

**NEW BUSINESS FORMATION: AN IMPORTANT ELEMENT OF
IRELAND'S RAPID GROWTH EXPERIENCE?**

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by

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Abstract

The extraordinary growth of the Irish economy - the 'Celtic Tiger' - since the mid-1990s has attracted a great deal of interest, commentary and research. Indeed, many countries are now looking to Ireland as an economic development role model, and *The Sapir Report* (2003) has suggested that Ireland should be seen as providing key lessons for other EU countries with regards to realising the objectives set out in the Lisbon Agenda.

Much of the discussion of Ireland's growth has focussed around growth triggers such as: the long term consequences of fiscal stabilisation of the late 1980s; EU structural funds; education; wage moderation; devaluations of the Irish punt. From an industrial policy perspective, the focus has been on the importance of FDI inflows and to a lesser extent on the performance of an indigenous stock of firms to Ireland's growth record. A notable absence from the industrial policy discourse on the 'Celtic Tiger' has been any consideration of the role of new business venture creation and entrepreneurship. In this paper we use unpublished annual Irish VAT data for the period 1988-2004 to provide the first detailed look at national and regional trends in business birth and death rates in Ireland. We also undertake a sub-national analysis of the Irish VAT data to understand more clearly the importance of new venture creation to past and emerging spatial trends in Ireland. Our conclusion is that new business formation made no detectable contribution to the acceleration of Ireland's growth in the late 1990s.

JEL Classification: L26; M13; R11; R12; L53

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1. Introduction: Ireland's Economic Transformation

The transformation of Ireland's economic fortunes since the mid-1990s has attracted a great deal of academic and policy interest both within and outside of Ireland as other small economies seek to learn the lessons from this late 20th century economic growth 'miracle' – what is commonly referred to as the 'Celtic Tiger'. Irish GNP per head in 1987 stood at 59 per cent of the EU15 average, largely unchanged from its 1960 position, but by 1997 it had risen to 88 per cent (Barry, 1999, p. 1). This growth was clearly transmitted to the labour market as over the same period the numbers at work increased at an annual average rate of 2.1 per cent, and the unemployment rate fell from 17.1 to 10.3 per cent (Barry, 1999; Harris, 2005). That growth continued beyond 1997 and in the period 1996-2002 Ireland recorded annual growth rates in GNP of 6.9 per cent with annual employment growth rates of 4.3 per cent (Cassidy, 2004). Irish GNP per head is now roughly equal to the EU average and about 70 per cent of the US (Cassidy, 2004).

The most obvious question which follows from this rapid transformation is what were the economic factors that caused this transformation? A myriad of factors have been advanced to explain the unprecedented growth trajectory of the Irish economy, particularly since 1994 (the so called 'Celtic Tiger'). There has, perhaps surprisingly, emerged widespread agreement as to the factors that played a role, although as argued by Barry (1999) "...the emphasis placed on the various components will differ as always with the storyteller" (p. 1). Much of the discussion regarding the causes of the 'Celtic Tiger' has focussed around growth triggers such as: the long-term consequences of fiscal stabilisation of the late 1980s; EU Structural Funds; wage moderation; education; the promotion of competition and improvement in telecommunications; devaluations and a booming US economy.

From an industrial policy perspective, the focus has been primarily on the importance of Foreign Direct Investment (FDI) inflows and to a lesser extent on the performance of an indigenous stock of firms (i.e., through the processes of business start-up, survival and growth). What has been broadly missing from the industrial policy discourse on the 'Celtic Tiger' is a direct consideration of the role of new business venture creation and entrepreneurship in the rapid growth of the Irish economy. This, we argue, is somewhat surprising given the debate in academic and policy circles about the relationship between entrepreneurship and economic development. Although Acs and Storey (2004) have recently argued in their review of a number of recent studies on new firm formation and regional economic growth that the evidence remains inconclusive on the subject there are a number of studies which provide evidence of the relationship. For example, Thurik and Wennekers (2004) identify

entrepreneurship as an important driver for economic growth, competitiveness and job creation.

Nevertheless, we still face the obvious, but nonetheless fundamental, question: are big business birth rates, where they occur, a *cause* of economic progress in those places or an *effect*, a by-product of the factors driving the growth process? A number of authors have looked at the role of new business creation in developing regional growth 'systems' (see for example, Plummer and Acs, 2004; Fritsch and Mueller, 2004; van Stel and Storey, 2004). For these authors, regions matter when studying the relationship between new firm formation and job creation or, more generally, economic growth. It has been argued that the continual entry and exit of firms and plants is a vital ingredient to an economy. Often described as 'churn', this process is seen as having a positive effect on productivity through increased competition leading to cost efficiency. Further, it may enhance a process of creative destruction as more innovative firms enter the market place and displace existing businesses using old or at best current technologies¹.

What we are presented with in the case of Ireland is a unique opportunity to investigate the relationship between new business formation (i.e., births) and *rapid* economic growth. We have witnessed an exceptional period of economic growth in Ireland since the mid-1990s and we have now for the first time the possibility to investigate the nature of the relationship between business entry and economic growth with the access to the Irish VAT annual data on registrations (entry) and deregistrations (exit) for the period 1988-2004. It is the time period covered by this dataset which makes it of unique interest. Despite their obvious shortcomings VAT datasets have been widely used in investigations of new business formation at both the national and regional level (see the discussions of the data in Ashcroft *et al.*, 1991; Johnson and Conway, 1997 and Anyadike-Danes *et al.*, 2005). We are able, therefore, to address a hitherto overlooked research question in Ireland: the extent to which business birth and death rates are connected to the rapid growth and expansion of the Irish economy in the 1994-1999 period. Is the rapid increase in Ireland's productivity since the mid-1990s associated with an increase in the level of business entry and exit?

The paper is structured as follows. Section 2 reviews the existing literature on new business formation and economic growth within the context of the rapid growth of the Irish economy and there follows a short summary of the established academic arguments concerning the reasons why the Irish economy experienced such unprecedented growth rates since the mid-1990s (Section 3). Section 4 sets out the trends observed in the VAT 'births' and 'deaths' in

Ireland at both national and sub-regional level for the period 1988-2004 and seeks to investigate the extent to which these trends can be connected to rapid economic growth since 1994. This includes a discussion of the relationship between business birth rates and employment rates at the national level over the study period. The paper concludes with some overall assessment of what the Irish case informs us about the wider international research agenda linking new business formation, entrepreneurship and economic growth.

2. New Business Formation and Economic Growth in Ireland – a missing discourse?

As outlined by Wennekers and Thurik (1999) “Empirical research on the role of entrepreneurship as a driving force of economic development still is not well developed” (p. 30). Audretsch and Thurik (2001) also argue that there has been a general absence of studies linking the impact of entrepreneurship on macro-economic performance at country level. However, one recent study by Bartelsman *et al.*, (2004), which examined harmonised entry and exit rates for 24 industrial and developing countries, though not for Ireland, found evidence of a high correlation between entry and exit rates and that this process of creative destruction was a positive driver of productivity growth.

