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Knowledge-based Entrepreneurship and Innovation for a Prosperous Wales

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Executive summary

Business entrepreneurs are at the heart of a dynamic, knowledge based economy. Understanding the early stages of business growth is critical to the development of a thriving economy. However defined, the rate of entrepreneurship in Wales consistently lags behind most regions of the UK. This policy brief reviews the connection between entrepreneurial activity and socio-economic prosperity and discusses existing evidence on the recent policy approaches to develop knowledge based entrepreneurship in Wales. The most important dimensions of entrepreneurship for achieving growth are identified as being innovation-active and having a skilled workforce. The brief also calls attention to the fact that policies need to address the various phases of entrepreneurial development, and more importantly, evaluate the impact of the programmes, developing new measures and evaluation processes where appropriate.

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Sustainable economic growth in Wales will require, among other things, efforts to develop its productive capacities, enterprise development and innovation

In the aftermath of the economic recession, it has become clear that faster and more sustainable economic growth in devolved regions will require, among other things, increased efforts to develop their domestic productive capacities, especially in the light of upcoming cuts to the public sector. This should lead to the creation of more productive employment and enable significant poverty reduction, leading to socio-economic development. Wales is consistently lagging behind its national and international peers, causing concerns amongst policy makers who recognise the importance of entrepreneurs as drivers of economic development. Government policies aimed at reinforcing domestic productive capacities have tried to address the interrelated issues of enterprise development and innovation. The recent Economic Renewal Plan from the Welsh Assembly Government (WAG) reiterates the inherent challenges and opportunities and aims to encourage enterprise development and innovation by focussing on high quality and sustainable infrastructure, broadening and deepening the skills base and providing targeted business support.

Dynamic economies have long been associated with a flow of innovative ideas from entrepreneurs, evaluated by a mature financial community and subject to demand-led scrutiny in a free market.ⁱ Entrepreneurship - the creation of new businesses - exerts competitive pressure on existing firms and markets which should lead to reduced costs and better quality products and services in the economy. There is also a consensus that 'knowledge' is increasingly important to competitiveness. One problem facing peripheral regions is that they lack an industrial base which is strongly knowledge-oriented. This is a consequence of a host of factors – the dominance of branch-plants, particularly in heavy manufacturing and amongst foreign owned plants, a tendency towards older manufacturing industries, and the lack of a dynamic knowledge-intensive business service sector. As governments seek to promote knowledge-based national economic competitiveness within tightening budgets, promoting entrepreneurs is a highly attractive policy option.

It is not only the level but also the quality, type, potential and sustainability of entrepreneurship that makes the difference

A higher degree of entrepreneurship does not, however, guarantee enhanced economic performance or faster rates of economic growth.ⁱⁱ Self employment may be seen as an employer of last resort. "Need-based" entrepreneurship is particularly prevalent in remote,

developing economies but will typically not contribute substantially to growth. Moreover, truly significant contributions are thought to be made by the fast growing “gazelle” firmsⁱⁱⁱ rather than newly founded firms in general, given their relatively low survival and growth rates. That is, it is not only the level but also the quality of entrepreneurship that makes the difference. Such entrepreneurship is frequently associated with technologically and/or organizationally innovative activities.

Innovative entrepreneurship affects the economy at three levels: at the aggregate level (by creating new jobs, increasing income, and raising the potential for new investments), at the consumer level (by providing improved/alternative products and services, and possibly at a lower cost), and at the firm level (by providing cost advantages and also facilitating further adoption of innovations). The distinguishing elements of this kind of entrepreneurship are novelty and dynamism. The creation of economically relevant knowledge and the availability of dynamic entrepreneurship must be aligned in order for new knowledge to have maximum impact on a region’s growth path.

Both entrepreneurship and innovation are associated with ‘doing something new’. The early work of Schumpeter established “entrepreneur as an innovator” as a key figure in driving economic development. The innovative activity of entrepreneurs feeds a “creative destruction” process by causing constant turbulence to an economic system in equilibrium, creating opportunities for economic rent and reallocating resources from less to more efficient uses. In adjusting to equilibrium, other innovations are spun-off and more entrepreneurs enter the economy. In this way, Schumpeter predicted entrepreneurs drive economic growth.

