

Mission Impossible? Entrepreneurial Universities and Peripheral Regional Innovation Systems

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Abstract

As part of their “third mission” to commercialise research and cultivate growth in local economies, universities have been accorded a central role in regional innovation systems. This paper takes issue with this policy emphasis. It presents empirical evidence suggesting the entrepreneurial spillovers from universities have been greatly exaggerated, especially in some peripheral regions. The explanation offered for this poor performance hinges on the substantive disconnect between universities and their surrounding local entrepreneurial and innovation ecosystems. Despite their marginal economic contribution, the paper claims that “policy entrepreneurs” play a powerful role in cumulatively reinforcing the dominant role of universities through a process of “institutional capture”, the outcome of which results in a form of “policy lock-in”. The implications of these findings for public policy are outlined.

Key Words

Innovation

Universities

Regional Innovation Systems

Institutional Capture

Policy Entrepreneurs

Scotland

1. Introduction

A key assumption underlying most regional innovation policies is that universities are crucial “entrepreneurial actors” (Huggins et al, 2008; Power and Malmberg, 2008; Audretsch, 2014; Siegel and Wright, 2015). This deeply held supposition is enshrined in national industrial policies, regional innovation strategies and strategy documents of most universities (Bramwell and Wolfe, 2008; Deiacco et al, 2012; Charles et al, 2014). A recurring feature running throughout these strategies is the implicit assumption that universities are simultaneously “good for businesses” and “good at creating businesses” (Collini, 2012).

This policy focus took a firm grip during the 1990s when “academic capitalism” transformed academic institutions into “entrepreneurial universities” (Slaughter and Leslie, 1997). The so-called “third mission” (i.e. their role in economic development) fundamentally recast the role of universities (Etzkowitz et al, 2000). As they embarked on their new “mission” as quasi-economic development bodies, universities accrued a range of new functions, such as technology transfer offices (TTOs) (Siegel et al, 2007), science parks (Massey et al, 1992) and incubator facilities (Mian, 1996). During the last decade, they also began investing heavily in entrepreneurship education programmes (O’Conner, 2013), entrepreneurship clubs, venture capital funds and business angel syndicates (Markman et al, 2008).

Meanwhile scholars have also accorded universities a key role when examining innovation and entrepreneurship. Indeed, the burgeoning literature on innovation systems placed universities at the heart of this construct (Cooke et al, 1997; Lundvall, 2007; Asheim et al, 2011). Owing to this increased focus on entrepreneurial universities, they are now similarly being ascribed as key actors in local “entrepreneurial ecosystems” (Isenberg, 2010). Similar to the innovation systems concept, entrepreneurial ecosystems depict the actors (e.g.

entrepreneurs, universities, business incubators) and inter-relationships (links between entrepreneurs and venture capitalists, university-industry linkages) which shape the nature of regional entrepreneurship (Mason and Brown, 2014; Stam, 2014). According to the World Economic Forum (2014) universities are crucial for promoting entrepreneurship, playing a key role in idea-formation for new companies and playing a key role in providing graduates to new companies.

In order to boost innovation and to promote entrepreneurial ecosystems, public policy has also actively supported “third mission” initiatives in most advanced industrial economies countries, especially in so-called “mission-oriented” countries like the UK and US (Brown and Mason, 2014)¹. Indeed, since the onset of the global financial crisis, there are increasing pressures on British universities for greater engagement within their local entrepreneurial “milieu” (Collini, 2012; Charles et al, 2014). Universities have also been at the core of most regional innovation policies (Huggins and Johnston, 2009a; Huggins and Kitigawa, 2012) especially their role in developing knowledge networks in peripheral regions (Huggins and Johnston, 2009b).

Despite being a common policy goal, some argue it is time for a rethink about the rationale and nature of “academic entrepreneurship” (Siegel and Wright, 2015). Towards this end, this paper challenges the overwhelming and unstinting belief that all universities can, or indeed should, be vital entrepreneurial actors in all regions. It debates this issue using the Scottish regional innovation system (RIS) as a case study. Owing to its increasing levels of political autonomy, the Scottish Government, some claim, has instigated more

¹ In contrast, in diffusion-oriented countries like Germany the role of universities is more about promoting competence enhancing practices (Casper and Whitley, 2004).

“controversial” and “visionary” innovation policies than other parts of the UK (Cooke and Clifton, 2005), manifesting itself in rich panoply of resource-intensive policy initiatives (Lyall, 2005; 2007; Huggins and Kitagawa, 2012; Brown et al, 2015). Despite the significant financial commitment entailed in these programmes, empirical scrutiny of this overall policy focus or instrument ‘mix’ (Borrás and Edquist, 2013) has been limited.