In the case of Ireland, there has been an almost complete absence of any discourse regarding the relationship between new business formation and the phenomenal recent growth rates of the Irish economy. In other words, there has been no investigation of the extent to which rates of new business formation were a significant driver of Ireland’s rapid economic growth. Barry (1999) comments (in common with other commentators writing on the ‘Celtic Tiger’) on the record levels of job creation that were witnessed and identifies the sectors in which job creation has been most substantial (i.e. market services). However, he also points out that manufacturing-sector employment has also risen, in both indigenous and foreign-owned sectors. Further, Burnham (2003) observes that the construction sector and financial and other business services have also showed significant increases. However, surprisingly, the discussion has never recognised that one of the drivers of Irish economic growth may have been entrepreneurship in all of its many forms. In other words, nowhere have commentators sought to investigate the extent to which entrepreneurship, as manifested through a tangible measure such as new business venture activity, may be connected to this exceptional period of economic growth in Ireland. Notice we do not make any reference here to the direction of causality. The initial task is to assemble the evidence on trends in new business venture activity over a time period which provides an opportunity to investigate the nature of the ‘connection’.

There has been a body of work using firm and plant-level demographic data in Ireland which has followed established international methodologies investigating the processes of job creation and destruction as well as entry, exist and survival rates (see, for example, Strobl et al., 1998; Görg and Strobl, 2002; 2003). These studies have focused solely on the manufacturing sector and relate to time periods immediately prior to Ireland's economic 'take-off'. As a result they cannot directly inform the specific research question of this paper. Nevertheless, they have made an important contribution to our understanding of the processes underlying the changes in the business stock over time and we will return to their findings later as we seek to interpret the results of our analysis of births and deaths for the 1988-2004 period.

One of the few papers that did address the relationship between economic growth and new venture creation and entrepreneurship is that of Acs *et al.*, (2007) which examines the question of whether the Irish miracle could be repeated in Hungaryⁱⁱ. In their paper, they build on internationalization theory and utilise data from the Global Entrepreneurship Monitor (GEM), to explore if and how the policy of attracting inward FDI from multinational enterprises impacts on indigenous entrepreneurial activity. The authors argue that the period of rapid growth in the 1990s was characterised by an increase in the number of new businesses. They point out that this entrepreneurial activity was concentrated in sectors related to the increase in domestic demand. More specifically, they argue that '...the rapid increase in the size of the Irish labour force translated into an increase in consumer spending, in real terms, of about 75 per cent between 1993 and 2003' (Acs *et al.*, p. 131). However, a major weakness of this analysis, which we address in this paper, is that the GEM data is only available from 1999 onwards so they are unable to look at the degree of entrepreneurial activity in the period prior to rapid economic growth in Ireland (i.e., from 1994 onwards) and as a result their analysis is even more bound by the problems of establishing the direction of causality at work between new venture creation, entrepreneurship and economic growth.

Using Value Added Tax (VAT) registrations dataⁱⁱⁱ, Acs *et al.*, (2007) report that the areas of activity in Ireland where entrepreneurial activity was most prevalent in 2000 were in the construction sector (33% of new VAT registrations) and other professionals, with the latter group being made up of architects, advertising, barristers, solicitors and legal agents (20% of net new VAT registrations). They also outline that some policies adopted by the development agencies were key to facilitating entrepreneurial activity in the software sector. A number of authors (e.g. Burnham 2003) also refer to the emergence of several Irish-owned and Irish-managed start-ups in the software

and internet sectors beginning in the mid 1990s. Finally, Ferreira and Vanhoudt (2004) acknowledge that structure of the Irish economy has changed irreversibly with the contribution of the agricultural sector - the most important sector in Ireland in 1960 – declining to 3 per cent economy-wide generated value added in 1999. By contrast, the services sector saw its relative share increasing from 58 per cent to 63 per cent while the industrial sector maintained its position at roughly one-third.

3. Factors that have contributed to the phenomenal growth rates in the Irish economy – the role of FDI?

What have been the key contributory factors which have brought about the phenomenal growth rates experienced in the Irish economy, in particular since 1994? Many countries are now looking to Ireland as an economic development role model and the list of stylised explanatory factors has travelled widely. The Sapir Report (2003) has, for example, highlighted the fact that Ireland should be seen as providing key lessons for other countries of the EU with regards to realising the Lisbon Agenda. A summary of the key factors commonly put forward as having contributed to the ‘Celtic Tiger’ can be summarised as follows: in-flows of Foreign Direct Investment (FDI); investment in infrastructure and other projects through the EU Structural Funds (Barry, 1999; Burnham, 2003; Andreosso-O’Callaghan and Lenihan, 2006); wage cost stability through national agreements with the social partners (McAleese, 2000); fiscal stabilisation (McAleese, 2000); administrative capacity and a supportive macroeconomic environment (Bailey *et al.*, 2007); uplift in education levels and increasing participation rates (Harris, 2005; Dorgan, 2006).

However, there is a rather more unexciting interpretation of Irish economic growth. Some commentators prefer to describe it as a simple story of ‘catch-up’ by a ‘lucky’ regional economy representing around 1 per cent of the US or EU economy (Barry, 2002; Honohan and Walsh, 2002). The economy was extremely open to trade and factor flows and had a currency pegged to an external unit. Viewed like this Irish growth was unexceptional in US terms (e.g., 23 out of 50 states grew faster in the same period) although it was unmatched in the EU. In short, it is perhaps better thought of as a ‘deferred and telescoped process’.

A closer examination of the role of FDI is now presented as it offers an opportunity to examine the ways in which it might impact upon new firm formation rates in Ireland. It is widely accepted that FDI, and to a large extent US FDI, has been a key trigger of economic growth and development in Ireland. As outlined by Gray (1997) “....it is not an exaggeration to say that the growth in foreign investment is at the heart of an understanding of the Irish economic

miracle” (p. xviii). Acs *et al.*, (2007) concur when they state that the Irish economic ‘miracle’ was brought about to “...a large part by attracting technology through Foreign Direct Investment (FDI)” (p.123). The evidence is clear (World Investment Report, 1999) - “...the FDI inward capital stock has increased from approximately UDS 3.7 billion in 1980 to 23.9 in 1998. Hence, Ireland ranks number 1 in terms of growth in its foreign-owned capital stock with a solid performance of 20 per cent a year on average over the 1990-98 period” (p. 225). The significance of FDI is further quantified by Harris (2005) when he argues that between 1990 and 2002 the number of companies exporting from Ireland rose from 11,000 to 70,000.

Starting with the ‘First Programme for Economic Expansion’ (Department of Finance, 1958), Ireland’s industrial strategy approach has focussed on the attraction of MNEs. In particular, as outlined by Buckley *et al.*, (2006) in 1973, when Ireland joined the European Economic Community, the Industrial Development Authority pursued a selective and targeted approach to entice investment from abroad in electronics, chemicals and other ‘high technology’ industries. Such industries, as outlined by Braunerhjelm *et al.*, (2000), are ideal for peripheral locations such as Ireland since they produce high-value goods which do not entail high transportation costs. Slaughter (2003) and Barry (2004) argue that Ireland’s geographic proximity and strong cultural links between Ireland and the US have been important factors in terms of attracting US FDI. Ireland’s membership of the EU has also been very important for US MNEs using Ireland as an export base for serving the European Market (Foley and McAleese, 1991).

On a more general note, it has been argued (Barry, 1999; Gunnigle and McGuire, 2001; Ruane and Görg, 1999) that one of the key features in terms of Ireland’s attractiveness for FDI has been the low level of corporation tax^{iv}. Direct incentives in the form of grant assistance have also been identified as having played an important part of the overall package in terms of attracting foreign firms to locate in Ireland (Gunnigle and McGuire, 2001). In fact, grants were put forward as a means to “...help offset the disadvantages associated with our peripheral location in Europe and absence of a large home market” (Government of Ireland, 1984, p.6).

