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**Indigenous Firm Performance in a Small Late
Developing State:
A Case-Study of the Role & Contribution of
Public Venture Capital in Ireland**

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Thesis submitted for the degree of Doctor of Philosophy

March

2013

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Indigenous Firm Performance in a Small Late Developing State: A Case-Study of the Role & Contribution of Public Venture Capital in Ireland

Anthony Paul Buckley

Abstract

Domestic market size constraints in small late developing states are expected to influence the economic growth process in general and indigenous firm performance in particular. The role and contribution of policy-makers in overcoming these constraints can therefore be significant. This thesis evaluates the role and contribution of public venture capital - as a significant industrial policy initiative - to shareholder value creation in growth-oriented indigenous firms in Ireland.

Three main themes are investigated. Firstly the rationale and context for micro-level industrial policy interventions in Ireland is considered. Secondly, the role and contribution of public venture capital to indigenous firm performance and thirdly the factors differentiating between performing and non-performing firms are explored.

Using mixed methods research this study finds that in a small late developing state such as Ireland, 'job creation' has been elevated from an industrial policy perspective to the *de facto* national objective. Enterprise policy development for indigenous industry however remains largely emergent and fluid, fifty-four years on from the advent of the national export-oriented industrial policy. In the absence of a deliberately-stated enterprise policy, this emergent micro-level approach has led the states' economic development agency into areas outside its originally intended

remit. This goes some way to explaining the plethora of micro-level policy instruments available in Ireland to growth-oriented indigenous firms. Further, this study also finds no conclusive evidence that an 'equity gap' existed in the analysis period. However, as a consequence of attempting to close this perceived gap, the Irish state now finds itself with an investment portfolio of over nine hundred *direct* share investments in indigenous firms. The Irish State, through its economic development agency, has thus become the largest venture capital company in Europe.

The portfolio of state-selected firms in the analysis ($n = 51$) for public venture capital investment are found not to perform as anticipated by the theory of change mapped out in the study. A quantitative model developed for the study also finds that there is no statistically significant association between firm performance as measured in the study and the value of the public venture capital invested in each firm. The cross-case and contribution analysis in the study further confirm that the contribution of public venture capital to indigenous firm performance in Ireland was marginal at best.

The primary barrier to profitable growth for the indigenous firms receiving public venture capital support in the analysis period was the firms 'Limited endowments of managerial resources' (Penrose, 1959) to manage the growth process and not a lack of risk capital as perceived by agents of the State. Policy implications of the findings are also considered in the study.

ACKNOWLEDGEMENTS

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Lastly and most importantly to my wife Mairéad – *grá mo chroí* – whose unstinting love and support gave me the confidence and strength to overcome the many challenges encountered along the journey. Love always.

DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for the award of a higher degree elsewhere.

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Chapter 1

Indigenous Firm Performance in Small Developing States: The Role and Contribution of Public Venture Capital in Ireland – Introduction

In global terms, small open states are, owing to their limited physical capacity and degree of sectoral specialisation, niche players in world markets. Typically, they have a small number of international markets leading to export concentration, increased instability and, in extreme situations, economic retardation. The literature also suggests however, that in spite of their limitations, small states are poised to experience growth if they are open to trade and investment, invest heavily in human capital and/or are well-endowed with natural resources. Indeed, many small states have higher per capita incomes than many larger states in the same region of the world although, with regard to the limitations cited above, this growth is likely to be more volatile (Easterly & Kraay, 2000; Baldacchino & Bertram, 2009).

In addition to the structural characteristics of small states noted above, it is important to note that the internal policies pursued, institutional strength and the competitiveness of the firms in the economy will also have a bearing on their economic growth. It is thus a combination of exogenous and endogenous factors which determine the ability of small states to grow economically (Armstrong & Read, 2003).

Economic enterprise in the state results from the matching of resources and opportunities by entrepreneurs to create value (Garnsey, 1998). Firms are the entrepreneurs conduit for transforming these factor inputs into added value outputs. Mayer & Ottaviano (2007) further note that it is *firms* which trade and not nations *per se*. In small open states, this is of particular relevance since small states are more

dependent on their stock of internationally-trading firms to deliver profitable export earnings than larger states. These earnings are necessary to pay for the high levels of imports required to make up the difference between domestic consumption and production resulting from the high levels of sectoral specialisation. Thus, policy-makers in small open states recognise the critical role played by internationally trading firms in generating export earnings and are constantly seeking ways to stimulate greater international growth and development from their entrepreneurial and firm stocks.

This study considers the contentious issue of the role and contribution of the state support system to the international competitiveness of the firm stock in a small open economy. It focuses on the case of Ireland. Specifically, it considers the Irish State's attempts at stimulating the growth-through-internationalisation of its indigenous industry by *direct* public venture capital (PVC) injections. This is approached empirically by evaluating the role and contribution of these capital injections to indigenous Irish firms' growth performance over an extended time period. Evaluation methodologies of state support programmes are of themselves contentious. This study helps to fill some of the knowledge gaps in the industrial policy evaluation area using evidence from Ireland. It also helps address the research gap that exists on indigenous firm growth behaviour and performance *in small states*.

1.1 Research Context

Ireland is a relatively small country with a population of 4.6 million (2012) which is trade dependent and reliant upon export-led growth (ESRI, 2009). Subsidiaries of multinational enterprises located in Ireland account for approximately 91 per cent of

the Ireland's exports in value terms (Forfas, 2009). All commentators on the Irish economy agree that Ireland's success in attracting mobile Foreign Direct Investment (FDI) has been the key factor that has led to its prolonged economic growth from 1991 to 2001 (O'Connor, 2001).

With increasing competition for FDI emerging from European and Asian states, Ireland needs to seek out alternative future sources of economic growth. The unique combination of factors that created sustained growth in Ireland during the so-called 'Celtic Tiger' period (1994-2007) cannot be expected to hold in the future. The focus of Irish policy-making therefore needs to shift to the future growth potential of indigenous firms - particularly small and medium-sized enterprises (SMEs)¹. Table 1.1 provides a breakdown of the size distribution of Irish-based firms. Of the 84,412 SMEs in Ireland in 2005, less than 3,500 (four per cent) had internationalised to any degree (Enterprise Ireland, 2009). Indeed indigenous firms only contribute approximately nine per cent (in value) to total exports (Forfas, 2009).

This reflects not only the overwhelming dominance of the multinational sector in Ireland's export performance but also the lower levels of productivity, R&D intensity and innovation in the indigenous sector (Oireachtas Committee on Enterprise & Small Business, 2007).

¹ This dissertation uses the official EU definition of SMEs shown below:

Enterprise category	Headcount	Turnover	or	Balance sheet total
medium-sized	< 250	≤ € 50 million		≤ € 43 million
small	< 50	≤ € 10 million		≤ € 10 million
micro	< 10	≤ € 2 million		≤ € 2 million

Table 1.1: Profile of Distribution of Firms in Ireland

	Number of enterprises			Persons employed			Value added		
	Number	%	EU -26 average	Number	%	EU -24 average	Value €	%	EU – 26 average
Micro	72,340	85.3	91.8	208,312	22.4	29.6	17,219	19.6	21.1
Small	9,853	11.6	6.9	200,199	21.5	20.6	12,787	14.6	19
Medium	2,219	2.6	1.1	211,483	22.7	16.8	18,854	21.5	17.8
SMEs	84,412	99.5	99.8	619,993	66.5	67.1	48,860	55.6	57.9
Large	402	.5	.2	311,926	33.5	32.9	39,005	44.4	42.1

Notes to the Table: SMEs are predominantly indigenous in nature. However the numbers quoted do include a small number of overseas firms who are 'scaling up'. Large firms are mainly FDI firms but the figure quoted also includes a small number of indigenous firms in traditional sectors such as retail, tourism, food production and construction related activities.

(Source: Eurostat SBS data base, 2004 and 2005 data/ SBA fact sheet Ireland, 2009)

A contributory factor to this relatively weak performance by indigenous firms may have been the inadvertent crowding-out of indigenous industry in the economy by the FDI (Matsen & Torvik, 2005) and the property-driven boom to 2007. In addition, the expected technology and knowledge spillovers from FDI have not materialised to the degree envisaged by policy-makers and the creation of linkages is at the lower end of the value chain (Garhart *et al.*, 1997; O'Sullivan, 2000; Gorg, 2007).

Combining these issues with the acknowledged loss of competitiveness in the economy as a whole resulting from the economic boom and subsequent global downturn in 2008 brings the growth challenge into sharp relief (NCC, 2009). The future international competitiveness of Ireland needs to be founded upon improved levels of productivity and innovation throughout the economy. Indigenous industry is therefore where the greatest improvements can potentially be made (Small Business Forum, 2005; Forfas, 2007). SMEs account for 99.5 per cent of firm stock, 66.5 per cent of industrial employment but only 55.6 per cent of value added to the economy (Table 1.1; Deakins & Freel, 2006).

The Irish State, through its development agencies has been actively attempting to stimulate increased export activity from its indigenous stock of firms since the 1960s (Breznitz, 2007). While indigenous exports have increased substantially in value since then and their composition has evolved into more technology-driven sectors, the prognosis is not all positive. The contribution of indigenous exports in Ireland has reached a plateau in recent years with growth of just 1.2 per cent in value between 2000 and 2005 – an acknowledged boom time for the Irish economy (Forfas, 2006). This calls into question not only the international competitiveness of Ireland’s SME stock but also the effectiveness of the State support system for these firms.

1.2 Objectives of the Study

The issues highlighted in the previous section can be framed into a number of related research questions. Firstly – *What role does public venture capital play in accelerating the growth performance of indigenous growth-oriented SMEs in small late developing states and how might its contribution be evaluated at firm and policy level?* Three related but subsidiary questions also arise and these are concerned with other factors which might positively influence firm growth performance in indigenous firms. Conversely, what are the constraining factors on indigenous firm growth in small states? Finally, what lessons, if any, can be learned from the Irish experience and how might these apply to the international development of growth-oriented firms from other small *later* developing states?

More specifically, these research questions are stated as research objectives. The first objective is to evaluate the role and contribution of direct public venture capital (as a policy instrument) to stimulating or accelerating the growth performance of

Irish growth-oriented SMEs. The second objective is to identify the other possible factors positively influencing firm performance in growth-oriented SMEs in a small state. This is followed by identifying the possible constraining factors on firm growth performance in indigenous SMEs in Ireland. Based on these empirical findings, a fourth objective is to recommend a future role for State support for the growth and development of Irish SMEs. The final objective is to assess whether the lessons learned from the Irish experience might be applicable to other small *later* developing states.

This study utilises a *mixed* method research design and data collection/analysis strategy (Johnson & Onwvegbozie, 2004; Bryman, 2006; Plano Clark *et al.*, 2007; Saunders, Lewis & Thornhill, 2007; Tashakkori & Teddlie, 2007) to address the research questions and objectives outlined above. Within the ‘mixed methods’ research genre, the approach taken here is referred to as ‘sequential mixed methods research’ - where one methodology is followed sequentially by another. It is thus a double-phase research design. More specifically, because this study uses quantitative methods followed by qualitative methods, it is referred to as a ‘sequential explanatory research design’ (Saunders *et al.*, 2012). Triangulation of the data is thus achieved by combining archival data (secondary) with interview data (primary) to give complementary perspectives on the same firm data. Combining this data triangulation with the methodological triangulation in the study strengthens the robustness of the overall findings and gives the study increased internal validity (Patton, 2002).

1.3 The Structure of the Thesis

The outline of the thesis is as follows:

Chapter 2 provides a comprehensive literature review, in the first instance, mapping the theoretical and empirical work on the growth of small states. This is followed by a review of the literature on the growth of the firm in the context of the small state.

It incorporates definitions and the measurement of the firm growth concept, the influences and determinants (and constraints) on the growth of these firms. The review of the literature then focuses on and explores the role and contribution (and evaluation) of state support systems for firm growth.

Chapter 3 is a contextual chapter on Ireland. It discusses the drivers of its economic growth and the contribution of FDI and indigenous industry. It also outlines the State support system in Ireland and the challenges it faces as it attempts to chart a course that will allow the state to grow in a more balanced fashion in future. The development of a comprehensive and sustainable enterprise policy is seen as a major policy gap.

Chapter 4 examines the research philosophy and research design underpinning the research process and explains the mixed method approach undertaken in the study.

The quantitative and the qualitative methodologies employed for collecting and analysing the data generated are discussed and described.

Chapter 5 is the first empirical part of the study and involves a research programme to quantify the contribution of a direct public venture capital investment programme to growth-oriented indigenous SMEs. The study is underpinned by a proprietary dataset (n=51) developed specifically for the study. This dataset includes all of the

major indigenous sectors (e.g. ICT, internationally-traded services, Cleantech, industrial products, lifesciences, consumer goods and agrifood). This part of the study investigates the contribution of direct public venture capital – as a policy instrument of the Irish State support system – to the growth and development of the indigenous internationally trading sector during the period 1999 – 2010.

Chapter 6 is a cross-case analysis of ten representative firm-level cases drawn from the overall cohort of firms in the study. The chapter identifies the key influences and determinants of indigenous firm growth in small states other than public venture capital, based upon the experience of Ireland. Each firm-level case includes an in-depth interview with the key informant - the founding entrepreneur (8 cases) or the current managing director (2 cases) in the firm.

Chapter 7 is a cross-case analysis of the constraints – both internal and external to the firm – for indigenous firm growth in Ireland. The chapter utilises frameworks drawn from the literature review to analyse the barriers to growth in the indigenous case firms in the analysis.

Chapter 8 is the final empirical research chapter in the study. It comprises a ‘contribution analysis’ (Mayne, 2001, 2008, 2012), which is a theory-based evaluation methodology. This analysis incorporates the findings from Chapter 5, 6, 7 and further case material into its meta-analytic framework to assess the overall contribution of public venture capital to indigenous firm performance in Ireland.

Chapter 9 outlines the policy implications of the findings in the study.

Chapter 10 draws the study to a close and outlines the principle findings, the policy implications for other small developing states and the limitations of the research.

The study culminates with the identification of avenues for further research.

The thesis is underpinned by ten firm case studies drawn from the overall cohort of firms included in the study. These ten cases analyses are detailed in Volume Two.