The paper addresses two key inter-related research questions: (i) how successful has this policy focus been? (ii) why has this policy focus become so dominant despite its apparent lack of success? While primarily a debate article in the mould of others (Power and Malmberg, 2008), the paper draws on a range of empirical evidence on SME growth issues (Mason and Brown, 2013; Mason et al, 2015), interviews with TTOs, evaluative evidence (Brown et al, 2015), unpublished data obtained from Universities Scotland and analysis of the Community Innovation Survey (CIS). In addition to these sources, the author examined the published Board meeting minutes from a variety of organisations such as the Scottish Government, Scottish Enterprise, Scottish Funding Council, Innovation Scotland, Interface and Scottish Science Advisory Council.

The remainder of the paper is structured as follows. First, the relevant literature on systemic innovation policy is examined. Second, the policy mix in Scotland is outlined. Third, the effectiveness of university commercialisation in Scotland is then assessed. In the penultimate section a discussion of “institutional capture” and the nature of “policy lock-in” is outlined. The paper ends with some conclusions and policy recommendations.

2 Why Do Universities Dominate Systemic Innovation Policy?

Within their “third mission” universities are assumed to produce a number of core benefits for regions (Bramwell and Wolfe, 2008). Table 1 below outlines the main types of technology transfer undertaken by universities. Within regional innovation policy the generation of university spin-outs (USOs), the licensing of technology and contract research for other actors within a RIS are often deemed the key formal mechanisms. A key objective within the Scottish economy is the desire to generate more new technology-based firms (NTBFs) from these activities (Brown and Mason, 2014). Evidence examining the performance of universities as generators of these firms (Harrison and Leitch, 2010) and as fulcrums of local knowledge exchange (Power and Malmberg, 2008) suggests that the outcomes of this policy focus have fallen well below expectations (Coad and Reid, 2012). However, as scholars observe, the expectations for this commercialisation “mantra” have risen markedly and have “assumed the status of a ‘silver bullet’ for regional economic development” (Harrison and Leitch, 2010, p. 1242).

Table 1: Formal and Informal Mechanisms of Technology Transfer

<i>Mechanism</i>	<i>Definition</i>
Sponsored Research	An agreement by which the university receives funding for conducting a research project
Licenses	Legal rights to use a specific piece of university intellectual property (IP)
Spin-off firms	A new entity that is formed around the faculty research or a university license
Student Start-ups	New ventures generated by student alumni not based on university IP
Human Capital	Recruitment of students from the university, especially those working on sponsored projects

Source: Adapted from Bercovitz and Feldman (2006)

While considerable work has examined these difficulties, there has been an absence of work examining why this policy focus remains such a deeply entrenched focus within innovation policy. One explanation for this probably owes to the main 'unit of analysis' within innovation policy focuses on different discrete interventions rather than analysing the strategic direction of policies. Scholars tend to look at the success or failures of specific interventions rather than the overall thrust and actors driving policy (Brown et al, 2015). Some suggest that what is needed to rectify this anomaly is "histories of policy mixes" (Flanagan et al, 2011, p. 711). Relatedly, the focus of scholarship has also been quite narrow which means that empirical studies typically avoid investigating "actual, as opposed to idealised, processes of policy learning" when examining the 'policy mix' within innovation policy (Flanagan et al, 2011, p. 711). This tends to overlook the messy nature of policy formulation (Arshad et al, 2014) and the importance of 'agency' within the literature (Markusen, 2003).

Another limitation of the innovation policy literature is a lack of focus on path dependence and subsequent levels of inertia within public policy (Flanagan and Uyerra, this issue). Once policy makers embark on a certain direction, it becomes deeply interwoven into the fabric of public policy. Past decisions can heavily and cumulatively determine the future of policy making. While innovation scholars have extensively explored the notion of technological "lock-in" (Arthur, 1989) whereby certain historical events or accidents lead to some technologies becoming dominant without necessarily being the most optimal, arguably a similar analogous process of "policy lock-in" occurs in terms of innovation policy. Similarly, Martin (2015) notes how scholars "lurch" from one analytical concept to another in search of the latest policy "fad". Once this occurs the direction of policy and associated belief

systems can become deeply engrained, clusters being an obvious example (Martin and Sunley, 2003). Arguably “entrepreneurial universities” is another such “fad” which has firmly established itself as the received wisdom despite lacking empirical substantiation.

Additionally, few studies have properly examined the darker side of the policy making process within regions, such as policy capture by vested interests. Yet Flanagan et al (2011) have promoted the notion of “policy entrepreneurs” to describe the role of certain policy actors who “may be incentivised by personal interest, the promotion of certain values, or the mere satisfaction of being part of the policy action” (Flanagan, 2011, p. 704). Policy entrepreneurs are organisations, individuals or teams which influence political processes in ways that alter policies and institutions (Edler and James, 2015). Despite this, little work has examined how entrepreneurial actors within a RIS can manipulate policy to their own ends. This seems curious because, after all, some organisations like research-intensive universities are large powerful actors which are skillfully adept at accessing public sources of funds. Rather than merely advancing their own interests, arguably their dominance within public policy can effectively preclude participation by other actors who should be seen as vital for a vibrant RIS such as small businesses, consultants, further education colleges and other vocational training organisations (Best, 2000; Tether and Tajar, 2008).

