2017

Internationalisation of Indigenous Start-Ups: Economic Development in a Small Peripheral Economy

Clare O'Mahony
Technological University Dublin, clare.omahony@tudublin.ie

Internationalisation of Indigenous Start-Ups:
Economic Development in a Small Peripheral Economy

Clare O'Mahony[1]
Dublin Institute of Technology

Presented to Regional Studies Association Annual Conference

Dublin, 5th June 2017

Abstract
Ireland's economic development is intrinsically linked to its success at attracting Foreign Direct Investment (FDI). For decades, indigenous industry has lagged behind the foreign-owned sector, giving rise to concerns of a dualistic industrial structure. An over-reliance on FDI carries a number of risks associated with its footloose nature and weak linkages in the domestic economy. The development of a strong export-oriented indigenous sector is therefore seen as essential to ensure sustainable economic growth and employment security. Since the 1990s, Irish industrial policy has placed a greater emphasis on indigenous industry. At the same time technological change and the decentralisation of Multinational Enterprises (MNEs) have provided opportunities for small innovative firms.

This paper examines the internationalisation of indigenous start-ups that received support from Enterprise Ireland, the government agency tasked with the development and growth of indigenous industry. These firms are traced over time using the FAME database, supplemented by other sources including websites and news reports. Survivors are found to have high levels of internationalisation. Consistent with findings for other small economies, acquisitions are often by foreign-owned MNEs. A blurring of the indigenous/foreign-ownership dichotomy raises a number of questions including the degree of embeddedness of these firms in the domestic economy, their FDI linkages, the ability of policy-makers to ensure local ownership, and the relevance of indigenous ownership for a small peripheral economy in a highly globalised and networked world.

Key words
High Technology Firms; Acquisition; Economic Development; Foreign Direct Investment.

1. Introduction
This study was motivated by a number of findings in an earlier paper by Barry et al (2012). First, that private equity (PE) investment in Ireland was highly internationalised with substantial inward investment, compared with other European economies over the period 1996-2006.[2] Second, that on average, almost 80 per cent of PE investment in Ireland over the period 1990-2010 was venture capital (VC). These two findings suggest a high level of inward investment into Irish-based start-ups by foreign investors. The third finding of interest from Barry et al (2012) was that trade sales were the most popular exit mode for VC in Ireland, far higher than

[1] Email: clare.omahony@dit.ie
[2] Data limitations do not allow this analysis on venture capital itself.

in Europe generally, at 42 per cent over 2004-2010 compared to a European average of 26 per cent in the same period. In addition to these findings, there were a number of news reports of the foreign acquisition of various Irish technology start-ups. Together, these suggest the possibility of both substantial foreign investment into Irish indigenous industry and the risk that Irish firms are bought by foreign firms and therefore cease to be Irish-owned. In the latter case, efforts to build a strong, self-sustaining, exporting indigenous industry may be in vain. In addition, substantial involvement of foreign owners in indigenous industry raises the question of the meaning and economic implications of indigeneity, for example are these firms less embedded in the local economy and hence more footloose than might be expected of indigenous industry?

As a preliminary analysis, this paper examines the outcomes for 222 High-Potential Start-Ups (HPSUs) supported by Enterprise Ireland, the Irish agency tasked with the development and growth of Irish-owned industry. These firms were registered as HPSUs by Enterprise Ireland over the years 2009-2011, a period of economic crisis in Ireland. [3] This paper reports on some of the characteristics of these firms and particularly focuses on ownership outcomes, on the rate of acquisition and the extent of indigeneity of the firms. This will form part of a wider study that looks at a number of aspects of the internationalisation of HPSUs in terms of activity in international markets, links with Foreign Direct Investment (FDI) in Ireland and reasons for acquisition.

The paper proceeds as follows: The next section reviews the role of indigenous industry within Irish economic policy. Various issues that arise in developing indigenous exporting industry in a peripheral economy and outcomes after VC exit are discussed in Section 3. The data sources and research approach are explained in Section 4. Section 5 reports some preliminary results. Some tentative conclusions follow, together with a discussion of the future plans for this research.

2. Indigenous Industry within Irish Economic Policy

The over-riding concern of Irish industrial policy since Independence, in the 1920s, has been job creation. At Independence, the Irish economy was underdeveloped and, due to the problems associated with late industrialisation, the market failed to create the requisite number of jobs. Consequently, emigration was high. Although the protectionist economic policy adopted in the 1930s and 1940s, with an emphasis on import-substitution and Irish ownership of industry, resulted in growth in manufacturing employment and higher standards of living, neither were on the scale required and high levels of emigration continued. Furthermore, the 1950s brought a balance-of-payments crisis.