The following characteristics have also been advanced as part of the explanation for the large presence of FDI investment in Ireland:

- A plentiful, well educated and English speaking labour force (O’Hearn, 1998; Tansey, 1998; Arrow, 1997 and Sexton and O’Connell, 1996) and some argue the success of Ireland’s ‘high-tech’

policy can be largely attributed to the significant investment in education.

- One-stop-shop approach to business support at the Industrial Development Authority (IDA).
- Quality of the infrastructure (Dascher, 2000) which was helped by significant financial transfers from Europe.

The key point to note is that the substantial FDI inflows into Ireland pre-date the start of the period of rapid economic growth in 1994. Recent work by Görg and Strobl (2002) on plant-level data for the manufacturing sector has revealed that there is a positive effect of the presence of foreign Multi-National Corporations (MNCs) on the entry of indigenous firms into the sector. This positive effect operates through the presence of MNCs in the same manufacturing industry as well as the presence of MNCs in downstream manufacturing activity. A later paper by the same authors found that the survival rate of indigenous manufacturing plants was also enhanced by the presence of MNCs. We return to these findings later in the paper.

The pre-occupation with the role of FDI in accounting for Ireland's economic growth may explain why entrepreneurship has not played a role in the mainstream discourse. In brief, there has been no attempt made in the research to assess the extent to which new venture creation was a major driver of Ireland's growth since the mid-1990s.

4. New Business Formation in Ireland 1988-2004

4.1 Data

In this paper almost twenty years of previously unpublished VAT data for Ireland is used (i.e., 1988-2004). This annual dataset was provided by the Revenue Commissioners and was disaggregated by bailiwick (broadly the Irish counties) and by four digit NACE code. From the outset it should be acknowledged that it is not being assumed that the VAT data provides the only or best measure of vital rates in the business sector. But it is one that policy-makers have typically used across the EU, and indeed are likely to continue to use, given present alternatives. So, for the purposes of the paper, all reservations about the limitations of VAT statistics as a proxy and/or their deeper meaning should be taken as understood^v. Most particularly, there is no presumption that these statistics have anything to say about some latent construct such as the "entrepreneurial spirit" or propensity towards business ownership of a region or county in Ireland.

For the purposes of this paper we only use the aggregated annual data on business ‘births’ and ‘deaths’ as proxied by registrations, re-registrations and cancellations.^{vi} We adopt an ecological approach to the standardisation process and express vital rates (i.e., births and deaths) as a ratio to the stock of businesses. This is an identical approach we adopted for our recent analysis of the UK VAT data (Anyadike-Danes *et al.*, 2005; Anyadike-Danes and Hart, 2006). For example, we measure the birth rate as the number of new firms ‘born’ during a period divided by the stock of firms at the beginning of the period. This contrasts with those authors (e.g., Ashcroft *et al.*, 1991) who adopt a labour market approach and standardise the birth and death data using population or employment numbers in order to reflect the view that the owners of business start-ups are likely to be drawn from participants in the local labour market. Opinions differ about the merits of both these approaches (see, for example, Love, 1995) but we argue that the ecological approach is more relevant in this analysis of the Irish VAT data as we are seeking to understand the dynamics of the business stock over a period of rapid economic growth. Our principal concern is to provide a simple and relatively transparent framework for investigating the contributions of the ‘gross birth rate’ and ‘gross death rate’ to the ‘net birth rate’ and thus the size of the stock of businesses over time and across sub-national administrative areas (i.e., bailiwicks) in Ireland. Both birth and death rates need to be measured on a comparable basis and the ecological approach has an advantage over a labour market approach to ‘death rates’ as they are more readily interpretable.

4.2 The National Picture

The proposition under investigation here is that given the phenomenal growth of the Irish economy in the 1994-2000 period we would expect to find some evidence that business birth rates are in some way positively associated with that trend. In particular, we are interested in identifying evidence that business birth rates were significantly higher in this period either as a driver or a consequence of economic growth. At the start of 1988^{vii} there were just over 75,000 VAT-registered businesses in Ireland and by the end of 2004 there were around 220,000 (Table 1)^{viii}. In other words, the stock of businesses had just about tripled in little more than 15 years. Moreover, the growth in the business stock exceeded population growth by a considerable margin: in 1988 there were 22 businesses per thousand population, and by the end of 2004 there were 56 businesses per thousand. This is a remarkable change, made all the more striking because much of the growth was concentrated in a relatively short period – 1994-2000 (see Figure 1).

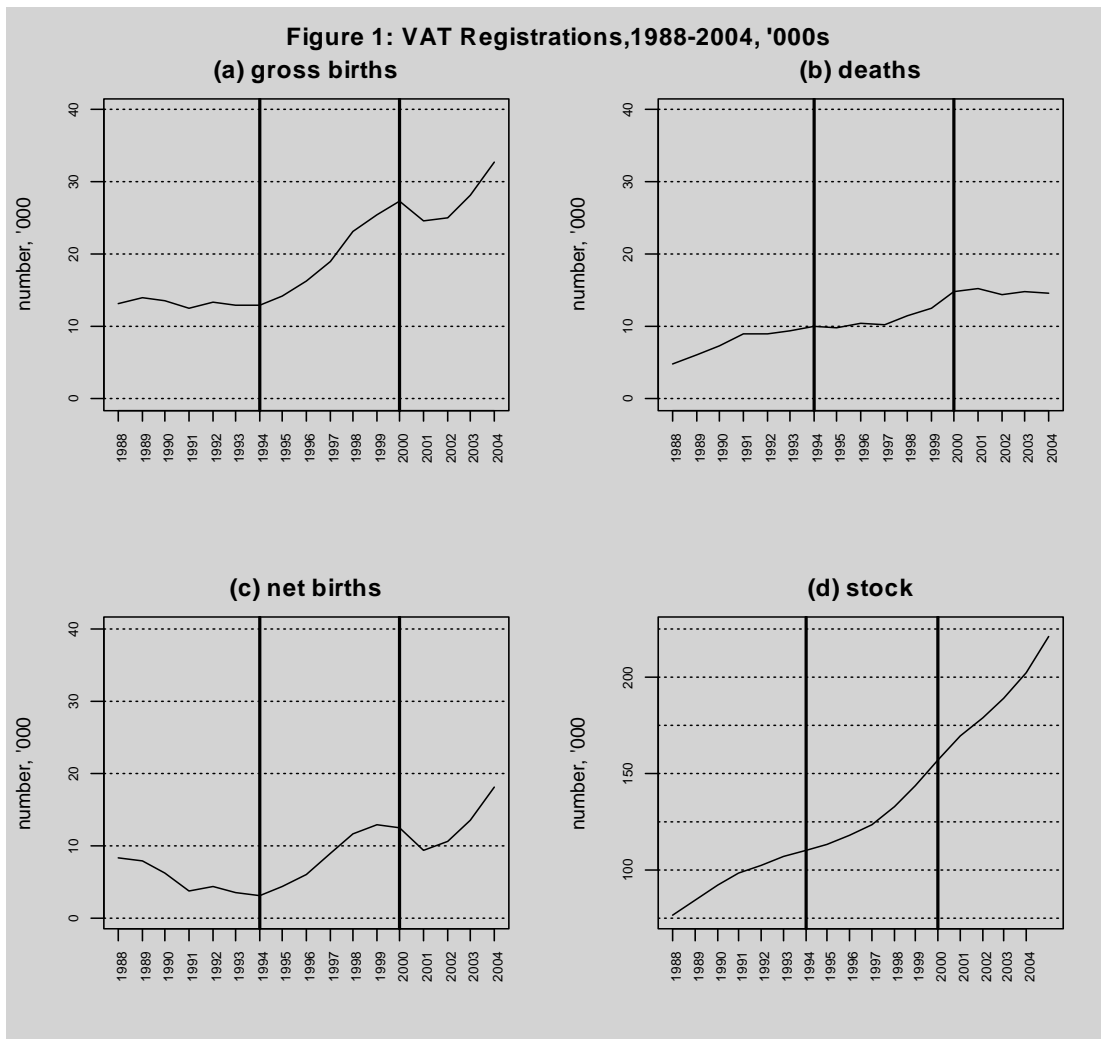
Table 1: VAT Registrations, Flows, Stocks & Vital Rates 1988 & 2004