Indeed, these kinds of contested inter-relationships are often downplayed by innovation scholars who tend to treat the political process as a “given” or a “benign black box” (Uyarra, 2010, p. 130). Very little research has attempted to examine how these power asymmetries influence the strategic direction of innovation policy. Given that a key role for innovation policy scholars is to highlight the “trade-offs and tensions inherent in any policy mix”

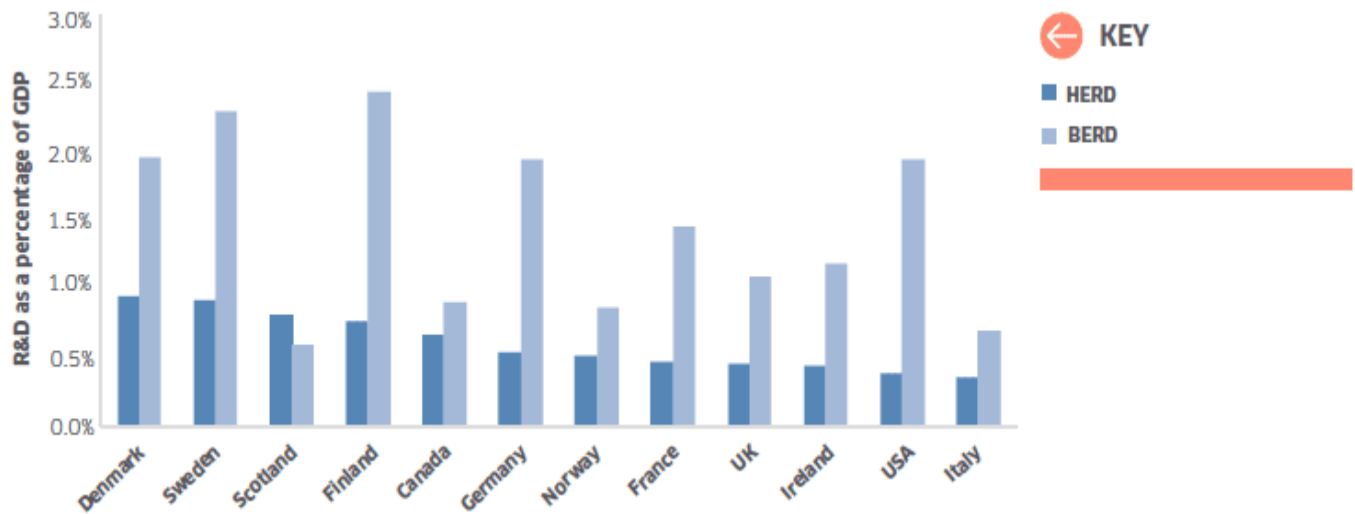
(Flanagan et al, 2011, p. 711), it is argued in this paper that vested interests play a powerful role in shaping the strategic nature of innovation policy in Scotland.

3. Examining the 'Policy Mix' in the Scottish Innovation System

Within the systemic literature there has been a growing focus on the 'policy mix' or 'instrument mix' within systemic innovation policies (Borras and Edquist, 2013; Martin, this issue). According to Flanagan et al (2011), the rationale for the adoption of a certain kind of policy mix is often far from scientific. From their perspective, policy formulation is no more amenable to 'instrumental rationality' than are innovation processes themselves (Flanagan et al, 2011). Implicit in this analysis is that policies arise quite randomly.

This thesis certainly chimes with Scotland's innovation policy. During the last twenty years, universities have assumed a "central defining feature" (Brown and Mason, 2014) of Scotland's innovation system (Roper et al, 2006; Lyall, 2007; Huggins and Kitagawa, 2012) without any explicit justification. Part of this rationale stems from their perceived strong performance. Scotland's 19 universities support 150,000 jobs (directly and indirectly) or 7.6% of total employment in Scotland (Biggar Economics, 2010). Despite having less than 9% of the UK's population, in 2010/11 Scottish universities attracted almost 14% of total UK external research grants (Scottish Enterprise, 2012). As shown in Figure 1 below, Scotland has one of the highest levels of higher education R&D (HERD) expressed as a percentage of GDP in the entire OECD. In contrast, Scotland performs extremely poorly in terms of business expenditure on R&D (BERD). With just 3.9% of the UK total, it ranks in the bottom quartile of the OECD (Scottish Government, 2012). Given this somewhat unique dichotomous situation, the so-called "*Scottish conundrum*" (Coad and Reid, 2012), it seems little wonder policy makers look to universities as a source of economic salvation.