The cases chosen for participation in the study were selected on ‘theoretical sampling’ grounds for their overall sectoral representativeness in the cohort of firms in the study (Glazer & Strauss, 1967; Pettigrew 1988; Strauss & Corbin, 1988; Eisenhardt, 1989; Patton, 2002). While there is no ideal number of cases, Eisenhardt (1989) recommends between four and ten, noting that: ‘with more than ten cases, it quickly becomes difficult to cope with the complexity and volume of the data’ (p. 545). This study thus utilises the maximum number of recommended cases. These firms are listed in Table 1.2. The descriptive case analysis of each firm is confidential and outlined in Volume Two. *Volume two is therefore made available for examination purposes only.* Sections 2.2 - 2.4, Chapter 2 however outlines the theoretical background to the case analysis. The structure of the individual case analyses can be found in Appendix C.

Table 1.2: Selected Cases & Case Coding

Case number	Code	Case number	Code
1	Food1	6	ICT2
2	Biotech1	7	ICT3
3	Biotech 2	8	ICT4
4	Consumer1	9	ICT5
5	ICT 1	10	ICT6

Chapter 2

Indigenous Firm Performance in a Small Late Developing State: A Literature Review

Chapter 1 highlights the research objectives of the study. These investigate the relationship between country size and wealth creation in a small late developing state (Ireland). In particular the research objectives focus on the contribution made by internationalising SMEs to economic growth. The role and contribution of the state support system in assisting these firms grow-through-internationalisation is also considered.

To provide the requisite theoretical and empirical background, it is necessary to review a number of distinct but related literatures. These are: The literature on the uniqueness or otherwise of small states – their similarities to large economies and more importantly their differences, real and perceived. These states are differentiated from larger states in the literature along a number of key dimensions i.e. structural make up, terms of trade, economic vulnerability and population size.

If, as the literature suggests, firms are major drivers of economic growth and development in small states - particularly internationally trading ones - then it is essential that the disparate research approaches to the theory of the growth of the firm are investigated. The emphasis in this dissertation is on *indigenous* firms (SMEs) as these constitute 99 per cent of firm stock, over 60 per cent of total employment and over 50 per cent of value added across Europe (Deakins & Freel, 2003).

Having investigated the theories and approaches to firm growth, it is then necessary to explore the literature on the influences and determinants of value creation in

indigenous firms in small states. A closely related strand of literature is the literature on the growth constraints faced by firms in the small state. This is addressed also.

Fundamental questions remain in the literature as to what constitutes firm growth, how is it measured and how appropriate are these measures to value creation in the firm? This strand of the literature also considers the important issue of how firm growth in the indigenous firm is financed.

Finally the literature review is concluded by examining the literature on the role and contribution of the state support system to the process of indigenous firm growth-through-internationalisation in small states. This strand reviews the literature on the enterprise policy options and instruments available to policymakers in the small state. Further it investigates the difficulties of isolating the effects of these policies and it considers the options for evaluation of these policy choices. This literature strand is contextualised by the preceding strands.

2.1 Economic Growth in Small States

One of the key distinguishing factors between small and larger states is population size. This is frequently used as a proxy for both domestic market size and the local labour market. In the 1970's the UN institutions adopted a benchmark of one million; the Commonwealth Secretariat (ComSec) (1998) uses 1.5 million, Easterly and Kraay (2000) use one million and Armstrong and Read (2000) use three million in their respective analyses to classify small states. There remains much debate in the area over the most appropriate measure(s). Other measures such as GDP or GNP, geographic area, terms of trade and composite size and characteristics measures

have been used (Armstrong and Read, 2003; Baldacchino & Bertram, 2009) but population appears to offer a better approximation of what constitutes a small state. It is contended here that although 'smaller' developed states like Ireland (population 4.6 million), New Zealand (population 4.1 million), Finland (population 5.3 million) or even Denmark (population 5.4 million) for example fall above the maximum threshold of population size discussed above they face similar economic development issues to small states of approximate size. Indeed there is a case to be made for increasing the population threshold given the increase in population in Singapore for example (The original benchmark state) – total population of 4.8 million with 3.6 million citizens (Singstat, 2008). Baldacchino and Bertram (2009) sum up the uncertainty in the literature over small state size categories when they note that smallness is essentially an arbitrary term - the median sovereign state in the world has a population of 5.3 million (Finland). ComSec (2006) and Qureshi & Te Velde (2008) recently adopted an upper threshold of 5 million. The issue, irrespective of population size, is whether 'small' or 'smaller' states suffer from an economic growth viewpoint from their 'smallness'?

In terms of their explanatory power of economic growth, the Endogenous growth models (Romer, 1986; Lucas, 1988; Barrow & Martin, 1995; Jones, 2002; Mankiw, 2003, Armstrong & Read, 2003) and the Export-Led thesis (Obstfeld & Rogoff, 1986; Sharma & Panagiotidis, 2004) seem to be most appropriate to the small state case. Orthodox economic growth theory (Lewis, 1955; Solow, 1956) implies that due to scale issues (i.e. small domestic market, limited domestic demand, small firm size, higher unit cost, limited firm numbers etc.) that this would favour a tendency towards natural monopolistic and oligopolistic market structures and therefore 'sub

–optimality’ (Armstrong & Read, 1998). Further, this suggests that small states are at a perpetual disadvantage in growth terms when compared to larger states. Empirical evidence however does not bear this out and small states have outperformed their larger counterparts in economic growth terms in many regions of the world. This indicates that despite their small size and considerable constraints, small open states in particular are poised for growth if they are open to trade and investment, invest heavily in human capital and/or are well-endowed with natural resources (Easterly & Kraay, 2000; Baldacchino & Bertram, 2009).

2.1.1 The Unique characteristics of Small States

Compared to larger economies then, there are a number of dimensions on which small states display unique characteristics, these are:

A small domestic market - this implies an inability to achieve critical mass in terms of supply and demand making the cost of production higher in smaller states than larger states. This is particularly so in industries and sectors where scale economies are important. Indeed the small domestic market further threatens the development of indigenous technologies and also the emergence of fast growth hi-tech industrial sectors (Kuznets, 1960; Briguglio, 1995). Technological innovation is by its nature limited because local firms can’t invest in large scale R&D. Small states therefore tend to rely on technologies produced abroad (Milner & Westway, 1993). Thus success in attracting inward investment can be particularly important in helping ‘seed’ host country R&D stock. Local indigenous industry can then benefit from these R&D spillovers - given certain conditions (O’Gorman & Kautonen, 2004; Read, 2004).

Lack of natural resources - Another disadvantage frequently attaching to small states is the lack of natural resources (Armstrong & Read, 2002). This leads to the states dependence on imports of key natural resources for domestic consumption and as key inputs for their internationally trading sectors. Conversely an overabundance of natural resources can create its own problems for other sectors of the economy. This can lead to 'Dutch disease' (Resource Curse Thesis) – the so called 'Paradox of Plenty' (Auty, 1993). This is illustrated in Corden and Neary's (1982) seminal article on the subject. The term 'Dutch Disease' is a double misnomer as the term refers to what essentially is a positive exogenously derived event for the host state (Ebrahim-Zadeh, 2003). This is discussed in more detail in Chapter 3 in relation to Foreign Direct Investment (FDI) and Ireland but Matsen and Torvik (2004) remind us that 'some Dutch disease is always optimal' in the sense that a positive fraction of the resource wealth should be consumed in each period. Therefore to foster economic growth it is important for small states to invest the rents earned from their natural resource endowments or FDI into knowledge-driven internationally tradable sectors or low growth may persist (Armstrong & Read, 2002; Jansen, 2004).

Sectoral specialisation - Given the relatively small scale of the state in global terms, sectoral concentration can be expected in indigenous industry in small states e.g. in Jamaica it is tourism and bauxite production (Staines, 2005). In Ireland it is predominantly tourism and agrifood in indigenous industry - pharmaceuticals/chemicals, medical devices, electronics and ICT in foreign owned firms (Forfas, 2006). Indeed there is strong empirical evidence to support the presence of niche specialisation in indigenous firms in small states (UNCTAD, 1977;

Armstrong & Read, 2002; 2003). The sectoral specialisations found generally in small states are predominantly tourism, financial services and natural resource exports.

Openness to trade - Another distinguishing characteristic of small states is their high degree of openness to trade. Given the differences between consumption and production (sector specialisations) mentioned above, domestic demand can only be met by high levels of imports. These imports need to be paid for and so the small state needs to export to help fund the imports thus providing an intuitive rationale for the export-led growth thesis (Kuznets, 1960; Armstrong & Read, 1998; Read, 2003).

Finally, there are other endogenous factors which will affect the Small States ability to grow economically. These relate to the internal policies pursued, the strength of the institutions of the state and the competitiveness of firms in the economy. These endogenous factors are discussed in more detail in Section 2.7 of this Chapter and Chapter 3 on Ireland.

2.1.2 The Vulnerability of Small States

Easterly and Kraay (2000) maintain that small states have received excessive attention in the literature as special cases calling for special policy measures. They point out that small states have higher per capita income than others in their respective regions and do not differ in growth performance from larger states. However they do point out that smaller states are more vulnerable to growth volatility due to terms of trade shocks and other environmental threats. While this is related to their trade openness - on balance - the benefits of trade openness to growth are positive. However this inherent vulnerability is reflected in the higher

costs attaching to the growth path of smaller states which consequently leads to greater risk exposure (UNCTAD, 1988).

There are thus significant structural differences between small and large states – with both on different paths to achieving economic growth and the creation of wealth (Katzenstein, 1985). In so far as both groups are capable of economic growth, the issue then becomes one of managing and maximising the benefits from the drivers of growth whilst minimising and reducing/eliminating the constraints on growth at both a macro and micro level (Baldacchino, 2007). Indeed Armstrong *et al.* (2003) maintain that the sources of vulnerability for small states can be categorised into those relating to economic, political, strategic and environmental issues.

As small states can be regarded then as *structurally different* from other larger states, these differences have clear implications for the states ability to grow. The export-led growth thesis and endogenous growth theories highlight two further significant structural issues which affect economic development.

Firstly the export-led thesis highlights the impact which the degree of openness to trade - the so-called trade multiplier effect (Ashoff, 1989) has on small states. Whilst this openness can increase the small states economic growth prospects, it also raises the small states vulnerability levels to exogenous shocks. Briguglio's (1995) vulnerability index is useful in this regard in highlighting the issues faced by small states. However it's cross sectional nature has been criticised by some researchers (Armstrong & Read, 2002). UNCTAD (1997) and the Commonwealth Secretariat (1998) have also developed indices of vulnerability for small economies. Baldacchino and Bertram (2009) argue that vulnerability and it's antidote in the literature –

'resilience' represent essentially a 'structurally deterministic' view of the issues facing small states. These authors advocate a 'strategic flexibility' model as a counterpoint to the determinism of the vulnerability/resilience approach.

Secondly, the endogenous growth models of human capital show the comparative advantage that investment in education, training and learning by doing (LBD) can bestow on a small state (Armstrong & Read, 2003). The development of the concept of human capital theory is attributed to Becker (1964) and Mincer (1974). This can be defined as the knowledge, skills and abilities (KSAs) embodied in people (Coff, 2002). It includes not just factual, 'how to' KSAs but also tacit KSA's which are difficult to articulate (Polanyi, 1966 *cited in* Crook *et al.* 2011). The appeal that human capital development can have for a small state becomes evident when it is unable to generate significant investment in physical capital due to market size constraints. The appeal increases when it is further realised that human capital - in terms of knowledge creation - is not only not size constrained but is also *not* subject to diminishing returns. Human capital investment, in these circumstances, will increase the collective 'absorptive capacity' (Cohen & Levinthal, 1990) in the economy, thus compensating for the small state's lack of investment in R&D (Briguglio, 1995; Armstrong & Read, 2003).

Indeed human capital development is of such importance to small state growth that the states relative size, far from being an impediment to economic growth, sometimes can act as a further stimulant of human capital development. As greater social cohesion is expected to exist in smaller states (compared to larger states), this social cohesion can lead over time to the development of considerable social capital

(Putnam *et al.*, 1993; Baldacchino, 2005). However this increased cohesion can also have some negative side effects leading on occasion to increased levels of cronyism, corruption, insider dealing and inefficiency. This is likely if the appropriate democratic, legal and regulatory frameworks are not sufficiently independent and robust (Transparency International, 2009).

Related to the degree of openness of the small economy is the volatility that attaches to the state's income. This can be particularly acute in developing countries (Ramey & Ramey, 1995). The equation for growth for the small economy then must ensure that the *positive effects* of openness to trade and the high levels of human capital investment *overcompensate* for the negative effects of income and terms of trade volatility in the medium to long term. The effects of the trade multiplier can be seen most starkly in small states with high degrees of trade openness (Ashoff, 1989).

Another issue that impacts income in the small, open economy is its ability to affect its terms of trade (Easterly & Kaay, 2000; WTO, 2003, Jansen, 2004). This is particularly true for states which depend heavily or exclusively on indigenous industry to develop international trade. Those small states hosting significant foreign direct investment (FDI) face different issues around the structure of their exports and thus their terms of trade. Positive local linkages and spillover effects however would be expected to emanate from this mobile foreign direct investment into the host small states economy (Read, 2004). However, the local impact of these spillover effects depends on the MNCs strategic rationale for their investment in the small state (resource seeking, efficiency – seeking, market seeking or strategic–asset seeking). The technological development of indigenous industry and its absorptive

capacity levels are also an important factor in the leveraging of positive linkage and spillover effects (Forfas, 2005). The effects of FDI however are expected to be positive – employment and technology wise - but limited in other respects given the narrowness and shallowness of domestic economic activity (Read, 2004).

As niche players and primarily price takers in the global economy then - severe fluctuations in trade levels can adversely affect income stability and economic growth in the small state. In global terms the small, open state typically has a limited number of markets, which can lead to export concentration, increased instability and economic growth retardation in turn (MacBean, 1966; MacBean & Nguyen, 1987). If an exogenous economic shock is severe enough to a small, open economy then this can ultimately lead to balance of payments problems further impeding economic growth (Jansen, 2004).