Cumulated Flows: 1988 to 2004	Numbers	Rate % (ratio to 1987)
Gross Births	328,889	432.2
Deaths	184,278	242.1
Net Births	144,611	190.0
Stocks	Numbers	
end-1987	76,103	
end-2004	220,714	
Ratio 2004/1987	2.9	

Source: Irish Revenue Commissioners

Charts (a), (b) and (c) of Figure 1 record the components of change in the stock of businesses, with the stock itself displayed on panel (d). In chart (a) we have “gross births”: the number of new businesses registered plus the number of older businesses re-registered; in chart (b) “deaths”, the number of businesses whose VAT registration was cancelled; finally, in chart (c) we have “net births”, gross births less deaths, that is, the number of businesses actually added to the register during the year. This last figure is equal, by definition, to the change in the stock of businesses during the year.

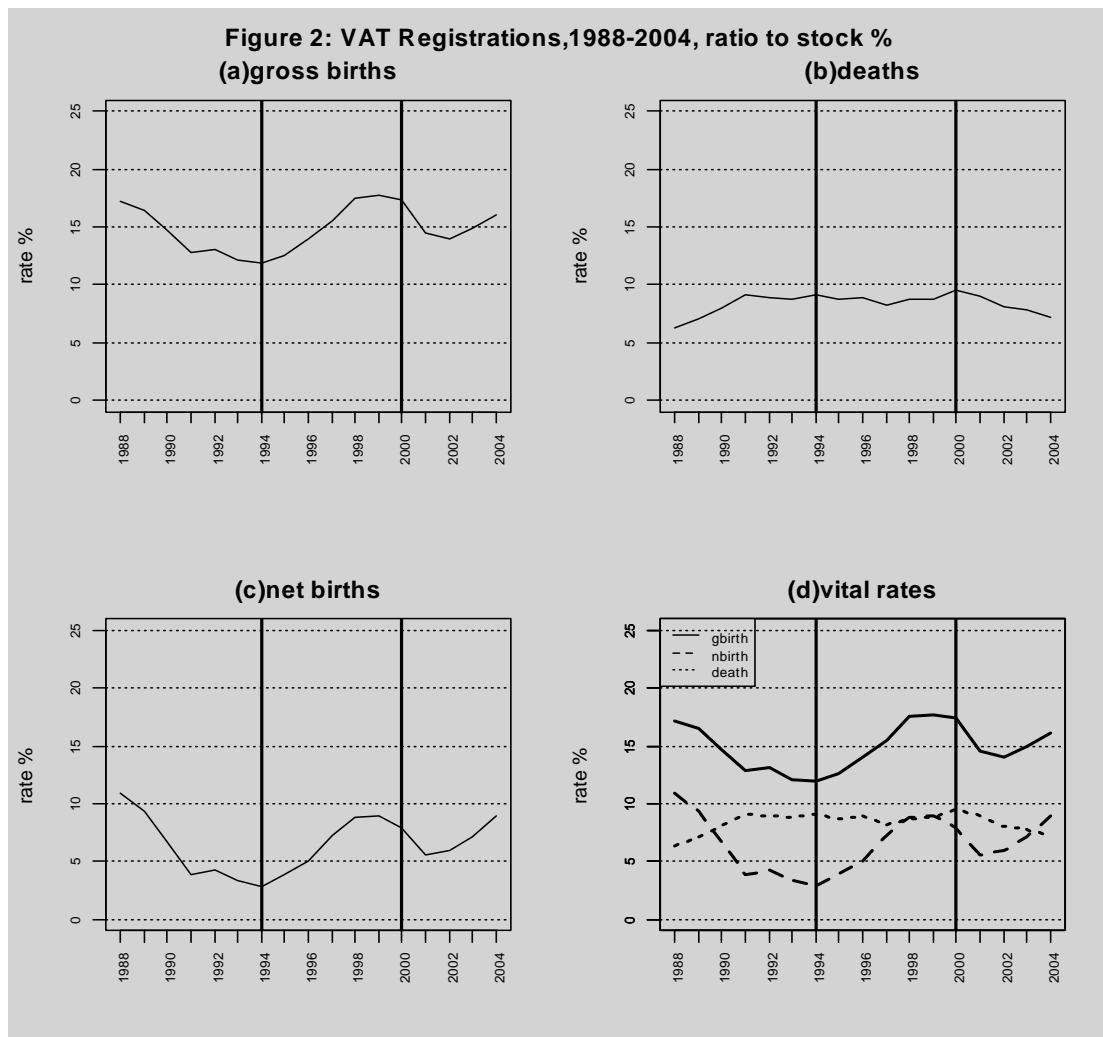
Looking across the charts^{ix}, which for ease of interpretation have the period of rapid economic growth delineated with a vertical line at the years 1994 and 2000, the proximate origins of the growth in the stock can be identified. From chart (a) we can see that up until 1994 the number of new registrations (of course we are including re-registrations too but these are relatively small in number each year) had been almost constant at between 12 and 13 thousand a year. In 1995 it started to move up, levelling off at an annual rate in the mid-20’s after the downturn hit at the beginning of the new decade. The death rate (chart (b)) reached a plateau at around 9 thousand in the early 1990’s, and remained there, not following births up until almost the end of the decade, then it plateaued again at around 14 thousand – after the year 2000. Notice there was, perhaps surprisingly, no detectable impact of the downturn in 2001 on deaths, rather it seems to have affected the number of business births for 2-3 years.



The combined effect of these differing time patterns in births and deaths can be traced in chart (c). The net birth number was around 4 thousand annually in the early 1990s. It moved up with births in 1995 as deaths remained unchanged, and then flattened a little towards the end of the decade as deaths moved up. With the resurgence of births after 2001, and deaths remaining on its new plateau (14,000), the number of net births has moved up quite steeply since 2002, and with it, of course, the number of businesses. Clearly then, the ‘active ingredient’ in this descriptive story of an evolving business stock is gross births.

However, if we are seeking to understand the evolution of the business stock over time it is useful to scale the components of change by the stock (i.e., the ecological approach to standardisation as outlined above): transforming births and deaths into ratios expressed as a percentage of the stock. As we can see from the four charts in Figure 2 the growth rate of the stock shows little trend. The death rate (chart (b)) is essentially flat, which means the gross and net birth

rates (charts (a) and (c)) are parallel (illustrated in chart (d)). More significantly, given the investigation of the link between new venture creation and rapid economic growth in Ireland, the vital rates (gross and net births and deaths) record similar rates of growth at the beginning (1988), the middle (1998) and the end (2004) of the period.