Ireland made its first tentative steps in attracting FDI in the 1950s through a system of grants and tax concessions.[4] Breznitz (2012) argues that foreign-owned MNEs were expected to provide jobs more quickly than was possible through the longer-term development of indigenous industry and these jobs were immediately measureable and achievable. Another

[3] There were 244 HPSUs over these years: 73 in 2009, 80 in 2010, 91 in 2011, but only 222 are recorded in the HPSU Showcase publications used to collect the data, comprising 68 in 2009, 73 in 2010 and 81 in 2011.

[4] Although these concessions were not exclusively available to foreign-owned firms, in practice it was new foreign industry that availed of them.

reason for efforts to provide concessions to foreign industry that was specifically export-oriented was that these new firms would not be competing with incumbent industry on the Irish domestic market. Ultimately, more employment, prosperity, and lower levels of emigration resulted. FDI gained further momentum after EU entry. Since then Ireland's economic development has been intrinsically linked to its success at attracting FDI.

In contrast the indigenous sector has lagged behind. Whether because of indigenous firms being considered rent-seekers, or a tunnel-vision on the part of state agencies, it has been argued that Irish indigenous industry has been neglected by the State, leading to a dualistic industrial structure. An over-reliance on FDI carries a number of risks associated with its perceived footloose nature and weak linkages in the domestic economy. The development of a strong indigenous sector is therefore considered essential to ensure sustainable economic growth, and employment security. With a small domestic market, Irish-based firms need to be export-oriented from early on. The policy emphasis is therefore on growing the exporting indigenous sector. Although the importance of a strong exporting indigenous sector and concern over the reliance of foreign ownership has been a consistent theme in Ireland for a number of decades, the development of a self-sustaining export-oriented indigenous industrial sector is a goal that has long eluded policy-makers.

Table 1, which excludes the finance sector, compares indigenous and foreign-owned enterprises in Ireland in 2014. Indigenous firms are far more numerous, but smaller, with only four employees on average, compared with an average of almost 84 employees for foreign-owned enterprises. Consequently, although less than two per cent of enterprises are foreign-owned, the sector accounts for almost one-quarter of all employment. Turnover and Gross Value Added (GVA) per employee are also lower in the indigenous sector.

Table 1: Comparisons of Indigenous and Foreign-Owned Industry in Business Sectors excluding Finance, 2014

	Indigenous	**Foreign-Owned**
Average employees per enterprise	4.0	83.8
Average turnover per enterprise (€m)	0.9	64.3
Average turnover per employee (€m)	0.2	0.8
Gross Value Added per employee (€m)	0.1	0.2
Nos. of Enterprises	245603	3774
Percentage of total enterprises	98.5	1.5
Nos. Employed	983331	316305
Percentage of Employment	75.7	24.3

Source: Author's own calculations from Structural Business Statistics, CSO

The 1990s saw the State introduce a number of initiatives to support the development of the indigenous sector. This policy shift was spurred by the growth and development of an indigenous software industry, together with criticism in both the Telesis Report of 1981and Culliton Report in 1992 highlighting the importance of a strong self-sustaining indigenous industry. Enterprise Ireland was established as the government agency to support the development and growth of indigenous industry. At the same time technological changes and the decentralisation of Multinational Enterprises (MNEs) provided market opportunities for small innovative firms. Concomitant with these changes were a number of developments boosting the venture capital (VC) market in Ireland.

One such policy initiative is the support targeted at High-Potential Start-Ups (HPSUs). Enterprise Ireland defines a High Potential Start-Up (HPSU) to potential clients on its website as

> "a start-up venture that is:
> - Introducing a new or innovative product or service to international markets.
> - Involved in manufacturing or internationally traded services.
> - Capable of creating 10 jobs in Ireland and realising €1 million in sales within three to four years of starting up.
> - Led by an experienced management team.
> - Headquartered and controlled in Ireland.
> - Less than five years old from the date of your company's registration"
>
> (Enterprise Ireland website)

Enterprise Ireland provides a number of supports to HPSUs, depending on the stage of the firm's development. Much of its financial support involves the co-funding of firms with venture capitalists. Enterprise Ireland has been supporting firms in this way since the 1990s. In 2011, its then CEO, Frank Ryan, proclaimed that "Enterprise Ireland is the largest venture capitalist in Europe" (O'Donoghue, 2015)

3. Developing and Growing Internationalised Indigenous Industry

The *Oxford English Dictionary* defines 'indigenous' as "originating or occurring naturally in a particular place; native". A similar definition is given in the *Cambridge English Dictionary*: "naturally existing in a place or country rather than arriving from another place." However, Enterprise Ireland requires only that the firm is "headquartered and controlled in Ireland" so will support foreign investors if they establish a business in Ireland.

