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How Science and Technology Parks support incubators in emerging economies

Parallel Session 7:
Incubators: what are the new developments in the incubation industry?

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How Science and Technology Parks support business incubation in emerging economies

Executive Summary

This paper highlights the important role that incubators play in emerging economies and how science and technology parks can support business incubation.

We will look at two programmes that have been developed by The Innovation Hub (TIH), a South African science park in Pretoria. These programs were created to address the joint objectives of both wealth creation and poverty alleviation via upliftment of the people of South Africa. By way of comparison, we will also look at two different enterprise development activities in an extremely impoverished area of Scotland where programs for creating wealth and alleviating poverty have typically been separate.

By comparing these Scottish and South African experiences, we hope to suggest implications for understanding the challenges inherent to developing and developed nations and to suggest possible ways for governments to consider policy in terms of the need to develop wealth as well as alleviate poverty simultaneously perhaps in ways where these two worlds of individuals have a greater chance of working side-by-side.

Keywords: incubation, poverty alleviation and wealth creation, emerging economy, science parks, enterprise development

Introduction

The role of science and technology parks has evolved over the last 40 years. Depending upon their geographic locations and the objectives of their stakeholders, the park's role varies, but most parks functioned early on as catalysts to promote academic cooperation with mature industry. Today some parks host national and academic research institutes. Others are home to innovation laboratories in the life sciences, engineering, or information technology. Regardless of their specific roles in their communities, however, science and technology parks have sought to provide environments that go beyond traditional real estate. They have sought to improve the chances for effective and innovative growth and development of knowledge- and technology-intensive business.

Although business incubation was not often viewed as a relevant component of the science and technology park model until the 1980s, it is now considered integral in many parks that see themselves as engines supporting the entire spectrum of a region's or nation's innovation system. Incubators too have matured over 25 years to the extent that many now provide a sophisticated level of services, networks, and training to support start-ups as well as technology commercialization and corporate spin-outs. The public has also come to understand the role that incubators and enterprise development centres play in generating new wealth as well as in alleviating social and economic deprivation.

In this paper, our objective is to highlight the important role that incubation plays in emerging economies and how science and technology parks can support these incubators. By comparing and contrasting incubator and enterprise support schemes in regions of South Africa and Scotland within their specific economic contexts, we believe that it is possible to gain a fuller understanding of how STPs and STP-like environments have the ability to foster not only wealth creation and business attraction, but also poverty alleviation through carefully designed programs that support this dual objective.

Definitions and Background

Entrepreneurs, globally, face numerous challenges when starting a business, particularly a "growth business". A growth business can be equated with "opportunity entrepreneurship" or a business that is motivated by opportunity whether it is an opportunity in the market place or an opportunity to lead a different lifestyle or to earn more money. At the other end of the spectrum is "necessity entrepreneurship" defined in the Global Entrepreneurship Monitor as the creation of business by an individual who has no other way of earning a living[1]. "Necessity entrepreneurship" is often associated with developing or emerging countries. But "growth companies" are not the sole product of high technology regions such as California, Singapore, Sweden, or France. They are also the product of regions that are known for poverty or political and economic flux, often associated with emerging economies. The entrepreneurs behind these business start-ups must find skilled and competent employees, access to operational funds, and

[1] Maas, G. and Herrington, M. 2006. *Global Entrepreneurship Monitor South African Report*. University of Cape Town.

access to market opportunities. Moreover, their needs are driven by challenges that are different from the kinds of challenges faced by companies in more developed regions.

So what do we mean by emerging economies? Antoine van Agtmael introduced the term emerging market economy when he worked with the International Finance Corporation at the World Bank in the 1970s. Van Agtmael coined the term to define "an economy with low-to-middle per capita income. Such countries constitute approximately 80% of the global population, representing about 20% of the world's economies"[2]. From third world, to undeveloped, to less developed, to emerging, market economies have by their very changing definitions reflected not only the increased attention they have received by investors, banks, and "other" nations over the last 60 years, but their integration among what used to be called developed nations. Van Agtmael predicts that by 2030, just two decades from now, these emerging nations will have more companies among the Fortune 500 than do developed nations today[3].

Economic activity around the world used to be described in terms of "first, second, and third world nations", then "developed and developing nations", and now "emerging countries". Today, due perhaps to increasingly rapid globalization, and perhaps due to more careful scrutiny of individual regions that make up nations, we can talk about *emerging regions* which may be a part of either an emerging country or of a developed country. In the last 20 years, regions, as opposed to countries, have attracted the focus of economic development attention. In Europe, one can often read about "regions of excellence" or "regions of growth", but not all regions in developed nations are excellent or thriving. The economic, social, and political challenges that used to be considered the domain of "undeveloped" nations exist within "developed nations" as well. The use of the word "emerging economies" instead of "emerging countries" leaves room for us to look at the economic situation in regions throughout the world, including those regions where business incubation and science and technology parks have focused primarily on wealth creation through innovation and technology commercialization.

We can argue, therefore, that many of the challenges that face a country like South Africa with regard to economic regeneration and wealth creation are also challenges that face "developed" countries like the UK and in particular, Scotland. By comparing the emerging, economies of countries that are not typically seen as sharing such challenges, it is also possible to look at the similarities and arrive at beneficial conclusions from the experiences of each country as governments and institutions seek to balance the needs for poverty alleviation and economic growth.

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[2] Heakel,R., 2003. *What is an Emerging Market Economy?,* Investopedia
http://www.investopedia.com/articles/03/073003.asp

[3] Kotkin, S. May 6, 2007. *First World, Third World (Maybe Not in That Order),* New York Times Book Review.