In addition to trade shocks (and FDI export levels) outside of its control, the small state may have to contend with the effects of natural disasters. This, of course, depends on a particular state's geographic location. In relation to locational effects, Read (2003) contends that whilst the growth of any country is likely to be influenced by the economic prosperity and dynamism of the broader region to which it belongs, little attention so far has been paid in the literature to the impact of location on the growth of small states. Indeed membership of a 'regional convergence club' can contribute significantly to the economic growth of a small state particularly if the small state is located within a wealthy and dynamic region and in close proximity to larger markets (Armstrong & Read, 2003). Even for small states outside regional convergence clubs, geography is not necessarily destiny and the endogenous policies

pursued can have a major impact on the small states growth trajectory (Acemoglu & Robinson, 2012). However small states with populations below a threshold of one million tend to exhibit extreme specialisation termed 'economic specialisation'. This involves a decision – conscious or otherwise – to embrace 'crowding-out' or 'Dutch disease' as a growth strategy (Bertram & Poirine, 2007).

This section of the literature identified the structural characteristics which will affect the small states ability to grow economically and examined how these influence the internal policies pursued, the institutions of the state and the competitiveness of firms in the economy.

2.2 The theory of the growth of the indigenous firm in the small state

Facilitating the competitiveness and growth of knowledge intensive, entrepreneurial firms is therefore an important role for policymakers in small open developing states (Carr, 2000b). This dissertation concerns itself with questions around the optimal methodology for achieving this at a micro-policy level. Before this key question can be addressed though, this section reviews the literature on the connection between firm growth and economic development in the small open state. The literature subdivides into two broad streams. The literature on the firm growth *process* is reviewed and summarised in Table 2.1. This is a summary of the literature from the differing research traditions and the various approaches taken by each in describing the process of firm growth and its relevance to small states. This is then followed by a review of the literature on the *determinants of* and the *influences on the firm growth* – Section 2.3. There are a number of conceptual frameworks and research approaches which have attempted to explain theoretically and empirically small firm

growth. The approaches taken are many and varied but usually reflect the background and worldview of the researchers in question (See: Table 2.1). Foss (1996) makes a clear distinction between those approaches which derive from orthodox economic thought and those which he classifies as 'Knowledge-based approaches'. Foss does not explicitly deal with the entrepreneurial approach and this is discussed in more detail in the next paragraph. The essential difference is that these knowledge-based approaches derive from 'organisational theory'. He further explains (p. 470) that the economics-inspired 'theory of the firm' literature can in general trace its origins to the work of Coase (1937) and his classic *The Nature of the Firm*. In this conceptual approach the firm is seen as an 'efficient contractual entity'. Property rights, incentives and contracts thus occupy centre stage. In contrast, the organisational theory approaches can trace their heritage to the work of Penrose (1959). In her classic *The Theory of the Growth of the Firm*, Penrose introduced not only a radically different view of the firm to the pure contractual approach of Coase but she also introduced new ways of viewing the role and purpose of firms in an economy. She postulated that the firm, in addition to being a contractual entity is also a possessor of distinct knowledge (technological and organisational) which the firm uses to gain advantage over its competitors. Thus terms such as capabilities, core competencies, organisational learning, competitive advantage, tacit knowledge etc. were introduced into the popular lexicon of management thought (Foss, 1996). These developments have had enormous impact on the development of management thought - particularly in smaller states. Penrose's approach demonstrated, theoretically at least, that sustainable comparative and competitive advantage could be built on dimensions other than scale. When this advantage is

knowledge-based (i.e. innovation developed through investment in human capital, R&D, education, training and learning by doing) then developing an asset like knowledge which is not only *not* size constrained but is also *not* subject to diminishing returns has distinct advantages for the small open state (Armstrong & Read, 2003). This investment in human capital will, it is hoped, increase the collective absorptive capacity (Cohen & Levinthal, 1990) in the state to compensate for the small states under-investment in R&D (Briguglio, 1995; Armstrong & Read, 2003). These insights, further developed through the endogenous growth models of human capital, have spawned a raft of research streams and approaches (Connor, 1991) culminating in the approaches to firm growth detailed in Table 2.1.

Casson (2004) argues that the theory of the firm should be viewed through ‘the lens of entrepreneurship’ as it is the missing influence in the leading theories of the firm. Baumol (1996) further reminding us in his typology that ‘the entrepreneurs are always with us’. Entrepreneurs’ move between productive, unproductive and destructive behaviour depending on the nature of the incentives they face. Thus it is the rules of the game which is most important and not the supply of entrepreneurs *per se*. Much work remains to be done however in the entrepreneurship field despite its history (Cantillon, 1755), in terms of definition, specification and most importantly on its almost singular focus on the entrepreneur. The firm is acknowledged then as the key economic transformation vehicle of factor inputs to added value economic outputs in the state –and is therefore the appropriate unit of analysis in this study. However, close attention is also paid to the role and influence of the entrepreneur, in recognition of the acknowledged close association between

Table 2.1: Approaches to explaining firm growth – Summary table

Theoretical background, school and referred authors	Relevance to small states	Associated internationalisation school
ENTREPRENEURIAL SCHOOL		
<i>Schumpeterian view</i> Schumpeter (1934,1942) Dasgupta & Stiglitz, (1980) Baumol (1990),Sutton (1996) Casson (2004)	Introduced the entrepreneur's role in 'creative destruction' - Decouples firm size from firm growth – introduces entrepreneurship and innovation as possible growth drivers	RBV/International Entrepreneurship
ECONOMIC SCHOOL		
<i>Neo-Classical</i> Machlup (1967),Foss (1996),	Of limited value to small states due to scale assumptions – some applicability where small state has abundant natural resources	
<i>Transaction Cost Approach</i> Coase (1937) Williamson (1975)	Of limited value to small states due to focus on multinational enterprises – does help explain how small firms circumvent entry barriers to foreign markets by tying up with (network) partners	Network approach for SME's – international expansion of multinationals
<i>Stochastic models</i> Gibrat (1931) Evans (1987) Reichstein & Dahl (2004) O'Farrell & Hitchins (1988)	Decouples size and growth also – large number of factors affecting growth of firm- none of which exert major influence over time – small and new firms have higher growth rates than larger and older firms – contradicting Gibrat's original hypothesis however Storey & Greene (2010) indicate that taking small and new firms out – the proposition broadly holds.	
<i>Static Equilibrium Models</i> Perry (1982)	Limited applicability – focus on scale and minimisation of long run costs – large firms logical outcome of growth – neo-classical assumptions	
KNOWLEDGE-BASED APPROACHES		
<i>Resource based view (RBV)</i> Penrose (1959), Wenerfelt (1989),	Decouples firm size and firm growth – there is no optimum size nor profitability levels for a firm – firm leverages its core competencies to create competitive advantages – growth	Resource Based View incorporating

<p>Prahalad and Hamel (1990) Barney (1991) Connor (1991) Garnsey (1998) Garnsey <i>et al.</i> (2006)</p>	<p>limited by resource availability particularly: 'limited endowment of managerial resources'</p>	<p>international entrepreneurship, contingency and strategic approaches</p>
<p>Learning perspective approaches Cohen & Levinthal (1990), Wyer & Boock, (1996) Deakins and Freel (1998) MacPherson & Holt (2006), Caniels & Romjin (2003), Cooke & Wills (1999), Freel (1998) Bessant <i>et al.</i>, (2005)</p>	<p>Firm growth result of application of acquired knowledge, focus is on management learning to fuel growth – introduced the notion of 'absorptive capacity' and 'tipping points' to the area and identified the complexity of knowledge and learning activity taking place in small firms to support growth generation</p>	<p>RBV, Stages, Network</p>
<p>Evolutionary approach Nelson & Winter (1982) Aldrich (1999)</p>	<p>There is no standard model or sequence of stages – growth will occur as a result of a firms own set of evolutionary circumstances</p>	<p>RBV</p>
<p>Strategic Management approaches Storey, (1994) Gibb & Davies, (1990, 1991) Johnson & Scholes, (2004) O'Gorman (2006)</p>	<p>Some applicability but general strategy literature of limited use as it is overly rational and most frameworks applicable to large firms – small firms encounter open-ended change-unknowable and unpredictable, they respond rather than shape or control external factors consequently strategy making is often informal and developed in an emergent fashion</p>	<p>RBV</p>
<p>Deterministic approaches See Dobbs & Hamilton (2007) pp. 300-304 for list of 34 studies in area since mid-1990's to 2005. See also: Delmar (1997), Weinzimmer <i>et al.</i> (1998), Achtenhagen <i>et al.</i>, (2010)</p>	<p>Attempts to develop predictive models of small firm growth – dominant empirical approach – so far over 30 explanatory variables identified grouped under characteristics of the entrepreneur, firm, environment and management strategy – large unexplained variation however remains.</p>	<p>RBV</p>
<p>Stages of growth models Greiner (1972), Galbreith (1982), Churchill & Lewis (1983), Miller & Friesen (1984), Scott & Bruce (1987), Kazanjian (1988), Hanks (1990), Hanks <i>et al.</i>, (1994)</p>	<p>Stages of growth models offer intuitive appeal but weak empirical support and they are overly deterministic. O'Farrell & Hitchens (1988) provide a thorough critique of the approach. See also: Garnsey (1998) and Garnsey <i>et al.</i> (2006) for a critique from a Penrosian perspective.</p>	<p>Stages/Network</p>

ownership and management in small firms (Storey & Greene, 2010; Smallbone & Wyer, 2012).

Mayer and Ottaviano (2007) remind us that it is firms and not nations which trade - thus the entrepreneurial approach will be treated, for the purposes of this review, as a distinct but closely related (and influential) stream to both the economic and knowledge-based streams. Table 2.1 summarises the three broad research streams discussed and their relevance to the small state. The associated internationalisation approaches are also highlighted as the firm growth concept is closely associated with the process of firm internationalisation (Buckley & Ghauri, 1993; Welch & Luostarinen, 1988; Ibeh, 2006, 2012). This close link between firm growth and internationalisation suggests that a constant flow of growing, early internationalising firms (Fritsch, 2008) is essential to the growth prospects of export-led small states.

2.3 Influences on and the determinants of indigenous firm growth in the small state

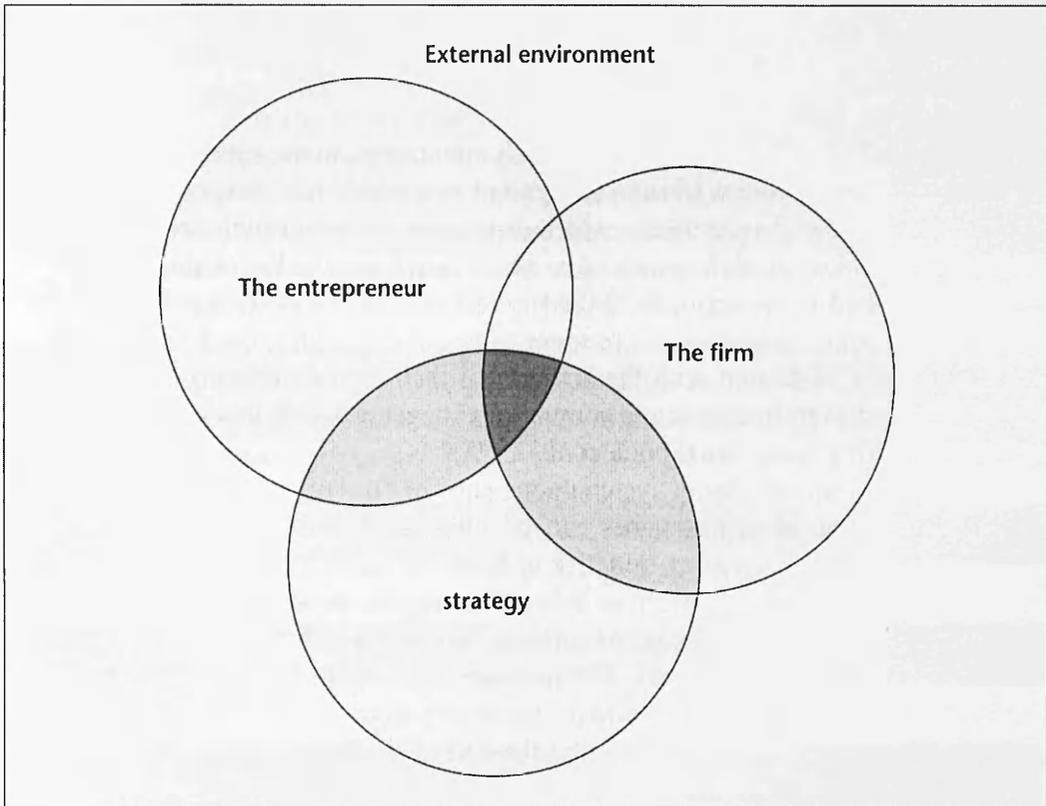
There appears to be, as yet, no pre-eminent approach emerging to prescriptively explain the growth process in SMEs and consequently no clear agreement on the key determinants of growth. This is due, in the main, to the myriad factors which have been proposed (and sometimes tested) to determine the growth of small firms (Dobbs & Hamilton, 2007). This is complicated by the interaction amongst these factors. Thus researchers, recognising the large unexplained variations in the possible determinants of the growth construct are focusing more attention on the possible 'influences' on small firm growth (Davidsson & Klofsten, 2003). This would appear to be a less deterministic approach and there is broad agreement in the literature

about what the main 'influences' are on small business growth. These have been summarised in the framework developed by Storey (1994).

Storey's framework has been modified by Smallbone and Wyr (2006, 2012) in their attempts to update, categorise and summarise the influences on small firm growth. Figure 2.1 illustrates the myriad factors involved. Smallbone & Wyr state that their approach incorporates aspects of the four main theoretical approaches mentioned by Gibb and Davies (1990; 1991). These are the Personality dominant approaches, Business management approaches, sectoral and market-led approaches and organisational development approaches. Their framework groups the variables influencing growth into the four categories of - management strategy, characteristics of the entrepreneur, characteristics of the firm – all identified by Storey (and all internal factors to the firm) but they separate out the influence of the external environment (linking internal factors to external) which had been highlighted by Gibb and Davies (1990).

The inclusion of the external environment as a separate category of factors is important here as one of the major size-related differences between small and large firms is how they interact with their environment. Indeed Welsh and White (1984) reaffirm the importance of the external environment to small firm growth when they state that 'external forces tend to have more impact on small businesses than on large businesses'. Larger firms having a greater ability to shape or control their environment – much as larger states can do.