Figure 1: International comparison of HERD and BERD as a percentage of GDP, 2012



Source: Scottish Government (2015)

Universities are viewed as a potential counterweight which can compensate for the lack of BERD in the Scottish economy (Roper et al, 2006; Scottish Enterprise, 2012; Scottish Government, 2015). The Scottish Government now invests very heavily in a plethora of different types of initiatives designed to enhance the economic contribution from these institutions. The bulk of these initiatives either directly or indirectly involve support for universities (Lyll, 2005). Recent major national initiatives include the High Growth Spin-Out programme (formerly the Proof of Concept programme), Enterprise Fellowships, Scottish Innovation Centres and the now defunct Intermediate Technology Initiative (Brown et al, 2015). These policies represent a considerable overall proportion of the total budget spent on economic development annually. For example, since its inception in 1999, the Scottish Government has supported 172 projects and committed nearly £30m to the Proof of Concept programme (PriceWaterhouse Coopers, 2006; Rasmussen, and Sørheim, 2012). Plus, the Scottish Government has recently established a programme of eight innovation centres to be based at Scottish Universities at a cost of £124 million, around half the annual

expenditure of Scottish Enterprise, the region's main economic development agency (Scottish Enterprise, 2015).

Research commercialisation is also strongly promoted through various technology-transfer initiatives undertaken in Scotland. One flagship initiative undertaken by the Scottish Government includes the 'Interface' programme which is a brokerage service designed facilitate linkages between SMEs and Scotland's universities. This programme, alongside the innovation centres above, was funded through the Scottish Funding Council which has itself assumed a key role in trying to aid the commercialisation process in Scotland. Interface offers SMEs innovation vouchers which contribute towards the costs of small research contracts. In 2013/14, Interface claims to have facilitated 214 projects which produced £17m in gross value added and generated 360 jobs (Interface, 2014). During the ten years it has been in operation the programme has fostered over 1,000 projects between SMEs and academia in Scotland. In addition to this custom designed initiative, the government funds a range of expensive bespoke initiatives with specific universities such as the Advanced Forming Research Centre at the University of Strathclyde which is funded by Scottish Enterprise and the UK Government. Most of these are sectorally-focused and attempt to aid the process of research commercialisation either through technology-transfer and research commercialisation.

Funding for these initiatives comes directly from the Scottish government but importantly it also includes support for universities from a range of other source of economic development sources, particularly Scottish Enterprise. In 2013-2014, Scottish Enterprise spend £6.1 million on this type of university-related commercialisation support activity (Scottish Enterprise, 2015). In addition to this kind of directly funded activity, additional

“hidden” innovation expenditure often occurs (Block, 2008). Space precludes a proper examination of the full raft of horizontal programme activities which inadvertently support university-led ventures. Examples include the Scottish Investment Bank’s investment programmes which co-invest alongside venture capitalists and business angel investors in NTBFs, many of whom are Scottish USOs (Brown and Mason, 2014). Other forms of assistance are the high growth start-up unit operated by Scottish Enterprise which intensively fosters high potential start-ups. Evaluation evidence shows that around a third of the firms supported under this programme originated from universities (Brazewell, 2007).

Arguably, the agenda set by the desire to commercialise university research has shaped large parts of the economic development machinery to the extent that large parts of enterprise policy are narrowly focused on support for USOs. Indeed, universities not only help set the policy agenda they have simultaneously become the delivery mechanism for large parts of innovation policy in Scotland. In part, this reflects the lack of other strong or vocal actors within the Scottish RIS, especially within the business community.

4. The Problematic Nature Research Commercialisation in Scotland

We now turn our attention to how successful this approach has been. We also seek to offer an indicative explanation why these policies have, by and large, failed to meet expectations. Firstly, let us turn our attention to the effectiveness of policies designed to commercialise university research through the creation of USOs. Proactive measures designed to help stimulate these firms “are mainly targeted at academic NTBFs” (Bower, 2003, p. 99). This focus has become something of the ‘holy grail’ for regional policy makers, intent on replicating the rather unique case of Silicon Valley’s prodigious start-up culture (Harrison and Leitch, 2010; Feldman, 2014; Mason and Brown, 2014)

Scotland also has one of the most comprehensive support frameworks to aid this process. Consequently, Scottish Universities regularly out-perform their UK counterparts on the levels of USOs generated (Kitagawa, 2009). Scotland has produced almost 20% of all UK USOs over the last decade (Spin Outs UK, 2014). Between 2000 and 2012, Scotland produced 172 new USOs compared to 115 in London and 85 in the South East of England (Spin Outs UK, 2014). This very strong performance is heavily driven by two research-intensive universities in Scotland, Edinburgh and Strathclyde. Indeed, 2009-2010 the University of Edinburgh produced the most (i.e. 40) USOs ever produced by a UK academic institution in a single calendar year (Times Higher Education, 2010). Policy makers have been quick to assert their role in effectively aiding the commercialisation of higher education research. Indeed, the Scottish Education Secretary, Mike Russell, commenting on these figures claimed Scotland “punches above its weight when it comes to higher education” (BBC, 2014).