South Africa and Scotland

South Africa is the largest economy in Africa with a GDP that has grown from $132 billion[4] in 2000 to $251 billion in 2006. It has a GDP twice the size of the next largest economy in Africa, being Algeria at $126 billion. Over this period South Africa's per capita GDP has grown from $2 913 to $5 276. Its 2006 real GDP growth rate was 5%, in a range of 14.9% for Angola and -5.1% for Zimbabwe[5].

South Africa is made up of nine regions. Their 2005 individual GDPs range from $4 701 million (R37 613 million) in the Northern Cape to $73 139 million (R585 114 million) in Gauteng. It has a population of approximately 47.9 million citizens and a relatively high unemployment rate of 25.5[6]. 10% of the population earns more than 50% of household income in the country, whereas the poorest 40% of the population accounts for less than 7% of household income[7] (Income and expenditure of households 2005/2006). In the past South Africa was essentially a resource -based economy and its main wealth was generated from minerals and mining e.g. gold and diamond production. However, it also boasts a high-tech component, most notably in the defence and security sector. South Africa has both a first world and a second world economy, from sophisticated product development and manufacture to necessity-driven street vendors. The country represents the breadth of economic activities found in both developed and developing or emerging countries.

Scotland, lags slightly behind the UK as a whole with an independent Gross Value Added[8] of $34 000 per capita,.[9] Since 1995 Scotland's GDP per capita has slowly decreased, due in part to its slow recovery from the ICT crash in 2001. According to Scottish government publications, however, Scotland has been in second to last place for innovation development among 12 regions in the UK for the last decade.[10] Scotland has earned its wealth and relative independence via a strong manufacturing tradition. From the turn of the last century until only recently ship building was one of its most important economic generators. Over the last fifty years, however, the Scottish economic landscape has changed and like many developed nations that built their wealth on the industrial revolution, Scotland has sought to transition itself to a knowledge economy supported by IT and the health and service sectors. The nation continues to thrive on its 40-year old oil and gas production and on a much older tradition of whisky production. But, in the aftermath of the demise of ship building and lost manufacturing between 1970 and 1995, as well

[4] Note: Except where indicated in R(Rand) figures are given in USD (US Dollars).

[5] Selected Statistics on African Countries. 2007. Part 1 – Cross Country Tables - Macroeconomic Indicators.

[6] Statistics South Africa. March 2007. http://www.statssa.gov.za/publications/statskeyfindings.

[7] *Income and expenditure of households 2005/2006: Analysis of results.* Statistics South Africa.

[8] http://www.cne-siar.gov.uk/factfile/economy/gdp/index.htm

[9] *Scottish Key Facts*, January 2008, Scottish Enterprises: Knowledge Exchange

[10] Roper, S. and Love, J. (2006) *Scottish Innovation System: Actors, Roles, and Actions*, Aston Business School and Cardiff University.

as its struggle to recover from the ICT crisis, one finds pockets of what might be considered rather devastated sectors of the economy that are only now beginning to "emerge" once again.

"On entrepreneurship, showing the rate of new business starts, Scotland comes in the second quartile at 12th out of 24 OECD countries", according to Donald MacRae, chief economist for Lloyds TSB Scotland.[11] But Scotland is also a good example of the weakness of GDP to reflect the disparity of economic activity in a given country including within enterprise development. In a country inhabited by just 5 million, 880,000 or 18% of the population live below the poverty level. "*Poverty* is technically defined as when a person's household income (adjusted for the size and composition of the household) is less than 60% of the UK median income. The Government also uses a measure to assess fuel poverty, based not only on income but also on fuel prices and the energy efficiency of homes."[12] "Using the half average income poverty (after housing costs) line, some 1.2 million people in Scotland live in poor households, 25% of the population"[13]. Unemployment in the Glasgow region is close to 25% whereas Edinburgh reported a 1.9% unemployment rate in 2007.[14] According to the *Study on Poverty* released by the Scottish Parliament in 1999, the focus of regeneration support has been on creating minimum pension levels for the elderly, increased day care options, and access to work. No statements were made at that time in the document regarding enterprise development. In the most recent 2008 publication on poverty alleviation in Scotland *(see reference section)*, there continue to be no references to programs that might support enterprise development as a potential means to help tackle poverty.

In spite of this lack of apparent attention to enterprise development by Parliament, several organisations have been working to increase work opportunity through the support of enterprise development including the Scottish Social Enterprise Coalition, Business Gateway, NatWest/Royal Bank of Scotland, and InBiz. In working within the poorer sectors of Scotland, these organisations must consider factors for supporting enterprise development that are not often a part of their remit when they assist enterprise development in less impoverished areas.

Start-up and even small and medium enterprises in developed and stable economies face challenges, the most common of which include:

1. Access to business opportunities
2. Access to financing
3. Recruiting and retaining talented employees

In emerging economies, these challenges are intensified by the following:

- lack of critical mass in terms of skilled people
- brain drain as scarce skills leave to more advanced economies
- small local markets
- absence of appropriate funding mechanisms, specifically seed and start-up funding

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[11] MacRae, Donald (4 Nov 2006) "Going Public is Thwarting Enterprise" Sunday Herald (Online)

[12] *Taking Forward the Government Economic Strategy: A Discussion Paper on Tackling Poverty, Inequality and Deprivation in Scotland*, Scottish Government 2008.