Whilst the stock of businesses in Ireland has grown in number – quite remarkably – over the period 1988 to 2004, the raw numbers themselves are a little misleading since we can clearly see from Figure 2 that, after standardisation, a continuation of the growth rates experienced in the late 1980s would have produced a similar sized stock of businesses as was actually recorded in 2004. Therefore, there does not appear to be any evidence of a “Celtic Tiger” effect in business stock growth. By this we mean that the observed dynamic of the population of businesses in Ireland over this period

would appear to be operating independently of factors which were driving Ireland's rapid economic growth. From this we conclude that Ireland's economic growth was not driven by a rise in new venture creation, nor can we associate this period of rapid economic growth as providing a stimulus to increased gross or net birth rates. This is an important conclusion for policy-makers as they seek to develop enterprise policies designed to stimulate economic growth through the process of business start-up interventions.

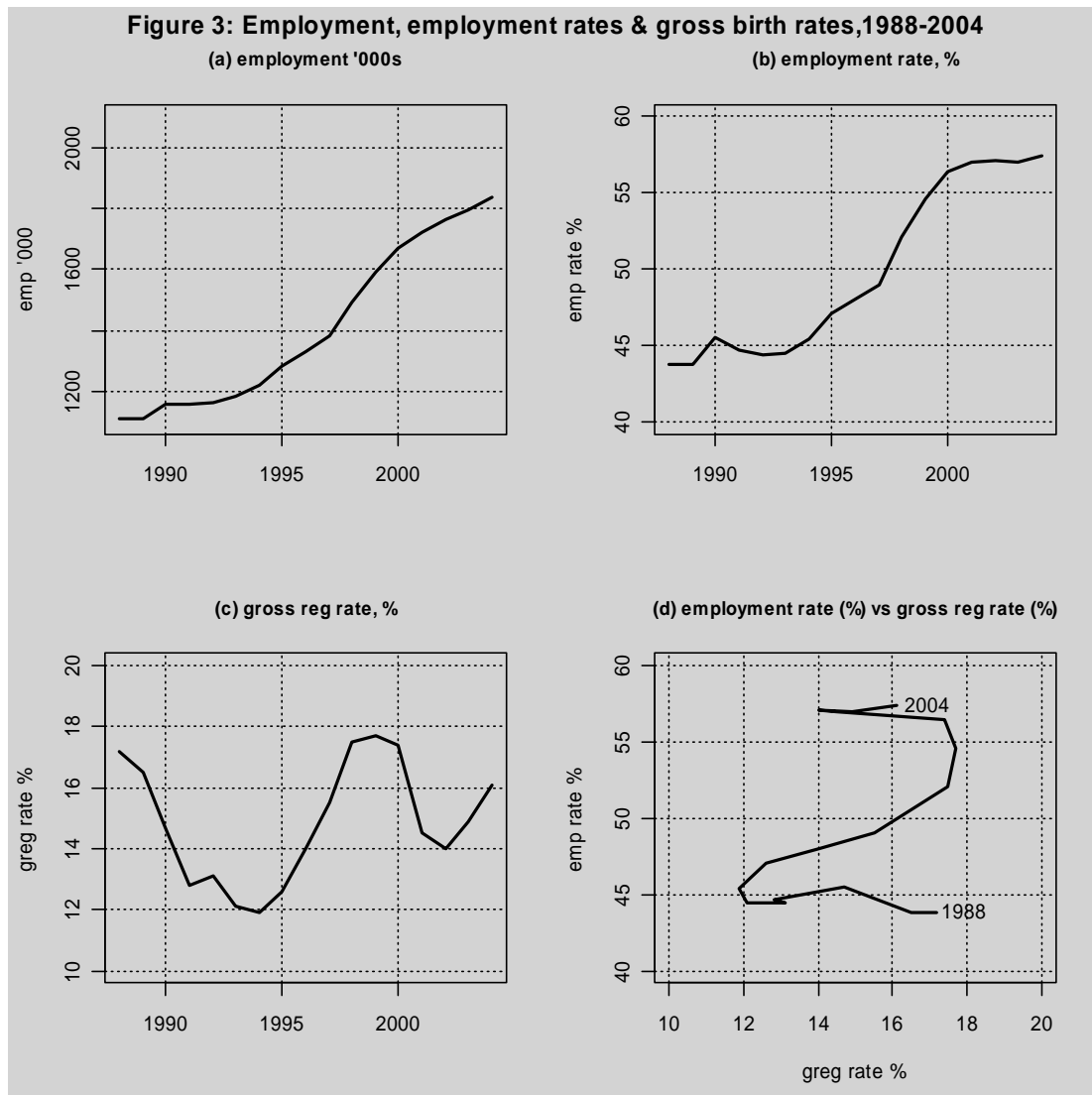
Let us return briefly to the issue of FDI. As reported above, FDI has been seen as an important driver of Ireland's rapid growth since 1994 but, notwithstanding the link demonstrated by Görg and Strobl (2002; 2003) between the presence of manufacturing MNCs and a positive effect on business entry in manufacturing since the mid-1980s, our analysis would suggest that this effect has not undergone an intensification since the mid-1990s. In other words, with the intensification of FDI flows into Ireland in the mid-1990s, there would not appear to have been an increase in the gross or net business birth rate one might expect.

4.3 New Firm Formation and Irish Employment Growth

Annual employment data is not available at the sub-national level in Ireland for the 1988-2004 period to enable a formal econometric estimation of the relationship between new business formation and employment growth over time following the methodology devised and applied by Michael Fritsch in recent years (see for example, Fritsch and Mueller, 2004). However, as an initial step, we are able to present a simple correlation between annual employment rates and gross VAT registration rates for this period. Between 1988 and 2004 the number of employees in employment in Ireland rose from 1.1 to 1.8 million – an increase of 65.3 per cent (Figure 3 – chart (a)). There was a rapid increase in the size of the labour market in the 1993-2000 period when annual employment growth rates of 5.1 per cent were recorded which was a dramatic increase in the previous five years when the number of employees remained almost static at between 1.1 and 1.2 million employees. Since 2000 the rate of growth in employment has proceeded at a much slower pace.

In the same period Ireland's population was also increasing rapidly and it is, therefore, important to present this rising trend in employment as a proportion of the population in each year (Figure 3 – chart (b)). Expressed this way the increase in employment in the 1995–2000 period is brought into sharp relief with the employment rates increasing by 10 per cent in this relatively short five year period. As we have already discussed the trend in gross registration rates over the whole period indicates that new business formation rates in the late 1990s were not significantly different from those observed in the late 1980s which led us to the conclusion that there was no obvious relationship between

Ireland's dramatic economic growth and the process of new business formation (Figure 3 – Chart (c)).



For the period as a whole, there is no obvious relationship between annual rates of new business formation and the employment rate each year (Figure 3 – Chart (d)). This is illustrated by the fitted 'Z' line on the chart which seeks to 'control' for time by tracking the association from 1988 through to 2004. We can see, for example, that falling registration rates in the 1988-1995 period were associated with a stable employment rate. Similarly, in the post-2000 period the employment rate was again relatively stable while formation rates initially declined and then rose. Finally, we do observe a broadly positive relationship between an increasing employment rate and an increase in the gross registration rates of new firms in the period of rapid economic growth between 1995-2000.

The employment rate rose by around 10 per cent, overall employment increased by just under 400,000 jobs (the annual growth rate rose from 5% to 8.3% and 6.4% in 1998 and 1999 respectively before falling in consecutive years to 2.4% in 2004).