Knowledge, embodied in people and technology has always been central to economic development and social well-being. In recent decades its importance has grown, as OECD economies have become more dependent on the production, distribution and use of knowledge. Technological innovation has always been underpinned by knowledge, but the increased emphasis on the knowledge economy requires a high proportion of knowledge-intensive entrepreneurial activity and substantial intangible capital.^{iv} However, the knowledge economy is not confined to high-technology industries and ICT services only, but pervades all sectors of market economies.^v

Investment in knowledge generation (i.e. R&D) will not automatically lead to economic growth. New knowledge does not always result in new economic activity. It is (a) the thickness of the “knowledge filter” (the sum of the barriers in converting research into commercialized knowledge) which determines the conversion of general knowledge to

economically useful knowledge, and (b) the presence of a transformative mechanism such as entrepreneurship that determines the effectiveness of the conversion of knowledge into economic activity.^{vi} Both the filter and the mechanism vary over time and depend on institutional conditions, cultural factors and the prevailing intellectual climate.

Entrepreneurship has a number of phases and types and faces different challenges in each

Entrepreneurship is multifaceted in nature and therefore difficult to define simply. It has a number of phases and types. Self employment is individual entrepreneurial activity, but captures low level, need-based entrepreneurship (such as hairdressing and taxi driving) which is unlikely to be growth enhancing. Measuring firm entry will not necessarily capture all entrepreneurial activity as only firms that grow beyond a certain threshold will be included. Whichever measures is used, there will be limited comparability across regions and countries because of differences in institutional arrangements (e.g., cut off points), definitions and industrial structures. The Global Entrepreneurial Monitor (GEM) constructs a composite measure of Total Entrepreneurial Activity (TEA) which is based on a survey of start-up activity and new businesses surviving the start-up phase.^{vii} Whilst it is clear there is no single agreed measure of entrepreneurship at the international level, the OECD (2009) also suggests that estimates of the share of high growth or dynamic firms might be informative. These various measures of entrepreneurial activity are highly correlated with one another.

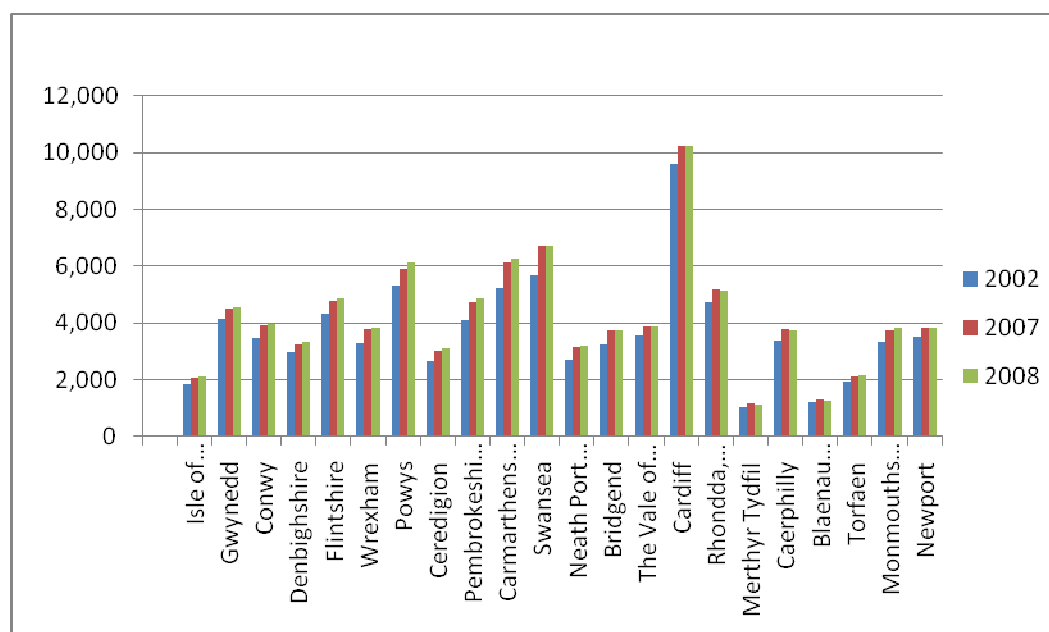
Our analysis mainly focuses on start-ups which, despite limitations is a widely used and easily understood proxy for entrepreneurship. Regional measures of firm start-ups show that Wales has one of the lowest rates of firm entry in the UK, second only to the North East of England. A further break-down of entry and exit in Wales is provided in the following section.