[13] *Study on Poverty*, Scottish Parliament- The Information Centre, 99/7, 4 June 1999

[14] Capital Review Online: http://www.capitalreview.co.uk/economic_key_facts.html

- poor infrastructure and specifically ICT infrastructure
- balancing the political tensions of promoting economic wealth on the one hand, and poverty alleviation on the other
- divergent cultures: collectivism versus individualism; low tolerance of risk
- few entrepreneurial role models

Not only are resources (skills and investment) in short supply, but the culture of an emerging country can be such that it is "non-supportive" of entrepreneurs. Many of the emerging countries, and specifically those in Africa, have evolved from a previous imperialistic system and have incorporated many of the cultural traits from such earlier systems. For example as a former British Colony, South Africa's financial and investment sector has traditionally catered for the large multinational companies that have onerous risk management systems in place. The result is that this sector has not yet adapted to serving a "higher risk and more volatile" entrepreneurial community. Hence, entrepreneurs in emerging countries face even greater barriers in establishing new business than their counterparts in more developed nations. But even in developed economies such as the UK, not all regions have favourable environments in which to catalyze and grow successful businesses. Rural areas and those parts of urban areas which have lost their traditional bases of industry face challenges similar to other emerging countries and regions.

Governments world-wide have recognized the importance of the SME sector as a driver of economic wealth as well as a provider of jobs[15],[16]. This has seen the introduction of many initiatives by government to stimulate the SME sector, including the establishment of business and technology incubators. The number of business incubators globally is approximately 4000. In North America the number of incubators has increased from 12 in 1980 to approximately 1500 in 2007[17]. In the UK there are 270[18] (UKBI 2005). In Scotland there are 57 incubators, most of them serving the high tech sector and associated with university spin-out activity[19]. In South Africa where the incubation industry is less than a decade old, there are approximately 20 incubators.

The fact that a country has substantial resources—natural, academic, industrial, and technological, and which already has the capacity to produce high growth companies is often lost to the fact that these countries may also have populations suffering from unemployment, low education, and abject povert and vice versa. The expectations of governments of emerging economies are therefore very high in terms of incubators facilitating the establishment and growth of SMEs to address *both* wealth and job creation as a means to poverty alleviation. Managing these expectations whilst garnering the support of government is a tension that incubator manages as well as other enterprise development actors must address. As the vast

[15] Kesper, A. 18-20 Sepember 2000. *Failing or not aiming to grow? Manufacturing SMMEs and their contribution to employment growth in South Africa.* Trade and Industrial Policy Secretariat 2000 Annual Forum, Glenburn Lodge, Muldersdrift.

[16] Schramm, C.F. July/August 2004. *Building entrepreneurial economies.* Foreign Affairs (83) 4:104-115.

[17] NBIA (National Business Incubation Association). 2007. *Business Incubation Frequently asked questions.*

[18] UKBI (UK Business Incubation), 2005, *Mapping Survey.*

[19] *Scottish Innovation System: Actors, Roles, and Actions*, Scottish Government Publication, January 2006

majority (94%) of incubators are not-for-profit[20] sustaining them financially is a relevant issue. In emerging economies financial support for incubators competes with other development programmes that cater to a larger sector of the population. Politicians view themselves defending a relatively large investment into an incubator to service a relatively small number of companies versus spreading the investment such that it services multiple companies and a broader base of the population. Anecdotal data from established economies convincingly highlights the higher return resulting from investments in incubators rather than general business support schemes. However, as the incubation industry is still in a very early phase in emerging economies, supportive data from emerging economies is not yet readily available. In the absence of such data, anecdotal evidence and case studies are used to justify continuous governmental support of the incubators.

The role of STP environments during this phase is very important. If an STP can and does attract larger firms and growing SMEs, the STP can better provide a stable environment for an incubator to sustain itself long enough to grow young businesses and also accumulate the necessary quantitative data to demonstrate its own capacity to further economic development. Furthermore, very importantly, the STP can cross subsidize the incubator hence affording it the opportunity of eventually becoming financially independent of funding agencies and helping it reach a form of self-sustainability. The STP, whilst allowing the incubator to rely on its infrastructure, programmes and networks, and achieving economies of scale, frees up incubator human resources to focus on value adding activities for the incubator tenants. This includes developing appropriate programmes to broaden the funnel for deal flow, building the networks of appropriate service providers for the incubator tenants, and lobbying for appropriate funding and marketing opportunities for the tenants.

More specifically STPs can play an important role in supporting incubators in the following ways:

- creating a sense of excitement and opportunity for highly skilled citizens such that they remain in the country/region
- forming international linkages with other STPs and hereby facilitating access to foreign markets
- lobbying for seed funds
- providing state-of-the-art infrastructure including ICT infrastructure
- co-branding with the incubator and hence lending credibility to the stakeholders
- providing the social networking opportunities for the incubator tenants
- drawing the foot-traffic to the incubator, specifically decision makers in corporate companies
- running appropriate training programmes, suitable for start-up companies
- attracting service providers to offer pro-bono services
- developing and running programmes to address emerging economy issues, hence whilst preserving the integrity of the incubator, simultaneously meeting poverty alleviation expectations
- celebrating entrepreneurial role models – including from established companies.

Specifically in an emerging economy where reliable power supply and IT connectivity are not necessarily a given, an STP that provides a reliable and professional facility is hugely attractive

[20] NBIA. 2007. *Business Incubation Frequently asked questions.*

for hosting an incubator. It not only provides the much needed reliable infrastructure, but lends international visibility and credibility to the incubator whilst offering a host of synergistic services and programmes.