Start-up enterprises find it difficult to access traditional sources of finance such as bank loans and other debt financing instruments. Reasons include high risk or uncertainty, an unproven product or concept, a high level of intangible assets, lack of collateral, lack of a track record, low turnover with many years of negative cashflow in prospect, and information asymmetries (Baygan and Freudenberg, 2000; Jeng and Wells, 2000; Hogan and Hutson, 2005; Lerner, 2009; Mac an Bhaird and Lucey, 2010). These problems are particularly acute for high-technology firms because their greater information asymmetries and levels of intangibles (such as in the software industry) make them difficult to value (Cumming and MacIntosh, 2001). Cumming and MacIntosh (2001) argue that this leads to longer investment durations in high-tech firms as it takes more time for cashflow to turn positive and exit is difficult due to the problems associated with valuation. Long maturing times can lead to VC market failure where a maturing time is beyond the lifespan of a VC fund, this is especially likely in the biotechnology or medical devices sectors (Messica and Agmon, 2008). Common sources of finance are for high-tech start-ups are VC funds or angel investors as well as government backed grant or tax incentive equity schemes (Mac an Bhaird and Lucey, 2010). Indeed early investors are often family and friends. Given the level of risk, VC-backed projects have high failure rates, and venture capitalists therefore expect high-returns from the few successful projects to compensate for the many failures (Kenney et al, 2002).

VC is defined as long-term equity capital provided to early-stage companies, covering seed, start-up, early-stage, and expansion funds. As VC plays an important role in the financing of high-tech start-up industry and as the co-funding of HPSUs with VC is an important part of the support offered by Enterprise Ireland, a number of aspects of the VC market are worth noting. First, long maturing times mean that the firm may only turn profitable long after the life of the VC fund. In such cases there can be a role for government intervention in supporting the firm and in helping obtain further financing. Second, the VC investment cycle can be quite volatile. State agencies can play a role in smoothing out the VC investment cycle and solve the problems associated with volatility (Jeng and Wells, 2000; Messica and Agmon, 2008). Third, VC funds are oligopolistic with most of the high-risk capital globally held by a few large financial institutions in the US and Western Europe (Agmon, 2006). Fourth, drivers of cross-border VC flows include the distance between home and host countries, and language and colonial ties.[5] Syndication of overseas deals, often undertaken by local VC firms, means that language and other cultural ties are particularly important. Important regional benefits from the support of HPSUs are direct job creation and indirect effects from knowledge spillovers result in the social benefits from R&D outweighing the private benefits (Lerner, 1996). The existence of such spillovers is a valid argument in favour of government intervention in the development of innovative start-ups (Lerner, 2009) as support for the early entrepreneurs in a new industry will create external economies leading to the establishment of more firms. Economies of agglomeration, including the development of pools of skilled labour and sub-suppliers, arise from the clustering of VC-supported industry. Shane (2009) suggests that the VC-backing of a firm is a good indication to industrial agencies of its growth potential.

Given that one focus of this paper is the ownership outcomes of firms a few years after receiving support from Enterprise Ireland, the VC exit process is also important to note. VC divestment may occur in a number of ways. Successful exits will be largely through trade sales (where the investee firm is sold to another in the same industry), or through IPOs. Agmon and Messica (2009) argue that the VC exit process is a direct outcome of two aspects of VC: Firstly, the need for change and secondly, the need to harvest the investment (i.e. through the capital gain on exit). The aim of venture capitalists is to ultimately harvest their investments when the time is suitable (Megginson, 2004). As noted earlier, Barry et al (2012) found that trade sales were especially popular as a mode of VC exit in Ireland. Arguing that IPOs have better returns than other modes of exit, Mulcahy (2005) suggests the poor performance of the Irish Stock Exchange as one reason for the popularity of trade sales over IPOs for Irish VC divestment. Another factor may be early divestment from Irish enterprise as Jeng and Wells (2000) point out that IPOs are more important for later-stage investments than for exit at an early-stage. Barry et al (2012) find low levels of later-stage VC. Together with the high level of trade sales in Ireland, this suggests either a lack of access to later-stage finance for expansion or a reluctance, or inability, on the part of venture capitalists or entrepreneurs to further grow their firms. Mulcahy (2005) suggests that most Irish start-ups perceive themselves as too small to go public and opt instead for trade sales. Interestingly, Mason and Brown (2010:46) argue that VC funds prefer trade sales to IPOs as “major shareholders are ‘locked-in’ after and IPO” and that some venture capitalists had to be talked into an IPO. Venture capitalists generally want to exit within a short few years, Mason and Brown (2010) suggest three to seven years. Mason and Brown (2010) recommend that policy interventions on VC exit should include promoting IPOs

[5] These may act as proxies for networks and also of institutional similarity (Aizenman and Kendall, 2008).

as the mode of VC exit in order to maintain independence of local enterprise, and facilitating entrepreneurial recycling by the cashed-out entrepreneurs. Trade sales may not just be the choice of the VC fund, however. The intention of the entrepreneur may have always been to sell the firm early rather than to continue to grow it. Mason and Brown (2013) suggest that, although there is evidence that VC funds increasingly favour trade sales, other reasons may be to acquire necessary resources for further growth of the business, or that the original objective of the entrepreneur may always have been to sell. Wennberg and DeTienne (2014) point out that exit intentions are formed early and vary across entrepreneurs. Where a business has been developed from a proprietary product or service, the entrepreneur's plan may have always been to ultimately cash-in by selling the intellectual property to another firm.