Wales experiences reasonable rates of TEA but performs less well if we measure entrepreneurship as firm start ups

Wales begins from a relatively poor economic position compared to the rest of the UK. It has low GDP per head and was recently ranked the lowest of all UK regions in terms of competitiveness.^{viii} We are therefore unlikely to see high levels of entrepreneurial activity and indeed what activity there is, is likely to be more need-based in nature. Figure 1 shows

the stock of enterprises in each local authority area in Wales. We see that Cardiff is by far the largest unitary authority (UA) in terms of the number of enterprises. Merthyr Tydfil and Blaenau Gwent are the UAs with the smallest number of enterprise. Over the 6-year period the absolute variation in number of enterprises has not changed dramatically, although these have increased in all UAs.

Figure 1: Active enterprises by local authority in Wales



Source: Stats Wales, WAG

Table 1 contains the rate at which firms enter and exit by Welsh UA. Entry and exit account for on average around 10 per cent of active enterprises in most UAs, and largely cancel each other out. Thus, churn is quite high, but the net change in the number of enterprises (cf. Figure 1) is not dramatic over time. From a social perspective, a high rate of churn for the sake of it is not necessarily desirable. Entry rates seem consistently low in Ceredigion (<10 in all 3 years), Pembrokeshire, Carmarthenshire, Conwy and Gwynedd (<10 in 2 of the years), although exits also tend to be lower in such areas. This clearly suggests an urban-rural divide in terms of churn.

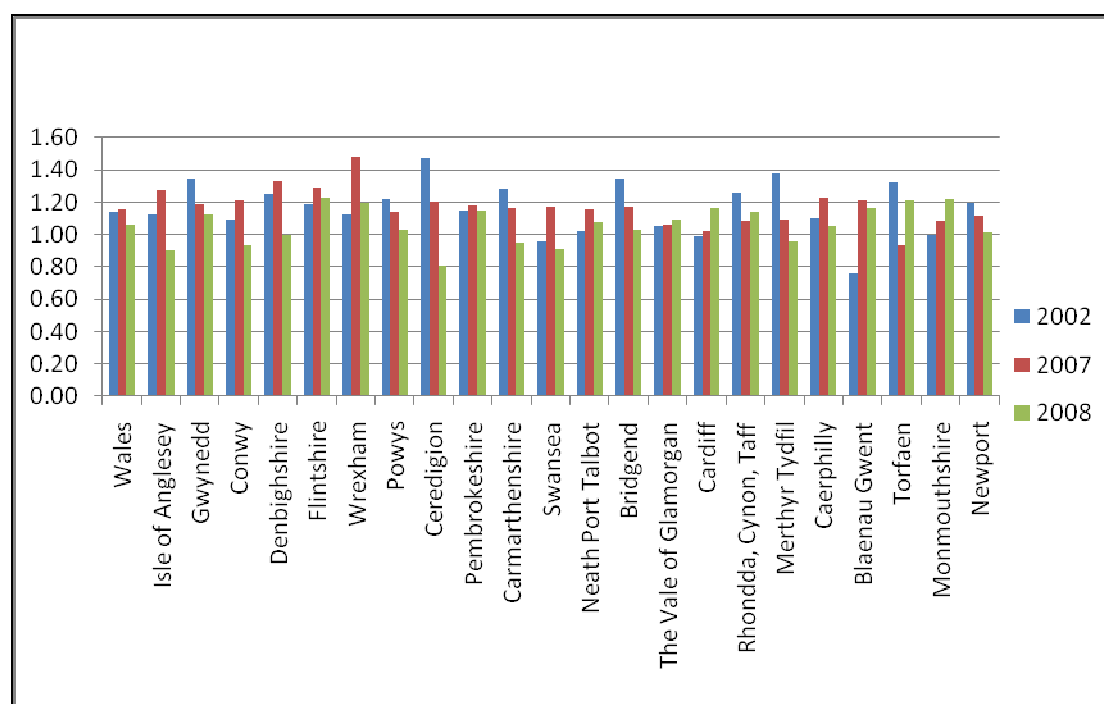
Table 1: Entry and Exit Rates in Local Authorities in Wales, 2002, 2007 and 2008