The next section will discuss four programmes, two in South Africa in the "Pretoria" region and two in Scotland, in the "Glasgow" region. We will first look at two programmes that have been developed by The Innovation Hub (TIH), South Africa's only IASP accredited Science Park and which is based in Pretoria, Gauteng (the very economically active province responsible for 34% of South Africa's GDP) to address the joint objectives of wealth creation as well as poverty alleviation via upliftment of the people of South Africa. We will then look at two different enterprise development activities in the Renfrewshire and Dumbartonshire regions of Scotland that are situated outside of STPs. One of these is a high technology, high growth business incubator called the Hillington Innovation Centre. The other is a business support organization that encourages enterprise development among those who have been unemployed for many years. By comparing these Scottish and South African experiences, we hope to suggest implications for understanding the challenges inherent not only to developing nations, but to developing, or re-emerging economies in developed nations and to suggest possible ways for governments to consider policy in terms of their need to develop wealth and alleviate poverty simultaneously.

South African Case Studies

1. The Innovation Hub's CoachLab Leadership Development Programme

Because of the severe skills shortage of knowledge workers in South Africa, as well as the pressure on graduates having completed their tertiary education to find employment and support their family that had enabled them to further their qualifications, there is a strong tendency for graduates to take up formal employment after completing their undergraduate degrees rather than register for postgraduate studies. The long term effect of this is that the industry leaders of the future will not necessarily have "deep" technical knowledge of a subject, but will need to rely solely on experiential learning. In an attempt to address this challenge, a programme was developed at The Innovation Hub called the CoachLab Leadership Development Programme.

The CoachLab Programme (www.coachlab.co.za) is managed by TIH, and is funded by both the private sector and government. The facility is situated in the Maxum Business Incubator and hence it is positioned in a very entrepreneurial environment. Private companies join the programme as partners and provide projects, technical mentorship and funding. Postgraduate students are recruited from the three local universities, and are employed to spend 25 hours per week working on company projects. The students receive a stipend and a bursary which enables them to gain valuable industry experience, whilst being able to afford postgraduate studies. The universities benefit as they manage to retain postgraduates for which they receive subsidies. The programme creates an additional platform for the academics to build relationships with industry. Industry benefits from their opportunity to do due diligence on prospective employees whilst young talent brings fresh ideas for new product development. The programme has grown to accommodating 19 students annually (mainly information and communications and electronic engineering students). New developments include identifying a flagship project that will have national impact by engaging all students and partnering companies/organizations; as and

broadening the reach by starting a CoachLab in Johannesburg to offer similar opportunities to students from Johannesburg-based universities.

Although this programme produces intrapreneurs rather than entrepreneurs, it goes some way to producing the much needed leaders of the future. There is a strong bias for PDI's (previously disadvantaged individuals i.e. people of colour) and the programme has been very successful in attracting top talent, mostly from disadvantaged backgrounds, and successfully preparing them for leadership positions. 87 postgraduates have benefited from this programme during the period 2001 – 2007. Examples of the fast track to leadership positions is evidenced by past candidates: Patrick Nyelisani and Gerrit Geertsema who after graduating from CoachLab in 2005, joined Cisco as systems engineering interns and were sent to Amsterdam for twelve months to train as Associate Systems Engineers. After completing this course they returned to South Africa and currently occupy positions with Cisco as Systems Engineers. Gerrit was nominated number 1 of the 86 engineering trainees from all over the world on the training course in 2006. Another CoachLab graduate, Mape Modiba (2004 intake), worked as a SAP consultant for 2 years and has recently been promoted to Business Development Executive of Epi-Use Africa.

This programme has been very successful in creating young graduate role models who interact with their fellow-students and create a sense of pride and achievement. The programme is furthermore, a show-case to government in terms of transformational leadership development and the development of a new cadre of industry leaders. Government stakeholders and sponsors are impressed by the stature of the CoachLab graduates and the number of graduates successfully completing this programme annually. The CoachLab has been so successful in creating employment opportunities for its postgraduates that it has, in 2008, been recognized by the Department of Labour as an Institute of Sectoral or Occupational Excellence, with an indication by the agent of the Department, the Isett Seta, that it will consider resources required by the CoachLab to improve and grow the programme. Hence the CoachLab programme helps to meet the needs and expectations in terms of quantitative delivery and particularly in the area of scarce skills development.

2. Maxum Business Incubator at The Innovation Hub

Maxum (www.maxum.co.za) is a programme of The Innovation Hub Science Park and its role is to create an enabling environment where start-ups from the knowledge-intensive sectors, including information and communications technology, biosciences, electronics, energy and the sustainable environment, and advanced manufacturing and materials, are fast-tracked to compete internationally. Maxum offers safe and secure office space; flexible leases; comprehensive ICT infrastructure; receptionist; advice from business mentors; venture capitalists and legal professionals; networking events; facilitated access to funding; media exposure and brand support; and state-of –the art meeting, restaurant and catering facilities. Maxum was started in 2001 having 5 companies. As at March 2008 it has assisted 45 companies of which 13 companies have successfully graduated from the programme. 11 companies exited early from the programme for various reasons, but have benefited from the programme and are all still in operation. These companies have created close to 250 new jobs. Maxum boasts a success rate of in excess of 75%, i.e. 75% of the businesses it has supported are still successfully operating.

Because Maxum focuses on assisting high growth companies, one of the entry criteria is that the company must be developing technologically innovative products or services. In a country with a population of more than 47 million citizens, the total number of school leavers is 347 184[21] and those having maths and science as final year subjects and meeting the university entrance requirement for science and engineering is only 32 112 and 45 652 respectively[22]. Furthermore in South Africa the industry is in critical need of knowledge workers specifically those having science and engineering undergraduate degrees. In 2005 the number of graduates in this category was 33 551[15]. Hence it is this very small pool of science, engineering and technology graduates that produces the feedstock of entrepreneurs developing high tech products and services. Apart from this small pool of students, reaching entrepreneurs via print/the media/presentations is challenging as entrepreneurs are in many cases relatively inaccessible, electing, often, to work from home, therefore, running programmes that attract entrepreneurs and add value to their businesses is very important for raising the profile of the incubator and making entrepreneurs aware of the services that they could access by being part of the incubation programme.