Given the high level of trade sales of Irish start-ups, the reasons for such acquisitions and the outcomes for the acquired firms are worth examining. According to Mason and Harrison (2006), there are both demand-side and supply-side reasons why larger firms acquire small technology firms. On the demand-side, there is the need for larger firms, operating in oligopolistic markets to retain their competitive edge through innovation. New technology tends to be developed by young small innovative firms whereas in-house R&D activities in larger firms are limited to incremental changes in technology (Mason and Harrison, 2006). Therefore, MNEs will buy small innovative firms obtain their proprietary knowledge in order to maintain competitiveness. Keller and Block (2012) argue that SMEs, rather than large MNEs, are now commonly responsible for innovation, one factor being the adoption of 'open innovation' policies by large corporations rather than undertaking R&D in house as in the past. Evidence for this according to Keller and Block (2012) is found in the jobs available for PhD level scientists and engineers in the US which are predominantly in SMEs rather than in large firms. O'Malley and O'Gorman (2001) also point to the lower entry barriers and consequent lower concentration of the software industry compared to other industries allowing the establishment of small firms, often to serve specialised niches. On the supply-side are the reasons for small firms to need or seek acquisition. Start-ups face various barriers to further growth. In particular, small firms face barriers to entry into markets especially foreign markets (an inability to develop distribution channels, for example) and they often lack the finance necessary to develop markets for their product or service. As a result, many such firms will either fail or stay small, while others will sell to larger firms in an effort to access markets or finance (Mason and Harrison, 2006). In their study of High-Growth Firms (HGFs) in Scotland, Mason and Brown (2010) find that a 'significant numbers' of HGFs are acquired as subsidiaries by MNEs, particularly if located in technology sectors.[6] Reasons include the need to access finance or managerial expertise or distribution channels (Mason and Brown, 2010). Entrepreneurs may also have aimed to sell (Mason and Brown, 2010).

Acquisition of indigenous industry may have a negative impact on the local economy, depending on what happens post-acquisition. If the business gains from an injection of funds and management expertise then the acquisition is likely to be positive for the local economy. On the other hand, if it is downsized or closed, the impact may be negative. Closure or downsizing

[6] HGFs tend to be larger than the HPSUs in this sample, defined by Mason and Brown (2010:7), in line with the OECD definition, as firms with "average annualised growth in employees or turnover greater than 20% per annum, over a three year period, and with more than 10 employees in the beginning of the observation period." Another difference between their study and the one reported here is that Scotland is regarded as a 'rustbelt' region whereas Ireland is a late industrialiser.

tends to happen more in the medium-term rather than immediately. Mason and Harrison (2006) note a consensus in the literature of a negative medium-term impact of such acquisition on the local economy. In particular, they point to the tendency for firms in the UK periphery (such as Scotland) to be bought by firms from the core (such as South-East England), further weakening the periphery through the loss of higher-order jobs and local business linkages. They further cite studies that show that where technology companies in Canada and Israel that had struggled to compete against US firms in the US market, sold out to US firms, they tended to only retain the R&D function.

However, Mason and Harrison (2006) point out that most studies are limited to the manufacturing sector. Irish HPSUs tend to be in services. Similarly, Mason and Brown (2010) find that most HGFs in their study were engaged in Business-to- Business (B2B) services and speculate that these services provide niches that can be easily filled by small firms. Such firms had on-going relationships with their customers (Mason and Brown, 2010). Some were ‘born global’ having no sales in Scotland, while others were heavily internationalised with a number of locations outside Scotland. There are positive outcomes from acquisition. ‘Cashed-out’ entrepreneurs may set up a new business or act as business angels (Mason and Brown, 2010). Mason and Brown (2010) find both serial and portfolio entrepreneurs in their sample. Some had sold previous businesses and used the funds to finance new ventures. Some had a number of firms but might run down existing businesses if they spotted a new opportunity that showed greater likelihood of success. Some entrepreneurs started their own businesses after the company they had worked for was acquired. Some churn therefore occurs. Mason and Brown (2010) say this confirms the importance of Schumpeterian creative destruction in economic development.

Indigenous industry is expected to be more embedded in the domestic economy, and therefore less footloose, than FDI. However, if indigenous industry is heavily internationalised with its focus on overseas markets, it may not be particularly embedded in the local economy. Mason and Brown (2010) observe that HGFs in Scotland have a small local “footprint” often being limited to the Head Office. This is necessary because of the necessity for a presence in export markets, close to the customer. They conclude that HGFs in small peripheral regions can have a minor impact on the local economy although they do create high quality jobs in the headquarters. Mason and Brown (2010) argue that this makes such firms particularly vulnerable to post-acquisition closure, especially if the only local involvement has been the head office. Firms that are mostly doing business overseas are likely to be freer in their choice of location. Mason and Brown (2010) in their interviews with HGF founders in Scotland, find that the choice of Scotland as a location for the firm was because it was where the founders lived and that they remained in Scotland because they wanted to live there. Some interviewees said that their base could be anywhere although others felt that their location was part of their brand (Mason and Brown, 2010).