	rate of entry (% active enterprises)			rate of exit (% active enterprises)		
	2002	2007	2008	2002	2007	2008
Isle of Anglesey	11.1	10.9	10.1	9.7	9.4	9.5
Gwynedd	9.8	11.2	8.9	8.7	8.8	9.8
Conwy	10.7	9.8	9.1	7.9	8.3	8.1
Denbighshire	10.0	10.8	9.1	9.1	8.9	9.8
Flintshire	11.0	11.2	10.1	8.8	8.4	10.1
Wrexham	11.1	12.2	10.7	9.4	9.4	8.8
Powys	9.9	12.2	10.6	8.8	8.2	8.9
Ceredigion	9.5	8.9	8.0	7.8	7.8	7.7
Pembrokeshire	11.1	8.9	7.4	7.5	7.4	9.1
Cardiff	10.5	9.9	9.7	9.1	8.4	8.4
Swansea	11.8	10.6	8.5	9.2	9.1	9.0
Neath Port Talbot	11.3	12.2	10.8	11.9	10.5	11.9
Bridgend	10.7	11.6	11.3	10.5	10.0	10.5
The Vale of Glamorgan	13.3	11.9	10.7	9.9	10.1	10.5
Cardiff	11.8	11.0	10.9	11.2	10.4	9.9
Rhondda, Cynon, Taff	11.6	10.6	11.0	11.7	10.4	9.4
Merthyr Tydfil	11.3	11.3	11.3	9.0	10.4	9.9
Caerphilly	10.9	10.3	9.7	7.9	9.5	10.1
Blaenau Gwent	11.1	12.1	10.4	10.1	9.8	9.9
Torfaen	7.9	11.3	11.1	10.5	9.4	9.5
Monmouthshire	11.6	9.9	12.0	8.8	10.6	10.0
Newport	11.0	10.6	11.0	11.0	9.8	9.0

Source: Stats Wales, WAG

Figure 2 presents the ratio of firm entries to firm exits in Welsh UAs. Whilst almost all regions saw net entry in 2002 and 2007, by 2008 we are seeing much lower levels of net entry and in 7 out of 22 local authorities, negative net entry rates (i.e. the number of firms fell). This may be expected as firms began to struggle as we entered recession. However, some UAs show positive net growth in each year including some Valleys, as well as rural parts of Wales such as Gwynedd and Powys. Data are not weighted and thus a firm employing 200 workers closing will carry the same weight as a firm employing 20 people opening. Thus, the overall employment effect of entry and exit cannot be inferred from these numbers.^{ix}

Figure 2: Ratio of entry to exits by local authorities in Wales (net entry =>1.00)



Source: Stats Wales, WAG

Data here do not show how new Welsh economic activity is coping with the recession. One anticipates that entrepreneurial activity will eventually lead to firm entry, but shorter term measures may be more appropriate if we wish to explore the response to policy following the recent economic downturn. A recent analysis of the GEM for Wales considers entrepreneurial activity more widely with the use of a harmonised survey of almost 3,000 respondents in Wales. This survey is explicitly designed to measure early stage entrepreneurial activity (TEA). These findings suggest that in 2009, Wales was showing signs of a slightly increasing TEA, rising from 5.3 per cent in 2008 to 6 per cent in 2009. Although the difference is not statistically significant, it is nevertheless encouraging.^x The results also show that Wales ranked 5th among the 12 Government Office Regions, considerably higher than raw firm entry rates would suggest. Finally, the GEM results indicate that a decline in the perception of good conditions for start ups in recent years. It will therefore be interesting to see how far these findings are affected by the ensuing public spending cuts given the reliance that the government is placing on the private sector.

Systemic factors can contribute or indeed hinder entrepreneurial activity

Local factors such as the physical infrastructure – road and rail networks as well as broadband provision and accessibility etc., can contribute or indeed hinder entrepreneurial activity,. Population density is also a factor, both in terms of supply (skilled labour force) and demand (market potential). For these reasons, start-ups often locate in regions that have similar industries or a concentration of people. This clustering is thought to lead to economies of scale and additional non-pecuniary spillovers.