"Money talks" and entrepreneurs are usually very responsive to offers of funding or assistance in creating market opportunities that will grow their businesses. For this reason Maxum partnered with The Meridian International Center (Washington, DC), University of Maryland-Baltimore County's Center for Women in Information Technology (Baltimore, Maryland), and submitted a proposal to the Office of Citizen Exchanges, Bureau of Educational and Cultural Affairs, U.S. Department of State to fund a programme designed to empower South African women ICT entrepreneurs. An invitation to participate in this programme was distributed via various women's networks and 61 applications were received. 12 candidates were finally appointed whose businesses range from cutting edge software development to hardware distributors. Urban entrepreneurs and rural entrepreneurs have been included in the final group – but all businesses are ICT or ICT-enabled businesses.

The 12 successful candidates will participate in this programme that will expose them to training and experiential learning via shadowing successful entrepreneurs, in the US, and follow-up mentorship in South Africa on their return. A partnership has been established with a Cape Town based incubator, CITI's Bandwidth Barn, to assist with the mentorship of the Cape Town based companies. After a period of approximately 6 months the US trainers will return to South Africa and regional workshops will be held to expose a broader audience to the experiences of the participants, and to share the learning. In this way a core group will be established who should have a positive ripple effect on a much broader audience in terms of learning and role models. Furthermore, as candidates were selected not only on their business prowness but also on the contribution they intend making in their respective communities, it is anticipated that there will be a very positive knock-on effect in the communities where they are operational.

Not only did the image of the science park influence the lobbying effort for the funds, but the institutional support is important in running a programme that is very human resource intensive. The networks of the science park (TIH) further play an important role in the dissemination of the learning from the programme to reach a much wider audience.

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[21] Department of Education (South Africa). December 2005. *Report on the 2005 Senior Certificate Examinations*.

[22] 2005 HEMIS database. September 2006.

In the case of Maxum, it is not only the tenant companies that benefit from the services offered, but also companies that might not meet the stringent programme entry criteria but are nevertheless operating in the same industries as those supported by Maxum. Hence Maxum has a broader reach in terms of the services it delivers to entrepreneurs, as well as a mechanism of assisting relatively non-innovative startup businesses, but businesses that are nonetheless having a large impact in their local communities. TIH as an STP has played an instrumental role in making this possible.

To conclude, in emerging countries, because of the multiple challenges facing these societies ranging from survivalistic existence to exploitation of wealth creating opportunities, tensions exist and there can be no singular focus. Incubators need to demonstrate their relevance to both economic wealth creation as well as to poverty alleviation and evidence of such is often required to ensure their continued existence. STPs in emerging countries and economies can demonstrate their relevance and impact by designing programmes that address both wealth creation and poverty alleviation

Scottish Case Studies

1. In Biz

Whilst most of the enterprise development support in Scotland has been focused on high tech incubation and support for SMEs, there are several organisations and initiatives that recognize the benefit of bringing the opportunity of business start-ups to areas of Scotland which struggle with issues of either remoteness, or deprivation, or both. The areas known as the Highlands and Islands (H&I), especially the Orkney and Shetland islands, include regions that have some of the lowest unemployment rates combined with some of the most highly educated inhabitants, but simultaneously suffer from a lack of resources, remoteness, and a brain drain. The H&I include some 400,000 of Scotland's population of 5 million.

City regions around Glasgow and parts of Edinburgh make up what is considered one of the EU's poorest regions[23].

In Glasgow, the unemployment rate, or "employment deprived" rate is 23%. Other regions of Scotland have unemployment or poverty level incomes ranging between 8 and 18%[24].

In these areas, people have more choices for employment, but those who have been out of work for more than 6 to 12 months may have lost significant motivation to work or they do not have the skills necessary to take on work. In the poorest areas, alcohol and drug abuse may impact one's ability to function and work properly and social peer pressures may actually discourage some individuals from seeking work or starting an enterprise because they may be looked upon as attempting to be better than their peers. This is a phenomenon that we see in impoverished areas throughout the world, not just in Scotland and it is one that proves challenging to government and private support organisations seeking to improve opportunities for enterprise development and employability.

Recognizing that the traditional microenterprise centers and technology incubators did not cater to the special needs of H&I inhabitants and those living in deprived areas, In Biz was created to serve not only those who traditionally seek business support, but also those who require special training and monitoring to help ensure greater success in their business or organisation.

InBiz was established originally in 1990. In 2006 Avanta Enterprises Ltd. was created as a holding company to facilitate the merger between InBiz and a 23 year old training and recruiting company called TNG to form a private service company to support start-ups, microenterprises, and even some SMEs as a way to support economic development initiatives and encourage new business development and new employment opportunities. After nearly three years in service, InBiz has offices in 33 locations throughout the UK. In Scotland, the Clydebank office serves clients who contact them directly or who come on reference from job centres, the local chambers of commerce, municipal offices, or word of mouth. After just a year in operation, InBiz Clydebank is sharing the same kinds of success stories their other offices have been able to tell.

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[23] BBC World News Thursday, 20 November, 2003, 16:33 GMT

[24] *Study on Poverty*, Scottish Parliament- The Information Centre, 99/7, 4 June 1999

Through the relating of success stories in online and offline newsletters and through regular feedback and public gratitude expressed to those who make referrals, InBiz is able to market itself successfully and secure new clients.