Given the dominance of FDI on the Irish industrial landscape, opportunities for embeddedness may be limited to B2B opportunities with MNE subsidiaries in the Irish economy. Finding low levels of productivity spillovers from manufacturing FDI to local industry, Ruane and Uğur (2005) point to an inconsistency in Irish industrial policy that has promoted ‘enclave’ FDI due to its emphasis on export-orientation and a corporate tax policy which favours imported rather than locally-sourced inputs, as it encourages profit-shifting to Ireland via transfer pricing. This has reduced opportunities for FDI spillovers. However, knowledge spillovers are likely to have been important to the development of the indigenous software sector in Ireland, which was particularly successful in the 1990s. The *Review of Industrial Policy and Performance* (2003) found that one-third of software entrepreneurs had worked in a foreign-owned electronics firm immediately prior to establishing their own firm and two-thirds had at some stage in their careers. Similarly, O'Malley and O'Gorman (2001) and Ó Riain (2004) found that a substantial number of those involved in the indigenous software sector were former MNE employees while others had worked in the industry overseas.

Mason and Brown (2010) question whether public policy interventions are worthwhile in cases where the firm is acquired. They question whether the State is 'fattening-up' firms for foreign owners to ultimately benefit. In this scenario the policy of promoting indigenous industry results in either expanding foreign-ownership in the economy (where the local firm remains in business) or overseas (where the local operation is shut-down post-acquisition). Mason and Brown (2010) find that firms may grow post-acquisition or may eventually close and their intellectual property extracted. They recommend that policy interventions on VC exit should include promoting IPOs as the mode of VC exit in order to maintain independence of local enterprise, and facilitating entrepreneurial recycling by the cashed-out entrepreneurs.

In the networked economy, decentralised and downsized MNEs engage with small firms through outsourcing, subcontracting and partnering, thereby maintaining what Harrison (1994) argues is a process of "concentration without centralization". In this view MNEs continue to dominate economically. Outsourcing, the debundling of MNE activities, and the relocation of corporate head offices makes it difficult to ascribe national identities to firms. For example, head office locations are often different from other homes: legal home, financial home, home of managerial talent (Desai, 2009). Internationalised SMEs in small peripheral economies may therefore also not be fully 'indigenous' in the sense of being locally owned.

4. Data and Methodology

The firms in this study were collected from the 'High-Potential Start-Up Showcase' publications produced by Enterprise Ireland for the three-year period 2009-2011. This period was chosen for a number of reasons. First, as the intention in the first instance is to examine firm outcomes after VC exit, this is a suitable period as it allows firms to be traced for approximately four to seven years post-receipt of Enterprise Ireland funding. It may therefore capture outcomes post-VC exit and the three to four year horizon in which Enterprise Ireland expects HPSUs to reach employment and sales goals.[7] Second, the timeframe covers years following the financial crisis and severe recession in Ireland, when many businesses closed and new start-ups are particularly important. Third, it gives a reasonably manageable data size for a preliminary analysis. There are 222 firms in the dataset. These are traced over time using Bureau van Dijk's FAME database, supplemented by other sources including websites and news reports.

FAME is an enterprise-level database covering the UK and Ireland only (including the Channel Islands). Mason and Brown (2010) used FAME to identify the HGFs in their study and to gather data for some descriptive statistics. They point out a number of disadvantages of the

[7] The data were collected over 2016-2017. In many cases, the most recent data in FAME are for 2015 however.

FAME database however. First, some information is out-of-date as some companies may have filed late accounts; second, as companies have different financial years, the information is not directly comparable in time; third, there is some double-counting and time lags in recording acquisitions and closures. Furthermore, FAME only includes companies with a separate legal status and incorporated in the country. This means that some entities cannot be found and changes in country of incorporation make the firm disappear from the database. This can occur, for example, where firms moved their head office abroad.

Unlike Mason and Brown (2010), this paper does not use FAME to identify the firms but only to find information about their various characteristics and outcomes. The firms are traced in the database and information on size (numbers of employees), sector (NACE Rev.2 codes), year of incorporation, year of closure or acquisition, directors, shareholders, and subsidiaries was collected, where relevant. In line with Lesher and Miroudot (2008), who utilise Bureau van Dijk's Amadeus database in their study of FDI spillovers, the 'global ultimate owner' (GUO) information is used to identify the owner of the firm. Because FAME only covers Ireland and the UK, further details of the ultimate owners (such as nationality) had to be traced through further searches if the owner was not an Irish or UK firm. Firms in liquidation are treated as dissolved.