However, what is perhaps more interesting is the period immediately prior to this (1990-1995) when annual rates of employment growth rose from -0.3 per cent to 5.0 per cent (the employment rate was approximately 45% in each of these years). Throughout this time the rate of gross registrations remained static at around 12 per cent. The implication here is that, although the employment rate was stable, a significant number of jobs were being created in the Irish economy (c. 120,000) seemingly unrelated to the process of new business formation and more likely the result of large inward investment projects. We now turn to the sub-national picture and again it should be noted again that this analysis cannot address the connection between annual rates of new business formation and employment change due to the absence of an annual employment series at this spatial level.

4.4. Sub-National Picture: Business Start-ups at County Level (Bailiwicks^x)

The task now is to investigate the variations in the trends in vital rates across the bailiwicks (essentially the Irish counties). We do this by focusing on the size of the business stock as we have already established that the growth in the business stock at the national level is a function of gross births – the ‘active’ dynamic of change in the 1988-2004 period. It is helpful to focus on the sub-national level for two key reasons. First, although nationally, there may have been no ‘Celtic Tiger’ effect in terms of business gross and net birth rates, at the sub-national level there may have been a process of catch-up taking place in which growth rates experienced in the Irish economy since the mid 1990s has led to a convergence in the distribution of new business activity across the regions. As we have seen from the analysis in the previous section it is the gross birth rate which is ‘actively’ connected to the trends in business stock.

The size of the business stock varies considerably across bailiwicks. For example, in 2004 there were 34,000 businesses in Dublin City (DUCI) but just 1,251 businesses in Leitrim (LEIT). Moreover, the distribution of businesses across bailiwicks was quite concentrated: taken together, Dublin City and Dublin County (DUCO) accounted for almost one third of the total, whilst the top six largest (in order: Dublin City, Dublin County, Cork County (COCO), Galway (GALW), Kildare (KILD) and Meath (MEAT)) together accounted for half of the all Ireland total. Of course, part of this variation can be accounted for by variations in the size of bailiwicks. For example, using the population in 2002 (the most recent year for which we have county and city data), we find

bailiwicks ranging in size by a factor of around 20: Dublin County (excluding Dublin City) about 500,000 inhabitants to Leitrim 25,000 inhabitants.

The scatter of the log of the number of businesses against the log of population provides some insight into the cross-bailiwick pattern. As we can see from Figure 4 this log/log relationship is linear and has a slope coefficient which is not significantly different from unity (coefficient of 1.02 with a standard error of 0.03). In other words the stock has unit elasticity with respect to population: if one bailiwick has a population 10 per cent larger than another, it will have a business stock which is 10 per cent larger too. To take an extreme example, Leitrim (LEIT), the bailiwick at the bottom left hand corner of the figure, has (as noted earlier) the smallest population (25,800) and the smallest business stock (1,251), whilst towards the other end of the scale we have Cork County (COCO), the third largest population (324,800) and the third largest business stock (16,220). Cork County's population is 13 times that of Leitrim, and Cork County's business stock is 13 times larger too.

Of course, were the point estimate of the elasticity exactly unity, and were all the data to lie on the least squares line, then all the business stock to population ratios would be equal, and equal in turn to the exponentiated value of the constant in the regression. In our example, where both bailiwicks lie very close to the line, the number of businesses per thousand inhabitants is 48 for Leitrim, and 50 for Cork County. However, although most of the data points are fairly close to the line there are a couple of points - notably Dublin County and Dublin City in the top right hand corner - which do fall some distance from it. So we can immediately infer that the rate does vary over a (relatively) small range. In fact, it runs from 41 per thousand inhabitants in Laois (LAOI) to 59 in Meath (the all-Ireland figure 52 is close to the mid-point) with an isolated outlier at the top end of Dublin City, at 68 (maybe a beneficiary of a 'capital city' effect).

Now we know that there has been a substantial (i.e., greater than two-fold) rise in the stock of businesses per head in the country as a whole since 1988, so it is worth enquiring how uniform that increase has been across the country. Figure 5 has on its vertical axis the 2004 per capita business stock expressed as a ratio to its 1988 value ($stkpc04/stkpc88$) and on the horizontal axis the 1988 value of the stock ($stkpc88$). The scatter of points is negatively sloped, which means that counties which had the lowest per capita stocks in 1988 recorded the largest increase between 1988 and 2004. In other words, there was some convergence in the distribution of businesses per head of population over the period.