However, the empirical evidence (Bower, 2003; Targeting Innovation, 2008; Harrison and Leitch, 2010; Brown and Mason, 2014) overwhelmingly suggests that Scottish USOs tend to “start and remain small” (Harrison and Leitch, 2010, p. 1256). Indeed, despite the significant levels of public resources dedicated towards this goal there have been very few entrepreneurial “blockbusters” emanating from Scotland’s universities. Since the 1980s, Scotland has produced one major success story of note: Wolfson Microelectronics (Targeting Innovation, 2008). Owing to their inability to grow and upscale, these businesses are often acquired by larger corporate entities. Ironically, Wolfson itself was acquired by the US firm Cirrus Logic in 2014.

Many smaller USOs with novel IP also become acquired at a very early stage owing to insufficient financial resources to take the idea beyond the proof of concept stage (Oahey, 2003). An example of this was the University of Edinburgh USO called MTEM which was acquired by a Norwegian oil and gas firm. A key stumbling block for many growth-oriented firms in peripheral regions is the lack of large-scale venture capital to help upscale companies (Klagge and Martin, 2005), so-called “thin markets” (Nightingale et al, 2009). Following a major investigation into the sources of growth in the Scottish economy, scholars noted “very few university spin-offs become high growth firms” (Brown and Mason, 2014, p. 780). In common with other empirical studies (Wennberg et al, 2011), those authors found that corporate spin-offs (CSOs) were much more growth-oriented than USOs.

So what accounts for this poor growth performance on behalf of Scottish USOs? There is now a vast array of empirical evidence on the growth patterns and processes within USOs (Djokovic and Souitaris, 2008). While the majority of firms face non-linear growth trajectories (Garnsey et al, 2006), this evidence shows that academic entrepreneurs are often unwilling and unsuited to growing and upscaling such businesses (Bower, 2003). Inadequate management capacity, low levels of entrepreneurial ambition and weak levels of customer engagement are some of the factors often associated with USOs in Scotland (Targeting Innovation, 2008; Mason and Brown, 2010). A central problem, appears to emanate from the fact that many are started up by post-graduate students in order to obtain follow-on sources of research funding. Indeed two of the main programmes highlighted earlier (i.e. High Growth Spin-Out programme and the Enterprise Fellowship programmes) explicitly targets this cohort of early stage academics.

Despite the lack of managerial capacity in many of these firms, innovation and entrepreneurship policy in Scotland is heavily skewed towards providing these firms with extensive resources in the form of innovation grants, finance through various co-investment programmes and through the provision of heavily subsidized property (Brown and Mason, 2014). While this should on paper help alleviate the resource scarcity and financial constraints faced by new ventures (Wright et al, 2006), an alternative perspective is that excessive pampering of USOs has a range of “unintended consequences” on these nascent ventures (Brown and Mawson, 2015). Arguably providing excessive resources to new USOs may prematurely push firms towards developing new ‘hard’ products at quite an early stage. In contrast, research on successful USOs in the Cambridge region of England has shown that ‘soft companies’ who specialise in R&D services for larger clients often take a considerable time to develop the necessary market insights and organisational competencies to become ‘hard technology firms’ with their own set of products and services (Probert et al, 2013). Indeed, after examining the determinants of success within these ‘soft’ firms the authors claim that the impact of university IP is “actually quite modest” (Connell et al, 2010, p. 97). Focusing on developing new products also increases the need for venture capital which then places added pressure on the firm to provide venture capitalists with an ‘exit route’ (Ragozzino and Blevins, 2015). Others also claim there are greater risks of failure within these ‘hard’ starts (Bower, 2003).

Relatedly, another potential pitfall within this policy of heavily supporting USOs is that it may make firms less externally-focused on the needs of their customers (Brown and Mawson, 2015). By being introverted they are less likely to develop a strong customer-orientation. Rather than being IP-driven most successful new ventures are often highly

externally oriented and are often very sales-oriented rather than innovation oriented (Mason and Brown, 2013). Given this, by offering considerable resources to these new inexperienced entrepreneurs it may obviate the need for early sales within these firms and delay their dealings with customers and other network actors like suppliers who can help nurture their competitive advantages.