As this study is a firm-level analysis, issues arise such as heterogeneity and the sample is therefore currently too small to undertake a very detailed analysis. Other difficulties arise from changes of name and also ownership which can be quite volatile. In this paper, the most recent information, at the time of data collection, is used. In some instances, firms were in FAME under alternative names, which in a number of instances had to be traced through searching through numerous news reports. Some were traced using the founder's name. In other cases, there are a number of related companies, this caused difficulties in finding the one in receipt of Enterprise Ireland funding. There is an inevitable survivor bias, as dissolved companies are difficult to trace, some never filed accounts.

5. Preliminary Results

Most Irish HPSUs are engaged in B2B services similar to the firms studied by Mason and Brown (2010). They are most often in Software, other IT-related, Fintech or Biotech industries. The most populated Nace 2-digit sectors are shown in Table 2. News reports suggest that a number have partnerships or on-going relationships with their customers. For example, Inishtech was reported in 2009 to have partnered with Microsoft IP Ventures to relaunch Microsoft Software Licensing and Protection (SLP) Services (Wauters, 2009). This suggests complementarities with FDI.

Table 2: Most populated Nace Rev.2 Two-digit Sectors

Nace 2-digit	Description	Nos. of Firms	Percentage
58	Publishing Activities (Includes software publishing)	49	22
62	Computer Programming, Consultancy and Related Activities	23	10
72	Scientific Research and Development	22	10
82	Office Administration, Office Support and Other Business Support Activities	15	7

70	Activities of Head Offices; Management Consultancy Activities	14	6

Employment data are unavailable for many firms in the FAME database, particularly if they are dissolved. Consequently, Table 3 reports the employment levels of just 126 HPSUs. Most HPSUs remained small, with few reaching the 10 or more employees, expected by Enterprise Ireland within three to four years of start-up. Indeed, more than one-fifth had just one or two employees, these are generally the founders.

Table 3: Firm Size

Employment	Nos. of Firms	Percentage
<10	72	57
10<50	48	38
50<100	5	4
100<250	1	1
Total	126	100

As the main focus of this paper is the indigeneity of HPSUs, the remaining discussion focuses on the acquired firms, or those that have moved head office abroad. Table 4 shows that, of the 222 firms in the database, 11 per cent had been acquired by the end of this study and another four per cent had become headquartered abroad. More than one-quarter had dissolved, four of which were dissolved subsequent to acquisition. This left just under 60 per cent headquartered in Ireland. Therefore, of the 165 surviving firms, 73, or just over 44 per cent, had either been acquired, moved abroad (at least in terms of the locations of their headquarters), were majority-owned by State agencies (most commonly Enterprise Ireland, presumably awaiting new round of funding), or, in one case, by an investment company.

Table 4: Outcomes

Outcome	**Nos. of Firms**	**Percentage**
Acquired (and dissolved)	25 (4)	11 (2)
Became Foreign	9	4
Majority Owned by State Agency	38	17
Majority Owned by Investment Company	1	1
No Change	92	41
Dissolved	57	26
Total	222	100

Out of the 57 non-acquired dissolved firms, more than one quarter were dissolved within a year of establishment, and over half within three years.

Table 5 shows that the GUO of almost half of the acquired firms is headquartered in the US.[8] Anglophone owners dominate with a further seven firms now in UK ownership and one in Australian. In total, 80 per cent of acquired firms were bought by owners headquartered in anglophone countries.

[8] One is headquartered in Bermuda, but as it is in every other respect a US company, this is assumed to be a case of financial engineering and the company is treated as US-owned.

Table 5

Country of GUO	Nos. of Firms	Percentage
Australia	1	4
France	1	4
Germany	1	4
Japan	1	4
Sweden	1	4
Switzerland	1	4
United Kingdom	7	28
United States	12	48
Total	25	100

Acquiring firms are in the same industry and often held a minority interest in the company at an earlier date. The main rationale for the acquisition is ownership of the proprietary knowledge or service. One firm, Mingoa, was acquired by a US MNE, Microsemi, that already had an Irish subsidiary.

Firms are further traced using websites and news reports, to get a better picture of the events that led to and shaped the acquisition, the intentions of the founders, the outcomes in terms of what then happens to the Irish subsidiary and the outcomes for the founders – do they become employees of the MNE or do they leave? If they leave, what happens to the cashed-out entrepreneur? The data collection is not yet complete so statistics are not reported here.

6. Concluding Remarks

This paper reports the preliminary results for a group of 222 Irish HPSUs supported by Enterprise Ireland in 2009-2011. It finds that most Irish HPSUs are in B2B services, particularly in software and IT-related activities, fintech and in biotech. Most firms remain small, many not growing beyond their founders. These findings are in line with those of Mason and Brown (2010, 2013). A number of firms (11 per cent) were acquired by foreign firms, some moved headquarters abroad, while others had moved to Ireland from abroad, or their founders were recent immigrants to Ireland.[9] Acquiring firms were in the same industry and were mostly from anglophone countries, particularly the US. Searches of websites and news reports suggest that survivors have strong business links internationally and many have business links with MNEs, including ones operating in Ireland. Another issue for Irish HPSUs is likely to be Brexit, as many had business links to the UK. Some parts of the research are incomplete however, so many results are only partially reported here.