Alison Nimmo, who heads up the Clydebank office describes the West Dumbartonshire area as one of Scotland's most deprived areas. "Fifteen years ago, the region saw the end of a long era of shipbuilding. Singer sewing company also closed, letting go of more than 8000 people with no work to turn to. Our job has been to rebuild confidence among people who have been out of work for not just months, but for many years"[25].

And re-employment is not simple. Many factors impact poverty. Murdo Fraser, the Scottish Conservatives' enterprise spokesman, has described multiple causes of deprivation including "poverty, lack of confidence, family breakdown, substance abuse, inadequate housing, low educational standards and poor health." [26]

To address joblessness, particularly the long-term unemployed, InBiz "links with The Prince's Scottish Youth Business Trust (PSYBT) *(see Appendix),* Business Gateway, Local Authorities, other local training providers to support clients into self employment. Support is in the form of start up grants, low interest loan schemes, small pots of money to help buy equipment / marketing promotional materials, etc and we also link with local providers such as Lifeskills and Shaw Trust to gain support for our clients once they are fully self employment – via 'into work schemes'." [18] These schemes are designed to work with many of the factors described by Fraser especially lack of confidence, skills, and supportive family structures.

In the past 3 years, InBiz has supported 8,749 people into successful, sustainable business of which:

- 22% (1882) were people with a disability
- 9% (777) were from an ethnic minority
- 26% (2236) were women
- 8%(686) were lone parents

These businesses alone have contributed over £179/$361 million to local and national economies, created over 285 extra jobs and paid over £30 million in taxes and national insurance to the exchequer.

Of the businesses assisted by InBiz, 76% of them are still successful after three years. This success is attributable to effective business assistance as well as a programme of on-going and persistent follow up for three to three and a half years following start-up.

InBiz serves a breadth of individuals who qualify for support. Based on an intiative called the New Deal for the Long-term unemployed which was started in 1998, InBiz follows rules established by the initiative which seek to provide attention to:

- Unemployed people with disabilities aged 18 and over

[25] Nimmo, A. (29 February 2008) In-depth telephone interview with Allison Nimmo, director of business development for InBiz, Clydebank Office.

[26] BBC News Scotland (17 October 2006) "Study Shows Most Deprived Areas" (Report from Scottish Executive quoted)

- Ex-offenders who have served a custodial sentence
- Homeless people
- People recovering from drink, drug or substance abuse
- Refugees (those with permission to claim JSA-Job Seeker's Allowance).
- Unemployed people with literacy and numeric needs
- Unemployed people for whom English is not their first language
- Participants who qualify for New Deal for Lone Parents
- Participants who qualify for New Deal for Disabled People
- Partners of people continuously unemployed for 26 weeks
- Ex-regulars of HM Forces
- Those affected by large scale redundancies

InBiz has likely learned a great deal from the more than 25 year history of formal business incubation practices. Nimmo shares the same passion for start-up support that many incubator managers have and whilst InBiz clients are not located on site, the InBiz client server center maintains close contact with their clients well beyond the initial, intensive 6-month start-up phase. Nimmo described a recent situation where a female client was fully established in her business and selling product in November 2007, just months after consulting InBiz about starting her business. She encountered some "red-tape" after the first of the year, however, and Nimmo feels that had client services not checked-in to see how she was faring, she would likely have failed to get over the hurdles that she faced. Virtual or not, clients need care and follow-up until they have reached a stage where they have overcome not only traditional business start-up challenges, but also other challenges that plague individuals who are a product of an impoverished region.

Not all individuals qualify to start businesses, but the InBiz programme seeks to bring them to the table to discuss the possibilities.

In addition to what might be considered virtual incubation services, InBiz a full 26 weeks of "test trading" whereby companies are guided and coached through business trading events to ensure that they understand the sales cycles and processes, from beginning to end. If the business owner(s) lack skills or training we seek funding from the Prince's Scottish Youth Business Trust (PSYBT).

Important to the success of InBiz and to their clients are rules that are also tailored to the needs and issues relevant to individuals struggling in an emerging economy. At InBiz clients must follow rules that are not typical of your average technology business incubator:

- 30 hours of business activity is required each week (excluding meal breaks)
- Weekly time sheets must be completed
- Regular review meetings with the client's Business Consultant must be attended
- Any money generated by the business will be paid into a business bank account. Only legitimate business expenses can be withdrawn
- Clients do not have to 'sign on' at the Job Centre

With a range of government initiatives in place to back their programme, InBiz hopes to see even greater successes with their enterprise development programme as it evolves.

2. Hillington Innovation Centre

Innovation Centres Scotland (ICS) is a company that operates two high growth business incubation centres in Scotland, one in Alba, Livingston, and the other in Hillington just minutes west of downtown Glasgow. Within the region of the Hillington Innovation Centre are Strathclyde University, University of Glasgow, and University of the West of Scotland in addition to numerous other colleges and institutes. Many of the companies started at Hillington are based on product and technology developments initiated at Strathclyde and the University of Glasgow.

The Hillington Innovation Centre (HIC) is a public-private partnership supported in part by the European Union, Scottish Enterprises *(see Appendix)*. Hillington Innovation Centre is located within a traditional business park on the principal motorway going west from Glasgow and just 10 minutes from Glasgow International Airport. The park, called MEPC, partnered with the local Scottish Enterprises organisation to support the creation of HIC as a means to attract more technology and innovation companies to the west side of Glasgow and to supply a pipeline of companies that might remain in the park.

Founded in 2002, HIC is truly one of the most successful incubator programmes in Europe. It has already incubated 107 companies which have hired over 1000 employees. Since December 2007, eight new companies have launched in the space bringing the total active incubatees to 38.

