional and national economic development

The Entrepreneurial University: Rhetoric rather than Substance?

- Advocacy rather than evidence and analysis
- Critics - A failed idea (Armbruster, 2008; shibboleth of contemporary American-style university technology transfer policy (Vass, 2008), raises unrealistic expectations (Snowdon, 2003)
- Impeded by role conflicts and tensions between researchers, administrators and industry (Vestergaard, 2007)
- Disjunction between perception and reality

Spin-offs in the Entrepreneurial System

- Little attempt to examine the role of the university within the context of the entrepreneurial system
- Belief that benefits can accrue locally – efficient way to transfer technology, job creation, taxable wealth, contribution to university revenue
- HOWEVER in UK the sale of shares in spin-offs is relatively insignificant
- UK – regional variation is apparent
- Higher than average spin-off activity – apparent in areas with access to capital markets and assistance
- Practice based on atypical experience in technology hotspots in US - why should this activity be engaged in?

University Spin-offs in a Regional Entrepreneurial System

- Queen's University, Belfast – 150 year old, red-brick, research-based university
- QUBIS - one of the longest established TTOs in the UK
- Consider – 2 research projects
- Examination of the dynamics of the university spin-out company development process

Project 1: Determining the Potential of University Spin-outs

- In-depth interviews with CEO of QUBIS and founders/ CEOs of 15 spin-offs
- Focus - to analyze the impacts of spin-off activity and to illustrate how the institutional structure, support processes and resource endowments of an entrepreneurial system impact upon their development
- Highly diverse profile - sector, age, tendency to be small
- Exploitation of small portfolios of protectable IP
- Little evidence to suggest that the spin-offs will provide a substantive contribution to economic well-being and if they do it is likely to be over the longer-term

Findings: The Role of the University

- Good relationship between QUBIS and founders (general encouragement to exploit technology, clarifying the legal position,, providing IP protection, providing pre-company and post-company general support)
- Less valued services included identifying the market opportunity, technology development, explanation of alternative exploitation options, career options for academics
- Benefits – advice, support, business support, networking, communication opportunities, credibility and reputation
- Disadvantages – tension with the academic role, interdepartmental tensions, attracting investors and investment capital and good business-experienced recruits

Findings: The Business Development Process

- Regional system – not munificent in terms of access to business development resources
 - Spin-offs – largely self-reliant (aside from TTO in initial stages)
 - Early-stage funding obtained from public sources (and not from institutional VC investors) has impacted performance and growth projections
 - Little use made of external service provision and support networks
 - Failure by University and wider business community to assist companies in developing strong external commercially oriented relationships
 - Mostly technology lifestyle businesses

Project 2: Second-order Commercialisation Activities

- Longitudinal study, case study of one particular company
- Focus – the role of the TTO as a third-party facilitator
- Focus on university-founded companies (second-order spin-outs)
 - Initiated and run by individuals with a past/ current association with the University
 - Use of a surrogate entrepreneur
 - Corporate venturing process

Case Study Company: Kainos

- Established 1986
- Developed as a result of relationship between Queen's and ICL
- Surrogate entrepreneurs appointed
- Until 2000 company grew consistently – 20% p.a.
- Four further companies spun-out
 - Lagan Technologies (1994) – call centre telepathy
 - Webforia (1995) – subsequently closed
 - Amacis (1999) – text-based electronic communications
 - Meridio (2002) – products division demerged to form a separate company
 - Property.News.com (2005-6) website advertising property

Role of QUBIS

- Assumed role of incubator organisation
- Direct relationship at start-up and beyond of second order companies
- Equity stake and position on Board
- Provision of advice, support and resources
- 'Honest broker' - legitimisation, validation, experience and networks
- Pursuing opportunities to develop business

Findings

Peripheral, non-technology-intensive regional economy – remit of TTO might have to be wide-ranging

BUT

Improving business development infrastructure and increasing pool of entrepreneurial and senior managerial talent less need for QUBIS' involvement

Conclusions I

- In the UK spin-offs start small and stay small
- For majority of universities spin-offs not a major source of income
- Focus on spin-offs solely is too narrow – there are other forms of commercialization
- Tension between being an academic and a founder
- Spin-off tends to occur too early in the development process
- Danger of becoming too reliant on the safety net of TTO
- Formal involvement from the University might impede spin-off growth
- Increasing tendency for TTOs to complicate, professionalize and mystify the process

Conclusions II

- Spin-outs make a minor contribution to regional economic development
- Disconnect between university and spin-off company formation process and wider entrepreneurial system
- Constraints of the regional environment
 - Restricted market
 - Access to labour
 - Absence of viable scale of clustered activity
- Tension between the University playing a surrogate economic development agency role and supporting the development and growth of spin-off companies
- Within context of entrepreneurial system in a region lacking in munificence – universities potentially have an important role to play