Figure 2.1: Influences on growth in small firms



Note: Smallbone & Wyer's framework (2006:103; 2012) is based on Storey's (1994:124) framework on the influences on the growth of small firms and the work of Gibb & Davis (1990; 1991). Storey does not treat the external environment separately in his framework but Smallbone *et al.* and other researchers in the small firm strategy literature make clear (O'Gorman, 2006, 2012; Hill & Jones, 2009) that the external environment is such an important influence in shaping the trajectory of the growth of the small firm (particularly in the small state) that it must be treated separately.

2.3.1 Empirical evidence on the respective influences

Storey and Greene (2010) further refine the framework by noting that the factors influencing growth can also be re-categorised as pre start-up factors (Characteristics of the entrepreneur), at start-up factors (primarily characteristics of the firm) and post start-up factors (Management strategy). Table 2.2 details the influences and factors involved in firm growth.

Table 2.2: Factors influencing the growth of the firm

Characteristics of the Entrepreneur	Characteristics of the Firm	Management Strategy	The External Environment
Motivation	Age	Workforce training	Economy performance
Unemployment	Legal form	Management Training	Macro-economic conditions
Education	Location	External equity	Regulatory and institutional environment
Management experience	Size	Technological sophistication	Government policy
Number of founders	Ownership	Market positioning	Industry sector
Prior self-employment	Market adjustments / flexibility		
Family History	Planning		
Social Marginality	New products		
Functional Skills	Management recruitment		
Training	Customer concentration		
Age	Information and advice		
Prior business failure	Exporting		
Prior sector experience			
Prior firm size experience			
Gender			

(Source: Storey, 1994; Smallbone & Wyr, 2006, 2012 – adapted by author).

Storey and Greene (2010:305) note, after their extensive review of the empirical research in the area, that the following factors have been shown, *on balance*, to have positive associations with firm growth. These are: Pre-start –up: Prime age, higher education and male gender have direct influence on firm growth performance with

personality having indirect effects. Negative effects were found relating to unemployment. At start-up factors: Limited company and location. In post start-up factors the authors found unclear impacts from *all* of the other potentially influential factors considered. This means that consistent empirical evidence is *currently* not there to support these other factors which are popularly thought to influence firm growth. This could change over time but there are also significant methodological and variable specification issues which remain to be addressed.

These 'unclear impact' factors are at: Pre-start -up: Team entrepreneurship, prior management experience, prior sectoral experience, in business before and family background. At start -up: Initial size, sector. Post start-up: Formal business plans, entrepreneurial skills, strategy, external environment, equity financing, innovation. Thus much business growth remains unexplained – this does not imply that business performance is a 'random walk' but it does imply that chance or luck has a role, perhaps a much greater role to play, than is generally appreciated (Penrose, 1959; Garnsey, 1998; Coad, 2007; Hill & Jones, 2009; Storey & Greene, 2010). Thus Delmar *et al's.* (2006) cluster analysis study is particularly important in recognising that firm growth is associated (more or less) with the directly observable demographic variables of the firm, i.e. firm size, firm age, industry affiliation (sector) and ownership/governance structures (limited liability) (pg. 205). Location was also found to be a significant factor (Storey & Greens, 2010). Thus a useful starting point for analysing the impact of independent variables on firm performance in the small state is to begin with the geo-demographic profile of indigenous firms.

2.3.2 The role of human capital in firm growth performance in the small state

Table 2.2- Column 1 (Characteristics of the entrepreneur) highlights the important *role* of firms' human capital stock – particularly at the ownership/leadership team level – in influencing prospects for growth. This is important in small states given the close relationship between ownership and management in small firms. More recent meta – analytic reviews in the area of human capital and firm performance do show – despite the myriad definitional and methodological issues encountered - that there is a significant, albeit small, positive relationship between human capital levels and firm performance. In particular, the association is strongest when the knowledge, skills and abilities (KSAs) are *firm specific* rather than of a more general nature (Crook *et al.*, 2011). Further, it was found that entrepreneurial success is also more closely associated with the *outcome* of human capital investments; i.e. the successful acquisition and transfer of knowledge and skills, than human capital investments *per se* and where the firm's knowledge, skills and abilities have *high* rather than low task relatedness (Unger *et al.*, 2011). However, performance can also vary depending on whether the entrepreneur(s) leading the firm are habitual (serial or portfolio) or novice entrepreneurs. Evidence on the link between the entrepreneur's prior business ownership experience and subsequent superior firm performance is mixed (Wright *et al.*, 2012). There is, however, some evidence that *portfolio* entrepreneurs outperform both novice and serial entrepreneurs (Westhead *et al.*, 2003).

2.3.2 Managing firm growth in the small state

Given the nature then of the internal and external characteristics highlighted in Table 2.2 it can be seen that the *role* of the owner/manager(s) or entrepreneur(s) or

leader(s) is considered crucial to the growth prospects of the small firm.

Management in growing businesses – particular small and medium sized businesses – must deal with changes which are ‘unknowable and unpredictable in terms of timing and consequence’ (Stacey, 1990). Open-ended change is increasingly what owner-leaders in growing firms are facing and Bradley (1985) notes that sustainable competitive advantage can only be developed if the leadership team develops the capabilities and competencies to cope, predict and comprehend changes in the external environment. That there is still so much debate around the characteristics of the firms’ management which exerts the most influence on firm growth and value creation is no surprise. This is so when the myriad tasks around organisation, control, strategy, operations, communication, leadership etc. that senior management are observed performing in small firms is considered (O’Gorman *et al.*, 2005; Barringer & Jones, 2004; Floren, 2006). In this context it is also worth noting that the work of senior management in small firms differs fundamentally from that of senior managers in larger firms, particularly in relation to strategy formulation (Bradley *et al.*, 1985; O’Gorman, 2006, 2012) and marketing/innovation management (Stokes, 2006; Shaw, 2012). It has been observed that small firms strategise, innovate and market more informally than large firms and so, by implication, studies and conclusions drawn from large firm research are limited in their application to our understanding of the role of managers in small firms (Mintzberg, 1973; O’Gorman, 2012) particularly owner/managers (Saraswathy, 2012). Future research will perhaps focus on the work of top managers in growth-orientated versus non growth-orientated small firms. Indeed Floren (2006) advises that improvement of management in small businesses will not occur until researchers develop a better

understanding of what top managers in small firms really do, why they behave as they do and most importantly how it relates to firm performance. Smallbone *et al.* (1995) did note - in their ten year longitudinal study of firm growth - that it is the management/leadership teams' ability to develop and implement robust *product/market* strategies which was the key differentiating factor between high growth and low growth firms. O'Gorman (2006, 2012) further noting that it is not the strategy process *per se* which differentiates between successful and unsuccessful firms but the ability to create *competitive advantage* from the strategy process. Storey and Greene (2010:215/216) conclude that after more than two decades of firm growth research there are just four known 'stylised facts' about small firm growth. These are:

1. Firms that grow (even modestly) are more likely to survive.
2. Fast growth firms are highly unusual. They make up no more than five per cent of any business population
3. Growth is 'spotty' from period to period.
4. Smaller and younger firms tend to grow more quickly than larger firms.

Whilst these 'truisms' apply to business populations generally - individual firms can and do prove exceptional. At this point in time (2013) it would seem that the 'firm growth' research community has not identified the 'blueprint' or DNA for success and this may indicate that, given the body of evidence accumulated so far, it does not exist. More importantly, it demonstrates the crucial role that luck/chance/serendipity plays in firm growth and value/wealth creation - both in large and small states. In small states though the margins for error are finer - firms are smaller and more vulnerable (as are small states) but conversely they have

greater strategic flexibility and can deploy more rapidly on international markets. Through strategic choice then they identify opportunities and try to exploit them (O’Gorman, 2006, 2012). Thus high task-related KSAs (Unger *et al.*, 2011) - particularly when manifested in ‘diagnostic capabilities’ (Arnold *et al.* 2004) and implementation skills (Merson, 2011) - are necessary but not sufficient attributes for successful commercialisation and internationalisation. The benefit of luck or chance (Penrose, 1959; Garnsey 1998; Coad, 2009; Hill & Jones, 2009; Storey & Greene, 2010) is also necessary and may be sufficient for a successful growth-related outcome when allied to *high-task-related* human capital investment (KSAs).

2.4 Barriers to growth for indigenous firms in the small state

Barriers or constraints on the firms’ growth trajectory can emanate from its proximate and distal external environments and/or from internal factors. Rapidly changing technological, competitive and market environments create growth difficulties not only for technology firms but increasingly for more traditional firms also (DeBurca *et al.* 2004; Mohr *et al.*, 2010).

The industry sector where the firm chooses to compete, or finds itself competing can be particularly important. There are three aspects to this competitive positioning influencing individual firm growth performance. These are the industry structure, the nature of the competition and the limitations of the chosen markets (Porter, 1980; McGahan, 2004). Moen (2002) notes that markets tend to become more heterogeneous over time thus creating ‘niche’ opportunities for smaller players. It remains for the firms’ management to recognize and exploit these opportunities, by

developing sustainable competitive advantage through its growth strategies (Arnold *et al.*, 2004; Hill & Jones, 2009; Merson, 2011).

Growth barriers can also be of an internal nature (O’Gorman, 2001, 2006, 2012). The internal barriers highlighted are in many cases the corollary of the drivers of and influences on value creation within the firm. Merson (2011: p.88) referring to these two opposing influences on firm growth as the ‘driving and restraining forces’ in his ‘force-field’ analysis. Highlighted internal barriers can include: Firstly the owner managers themselves and secondly size-related constraints including the organizational culture, finance, attracting and retaining talented staff and marketing problems. In addition, the assets of the business may be inadequate to underpin growth and the management may not be experienced in or unable to build a balanced management team (Smallbone & Wyrer, 2006, 2012).

O’Gorman (2012:399) approaches the barriers to growth from a strategic management perspective and classifies the barriers to growth as ‘the strategic problems of small business’. However a cursory look at this classification shows the similarities to Smallbone and Wyrer’s. O’Gorman however does not differentiate between internally and externally generated challenges but lists them as: Lack of financial resources, marketing problems and customer concentration, management and human resources, over-reliance on the entrepreneur, lack of systems and controls and lack of technological skills. Bessant *et al.* (2005) also developed a typology to capture the internal and external barriers to growth. The variables identified by Bessant *et al.*, are captured in their Tipping point/absorptive capacity framework and are incorporated into Table 2.3. These authors identified - from a

review of the literature - six 'barriers' to growth in the small firm and these are: Market entry, operational improvement, availability of finance, formal systems, strategy and People management. This typology is contrasted to Smallbone & Wyer's (2006; 2012) and O'Gorman's (2006, 2012) in Table 2.3. The variables common to all three approaches are then incorporated into the empirical analysis in Chapter seven.

In summary then - the barriers to small firm growth can be subsumed under the rubrics of *internal factors* (owner-management and resource-acquisition related) and *external factors* (Rapidly changing environment, Industry structure, competition and market limitations).

In the small state, the impact of each of these factors on indigenous firms is magnified given the small domestic base and the relatively smaller scale of the enterprises. However the external environmental factors are likely to have a greater bearing on small firm performance in small states given their vulnerability to environmental and terms-of-trade shocks (Ramey & Ramey, 1995).

Table 2.3: Typologies of barriers to small firm growth

Smallbone & Wyer (2006, 2012)	O'Gorman (2006, 2012)	Bessant, Adams & Phelps (2005)
<i>External</i>	Lack of financial resources	People management
A rapidly changing environment	Marketing problems and customer concentration	Strategy
Industry structure, competition and market limitations	Management resources and human resources	Formal systems
<i>Internal</i>	Over-reliance on the entrepreneur	Market Entry
Owner-manager and size-related constraints: Organisational culture, Finance, Attracting and retaining quality people, Marketing problems,	Lack of systems and controls	Obtaining Finance

Inadequacy of existing assets for underpinning growth

Technological skills

Operational improvements

Difficulties associated with team building and team management

(Source: Bessant et al., 2005; O’Gorman, 2006, 2012; Smallbone & Wyer, 2006, 2012 - adapted by author)

Thus the strategy choices available to - or foisted upon - firm management becomes increasingly important (O’Gorman, 2012). The literature clearly implies that management competence (including its diagnostic, analytic and absorptive capacity abilities) and its resource mobilization capabilities are captured in the strategies pursued (O’Gorman, 2001). These strategies demonstrate the managements of indigenous firms’ ability to develop, despite the external barriers presented, sustainable competitive advantage. It is therefore not unreasonable to conclude that whilst the entrepreneur is always with us (Baumol, 1996), high or fast growth firms in small states are exceptional. The indigenous firm which then grows through internationalisation is *truly* exceptional (Mayer & Ottaviano, 2007), or at the very least serendipitous (Garnsey *et al*, 2006; Hill & Jones, 2009; Storey & Greene, 2010).

2.5 Measuring and describing indigenous firm growth in the Small State

McKelvie & Wiklund (2010) review the literature on firm growth and categorise it into three distinct but related streams of: Firstly, growth as an outcome - deterministic studies with growth as the dependent variable. Secondly, the outcome of growth - growth as an independent variable, and thirdly the process of growth - organic v acquisition v hybrid growth processes. These authors note that, the ‘growth as an outcome’ is (as Dobbs & Hamilton, 2007 have also contended) the predominant literature stream. Some measure of growth is used as a dependent variable, and various predictor variables are used to try and explain variations in the

dependent variables (Storey, 1994; Smallbone & Wyr, 2000; Baum *et al.*, 2001; Gilbert *et al.*, 2006; Delmar, 2006; Shepherd & Wiklund, 2009). The literature on this stream, according to the authors, has a number of drawbacks, mainly relating to the unit of analysis (the firm), differences in modes of growth (organic/acquisition/hybrid), variation in growth rates over time (appropriate time periods for analysis), and perhaps most importantly, the measures of growth.