**Figure 4: Stock of businesses(2004) vs population (2002)
by bailiwick (log vs log)**

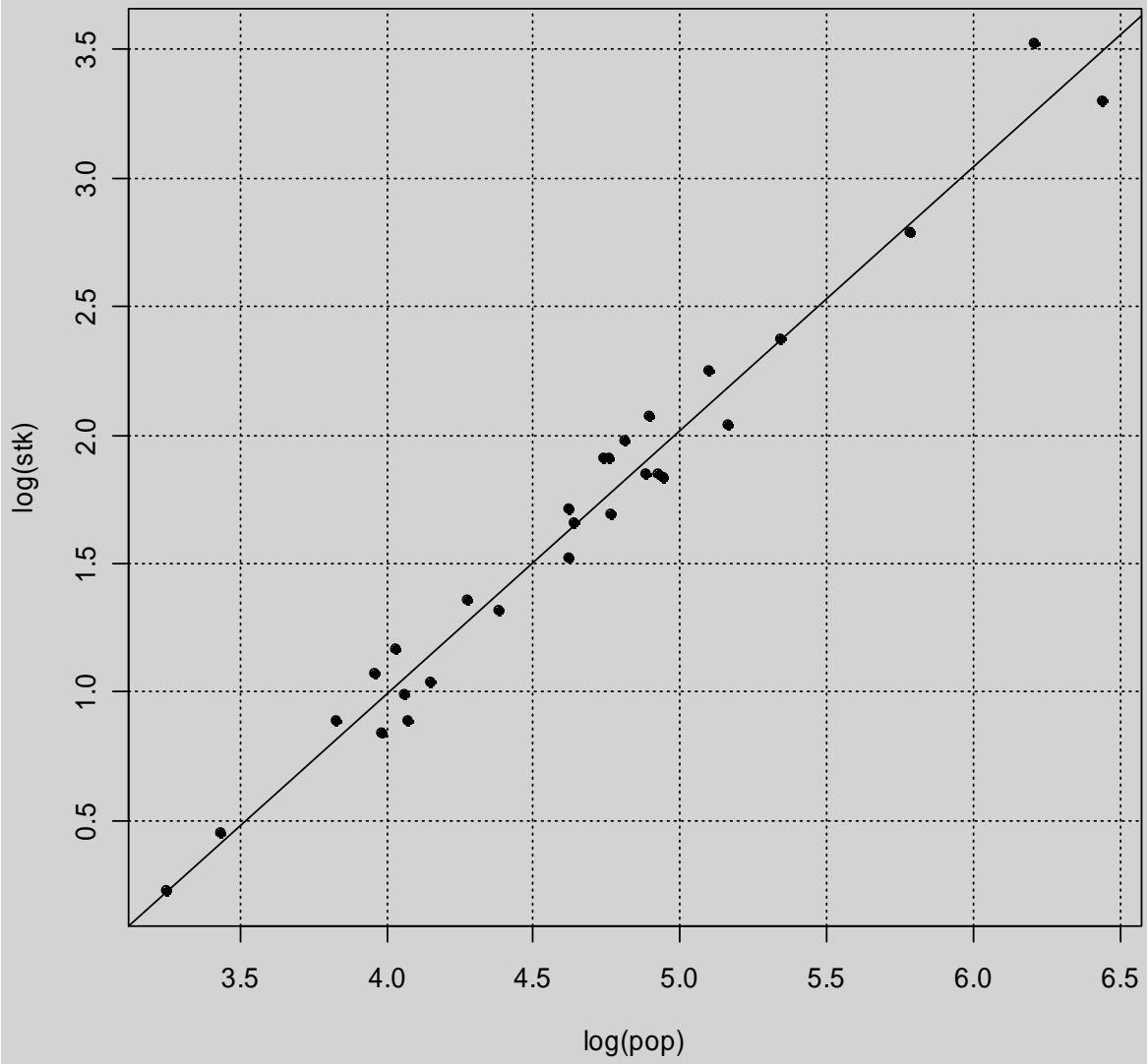
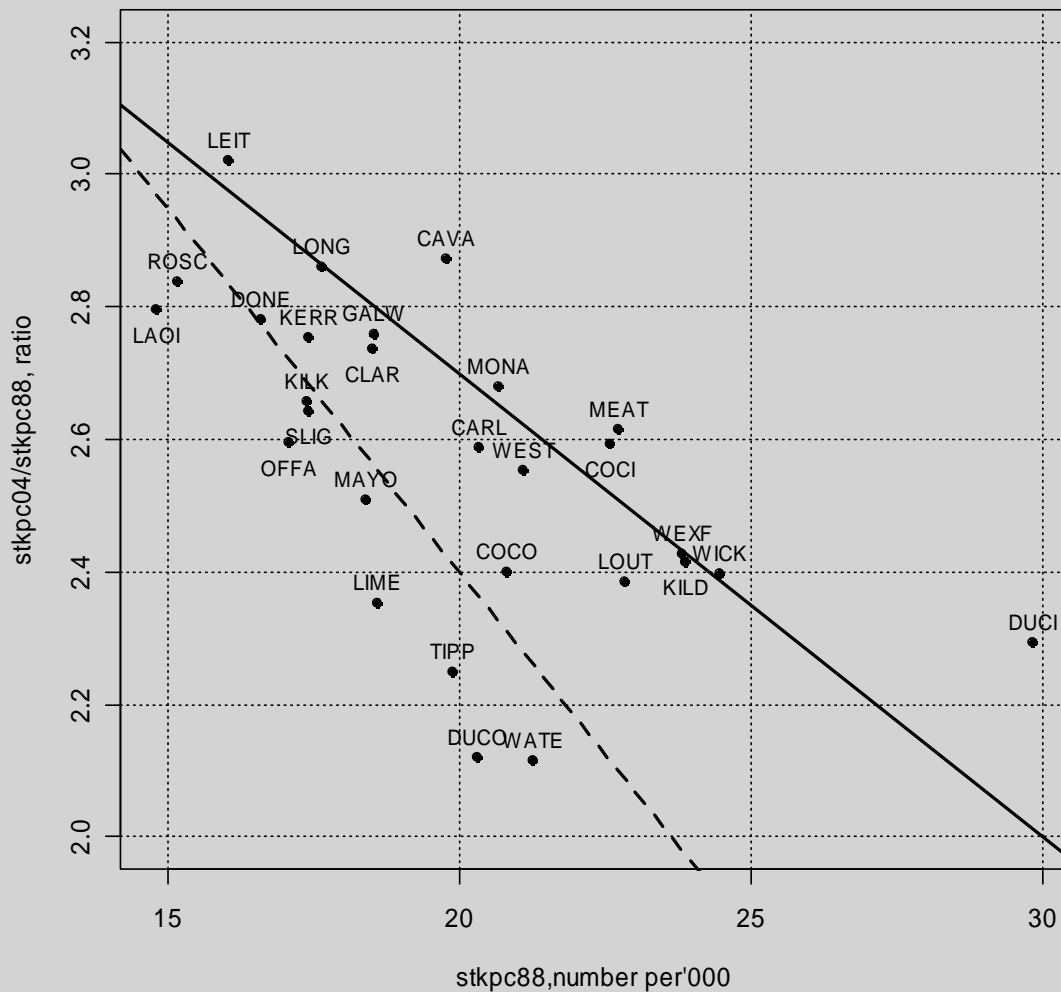
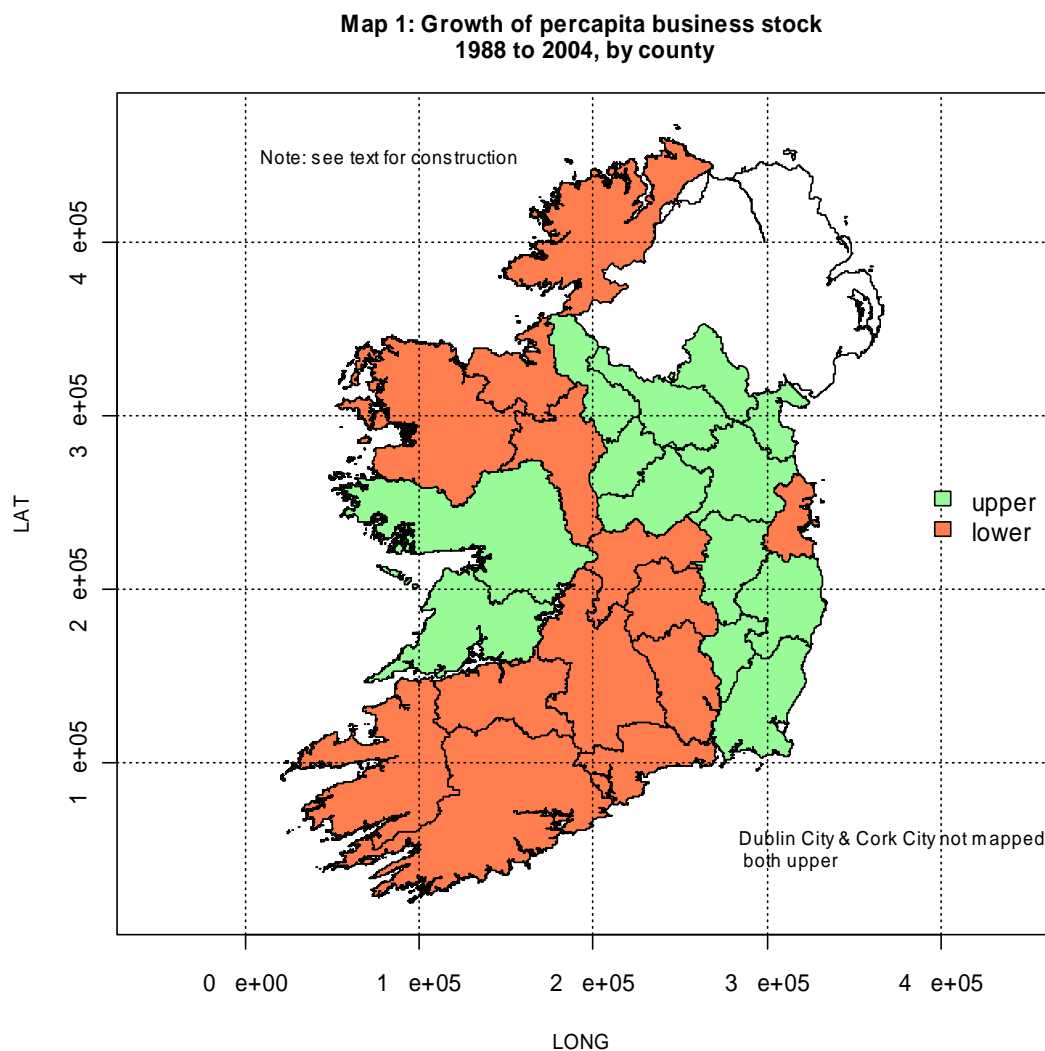