Turning to other forms of research commercialisation we see a similar picture. Recent research has started to strongly question the extent to which regional economic development can be achieved through the utilization of localised knowledge spillovers (Huggins et al, 2008; Power and Malmberg, 2008; Kitagawa, 2009). It is important to remember that the perceived beneficiaries of these interactions are often local SMEs yet often these kinds of firms place a 'low value' on these kinds of interactions with universities. Scotland is not alone in this respect and in most countries the business community place universities "low on the list of sources of knowledge for innovations" (Deiaco et al, 2012, p. 537). Power and Malmberg (2008) further claim that it's unclear that "knowledge and innovation processes within universities or research institutions are best supported through prioritizing regions links" (p. 242). Indeed, non-localised sources of knowledge are often prioritized by growing entrepreneurial firms (Huggins et al, 2015).

Within Scotland the perception of a mismatch between the global orientation of universities and the needs of smaller indigenous firms is well recognised (Roper et al, 2006). This disconnect has also been found in other small UK peripheral economies like Wales (Huggins and Johnson, 2009b). However, the degree of the divergence between the two vital actors –universities and SMEs- within the Scottish RIS is often assumed rather than empirically verified within the literature. Using data obtained from Universities Scotland, we can assess

the knowledge connections between universities and local firms within the Scottish RIS. As shown in Table 2 below, the number of licenses conducted by Scottish universities is below the proportion of its population total. Surprisingly, Scottish universities seem to perform particularly poorly in terms of software licensing. By value of licenses Scotland performs better. What is also notable is that the income generated in 2010/11 by non-local licensing by Scottish universities is five times the amount generated by local licensing (see Table 2 below). In other words, Scotland underperforms in terms of licensing and the most important commercial relationships undertaken by Scottish universities are with research users located outwith Scotland.

Table 2: License Numbers and IP Revenues

	HE-BCI: Licence numbers and IP revenues 2009/10		
	Total licence numbers (non-software)	Total licence numbers (software only)	Total IP Revenues (£000s)
Scotland	150	68	6,486
UK	2,990	1,818	83,689
Scotland as % of UK	5.0%	3.7%	7.8%

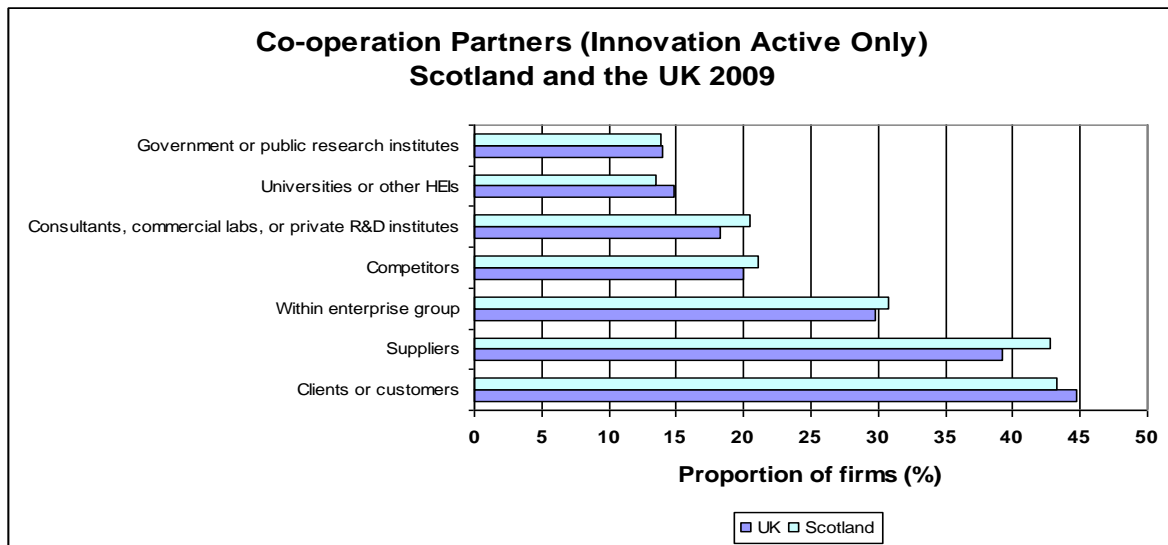
Source: Universities Scotland

What accounts for this disconnect between the knowledge generated by Scottish universities and where this knowledge is developed and appropriated? Research shows that there is a fundamental divergence between the innovative requirements of most Scottish businesses and the types of research being conducted at Scottish research intensive universities (Harris et al, 2013). This is caused by the fact that Scottish research-intensive

universities often specialise in research areas where Scotland has little indigenous industrial capabilities such as life sciences and optoelectronics (Birch and Cumbers, 2010). Observers highlight the lack of “absorptive capacity” which limits the ability of SMEs to utilise the advanced levels of research being undertaken (Roper et al, 2006; Pinto et al, 2015). Recent case study evidence from specific knowledge-transfer programmes undertaken in the Scottish RIS corroborates this and highlights systemic weaknesses within the local entrepreneurial ecosystem (Brown et al, 2015).