Whilst there is a natural link between entrepreneurship and innovation, there is little direct measurement of the innovativeness of start-ups, particularly at the sub-regional level. The Community Innovation Survey is limited to firms with more than 10 employees and therefore offers little insight into new firm innovation. However, studies that explore the regional variation in enterprises show that Wales ranks relatively poorly within the UK (3rd from bottom, ahead of Scotland and Northern Ireland in 2007).^{xi} Innovation rates within the NUTS1 regions similarly reveal Wales to have one of the lowest rates of R&D investment as a proportion of GVA (around 0.5% in 2006), suggesting that for Wales, it's a combined problem; not enough start ups and not enough innovation.^{xii}

Institutional factors can thwart start-ups and business closures. Barriers may stem from industrial conditions, market concentration and high start up and exit costs. This is particularly true for industries with large sunk costs –costs which are not recoverable in the medium to long term. Incumbent firms can often overcome these by cross-subsidising across their business portfolio, which is not possible for small new firms. There are a number of other reasons why firms cannot enter and exit as freely as we might want; these include information asymmetries as well as access to finance and industry specific barriers to entry and exit.

Existing policies go some way in fostering entrepreneurship, but how successful are they and do they go far enough?

Policy has a clear role to play in addressing market imperfections and it can either aim to affect the infrastructure/environment or the new firm itself. Entrepreneurship policy is aimed at the pre-start, start-up and early post-start-up phases of the entrepreneurial process. It is designed to address the areas of motivation, opportunity and skills to encourage more people to consider entrepreneurship as an option and proceed into the entry and early

stages of the business. Pre-start follows the evaluation of the business concept and the decision to start the business. Post-start-up covers the stages after the business opens. In general, entrepreneurship policy covers all of the above stages up to five years after the business opens.

Entrepreneurship policy is divided into seven sub-areas: promotion activities, financing, counselling and information activities, efforts to reduce the administrative burden, entrepreneurship education, special efforts for target groups and investments in policy through relevant research. Government can intervene in a number of ways to ease the burden on new start-ups, assist closure and provide direction on growth, in order to try to reduce barriers and facilitate the churning process. For example, governments can increase the availability of venture capital and underwrite the risks of small businesses to increase their access to finance. A less costly and less risky intervention is to improve information flows to smaller (newer) companies. Another provision could be expert advice on how to run a business and preventing business failure.

Encouraging entrepreneurship has been a key policy agenda in Wales. The establishment of the Welsh Development Agency (WDA) in 1976 was a milestone in this regard. One of its main objectives was to secure and promote entrepreneurial growth in Wales.^{xiii} In its various programmes in 2000, WDA developed an action and implementation plan to map the actions for the development and delivery of entrepreneurship and enterprise across Wales - the Entrepreneurship Action Plan. This, steered by a group of private sector leaders, education heads and business support professionals, set out a braided approach for business support in Wales focussing on three elements: Recognising Opportunity, Creating Enterprises and Going for Growth. The themes on which efforts were to concentrate were identified as: (1) fostering a culture of entrepreneurship, (2) unlocking potential, (3) enterprising communities, (4) investing in knowledge and experience, (5) bridging the funding gap and (6) reaping the rewards. Overall, the plan was thought to be relatively successful in the more successful areas in changing attitudes towards entrepreneurship, but the less entrepreneurial counties saw little direct benefit.

The agenda of promoting entrepreneurship was strengthened over time, evident from the subsequent policy documents viz., WAVE (Wales: A Vibrant Economy) and more recently WAG's Economic Renewal Plan. It clearly recognises not only the importance of entrepreneurship and the need to increase the activity in Wales, but also the diversity of support that is required to foster long term innovation and entrepreneurship. For instance, in their current policies to facilitate firm access to information, WAG run 'Flexible Support for

Business' (FS4B)^{xiv}, a web-based one-stop shop for advice on innovation, financial support, how to set up a new business, how to encourage exporting, and ways in which SMEs may develop their workforce through training opportunities and support information. In addition, FS4B also offers guidance to SMEs on health and safety, employment and tax laws and also how to grow or sell a business. The aim is to improve knowledge amongst new businesses. There has also been considerable effort to create greater links between key providers of knowledge (universities) and small, dynamic businesses.^{xv}

Achieving an entrepreneurial culture is not very straight forward. The recent Stats Wales data also suggest that any improvement in entrepreneurial activity in Wales did not improve Wales' overall rankings. In their framework for economic renewal, the WAG highlight 5 policy priorities including targeting the business support they offer. Whilst this is clearly most directly related to business growth and development, the other points also have significance in relation to early stage entrepreneurship and creating the appropriate environment in which innovation and small businesses can flourish. As well as highlighting priorities, it necessarily draws attention to Wales' current position of having a low R&D base, absence of strong incentives within the (higher) education system to link up strongly with the manufacturing sector^{xvi}, low STEM (Science, Technology, Engineering and Mathematics) activities, and less success in attracting European research investment (FP7, in particular) than other parts of the UK. All these factors contribute to a lower incentive to innovate and to commercialise innovation which in turn limits the entrepreneurial capacity.