In the case of foreign acquisitions, or where firms move their head office abroad, there is an irony that public policy aimed at developing indigenous industry leads ultimately to the growth of foreign-owned industry instead. If the State really wants to develop self-sustaining indigenous industry, it needs to consider ways to support and maintain Irish ownership. This may be achievable by supporting firms at the later-stage to grow and reach IPO stage. Alternatively, a change of culture may be required to encourage Irish entrepreneurs to envisage heading a larger company rather than selling. Another important factor that needs to be

[9] Not quantified here as this requires the wider website and news search, which is incomplete.

considered in maintaining indigenous ownership is access to markets, often provided through foreign ownership. However, in light of the shifts in international business and in the configuration of firms, the question may be more one of how to create Irish-owned MNEs.

The rationale for building a self-sustaining export-oriented indigenous sector is based on the risks associated with the footloose nature of foreign investment and the stronger linkages to the wider economy thought to be provided by indigenous industry. The external focus of HPSUs suggests a possible lack of embeddedness in the Irish economy, and the desire to be closer to the market is a likely reason for the relocation abroad of head offices by some firms. It also appears likely that a number, though headquartered in Ireland, have more activity abroad. This raises the question of the economic meaning of the location of a firm's headquarters. Many companies during website searches, did not report any physical location, suggesting that this is irrelevant to them. A blurring of the indigenous/foreign-ownership dichotomy raises a number of questions including the degree of embeddedness of these firms in the domestic economy, their FDI linkages, the ability of policy-makers to ensure local ownership, and the relevance of indigenous ownership for a small peripheral economy in a highly globalised and networked world.

Future plans for this research are the completion of data collection on international business linkages and linkages with FDI. Further searches are necessary also to complete the data on founder motivations and reasons for acquisition. It is also intended to extend the database to cover a greater number of years, to both include a larger number of firms and to generate a longer time-series.

References

Agmon, T. (2006) 'Bringing Financial Economics into International Business Research: Taking Advantage of a Paradigm Change' *Journal of International Business Studies, 37,* 575-577

Agmon, T. and A. Messica (2009) 'Financial Foreign Direct Investment: The role of Private Equity Investments in the Globalization of Firms from Emerging Markets' *Management International Review*, *49*(1), 11-26

Aizenman, J. and J. Kendall (2012) 'The Internationalization of Venture Capital' *Journal of Economic Studies, 39*(5), 488-511 an earlier version is available as Aizenman, J. and J. Kendall (2008) 'The Internationalization of Venture Capital and Private Equity ' *NBER WP14344*

Barry, F., C. O'Mahony and B. Sax (2012) 'Venture Capital in Ireland in Comparative Perspective' *Irish Journal of Management, 32* (1), 1-26.

Baygan, G. and M. Freudenberg (2000) *The Internationalisation of Venture Capital Activity in OECD Countries: Implications for Measurement and Policy.* OECD Science, Technology and Industry Working Papers DSTI/DOC (2000)7, OECD Publishing.

Breznitz, D. (2012) 'Ideas, Structure, State Action and Economic Growth: Rethinking the Irish Miracle' *Review of International Political Economy, 19*(1), 87-113.

Cumming, D. and J. MacIntosh (2001) ‘Venture Capital Investment Duration in Canada and the United States’ *Journal of Multinational Financial Management*, *11*(4), 445-463.

Desai, M. (2009) ‘The Decentering of the Global Firm’ *World Economy*, *32*(9), 1271-1290.

Enterprise Equity Venture Capital (2012) *Polecat secures €850,000 investment from AIB Seed Capital Fund, private investors and Enterprise Ireland*, 23rd February. Available at http://www.enterpriseequity.ie/2012/02/polecat-secures-e850000-investment-from-aib-seed-capital-fund-private-investors-and-enterprise-ireland/ accessed 7th May 2017.

Enterprise Equity Venture Capital (2014) *Microsemi Acquires Mingoa*, 23rd July. Available at http://www.enterpriseequity.ie/2014/07/microsemi-acquires-mingoa/ accessed 16th May 2016.

Enterprise Ireland website accessed 7th May 2017.

Halo Business Angels Network *(*HBAN) (2014, 9th September). Available at http://www.hban.org/News/Mingoa-sale-a-successful-exit-for-Boole-investors.363.html accessed 5th May 2017.

Harrison, B. (1994) ‘The Small Firms Myth’ *California Management Review*, *36*(3), 142-158.

Hogan, T. and E. Hutson (2005) ‘Capital Structure in New Technology-Based Firms: Evidence from the Irish Software Sector’ *Global Finance Journal*, *15*(3), 369-387.

Industrial Policy Review Group (1992) *A Time for Change: Industrial Policy for the 1990s*, Stationery Office, Dublin. This is widely known as the “Culliton Report”.