Another limiting factor seems to be the way in which Scottish SMEs obtain their ‘inbound’ sources of innovation (Brown and Mason, 2014). Rather than using formal relationships with universities or other R&D providers, SMEs increasingly rely much more heavily on ‘open innovation’ sources such as collaborations with peers, suppliers, customers and end-users (Brunswick and Van der Vrande, 2014). Knowledge intensive business services (KIBs), such as consultants and private research organisations all play a key role in providing knowledge to SMEs (Tether and Tajar, 2008), especially in peripheral regions (Pinto et al, 2015). Evidence from the CIS 2009 suggests that for the vast majority of Scottish firms, interaction with universities is not a major source of innovation (see Figure 2 below). In total, 55% of Scottish businesses are ‘innovation active’ and of these only 13.5% (14.8% for UK as a whole) co-operate with universities - and only around 10% view HEIs as ‘medium-to-high’ in terms of level of importance for their innovation sources and requirements. This picture is consistent with earlier studies of CIS data (Freel and Harrison, 2007). Smaller firms in particular are averse to formal contracting with third party organisations such as universities due to their perceived inefficiencies and the associated costs of these formal relationships (Brown and Mason, 2014).

Figure 2: Cooperation Partners for Innovation Active Firms in Scotland



Source: Community Innovation Survey 2009

Intriguingly, despite this clear preference for utilising knowledge sources from these ‘open sources’ of innovation (e.g. such as customers, suppliers and peers etc) rather than universities (NESTA, 2010), the latter is the route the majority of policy interventions try to foster. Recent research analysing data from the CIS reveals that the low levels of absorptive capacity within firms undertaking knowledge connections with universities can actually adversely affect their total factor productivity (Harris et al, 2013). This research found that indigenous firms in Scotland who source knowledge from Scottish universities have lower productivity than other firms of around 12.5%. While larger firms seem able to productively engage with universities, smaller firms seem to prefer more informal ‘open’ sources of information. In other words, different types of firms rely on different kinds of knowledge interactions (Tödting et al, 2009; Huggins et al, 2015).

What this reveals is a strong disconnect between research produced in universities and the innovation needs of local entrepreneurial actors. Low levels of entrepreneurship, weak absorptive capacity in SMEs and an inability to engage within complex technologies all

combine to prevent local technological spillovers in peripheral regional economies.

Therefore the explanation for this marginal impact of universities is strongly connected to the nature of the “knowledge exploitation” sub-system or entrepreneurial ecosystem within the Scottish RIS.

5. Institutional Capture and the Scottish RIS

We now turn our attention towards theorising why this policy focus has become such an unquestioning aspect of public policy within the Scottish RIS despite its apparent lack of effectiveness. The central argument put forward within this paper points towards the role of power asymmetries and “institutional capture” within the RIS as critical factors embedding this policy incongruence. Institutional capture is a term used by some authors to depict the situation when high profile inward investors effectively capture the strategic orientation and resources of local institutions and service providing organisations (Phelps et al, 1998). As a consequence local policy making bodies and resources became heavily aligned towards servicing these multinational “clients”, especially in UK peripheral regions during the 80s and 90s (Phelps, 2000). Like inward investors before them, universities have arguably captured the local policy making resources in regions such as Scotland with the explicit blessing of successive Scottish Governments. As such they have been accorded a central role within the RIS and much of the economic development machinery is tailored towards aligning with this policy focus.

One clear sign of this is the implicit assumption within Scottish innovation policy is that universities are deemed the most suitable organisations for assisting SMEs with their unmet innovation needs. Despite the overwhelming evidence from past experiences suggesting that universities may not necessarily be the most desirable actors for this role, universities

are perceived by policy makers and themselves as the central way of overcoming the “innovation deficit” within the economy (Scottish Government, 2015). Indeed, the Scottish Government’s main funding council now actively promotes this commercialisation agenda as one of its core objectives (Scottish Funding Council, 2012-2015). It has become the *de facto* position that through interaction (and programmes such as Interface) with Scottish universities, all SMEs can become more dynamic innovative firms.

This form of institutional capture partly owes to powerful actors within the innovation system perpetuating this belief. As well as political actors, universities themselves have become key “policy entrepreneurs” (Flanagan et al, 2011) within the Scottish RIS in a number of important respects. This manifests in a number of explicit and implicit ways. In terms of the former, Scotland’s universities are very intimately connected to the Scottish Government’s policy making machinery. University principals are part of the Scottish Government’s Council of Economic Advisors who help shape economic policy in Scotland. University representatives also dominate bodies like the Scottish Science Advisory Council (SSAC) which sets the Science Strategy for Scotland. Many university principals also sit on a wide array of public-private partnerships, trade associations and technology-transfer organisations. Universities also have the added benefit of their own powerful lobbying organisation in Scotland, Universities Scotland, which aims to promote and protect the interests of Scotland’s 19 higher education institutions giving it a powerful and vocal “voice” through its lobbying role.