2.5.1 Measures of firm performance – the empirical evidence

Achtenhagen *et al.* (2010) in their review of 56 articles investigating firm growth from 1997 to 2008, found that their results confirm the earlier reviews of growth measures in that 42 per cent of studies used sales growth, 27 per cent used employment growth and 16 per cent used a combination of measures. Similarly Dobbs & Hamilton (2007) in their comprehensive review of the literature on deterministic studies from 1999 to 2005, note that employment growth is used in 22 studies, sales growth in 19 studies, and asset growth in a small minority of cases. It is important however, to point out that only 18 of the 34 studies cited above cover periods of five years or more. Only six of the cited studies cover periods of five years or more and (as in this dissertation) use multi-sectoral data. Weinzimmer *et al.* (1998) also raises the issue of the appropriate growth measures to apply. These authors conduct a comprehensive review of 35 studies in leading journals in the area between 1981 and 92, and find that 83 percent of studies used sales as a growth measure with 75 per cent using *only* sales growth. Employment growth is used as a measure in 17 per cent of the studies with asset growth used in eight per cent of them. In his study of growth measures, Delmar (1997) reviewed 55 empirical studies

published between 1989 and 96, and finds that 31 per cent of studies use turnover, 29 per cent use employment, 18 per cent used multiple indicators and 12 per cent use subjective indicators. He concludes (*a la* Weinzimmer *et al.*, 1998) that different choices of growth indicators results in different outcomes even when tested on the same data. None of the meta-analysis distinguished between small and large states.

Storey and Greene (2010) further note the limitations of using 'backcasting' studies (as described above) to study such a complex phenomenon. They conclude that whilst the findings in these studies may help in descriptive analysis; they have not been tested for predictive or forecasting purposes.

2.5.2 Value creation

It is surprising then that scholars from the entrepreneurship stream - researching firm growth - have not focused on 'value creation and capture' (in terms of return on invested capital - ROIC) to any great degree as a dependent variable. This is an established and now generally accepted methodology for evaluating firm performance in the strategic management and financial management literatures (Copeland *et al.*, 1996; Rappaport, 1998; Baldwin, 2002; Hill & Jones, 2009; Arnold, 2009). See Appendix 1 to this chapter for a description of the importance of ROIC as a performance measure. More importantly, Appendix 1 demonstrates the clear relationship between the drivers of ROIC and management strategy.

2.5.3 Turnover as a growth measure

Sales and employment growth measures (absolute and relative) are clearly the most popular dependent variable measures used in empirical growth studies by firm growth scholars. These may be non-controversial measures but they are, on their

own, regarded as incomplete measures of the true 'economic value' created by the firm. Davidsson (2004) noted, when commenting on 'high growth firms', that differing results are achieved when absolute and relative measures of the same variables are used on the same dataset, leading him to conclude that what constitutes 'high growth' firms depends entirely on the measures used. Sales and employment appear to be popular in the firm growth literature because of the relative ease of access to this information in certain developed countries (Davidsson, 2004; Anadike-Danes *et al.* 2009; OECD, 2010). Turnover (as shown in Appendix 1) is the 'top line' driver of enterprise growth (and an indicator of the success or otherwise of management's strategy at increasing turnover and possibly company value) and therefore can be regarded as an important driver of organisational growth. However this is not the same as value capture for the firm. Post-tax profitability levels are a measure of this. There is thus an important trade-off between revenue growth and profitability levels as shown in Appendix 2 to this chapter, which management must be aware of i.e. driving for revenue growth needs to be balanced with concerns for profitability levels as diminishing returns sets in beyond a certain point and shareholder value can be adversely affected (Hill & Jones, 2009: Chap. 11). This can result in destruction of shareholder value and is, in essence 'bad growth' (Arnold, 2009).

2.5.4 Employment as a growth measure

Employment growth, on the other hand, is generally regarded as a *consequence* of enterprise growth and is not therefore, of itself, a satisfactory measure of firm growth performance. This despite its recommended use (in addition to turnover) by

the OECD (2010) for categorising high-growth firms (Eurostat-OECD, 2007). Some scholars attempt hybrid measures (See: Delmar, 1997) but these have not gained traction in the literature so far even though they have the potential to offer a more robust growth measure than either sales or employment (Davidsson *et al.*, 2006). These authors note that researchers in the firm growth area in future will need to focus on either myriad dependent variable measures or agree to settle on one if *cumulative* knowledge is to develop in the area. As noted in the literature, both approaches have their drawbacks and it is likely that the debate will continue until either approach or a new approach gains the ascendancy.

2.5.5 Shareholder value creation as a growth measure

To obtain a more complete and accurate firm growth performance measure which acknowledges the customer value created *and* captured by the firm, we do not need to look far. The firm, through its legal requirement to file annual returns and accounts in developed countries (as a limited liability entity), has readymade value creation and capture metrics available. This allows researchers to analyse the financial performance of the firm. These financial accounts are an annual evaluation of management's strategic performance. They indicate (retrospectively) how well management's strategies contributed – or not – to shareholder value creation or destruction (Rappaport, 1998; Hill & Jones, 2009: p.93; Arnold, 2009). Analysing financial performance over a longer period, allows researchers to see management's strategy in action and to gain insights into its success or otherwise at creating shareholder book value. More precise measures of the 'economic value' created by SMEs would be measures such as economic profit (EP) (Fernandez, 2003) or

Economic Value added (EVA®) (Bennett Stewart 111, 1991), but these measures require more detailed financial information than SMEs are typically required to file on an annual basis. They are therefore more applicable to public companies.

Measures of the financial growth of firms are available for use by researchers in the firm growth space and have been used successfully by some such as Becchetti and Trovato (2002) who look at movements in the profitability and the return on the invested capital in Italian firms. Shareholder value creation or destruction then can be annually tracked as a growth measure. Christopher and Peck (2004:121) note that:

Whilst there can be no argument that long-term, sustained profit has to be the goal of any commercial organisation, there is a growing realisation that if profit is the *end*, then we should spend more time examining the *means* whereby it is achieved.(p.121)

Profit is a measure of how successfully a firm achieves its commercial goals – profitability as a percentage of the capital invested in the business (ROIC) is regarded as the prime measure of how effectively value is created for shareholders (owners) in a business over time (Baldwin, 2002). See: Appendix 1 to this chapter for a full explanation. Unprofitable or ‘bad’ growth below the cost of capital to the business destroys shareholder value – growth above the cost of capital conversely creating value. Thus the two main drivers of increased enterprise or shareholder value are the return on invested capital and the growth rate of profits. By successfully pursuing strategies that result in a high ROIC and by growing operating profitability after tax, shareholder value can be maximised (Hill & Jones, 2009: Chap.1 Appendix, p.37).

Indeed, positive increases in shareholder value on an annual basis in small private firms primarily arise from profitable returns (trading and otherwise) and/or fresh injections of capital during the financial period. Decreases in shareholder value can only come from losses during the year and/or withdrawals of retained earnings (or losses on disposal of assets) and/or the payment of dividends to shareholders. Access to the annual financial accounts of private firms over prolonged periods allow researchers to track the historical performance of firms and, more importantly, the success or otherwise of managements' growth strategies. These performance measures aggregated over a cohort of firms allows *longitudinal* analysis of firm performance to be undertaken, thus meeting a necessary requirement of researching firm growth (Davidsson, 2004; Dobbs & Hamilton, 2007).

The principal way then to increase shareholder value is by focussing on ROIC, profit growth and high profitability levels (margins) (Baldwin, 2002). This prioritisation has been applied to publicly-quoted companies over many decades and the same principle can and should be applied to small and growing firms – notwithstanding the difficulties of accessing, using and interpreting accounting measures of profit (Rappaport, 1998). This 'going concern' measure is particularly problematic for the valuation of new technology based firms (NTBF's) (Storey & Tether, 1998) and for technology start-up's given their heritage deficit (Audretsch & Link, 2011; 2012). Nevertheless profitability measures do, at the very least, provide a benchmark for NTBF performance.

This need for focus on **profitable** growth and ROIC is finally been acknowledged in the entrepreneurship/small firm growth literature (Davidsson *et al.*, 2009; Steffans

et al., 2009; Davidsson *et al.*, 2010). The empirical research results of these authors suggests that the pursuit of early profitability followed by ‘profitable growth’ rather than the pursuit of growth (scale) *per se* (growth to profit) appears to be a more robust strategy for the longer term survival of young, small, growth-oriented firms. Thus profit/invested capital related growth measures are important measures to track over time when researching growth patterns in small, growth oriented firms if shareholder or firm value creation is the focus. O’Gorman (2001) cautions that even for businesses which achieve growth – this may come from market growth itself and not due to managerial choice or competence.

Given the wide acceptance and understanding of the relationship between profitability levels, profit growth, capital invested and firm value in the strategic management literature (Hill & Jones, 2008; Johnson & Scholes, 2009), strategic marketing (Doyle, 2010) and the corporate finance literature (Rappaport, 1998, Baldwin, 2006; Arnold, 2009), it is important that future growth performance measures in the firm growth literature have the:

Explicit inclusion of ***company value*** in future work, as this is arguably a more terminal goal than either growth or profitability’ (Davidsson *et al.*,2008:19).

This is an acknowledgement by some leading scholars in the ‘entrepreneurial’ research stream that ‘value creation’ measures may perhaps be the future of growth performance measurement. Indeed it is a further acknowledgement that the literature is remiss in having downplayed or ignored these insightful measures for so long. In spite of the large number of studies which have used incomplete measures like sales and employment to estimate growth, concerns about the validity of firm

growth measures persist in the entrepreneurship literature (Cho & Pucic, 2005). It is important to remember also that Capon *et al.*, (1990) highlight the need to focus on 'shareholder value creation' in growth measures as early as 1990 in their meta-analysis of firm financial growth measures then in use. Their suggestions however have only recently regained traction in the academic literature on firm growth (Davidsson *et al.*, 2008a; Steffens *et al.*, 2008; Davidsson *et al.*, 2010). These researchers, using Swedish and Australian data have investigated the relationship between profitability and growth in the small firm in the smaller state and conclude that 'profitable growth' is a superior long-term strategy for the entrepreneur than 'growth-to-profit' strategies. Whilst growth-to-profit strategies may be appropriate to firms with disruptive innovation or operating at the edge of the technology envelope (R&D based), it is not a strategy which is appropriate for the majority of firms operating towards the incremental end of the innovation continuum.

2.6. Financing indigenous firm growth in the small state

Financing of firm growth is an important topic in the small state from both a demand and supply side perspective. Figure 2.2 illustrates how firms' financing requirements and sources of finance change over the lifecycle of the growing firm (Berger & Udell, 1998). This approach implicitly supports the propositions of the Pecking Order Theory (POT) of firm finance, which holds that firms will attempt to finance from internal sources (retained earnings) before they seek external finance (Myers, 1984; Myers and Majluf, 1984; Hogan & Hutson, 2005). SME financing strategies in smaller states broadly follow international practice - (Mac an Bhaird, 2009; Mac an Bhaird & Lucey, 2010). In small states the availability of state finance at the seed and venture

stages of the financial lifecycle signals the belief that there is a 'finance or equity gap' for growth oriented firms which the financial system cannot or will not fill (Jarvis & Schizas, 2012). Storey and Greene (2010) note that since 'information opacity' is a feature of small business finance, there is always evidence of 'market failure', implying that there may be a role for state intervention to correct the situation. Empirical evidence is required to validate the existence of an equity gap and unfortunately the literature is less clear on specifically what constitutes an equity gap and how this might be measured (Mulcahy, 2005a). Whilst the life cycle model is a descriptive representation of the broad financing process for firm growth, it needs to be treated as a broad approximation of the process (Berger & Udell, 1998; Gregory *et al.*, 2005). The financial lifecycle approach suffers from the same predictive validity issues as the lifecycle models in the firm growth literature (Greiner, 1972; O'Farrell & Hitchins, 1988; Hanks *et al.*, 1994; O'Gorman, 2001). Since most small firms do not grow or grow erratically, the model cannot apply to all firms in all situations. By seeking to raise outside equity the firm's shareholders (through its management) is *signalling* its growth intent and its recognition that it must dilute its shareholding if it is to attempt to increase the future firm value (Carpenter & Peterson, 2002). Firms in technology-driven sectors with initial high initial expenditure on R&D (Sunk costs) generally employ higher levels of external equity and lower levels of internal equity than traditional firms. Technology-driven firms typically are not generating enough (or any) profits to meet their investment needs – at least in the early years after start-up. Indeed lack of collateralisable assets is also a problem for these firms and they must depend upon cash flow based financing options or the personal assets and/or guarantees of the shareholders (Mac an Bhaird & Lucey, 2010; Jarvis &

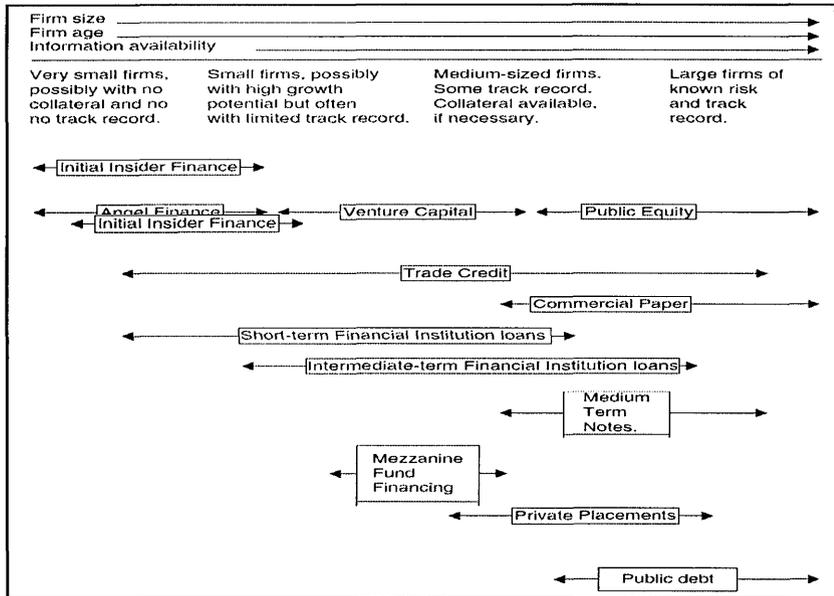
Schizas, 2012). Valuing such enterprises then is particularly problematic (Audretsch & Link, 2012a, 2012b) as the value of the business may be in proprietary knowledge assets which are 'off-balance sheet'.