One might argue that HIC has striven to bring the best of best practice to bear on their operations and have managed to tailor a programme that is ideally suited to the needs of its clients, the region, and the incubator itself.

The HIC website (www.innovationcentre.org) describes their offer by saying that "The Centre aims to support companies by providing accommodation which help enhance *growth, creativity, customer satisfaction and market share both nationally and internationally* (our emphasis). The Innovation Centre offers high quality, modern accommodation on flexible terms under a license to occupy for a single monthly fee. We have a range of offices for 1-8 persons with suites furnished to a very high standard with telephone and high speed internet access."

HIC offers a breadth of virtual services and is relatively strict about its admissions process. Both Strathclyde and the University of Glasgow support their own incubators as well, but the university-based incubators operate under a different and perhaps more flexible model than HIC. Companies that come into HIC are expected to accelerate at even faster rates than their university counterparts and in spite of an attractive, open and creative environment, the professionalism and competitiveness is palpable in the centre. This level of incubation "discipline" helps to guarantee the long-term success of fast-growing technology-based start-ups.

HIC is a state-of-the-art high growth technology incubator that depends on much of its client base from the local universities. Yet whilst HIC does not see itself as having a direct role in solving job creation to alleviate poverty, the centre is engaging in dialogues that will likely serve to generate more interest in the future among enterprise development officials to seek ways to understand the interplay of organisations in order to solve the needs for both job and wealth creation.

In March of 2008, HIC hosted a day-long seminar attended by Peter Harman, Executive Director of UKBI, and by international guests as well in order to discuss, among other things, the economic development

agenda in Scotland and the relationship between economic development and business development. Revisiting the role of incubators and science and technology enterprise development schemes in economic development today is important if regions expect to create wealth whilst alleviating poverty. Implied in the discussions proposed by the March seminar at Hillington, and in this study, is the fact that traditional technology incubators and science parks have matured over the last 20+ years to a level of proficiency, efficiency and know-how that now "allows" them the opportunity to work beyond their wealth-generating walls by sharing their learning and expertise with the broader community. Through greater synergies between organizations or schemes traditionally focused on either wealth-generation OR poverty and joblessness (but often using the same public and private funding), regions may actually be able to leverage the capacities that we all have gained in this business of "knowledge-transfer."

Conclusion

When Innovation Systems were first contemplated, they described the function of learning and innovation processes in the context of economic development[27], [28]. STPs have played an important role over the last 40 years in promoting interaction between academia and industry to catalyse technology innovation, knowledge transfer, and commercialization as a means to increased competitiveness and growth. During this time, traditional business development organisations such as chambers of commerce, regional development agencies, manufacturing support centers, and private development consultants have evolved as they re-invent their own roles in the context of what is popularly referred to as the triple helix,[29] where the synergies between government, academia and industry, among others, are optimized for economic growth and development.

In South Africa, The Innovation Hub, driven by the needs of the province to foster growth as well as to alleviate poverty, has integrated its services in such a way that these two, often disparate objectives are addressed. This is evidenced in the programmes it develops and runs (two of which have been discussed in this paper). It is clear that a "double objective" guides the STP strategy and ensures its relevance in an emerging economy that has multiple demands on its institutions.

In Scotland and in other developed nations, policies related to innovation systems have tended to focus on the academic and industry relationships that foster high growth through knowledge and technology assuming that the effects of this activity would somehow "spill" over into other aspects of the economy. So whilst STPs and business incubators are described in the Scottish Innovation System as responsible for "technology diffusion"[30], STPs and their related incubators in Scotland do not see their activities or remits directly related to the policies that might seek to solve poverty alleviation through job creation.

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[27] Edquist, C. 2004 'Systems of Innovation – A Critical Review of The State of the Art' in *Handbook of Innovation*, Fagerberg, J Mowery, D and Nelson, R Oxford University Press, 2004

[28] Lundvall, B-Å. Ed. 1992. *National Systems of Innovation: Towards a Theory of Innovation and Interactive learning*, London: Pinter.

[29] Etzkowitz, H.and Leydesdorff, L. (1997). *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations*. London and Washington: Pinter.

[30] *Scottish Innovation System: Actors, Roles, and Actions*, Scottish Government Publication, January 2006

"Very different factors are likely to determine the extent to which Scotland benefits from pure knowledge spillovers from R&D investments, which are usually said to depend on the frequency of face-to-face contacts, and intentional and unintentional 'leakages' of knowledge from one organisation to another. Empirical evidence on pure knowledge spillovers is indirect, however, with the effects weakest in very small regions. Evidence from the US, however, suggests that Scotland is large enough geographically to capture a significant proportion of the innovation spillovers from university R&D. Specifically, in the US, spillovers from university research have a positive impact on levels of innovation in firms up to 75 miles from the location of the university[31]." Given that a fifth of Scotland's population is spread out in areas much farther than 75 miles from universities that support business development initiatives, it is unlikely that remote regions will benefit from the kind of STP support that benefits the Pretoria or even Glasgow regions. Nonetheless, the recognition that programmes tied to national innovation systems have a direct role to play in wealth, job creation, and poverty alleviation should lead to a clearer understanding by actors in government, academia, and industry as to how they can work together to impact change.

[31] *Scottish Innovation System: Actors, Roles, and Actions*, Scottish Government Publication, January 2006

Bibliography:

2005 HEMIS database. September 2006.

BBC News Scotland (17 October 2006) "Study Shows Most Deprived Areas" (Report from Scottish Executive quoted)

BBC World News Thursday, 20 November, 2003, 16:33 GMT

Capital Review Online: http://www.capitalreview.co.uk/economic_key_facts.html

Department of Education (South Africa). December 2005. *Report on the 2005 Senior Certificate Examinations*.