Figure 5: stock of businesses per capita (stkpc), ratio stkpc(2004/1988) vs stkpc(1988), by bailiwick



However, on closer inspection the scatter of points can be divided roughly into two groups: the relationship between $stkpc88$ and $(stkpc04/stkpc88)$ appears to have two 'arms'. For similar initial per capita business stocks, bailiwicks on the lower 'arm', close to the dashed line (e.g. Laois (LAOI), Roscommon (ROSC), Donegal (DONE)) recorded lower growth than bailiwicks on the upper 'arm' (e.g. Leitrim (LEIT), Longford (LONG)). Map 1 has been coloured according to this classification with the bailiwicks from the upper 'arm' coloured green, and those from the lower 'arm' coloured orange, and there is a clear spatial pattern. The bailiwicks from the upper arm: that is, those which converged more than average are, for the most part, in an arc around Dublin (but not including Dublin County itself), and along the border with Northern Ireland. Two other bailiwicks in the west of Ireland – Galway (GALW) and Clare (CLAR) – are

also on the upper ‘arm’. Elsewhere, the rest of the country displayed a lower than average rate of convergence.^{xi}



From a spatial viewpoint the doubling of the per capita business stock between 1988 and 2004 has been associated with a degree of convergence with initially under-endowed bailiwicks growing more. However, there is a clear Dublin-bias in the process with most of the fastest converging bailiwicks located relatively close to Dublin. There may be a number of interpretations of this pattern with the most obvious being some spill-over of growth from Dublin coupled with the role of FDI in stimulating business births in the western counties of Clare and Galway (see the earlier discussion on the work of Görg and Strobl, 2002; 2003). The series of Irish National Spatial Strategies, the latest of which is for the 2002-2020 period, placed increasing emphasis on emerging spatial clusters of

economic activity developed around internationally competitive Irish and foreign-owned firms in order to achieve a more ‘balanced regional development’. The evidence presented here would suggest that, using this rather narrow dimension of the stock of businesses, and the process of ‘births’ and ‘deaths’ which lie behind it, some considerable progress has been achieved. However, a detailed consideration of the role of industrial policy (e.g. through more favourable subsidies to firms located in certain areas) and the impact of a National Spatial Strategy on encouraging business start-up activity outside Dublin, while important, is beyond the scope of the current paper.

5. Conclusions

Since the 1980s a major component of small firm policy throughout the European Union was the encouragement of start-up activity which was predicated on some understanding of the notion that economic growth was, in part, driven by the entrepreneurial process. The growing research evidence would suggest that this ‘causal’ connection has not yet been adequately demonstrated. In this context we take the ‘unique’ Irish case and address a very basic research question: if there were indeed a connection between economic growth and entrepreneurial activity, would we not expect to find evidence of an increase in the gross and net business birth rate in one of Europe’s most rapidly growing economies?

What we find is that at the national level the growth rate in new business venture creation in Ireland in the late 1980s/early 1990s (i.e., prior to the period of rapid economic growth) are broadly similar to those observed in later periods: either the rapid growth phase (1994-2000) or the period 2001-2004. The implication here is that economic growth can occur at the national level without a concomitant rise in business start-up activity. An examination of the relationship between new firm formation (gross births) and the employment rate in this period confirms this interpretation as the resulting plot of the relationship over time follows a ‘Z’ shape suggesting a much more complex set of drivers involved in job creation in Ireland. This is an important observation in the context of the constant desire by policy-makers to embrace some notion of a ‘business birth rate strategy’ as part of a wider economic strategy to stimulate economic growth (see Anyadike-Danes *et al.*, 2005 for a fuller critique).

However, at the sub-national level, what we observe is that there has been some degree of convergence in the growth rate of new business activity across the Irish counties (or more accurately bailiwicks in this analysis). What we interpret from this is that the growth of the Irish economy since the mid-1990s has enabled other regions to increase their business start-ups rates. Therefore, what we may be observing here are the trickle-down effects of national

economic growth manifested through the entrepreneurial process in some more remote parts of Ireland outside Dublin, but mostly in those bailiwicks which are closest to the capital. The existence of a National Spatial Strategy may also have played an active role in this convergence. In other words, we are tending towards a conclusion which argues that national economic growth may have been a stimulus to increasing levels of gross business births at the sub-national level, which in turn may generate economic growth at the regional level.

The process of new business venture creation in Ireland obviously requires further investigation, for example an analysis of the Irish VAT data by sector for the 1988-2004 period. Unfortunately, the lack of spatial time series datasets makes impossible a more formal investigation of the links between birth rates and economic growth at the county-level.

Notes

ⁱ For a useful summary of this literature see Robinson et al., (2006).

ⁱⁱ The only previous attempt to examine the role of new firm formation to national and regional economic growth in Ireland was the work of Gudgin and Hart (1994); Hart and Hanvey (1995a; 1995b) and Gudgin et al., (1995). These studies used new firm formation data for the period 1980-90 and 1973-1990 respectively and, as such, are not pertinent to the central research question of this paper. The overall conclusion was that in the Irish economy it was FDI which was the major component of job generation compared to new indigenous start-ups.

ⁱⁱⁱ From the aggregate published statistics of the Department of Revenue, Government of Ireland.

^{iv} As outlined by McAleese (2000) "This took the form of a preferential tax rate of 10 per cent on all corporate profits for export-oriented manufacturing and traded services. Up to the 1990s, the standard rate of corporate tax (CPT) was 50 per cent. In 1998, under EU pressure, a new CPT regime was negotiated, involving the introduction of a 12.5 per cent CPT for all corporate income effective from 2003. The 10 per cent was "grandparented" up to 2010 for all companies already enjoying this preference" (p. 48).

^v For example, Johnson and Conway (1997) concluded that the VAT data does have the advantage that they are relatively comprehensive, are "official" and are collected on a regular basis. The OECD micro-level dataset on firm demographics uses VAT business registers in many of the industrial countries as a key input into identifying business entry and exit (see Bartelsmann *et al.*, 2004).

^{vi} Detailed discussions with officials in the Revenue Commissioners responsible for the Irish VAT statistics confirm that their administrative categories broadly conform to this notion of business ‘births’ and ‘deaths’.

^{vii} As we observed earlier this was the year the Irish Government announced a tax amnesty. Although it has not yet been possible to estimate how this may have affected the trend of VAT registrations and cancellations in the early years of our study period, it is reasonable to assume that some of the rise in VAT registrations in 1989 and 1990 may be related to this amnesty as businesses not previously registered for VAT take the opportunity to do so as part of a wider legitimisation of their tax affairs.

^{viii} We are currently in the process of checking the industrial classification data (5-digit NACE codes) held for each record and we will be able to provide a disaggregated analysis once this is done. Investigations of the data to date suggest that the NACE coding in the earlier years of the period require some verification with the Revenue Commissioners.

^{ix} In each case a single tick mark represent 10 thousand businesses.

^x This is the administrative geographical unit (or Tax District) historically used by the Revenue Commissioners and broadly relates to the Irish county boundaries.

^{xi} Of course, there is a degree of arbitrariness in this classification, but notice that the bailiwick closest to the upper/lower border – Kerry (KERR) – is a neighbour to Clare.

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