2.6.1 Financial Bootstrapping

Financial 'Bootstrapping' (Bhide, 1992; Winborg & Lindstrom, 2001) referred to by Berger and Udell (1998) in Figure 2.2 as 'initial insider finance' is an under researched area in the literature. It would appear to be an important skill for entrepreneurs to learn as it teaches them how to manage with a 'profitable growth imperative' (Steffens *et al.*, 2009) and identifies for them the link between cash flow, profitability, profit growth and ROIC (Hill & Jones, 2009). Failure to raise sufficient finance or to manage growth financing can lead to 'overtrading' or other cashflow or undercapitalisation related difficulties (Merson, 2011). Bootstrapping also allows the founder to develop their customer value proposition (CVP) *before* seeking outside investors. Taking a bootstrapping approach to funding a venture also suggests that the entrepreneur is applying an 'effectuation logic' to entrepreneurship (Sarasvathy, 2012) rather than the assumed 'opportunity analysis' approach (Davidsson, 2012). In the effectuation approach the entrepreneur takes an iterative, emergent but controlled approach to business development rather than pursuing a deliberate grand vision. Acquiring outside finance before the firm is 'investor ready' (Mulcahy, 2005a; Mason & Kwok, 2010) can prove detrimental to the interests of the founding entrepreneur - particularly if growth targets are not met. Barker (2002) - cited in Merson (2011) concludes:

.... a lot of entrepreneurs think they need money to build the business faster when they actually haven't figured out the business equation yet (Pg. 35).

Figure 2.2: Firm continuum and sources of Finance*



*Whilst the sources of finance are broadly applicable in Ireland, one major difference is the presence of the state – through Enterprise Ireland, its economic development implementation agency (Enterprise-Ireland.com)– in the seed and venture funding space, the provision of public venture Capital and grant assistance. (Source: Berger & Udell, 1998).

2.6.2 Financing Knowledge-intensive firms in the small state

There are a number of implications for growth-oriented firms in small states. Firstly this review suggests that *profitable growth* should be pursued by entrepreneurs if they wish to retain control of the business in the long term. Growth, in these instances, is carefully managed but ‘good’ growth ensues as the entrepreneur is guided by the ‘profitable growth imperative’ in creating shareholder value. If, on the other hand, the entrepreneur wishes to harvest the business in the short to medium term or aspires to leading a fast or high growth firm then they can pursue scale driven strategies – funded in part by outside investors, generally private equity or venture capitalists. Whilst this can be regarded as ‘bad growth’ in the traditional sense – the ultimate objective is a ‘trade sale’ or IPO and shareholder value may be realised in this way. This is potentially a more rewarding but more uncertain path in

the short term for the entrepreneur. The approach adopted by the entrepreneur will depend on their personal goals for the business (O’Gorman, 2012: 394).

This knowledge-driven growth model, developed internationally for new technology based firms (NTBFs) is most appropriately applied in fast developing markets and/or to disruptive technologies or with disruptive business models. This model underpins the classic ‘venture capital’ approach to funding firm growth (Gompers & Lerner, 2001). It has been shown to be applicable to only a small percentage of young, potential fast-growth firms in any given economy (Murray *et al.*, 2012). Venture capital providers are increasingly migrating to larger deals and to follow-on rather than start-up funding. Therefore angel investors or angel consortia are becoming increasingly important in back filling the market gap vacated by venture capital firms (Mason, 2006).

Within the small state, the available pool of potential fast growth projects will be, by definition, comparatively small. The number of projects will depend on the states level of technological sophistication and the dynamism of and investment in the local innovation eco-system in facilitating or stimulating innovative start-ups (Edquist & Hommen, 2008).

Making private equity and/or venture capital more easily available to firms in the state without correcting for the acknowledged strategy and structural weaknesses in growing firms (O’Gorman, 2006; 2012) may result in suboptimal allocation of scarce resources in the small state - particularly if there is *direct* state involvement (Lerner, 2009; Murray & Liu, 2009; Bertoni *et al.*, 2011; Murray *et al.*, 2012, Barry *et al.*, 2012).

2.7. The role and contribution of the State Support System to indigenous firm growth performance in the small state

2.7.1 Macro and micro level policies.

The role and contribution of the state to indigenous firm growth remains an area of contention in the literature (Bennett, 2012). If, as Baumol (1996) contends the entrepreneur is 'always with us' and Marris (1999) observes that firm contribution to social welfare probably lies in the realm of competitive dynamics then what role is there for industrial policy and the institutional framework in the small state.

Storey & Greene (2010) note how macro-economic factors such as taxation, regulation, immigration and competition policies exert powerful influences over indigenous firm activity, principally because small firms are exposed to the vagrancies of the external environment. The state therefore faces difficult policy choices in how it treats the interests of its indigenous firm stock and the general taxpayer. Storey & Greene (2010) further add that the justification for using public funds to support SMEs is because of their job creation abilities, their contribution to economic development, the sustainability benefits and finally because they are a core political constituency. However controversy arises in *how* the state should assist growing firms beyond creating the right enterprise environment for them (Baumol, 1996; Lerner, 2009; Hart et al, 2009). Bennett (2006) further reminds us that:

The first point on which it is important to be clear is that entrepreneurs and managers, not governments, develop small business. But governments can have a profound effect on all firms, particularly small firms operate and their opportunities to grow. Indeed, government policy and its influence on the 'institutional environment' of a country, region or locality has become a key focus of efforts to help improve how small firms develop and economies compete (p.49/50)

Bennett (2012) further opines that, at the micro-intervention level, the case for direct government action has traditionally been justified by the 'market failure', public interest and government as strategic planner arguments (See also: Breznitz & Zimmerman, 2008; 2010). The lack of empirical evidence justifying direct micro-level intervention however does not seem to deter governments, particularly in smaller states from attempting to target direct assistance at 'growth-oriented' firms (Lerner, 2009; Storey & Greene, 2010; Mason & Brown, 2011).

2.7.2 Micro-level policy rationale

Governments can apparently justify very few elements of micro – level policies on either the supply or demand side based on the available empirical evidence to date. This point is re-affirmed by Bannock (2005), Davidsson (2008c), Bridge *et al.* (2009) and Bill *et al.* (2009) in their respective findings. Storey & Greene (2010) further reiterating that despite the myriad micro-level instruments in use, the quality of impact evaluation is generally inadequate or non-existent.

How, where, when and why Governments intervene at microeconomic level to assist SMEs largely depends on the prevailing political ideology and historical context of the state in question (Breznitz, 2007, 2008, 2012; Mason & Brown, 2011). When governments intervene at the micro level they attempt to pick or make winners, or at least attempt to avoid picking losers. Targeting is seen as a very attractive public policy approach when viewed from the 'perceived need', 'additionality' or 'value for money' perspectives (Bennett, 2012). However Dobbs and Hamilton (2006) remind us that firm growth is 'idiosyncratic' and depends on 'context specific variables' whilst Coad (2009) notes that empirical findings on firm growth so far have shown it

to be 'almost random' in nature and thus highly unpredictable. Storey and Greene (2010) therefore contend that - given the predilection of governments (particularly in smaller states) to target firms for assistance (whether the reasons are well founded or not) – then, at the very least, a robust monitoring and evaluation process should be enacted to evaluate the impact of the intervention and to facilitate policy learning.

The OECD (2008) cite four important reasons for the need to formally evaluate the impact of small business policies – the substantial amounts of taxpayer sums invested, to establish how effectively that public money is spent, the political imperative/accountability and the need for efficient policy delivery. In short - there is an 'opportunity cost' to using state funds for intervention policies (Mulcahy, 2005a).

Storey and Greene (2010) acknowledge however that it is the ability of a sovereign state to nurture new 'fast-growth' firms (Gazelles) which is probably *the [italics added by authors]* most important element in enterprise development. This largely explains the focus on and resources committed by governments to growth-oriented SMEs (Brown & Mason, 2012).

The literature in this area looks at approaches to micro-level state intervention to support/encourage/stimulate an enterprise culture by *selectively* identifying and supporting those entrepreneurial SMEs which Georgellis *et al.*(2000) define as those 'with a strategic intent to grow'. These are the fast-growth or high growth firms which make a disproportionate contribution to employment (Henerekson & Johansson, 2008; OECD, 2010). Carr (2000b: 410,412) notes that:

The policy of selectivity has two strategic aims. First, to identify and support entrepreneurial small business. Second to shape and nurture a strategic mindset

Though entrepreneurs are encouraged to be more strategic in their approach there are limitations on the efficacy of such order (P.410, 12).

These are important points as Section 2.4 of this chapter shows that typically SMEs do not engage in overt formal strategic planning nor do they engage in traditional marketing planning. Strategy tends to be informal and intuitive – emergent rather than deliberate. Marketing tends to be more entrepreneurial than corporate (Bradley, 1985; O’Gorman, 2006; Stokes, 2006, Shaw, 2012). This can have serious implications for micro-level intervention policies which are targeted at these firms. These interventions can be seen as an overt attempt by the state to impose a strategic and rational approach to business planning - in the belief that suboptimal performance (and the likelihood of business failure) are closely related to a lack of attention to business strategy (Beaver & Ross, 2000). This approach needs to be treated with some caution for the reasons cited earlier. However Carr (2000b:410-11) notes that:

It can therefore be suggested that selectivity can be understood as a system by which strategic order is imposed on entrepreneurial ‘chaos’ with firms being advised on how best to develop their produce and market.

Its aim [*the selectivity process – added by author*] is to professionalise the way in which entrepreneurs approach their business and to promote the development of a strategic orientation. In doing this, selectivity requires the collaboration of entrepreneurs in these practices of self-shaping, self-cultivation and self-presentation (Pg. 410, 12).

Thus, the state and the SME owner can be at cross-purposes - not so much over ‘the opposition to selectivity and rationality *per se*’ but sometimes around the selectivity criteria that is applied. In small states with a ‘developmentalist’ heritage, the state can be deeply implicated in attempts to ‘fashion’ entrepreneurial behaviour within

small firms (*ibid*) - in trying to *make winners*. However sometimes the state finds it difficult to apply truly objective criteria given the higher levels of social cohesion that exists in small states, and therefore policy implementation can revert sometimes to policies more akin to 'blanket' support. This is generally regarded as non-strategic and suboptimal (*ibid*) i.e. it is satisficing rather than optimising behaviour. O'Gorman and Cooney (2007) note that most developed nations do *not* have a formal, coherent enterprise policy guiding policy interventions and thus a piecemeal approach ensues causing duplicity and sub-optimality. This helps to explain the plethora of micro-level policy interventions in small states. O'Gorman (2006:402) thus cautions:

It is important that policy makers appreciate the problem is not with the strategy formulation process but, rather, the development of a **clear competitive advantage** [*bolding added by author*] (pg.402).

At the level of the firm, it is about developing competitive advantage or differential firm advantage (Cavusgil & Nevin, 1985; Prahalad & Hamel, 1990; Porter, 1995, O'Gorman, 2012). Comparative advantage (whilst most important at the macro level of the host nation) is but one part of the competitive advantage make-up of *the firm* at the micro level. It is entrepreneurial firms which compete and trade internationally and not nations (Mayer & Ottaviano, 2005; Bennett, 2006, 2012). Porter's diamond model (1990), Rugman and D'Cruz (1993) double diamond model and Hollensen's (2004: 85) synthetic model all try to encapsulate the complexities of the internal factors and the competitive/environmental factors that internationalising firms face (See also: Cassidy *et al.*, 2010; Van den Bulcke *et al.*, 2010). The impact of this environmental uncertainty is magnified for from small

states who are obliged to internationalise early – particularly those seeking organic growth opportunities in the same product/market sectors (Merson, 2011).

Given the myriad internal and external influences and determinants involved in SME growth, the instability of the growth construct itself, the complicating influence of the growth-through-internationalisation process, the questionable logic of state intervention at micro-level and it is little wonder that the contribution of stimulus interventions by the state remains difficult to evaluate. Most cases therefore are simply not rigorously evaluated (Storey, 2000; OECD, 2004; OECD, 2008; Storey & Greene, 2012). Until impact evaluation becomes an integral part of the policy making process, policy learning's will not be captured and cumulative knowledge banks on the firm growth process will not be amassed by policymakers (Papaconstinou & Polt, 1997).

Figure 2.3 is a representation of the 'theory of change' hypothesised to occur when the small state makes a micro-level intervention in its indigenous growth-oriented firms aimed at accelerating firm growth.

2.7.3 Isolating the effects of micro-level policy instruments

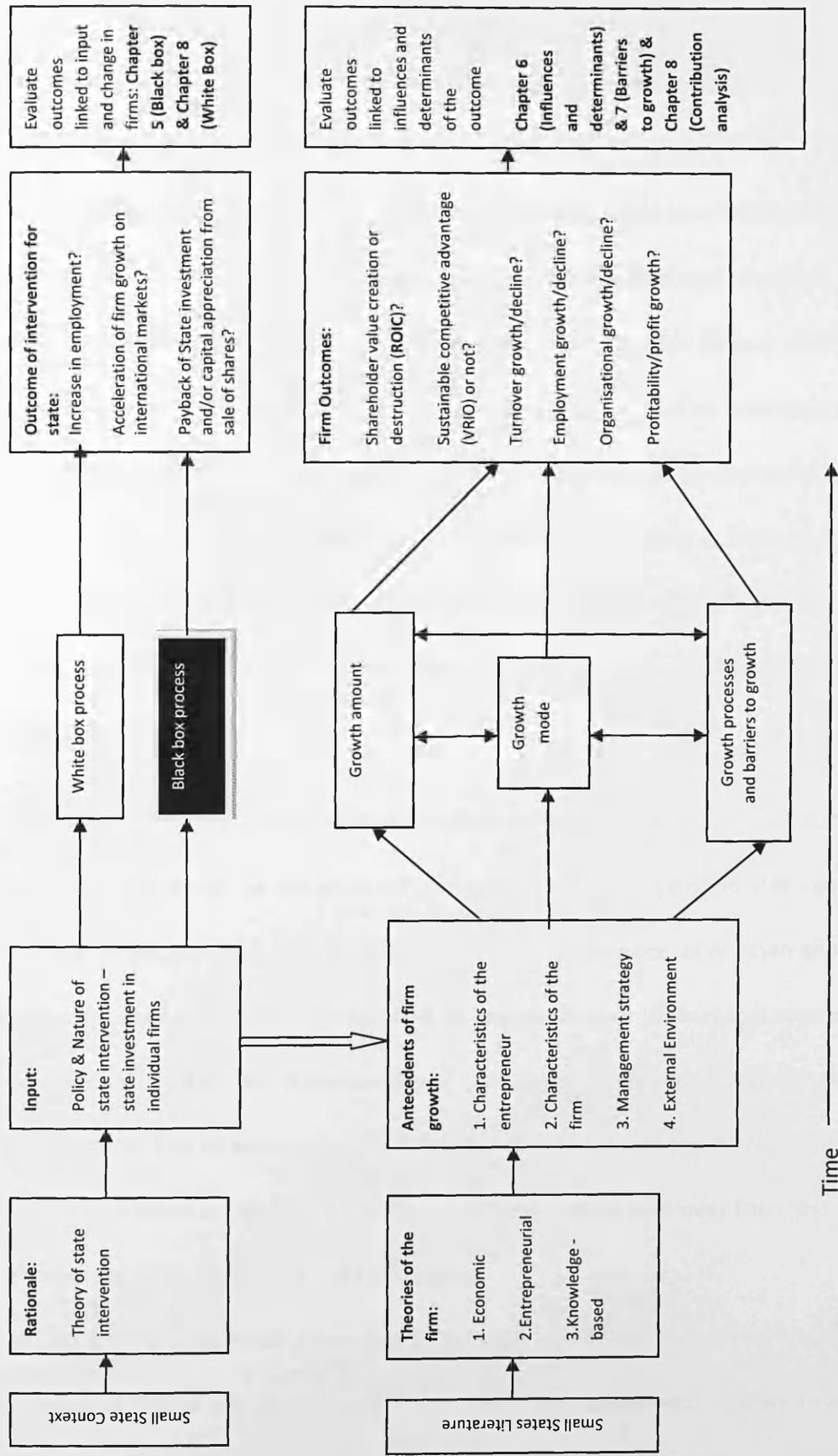
Impact evaluation has an integral role to play in the policy making process in these circumstances. Evaluation cannot be left at the end of the line but instead, it has to be a key element of initial policy formulation (OECD, 2008). Morton (2009) notes that:

Impact evaluation encourages a shift in the focus of policy evaluation from the past to the future and promotes the use of evaluation for policy learning rather than simply for cost containment or control. (p.4).