Edquist, C. 2004 'Systems of Innovation – A Critical Review of The State of the Art' in *Handbook of Innovation*, Fagerberg, J Mowery, D and Nelson, R Oxford University Press, 2004

Etzkowitz, H.and Leydesdorff, L. (1997). *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations*. London and Washington: Pinter.

Heakel,R., 2003. *What is an Emerging Market Economy?,* Investopedia http://www.investopedia.com/articles/03/073003.asp

Income and expenditure of households 2005/2006: Analysis of results. Statistics South Africa.

Kesper, A. 18-20 Sepember 2000. *Failing or not aiming to grow? Manufacturing SMMEs and their contribution to employment growth in South Africa*. Trade and Industrial Policy Secretariat 2000 Annual Forum, Glenburn Lodge, Muldersdrift.

Kotkin, S. May 6, 2007. *First World, Third World (Maybe Not in That Order),* New York Times Book Review.

Lundvall, B-Å. Ed. 1992. *National Systems of Innovation: Towards a Theory of Innovation and Interactive learning*, London: Pinter.

Maas, G. and Herrington, M. 2006. *Global Entrepreneurship Monitor South African Report*. University of Cape Town.

MacRae, Donald (4 Nov 2006) "Going Public is Thwarting Enterprise" Sunday Herald (Online)

NBIA (National Business Incubation Association). 2007. *Business Incubation Frequently asked questions*.

Nimmo, A. (29 February 2008) In-depth telephone interview with Allison Nimmo, director of business development for InBiz, Clydebank Office.

Roper, S. and Love, J. (2006) *Scottish Innovation System: Actors, Roles, and Actions*, Aston Business School and Cardiff University.

Schramm, C.F. July/August 2004. *Building entrepreneurial economies*. Foreign Affairs (83) 4:104-115.

Scottish Innovation System: Actors, Roles, and Actions, Scottish Government Publication, January 2006

Scottish Key Facts, January 2008, Scottish Enterprises: Knowledge Exchange

Selected Statistics on African Countries. 2007. Part 1 – Cross Country Tables - Macroeconomic Indicators.

Statistics South Africa. March 2007. http://www.statssa.gov.za/publications/statskeyfindings.

Study on Poverty, Scottish Parliament- The Information Centre, 99/7, 4 June 1999

Taking Forward the Government Economic Strategy: A Discussion Paper on Tackling Poverty, Inequality and Deprivation in Scotland, Scottish Government 2008.

UKBI (UK Business Incubation), 2005, *Mapping Survey*.

Working age population from General Register Office for Scotland 2001 Census (SIMD 2004) and SAPE 2004 (SIMD 2006)

Appendix:

The Prince's Scottish Youth Business Trust (PSYBT)

Students in Scotland's high schools are tending to drop out earlier and earlier. While there is much discussion and controversy today regarding requisite apprenticeship programmes, the PSYBT plays an important and concrete role in the development of enterprise by young adults.

Started in 2002, the PSYBT offers loans and start up funding to individuals between 18 and 25 and to disabled individuals between 26 and 30. Their contributions include test market grants of 250£, special grants up to 1000£ and low interest loans (around 3%) up to 5000£. Special development funds are also available for up to 25000£.

What is unique to the PSYBT is its strong team of volunteers who serve as start-up advisers, mentors, aftercare advisers and even as business angels or fund seekers. In the Paisley office for the PSYBT, 40 volunteers provide service and support to one of the countries most impoverished areas.

In addition to the financial support, the PSYBT offers:

- Access to pre-start training and advice
- A business advisor for at least two years
- Book Keeping training and a free book keeping system
- Access to business competitions
- Opportunities to attend exhibitions
- PR opportunities
- Networking opportunities with other young businesses

The PSYBT funding is guaranteed in part by the European Investment Fund. PSYBT also participates in Youth Business International, a world-wide network of programmes like PSYBT that work to help younger disadvantaged men and women become entrepreneurs through specially targeted training and relevant funding. (The PSYBT's equivalent in South Africa is the Nations Trust Youth Enterprise Finance (TNTYEF) which is known today as the Umsobomvu Youth Fund (http://www.youthportal.org.za).

Headquartered in the City of Glasgow, the PSYBT has 18 regional offices as well. As of May 2007, "PSYBT has assisted 9,479 young people who have started 7,997 businesses - 80% have traded beyond one year and 53% beyond three years. Over £28.68m has been awarded, 88.9% of which is in the form of low cost loans and 39% of the young people assisted are women. The annual turnover of PSYBT supported businesses is over £80m." (http://www.psybt.org.uk/AboutUs.aspx)

Scottish Enterprises

Today, Scottish Enterprises, Scotland's main economic development agency, provides its own mentorship and business support schemes. It supports enterprise development through its "Business Gateway". Through a network of storefront offices, Business Gateway is the equivalent of many countries' business development service office and assists with more traditional business support

schemes, but also lends time and talent and referrals to both the PSYBT and to InBiz. On 1 April 2008, the Business Gateway programme will be disaggregated from Scottish Enterprises and transferred to local governments who will take up responsibility for local development with the expertise that has evolved through the regional and national programme.

It is anticipated that programmes such as InBiz, PSYBT, and the expanding localization of Business Gateways throughout rural Scotland and the Highlands and Islands will together form an even strong network of social enterprise system that will serve to catalyze the emergence of those impoverished regions of Scotland where there is no difference between life in developed and what we used to refer to as “undeveloped” nations.