Jeng, L. and P. Wells (2000) ‘The Determinants of Venture Capital Funding: Evidence across Countries’ *Journal of Corporate Finance*, 6, 241-289.

Keller, M. and F. Block (2012) ‘Explaining the Transformation in the US Innovation System: the Impact of a Small Government Program’ *Socio-Economic Review 11*, 629–656.

Kennedy, J. (2012a) ‘Polecat Raises €850k to Focus on Decision Analytics Business’, *Silicon Republic*, 24th February. Available at https://www.siliconrepublic.com/start-ups/polecat-raises-850k-to-focus-on-decision-analytics-business accessed 7th May 2017.

Kennedy, J. (2012b) ‘US Cloud Player Egenera Buys Dublin Software Firm Fort Technologies’, *Silicon Republic*, 5th December. Available at https://www.siliconrepublic.com/enterprise/us-cloud-player-egenera-buys-dublin-software-firm-fort-technologies accessed 7th May 2017.

Kenney, M., K. Han, and S. Tanaka (2002) ‘Scattering Geese: the Venture Capital Industries of East Asia: a Report to the World Bank’ *Berkeley Roundtable on the International Economy*, UC Berkeley.

Lerner, J. (1996) ‘The Government as Venture Capitalist: The Long-Run Effects of the SBIR Program’ *National Bureau of Economic Research* WP5753.

Lerner, J. (2009) *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do About It*, Princeton University Press.

Lesher, M. and Miroudot, S. (2008) 'FDI Spillovers and Their Interrelationships with Trade', *Working Paper No. 80*, OECD Working Party of the Trade Committee.

Mac an Bhaird, C. and B. Lucey (2010) 'Determinants of Capital Structure in Irish SMEs' *Small Business Economics*, *35*(3), 357-375.

Mason, C. and R. Brown (2010) *High Growth Firms in Scotland* Final Report for Scottish Enterprise. Available at https://pure.strath.ac.uk/portal/files/1364523/HGF_FINAL_REPORT_NOV_2010_1_.pdf

Mason, C. and R. Brown (2013) 'Creating Good Public Policy to Support High-Growth Firms' *Small Business Economics*, *40*(2), 211-225.

Mason, C. and R. Harrison (2006) 'After the exit: Acquisitions, Entrepreneurial Recycling and Regional Economic Development', *Regional Studies, 40*(1), 55-73.

Megginson, W. (2004) 'Toward a Global Model of Venture Capital?' *Journal of Applied Corporate Finance*, *16*(1), 89-10.

Messica, A. and T. Agmon (2008) 'Venture Capital Dynamics, the Public Sector and the High Technology Industry' *International Journal of Entrepreneurship and Innovation Management, 10*(3), 227-242.

Mulcahy, D. (2005) 'Angels and IPOs: Policies for Sustainable Equity Financing of Irish Small Businesses' *Studies in Public Policy, 16,* 1-123.

O'Donoghue, P. (2015) 'Enterprise Ireland is Now Europe's Biggest VC fund' *Sunday Independent*, 18th January.

O'Malley, E. and C. O'Gorman (2001) 'Competitive Advantage in the Irish Indigenous Software Industry and the Role of Inward Foreign Direct Investment' *European Planning Studies, 9*(3), 303-321.

Ó Riain, S. (2004) *The Politics of High-Tech Growth: Developmental Network States in the Global Economy*, Cambridge University Press.

Percival, G. (2012) 'US Cloud Firm Egenera Buys Fort Technologies', *The Irish Examiner,* 6th December.

Review of Industrial Policy and Performance (2003).

Ruane, F. and A. Uğur (2005) 'Foreign Direct Investment and Productivity Spillovers in Irish Manufacturing Industry: Evidence from Plant Level Panel Data' *International Journal of the Economics of Business, 12*(1), 53-66.

Science Foundation of Ireland (SFI) (2009) ‘Irish Firm to Offer Faster and More Dynamic Market Intelligence Data to Global Organisations’**,** 2nd December 2009. Available at http://www.sfi.ie/news-resources/press-releases/irish-firm-to-offer-faster-and-more-dynamic-market-intelligence-data-to-global-organisations.html. Accessed 7th May 2017.

Shane, S. (2009) ‘Why Encouraging More People to Become Entrepreneurs is Bad Public Policy’ *Small Business Economics*, *33*(2), 141-149.

Wauters, R (2009) ‘Irish Startup Reboots Microsoft Software Licensing and Protection Services Unit’*Tech Crunch*. Available at https://techcrunch.com/2009/06/09/irish-startup-reboots-microsoft-software-licensing-and-protection-services-unit/ accessed 3rd May 2017

Wennberg, K. and D. DeTienne (2014) What Do We Really Mean When We Talk About ‘Exit’? A Critical Review of Research on Entrepreneurial Exit, *International Small Business Journal*, *32*(1), 4-16.