Once the policy is operational, all organisations and individuals responsible for delivery have to be aware that evaluation is to take place. It is recommended that monitoring and formative and summative evaluation should be integrated into the programme design (Walker & Wiseman, 2006).

Once the evaluation has been undertaken it should be used as the basis for dialogue with policy makers, with the objective of delivering *better* policy. The outcome of the evaluation can then become an input into the debate on the most appropriate ways for governments and SMEs to co-evolve to pursue economic growth (Breznitz, 2007, 2012). Policy formulation can thus become 'evidence-based'. Policy can thus be improved through a process of 'radical incrementalism' (Eisenhardt & Brown, 1998).

Figure 2.3: Mapping micro-level state intervention in the growth-oriented firm in the small state



Source: Storey, 1994; Smallbone & Wyr, 2006, 2012; Davidsson et al., 2010, Hill & Jones, 2009; White, 2009; Mayne, 2001, 2012 - adapted by the author.

This approach emphasises the need for a clear high-level view on SME policy's long term strategic direction. Near term initiatives or experiments can then be contextualised by this longer view. Without this blueprint the near term initiatives begin to lose coherence (Brown & Hagel, 2003) and a smorgasbord of policy initiatives ensues (Bennett, 2012). In tandem with this Simonian (Simon, 1968) 'incremental' learning approach, the state can also involve itself in 'market making' i.e. putting in place the conditions for new markets and acts as co-ordinator or facilitator where there are obvious co-ordination failure (Sissons & Thompson, 2012). This requires policy makers to have superior research and diagnostic skills, be proactive and forward looking, but also effective at working with business and institutions (Link & Link, 2009).

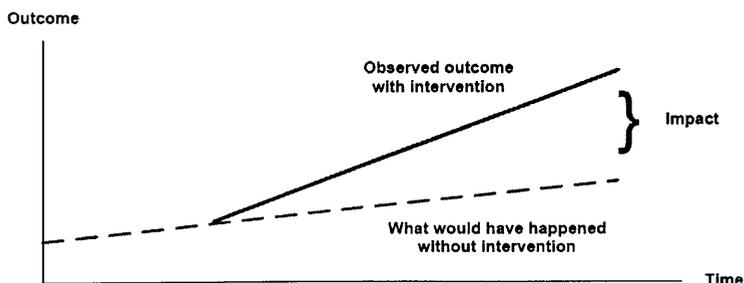
Attempting to evaluate the effects of programmes is complex and difficult as there are myriad influences on and determinants of the performance of an SME - other than that of programme participation (Figure 2.3). In essence, only when all known factors (including chance) are controlled for can the impact of the programme be accurately estimated. Given the paucity of cumulative knowledge in the firm growth space and the lack of agreed specificity around the number of key variables, it is little wonder that there is controversy in the impact evaluation field over the most appropriate approaches and methodologies.

The OECD (2000) identified seven headings under which policy interventions could be assessed. These are: Rationale, Additionality, Appropriateness, Superiority, Systemic Efficiency, Own Efficiency and Adaptive Efficiency. Each of these areas is important in its own right and should receive the appropriate attention if designing policy instruments but the most important is the concept of *Additionality*. This is

defined as the *true* impact of the scheme/programme. Theoretically this makes great sense and whilst it is not always easy to quantify, it is likely to be reflected in a measure such as additional output, or growth in employment or growth in sales, exports, profits or assets that can be attributed to the existence of the policy. In other words activity that would not have taken place without the policy programme but is attributable to the firm participating in the programme. Figure 2.4 (Oldsman, 2002) is a simplified view of the process. It shows, for any given outcome, that policy impact can be considered as the difference between the observed outcome with the intervention and what would have happened without the intervention - the counterfactual. Figure 2.4 shows these two outcomes diverging after the time when the policy is implemented.

This illustration is most applicable to 'Hard' support programmes (financial support) but is clearly more challenging to measure the effects of 'soft' supports such as consultancy, training, management development etc. The diagram also does not show that the state intervention can also result in a negative outcome for the firm or cohort of firms in a programme.

Figure 2.4 The Impact of an Intervention



Source: Oldsman (2002)

Storey (2000) developed an approach to try and overcome the limitations of the evaluation methodologies of that time. His six stage approach attempts to evaluate the impact of specific programmes on firm behaviour and performance. This approach was subsequently adopted by the OECD (2004) and has now become the recommended approach of the OECD (2008). Whilst recommended as 'best practice' by the OECD, no exemplar case or empirical studies has yet been published to demonstrate the appropriateness of the approach. Its usefulness remains an open question until such time as an empirical research base has developed. It also appears to be more appropriate for estimating the shorter term effects of programmes.

Rigorous evaluation seeks, *by some means*, to contrast the views or actions with those of non-recipients in order to present the *counterfactual* (White, 2010). The difference between actual changes and the counterfactual is viewed as the impact of the policy (See Figure 2.4 above). The OECD recommended approach is applicable to *discrete* policy instruments only and does not measure the effects of multiple instruments or take an economy-wide approach. Impact evaluation, as discussed here, is inappropriate for applying to the broader macro-level research questions which are typically addressed by statistical or macro – economic modelling (Morton, 2009).

Storey's approach to evaluating micro-interventions introduced the notion of using mixed research methods in evaluation. Nevertheless Curran (2000) highlights the methodological problems encountered when attempting to evaluate SME small business policies and support through this methodology. On a broader level the net contribution of the policy or programme has to be offset ultimately against

deadweight (defined as desired outcomes which would have resulted even if the policy or programme had never been initiated) and displacement (defined as the result of the policy or programme where other firms not involved cease to trade or have lower sales or employment or suffer higher costs) (*ibid*).

Curran claims that the most appropriate evaluation design to control for these myriad external influences on SME programmes are versions of the 'matched control sample' approach to establish the counterfactual – essentially a true experimental approach (White, 2009). Storey (1998) however does acknowledge the difficulty of 'matching' firms given the myriad factors to consider in relation to the characteristics of the firm, the characteristics of the entrepreneur/management/ownership, the nature of the business strategy and the external environmental factors facing the firm (Smallbone & Wyr, 2012). Even firms in the same sector and locality may serve very different markets (Curran & Blackburn, 1994). The methodological problems above are compounded by issues around sample framing and response errors and selection bias. Valid comparison between assisted firms and other firms can be affected by administrative selection, self-selection or moral hazard (Storey, 1988; Bennett, 1997). Taken together the problems of sampling, response bias, self-selection and establishing control samples, make rigorous impact evaluation extremely difficult (Curran, 2000).

The limitations of quantitative experimental techniques alone can be offset to some extent by using qualitative techniques such as depth interviews, focus groups and case studies. In addition to adding richness and depth to the overall findings, these methodologies can also help identify the firms behavioural and organisational

changes attributed to the programme or policy. This approach would appear, as far as possible, to offer a methodological approach to the measurement of the strategic, operational (increased sales, profits, employment) and behavioural changes (change in organisational cognitive and absorptive capacities) postulated to happen in Figure 2.3. Changes in the environment provoke policy change which in turn initiates state intervention which in turn stimulates the hoped for changes in the strategic, operational and behavioural performance of the firm to create economic value. Thus the contribution of the state micro-level intervention may be assessed along these three dimensions. Table 2.4 shows the monitoring and evaluation possibilities available for various intervention programmes and policies (Storey, 2004).

Table 2.4: Types of Government micro-level intervention instruments for SMEs and the measurement of outcomes for the policy instruments

Programme	Monitoring			Evaluation			Causal relation output – outcome	Measurement
	□	□	□	□	□	□		
Provision of information	○	○					weak	high
Seminar, Training	○	○	○				weak	low
Consultation, Mentoring	○	○	○				weak	low
Grant	○	○	○	○	○	○	strong	low
Loan Guarantee	○	○	○	○	○	○	strong	low
Equity programme	○	○	○	○	○	○	strong	low
Tax incentive	○	○	○	○	○		strong	high

(Source: OECD, 2004)

2.7.3 Theory based Impact evaluation approaches

In situations where the counterfactuals (as a precursor to establishing additionality), cannot be reliably established or where it is not possible to construct satisfactory control groups due to data quality or access issues then theory-based impact evaluation (TBIE) approaches is more appropriate (Weiss, 1998; Stame, 2004;

Carvalho & White, 2004; Rogers , 2007; White, 2009; Funnell & Rogers, 2011). The Network of Networks on Impact Evaluation (NONIE) – an industry representative group explain the benefits of theory based impact evaluation as follows:

The application of the theory-based approach implies that a well designed impact evaluation covers both process and impact evaluation questions. Policy relevance is thus enhanced as the study can address questions of why – or why not – an intervention had the intended impact, not just whether it did. (White, 2009:p.3)

Thus TBIE examines the underlying assumptions of the causal chain from inputs to outcomes in a particular programme or policy. The ‘theory’ in TBIE therefore refers to the underlying theory behind the intervention programme. TBIE provides a logical framework for analysis within which both quantitative and qualitative techniques can be used to evaluate the impact of the intervention. Despite its undoubted acceptance in principle by the evaluation research community, White (2009) notes that few studies to date appear to meet the promise of the approach in practice. One theory-based approach which has gained in popularity since it was first proposed is Mayne’s ‘Contribution analysis’ - developed from his work on results monitoring systems (Mayne, 2001). In sum the ‘Contribution analysis’ either confirms the postulated ‘theory of change’ in the policy instrument or suggests revisions to the theory where results prove otherwise. Mayne (2012) notes that a ‘contribution analysis’ will rarely provide definitive proof. Causality is provided in probabilistic terms. This is differentiated from the ‘attribution’ issue in evaluation studies in that *attribution* is used to both identify the cause of the effect and also measures it quantitatively. Attribution studies attempt to establish how much of the effect is due to the intervention but they require the establishment of the counterfactual to be

effective (Leeuw & Veessen, 2009; White, 2010). Whilst attribution studies are appropriate in the development field, in the business field their use has proven more problematic due to the instability of the growth construct and the myriad confounding factors.

TBIE is a pragmatic alternative to the attribution approach. The six stage 'Contribution Analysis' is an iterative process which builds a chain of evidence and argument to get to a conclusive situation where 'plausible association' does or does not exist (Hendricks, 1996). For 'Contribution Analysis' scholars then *contribution* is defined as:

In light of the multiple factors influencing a result, has the intervention made a noticeable contribution to an observed result and in what way? (Mayne, 2012:p.273)

Thus the impact on firm performance by micro-level policy instruments can be evaluated whilst taking account of the change theory and myriad influencing and determining factors present. The resultant 'contribution analysis' studies could then input into the enterprise policy-making process so that future SME policy at firm level can be 'evidence-based'.

2.8 Summary and Conclusion

Small states are unique in the issues that they face. They are *structurally* different from larger states. These differences have implications for the small state's ability to grow economically. The equation for growth then for the small state must ensure that the positive effects of openness to trade and high levels of human capital investment overcompensate for the negative effects of income and terms-of-trade volatility in the medium to long term.

In addition to the structural characteristics it is important to realise that the internal policies pursued, institutional strength and the competitiveness of the firms in the economy will also have a bearing on economic growth. Thus it is the combination of exogenous and endogenous factors, which determine the small state's ability to grow economically.

The stock of (SMEs) then in a small state is a key engine of economic growth, particularly those that are in internationally traded sectors. However an operational framework which distinguishes between growth and non-growth firms does not currently exist despite the number of differing research traditions investigating the issue and the number of empirical studies already carried out to date.

The ability to understand and predict the determinants of small firm growth has increasingly occupied researchers but studies to date show that firms do not grow in an orderly sequential fashion. Growth may occur in surges, may be reactive rather than proactive or may not occur at all. Since the mid 1990s over thirty significant independent variables have been identified by researchers as 'being of significance' in helping explain firm growth. However significant unexplained variation remains.

A consensus exists in the literature on the measures of the dependent or growth variable. Employment growth, sales growth and asset growth respectively are the most popular. Increasingly 'shareholder value creation' is being considered as a more complete measure of a firm's achievement and thus profitability, profit growth and Return on Invested Capital (ROIC) are poised to assume greater importance in the 'firm growth' literature in future.

Due then to the myriad factors involved, (not to mention the interactions between these factors) in determining firm growth, there is no one pre-eminent approach emerging and so researchers are contenting themselves with theorizing on the 'influences on' firm growth. There appears to be broad agreement in the literature, that the main influences revolve around the interplay of the characteristics of the entrepreneur, the strategies of management, the characteristics of the firm and the characteristics of the external environment. Factors - identified in empirical studies - which, on balance, appear to influence firm growth are: at prestart –up phase - prime age, higher education and male with personality having an indirect effect: At start – up – Location and whether the firm is limited liability. At post start –up there are no clear factors identified as yet. Considering firm growth in the small state then, the observable 'geo-demographic' factors identified in wider studies are an appropriate starting point.