The domination of universities also occurs in less explicit ways which has become implicit within enterprise policy in Scotland. For example, university principals sit on the board of Scottish Enterprise and/or on the boards of major innovation projects. While steps are put

in place to ensure conflicts of interest do not arise, the close association is bound to foster a common mind-set between these organisational actors. It is only natural that these policy entrepreneurs will promote the importance of their own organisations under these circumstances. This can also prevent universities voicing their concerns when commercialisation interventions fail to deliver like the ITI programme² (Brown et al, 2015). Plus, universities play a strong role in presenting their commercialisation agenda through their marketing activities and incorporation of commercial metrics in their reporting systems. However, this often fails to recognise the limited impact of these activities as reported in this paper. Indeed, some scholars have been criticised by their own internal TTOs for being too critical of the entire commercialisation agenda which may prevent an open discussion about the appropriate objectives of innovation policy in Scotland.

Another sign of these assumptions becoming embedded in policy is the intimate connections between economic development actors and universities. Indeed, universities are often instrumental in helping to design certain initiatives through the symbiotic relationships between higher education and Scottish Enterprise. Programmes such as the High Growth Spinout Programme are specifically co-designed to help foster the growth of USOs through intensive levels of public support. Despite the poor growth track record of USOs in general and modest levels of success within the programme to date (Brown and Mason, 2012), there is a high level of vested interest in universities to maintain this type of funding relationship. Often university policy entrepreneurs attempt to portray the importance of these schemes in a positive economic light despite the fact many of these projects are, in all but name, “science projects”. Universities often heavily promote their

² Indeed, the current Principal of the University of Edinburgh sat on the Board of the ITI.

start-up success stories, as do the Scottish Government (2014), but fail to convey how rare these are compared to the more numerous failures.

The process of institutional capture depicted above creates a cumulative process of “policy lock-in” which reinforces the belief system within the policy making machinery. It needs to be stressed that university “policy entrepreneurs” are very much swimming with the current political tide in Scotland. Despite high levels of political decentralisation within Scotland, the Scottish Government’s approach towards innovation policy has remained closely wedded to the linear model of innovation hard-wired into UK innovation policy as a whole (House of Commons, 2013). Indeed, Scotland’s strict linear-oriented approach to innovation has made it prone to some of the biggest and costly mistakes in this policy domain (Brown et al, 2015), suggesting that the regional innovation policy making process is a highly path dependent process mediated by stakeholders at various spatial levels (Flanagan et al, 2011).

7. Conclusions and Policy Recommendations

In conclusion, the “third mission” bestowed upon universities, at least within the Scottish context, seems virtually “impossible” to achieve despite the considerable resources directed to this aim. By continuing to prioritise university research commercialisation above other equally valid innovation objectives, the Scottish RIS seems caught in a vicious cycle of policy underperformance. Universities play a crucial and highly complex role in enriching society that goes way beyond technology transfer indicators, not least their crucial role in producing human capital and undertaking basic research. Therefore, attempting to turn universities into quasi economic development agencies seems a highly reductionist policy objective.

What does this mean for future policy frameworks? Owing to the complex nature of “institutional capture” it is unlikely the belief in university commercialisation will easily relinquish its powerful grip on the policy making machinery in Scotland. In many respects, this dominance arises due to the vacuum created by the lack of involvement and poor performance of other actors in the RIS. A more diverse array of actors need to become much more centrally engaged within the innovation policy making process to help prevent the continuation of this situation. As the ultimate end-users and drivers of innovation, a much greater role should be given to entrepreneurs, SMEs and large-scale firms in designing future innovation policies. If these actors can somehow be stimulated to actively participate in the RIS it can potentially help mitigate institutional capture in the future.

In terms of potential future policy instruments, some have argued for a more entrepreneurial role for the state (Mazzucato; this issue). Towards this end, steps such as enhancing the absorptive capacity of existing small firms seems a more suitable goal for innovation policy, especially for peripheral regions with limited innovative capacity.

Promoting networking and knowledge exchange between SMEs and other actors both local and further afield should become more central methods for promoting innovation. For example, brokerage models like Interface could be reconstituted to offer peer-to-peer support for SMEs, KIBs and with larger Scottish corporate firms rather than purely acting as a conduit between small firms and universities. Plus, given a preference for ‘open sources’ of innovation, help connecting SMEs to customers and end-users (wherever they are located) seems another useful and novel departure for policy makers. These interventions must take a proper account of the entrepreneurial propensity within a RIS if they are to be effective (Radosevic and Yoruk, 2013).

These suggestions are indicative of the diverse types of multi-actor, multi-scalar approaches policy makers may wish to consider in the future. In light of these findings, it seems highly unlikely an over-reliance on a single solution for enhancing a region's systemic innovative capacity will work effectively.

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