Designing policies for promoting innovative entrepreneurship is a challenge and intervention should operate at a number of levels

Clearly, entrepreneurs contribute positively to the general business environment by creating incentives for people to invest in their human capital through the demand for skilled labour. They also demonstrate the adoption of new technology and provide information on what kind of business may be profitable. These broader social benefits, which are usually considered to be much greater than the private benefits to a potential entrepreneur, can justify support for entrepreneurial activity.

Though there is no definitive prescription for creating an innovative economy, it is clearly important to engage with methods that are known to work –building the necessary infrastructure to supporting higher education and offering a favourable business climate. The promotion of entrepreneurial activity is a long term process that is greatly influenced by the

external environment. This is much harder to affect than targeting firms and it is even more difficult to measure whether policy has influenced it significantly and if for the better.

*Proper evaluation of the existing policy measures is also essential. One problem is disentangling the various effects and causes. Even if we can observe increasing levels of different indicators of enterprise such as the number of start-ups or the number of individuals interested in becoming entrepreneurs, we don't know to what extent such changes can be related to policy measures taken. There is an urgent need for more systematic evaluations. Government's role is not only to 'get the institutions right' but also to design specific policies, interventions and regulations relating to start up costs and innovative activities. It is sometimes difficult to differentiate between policies designed for SMEs in general and the innovative business start ups. Policies to encourage entrepreneurship may support all entrepreneurial activity *per se*, without adequately considering how the business will progress. Therefore, clearer distinctions in policy are required based on the life cycle stage of a firm. Generic policies not targeted at particular type of firms are likely to have less of an impact than specific ones.*

i Phelps, E. (2004). Entrepreneurship and Innovation in Capitalist Systems, in Capitalist Systems, quoted in Understanding Entrepreneurship: A Research and Policy Report, Ewing Marion Kauffman Foundation.

ii Wong, PK, Yo Ho and E. Autio (2005): "Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data", Small Business Economics 24.

iii Birch, D., A. Haggerty and W. Parsons (1997), Who's Creating Jobs? Cambridge, MA, Cognetics.

iv Atkinson, R.D. and R. Court (1998). The new economy index: Understanding America's economic transformation. From the Progressive Policy Institute Web site, www.neweconomyindex.org/index_nei.html

v O'Mahony M. and B. van Ark (2003) Contributions to *EU productivity and competitiveness: An industry perspective. Can Europe resume the catching-up process?* European Commission, Enterprise publications.

vi Carlsson, Bo, Z. Acs, B. Audretsch and P. Braunerhjelm, (2007), "The knowledge filter, entrepreneurship, and economic growth", Jena Economic Research Papers 2007-057.

vii TEA is an index determined as the share of the adult population engaged in starting an enterprise or being an owner/manager of a business that is less than 42 months old – a definition used also by the OECD.

viii Huggins, R and P. Thompson (2010) The UK Competitiveness Index, 2010, available at <http://www.cforic.org/downloads.php>

ix Also firms may consolidate as they grow; merging and forming formal strategic alliances in the form of mergers or acquisitions, such actions however are not considered here.

x Hart M. and J. Levie (2010) GEM UK: Wales Summary, 2009, available at: <http://wales.gov.uk/docs/det/publications/100608gemsummary.pdf>

xi Wosnitza, B., K. Tyrell and J. Knight (2009) 'Regional Economic Indicators. A focus on Enterprise – driving regional productivity', *Economic and Labour Market Review*, 3(2), 54-67.

xii The argument that R&D spend is not an effective indicator of innovation in the service sector should not be important here because Wales is not more dominated by services than the rest of the UK, although the service sectors that are relatively concentrated within Wales may not lend themselves so much to innovative activity.

xiii In 2006 the WDA was absorbed into the [Welsh Assembly Government](#)..

xiv See <http://fs4b.wales.gov.uk>

xv The LEAD Wales project, for example, is a joint WAG-European Social Fund project designed to enhance SME access to training on developing leadership skills (available at <http://www.leadwales.co.uk/>).

xvi These may in turn be linked to other deep-seated factors which makes the region less conducive to successful entrepreneurial formation and development.