Another aspect of the firm growth literature reviewed here is the 'barriers to growth' or 'constraints on growth' literature. These barriers are analysed in the literature by dividing them into those that are of an external nature and those that are of an internal nature. The literature finds that it is management's ability to comprehend, deal with and respond to the firm's environment, mediated through its strategy, that ultimately exerts a major influence on the growth trajectory of the firm. However large unexplained variation persists and this may be attributable to omitted variable bias and the role of chance or luck.

After more than two decades then of firm growth research then, there are just four known 'stylised facts' about small firm growth. These are: Firms that grow (even

modestly) are more likely to survive; Fast growth firms are highly unusual, they make up no more than five per cent of any business population; Growth is 'spotty' from period to period and smaller and younger firms tend to grow more quickly than larger firms.

Whilst these 'truisms' apply to business populations generally - individual firms can and do prove exceptional. At this point in time it would seem that the 'firm growth' research community has yet to identify the 'blueprint' or DNA for successful growth and the research may indicate - given the body of evidence accumulated so far - that it may never be found.

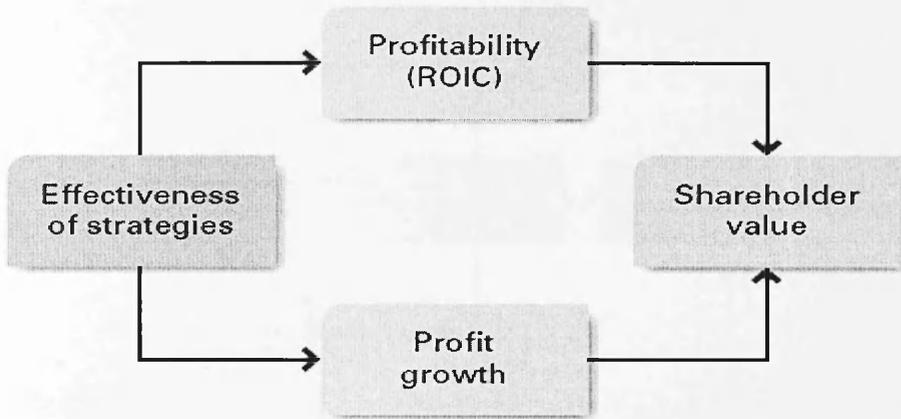
One of the other key factors influencing or stimulating SME growth can be the state. Given the lack of integrative theory and indeed the lack of consensus on specific growth determinants, serious questions are raised in the literature over the applicability and effectiveness of public policy initiatives in the area - particularly micro-level interventions.

With the constraints on state resources in Small States and an apparent lack of a guiding 'Enterprise policy', it is suggested that isolating the effects and evaluating the effectiveness of micro-policy instruments should be a priority for policy makers. Thus a crucial issue becomes one of isolating and evaluating the *net* effects or 'Additionality' of state micro- policy instruments on firms' performance to determine if the desired change has occurred. Did the policy instrument help 'accelerate' growth in a measurable way and did the state obtain added value from the programmes? Evaluation methodologies applicable to micro-policies are discussed from a theoretical and pragmatic perspective. The literature review suggests that

whilst counterfactual methodologies make most theoretical sense, in practice Theory Based Impact Evaluation (TBIE) approaches hold more promise. A TBIE methodology which focuses on contribution rather than attribution and appears to hold most promise from a pragmatic perspective is 'Contribution Analysis' – a systematic approach to arriving at credible causal claims.

Appendix 1

Determinants of shareholder value*



(Source: Hill & Jones, 2009)

To increase shareholder value, managers must pursue strategies that increase the profitability of the company **and** grow the profits.

A firm's Profitability and Profit Growth are determined by two main factors:

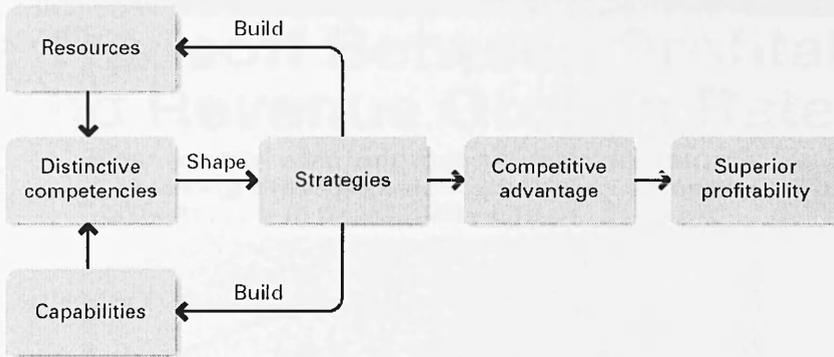
- The overall performance of its industry relative to other industries
- Its relative success in its industry as compared to the competitors

* Return on Invested Capital (ROIC)

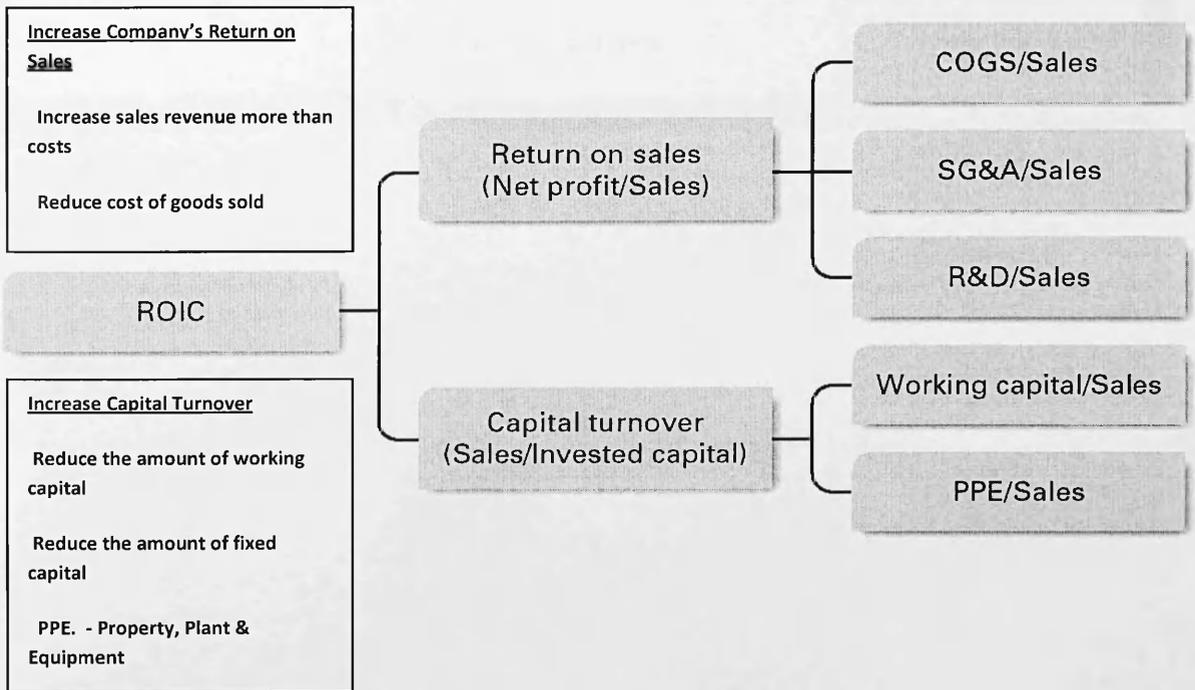
$$\text{(ROIC)} = \frac{\text{Net profit}}{\text{Invested Capital}} = \frac{\text{Net income after tax}}{\text{Equity capital} + \text{Debt capital}}$$

$$\text{Net Profit} = \text{Total revenues} - \text{Total costs (After tax)}$$

Relationship between Strategy, Resources, Distinctive competencies and Dynamic Capabilities



De-constructing ROIC – how to increase ROIC?



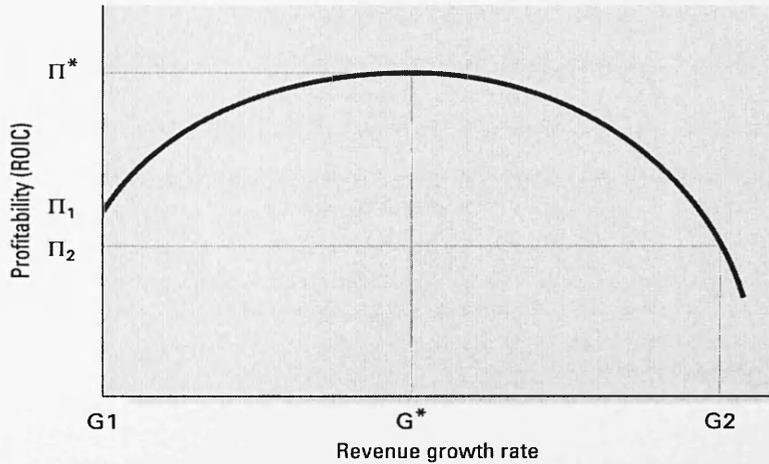
(Source: Hill & Jones, 2009)

Appendix 2

Managing firm growth

The Tradeoff Between Profitability and Revenue Growth Rates

Need to maximize long-run shareholder returns by seeking the right balance between company growth . . . and profitability and profit growth.



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(Source: Hill & Jones, 2009)

Chapter 3

Ireland – A Case study of a small late developing state.

International trade has been central to the growth of the Irish economy since the 1960s (O'Connor, 2001). As Ireland has a relatively small domestic economy with the attendant levels of industrial specialisation, it needs to import to a greater extent when compared to countries with larger domestic economies. Such imports must, in the long run, be financed by export sales (Marin, 1992). However this export-led growth hypothesis, based on the proposed positive link between exports and output (Sharma & Panagiotidis, 2004) still remains controversial.

Nevertheless as a trade dependent economy (ESRI, 2008), Ireland would appear to face two main challenges. Firstly to develop specialisation in sectors that yield the greatest possible value added. Secondly, to produce these goods and services with the greatest efficiency possible (Forfas, 2006). This is an equally difficult task when the size of the population (less than 4.6 million) is factored in (CSO, 2012). The literature reviewed in Chapter 2 informed us that small economies, despite their scale-related constraints are poised for growth if they invest heavily in human capital and R&D, and are open to trade and investment (Armstrong & Read, 2003). However, in an increasingly globalising world, the small open states vulnerability to income and terms of trade volatility also increases (UNCTAD, 1988; Easterly & Kraay, 2000).

In recent years, also in line with global trends in more developed and late developing economies, the export growth performance of the services sector in Ireland has outpaced that of manufacturing (Forfas, 2006, 2013). Across the OECD,

services activities now account for an increasing proportion of economic output and employment. In Ireland two out of every three jobs, and sixty four per cent of value added in the economy is accounted for by services (Forfas, 2008). This has given rise to the debate that developed, and late developing economies are undergoing some form of 'deindustrialisation' (Rawthorn & Ramaswamy, 1998). This will result, according to the more bearish commentators, in the future development of an 'hourglass' economy with high value added service jobs at the top, an increasingly denuded manufacturing sector in the middle and low value added service jobs at the bottom (Brinkley, 2006). However this structural changes plays out over the coming years, there is general agreement at supranational (EU) and national policy level, that we are entering an era, where:

The strength of its knowledge industries and Europe's capacity to diffuse knowledge across the totality of the economy are fundamental to its success and are key to lifting its growth of productivity to compensate for falling population growth and pay for its social models (Kok, 2003:6).

The 'knowledge economy' or 'knowledge-driven economy' has arrived.

3.1 The knowledge economy

The knowledge economy is difficult to define precisely because, as the Work Foundation (2006) acknowledged, the commodity it rests on – knowledge - is hard to define with any precision. This, of course, creates problems for the quantification and measurement of the concepts (Arrow, 1962). However the World Bank Knowledge Assessment Monitor (KAM) (2009), attempts to describe the pillars of a knowledge economy along four dimensions. The four pillars are; a states' economic and institutional framework, the quality of its education system, its national innovation system and its ICT infrastructure. Ireland ranked 11th in the world in

2012 across the 148 variables measured. Interestingly it does not include a 'quality of life' metric, which is widely seen as an important factor and the fifth pillar of a knowledge economy. This pillar is seen as essential in attracting in 'knowledge workers' to the host nation (Florida, 2003).

The Work Foundation (2006) has attempted to operationalise and adopt for its own research purposes, the following working definition of what constitutes 'the knowledge economy' within a state. It is:

The share of national income and employment produced by the innovating organisations, combining ICT and highly skilled labour to exploit global scientific, technological and creative knowledge networks (p. 2).

One of the key enablers of the knowledge economy is the intensive use of information and communications technologies (ICT) as a catalyst for development in the economy. The rapid fall in price and the vast increases in computing power have allowed the creation of networked systems – including cloud computing and big data - which are able to store, analyse and handle vast knowledge and information flows. This represents a 'soft discontinuity' from the past (David & Foray, 2002), and not a 'new economy' operating to a new set of economic laws as initially suggested (Brinkley, 2006).

Whilst the Work Foundation definition gives a broad understanding of what the knowledge economy is, it is important to find a more specific unit of analysis to allow international comparisons of knowledge-driven economies or at least, particular facets of these economies. For the purposes of the analysis here it is more useful to use the OECD (2005)/Work Foundation (2006) definition of what constitutes knowledge intensive industries within a knowledge economy – these are

regarded as; High to medium tech manufacturing, finance, telecommunications, business services (all OECD) and education and health (added by Work Foundation).

Applying these (broad) measures to Ireland in 2005 reveals that it appears to be the most knowledge - based economy in the OECD. The industries described above account for 48 per cent of Irish GDP followed by the US (43 per cent), Germany (43 per cent) and Sweden (42 per cent). 41 per cent of its workforce in 2004 was regarded as knowledge workers, up from 30 per cent in 1995 (ILO, 2004). Yet Ireland is only regarded as 'Middle tier' when judged by its 'investment in knowledge' (a composite index developed by the OECD), decreasing from 2.6 per cent in 1994 to 2.4 per cent in 2002 (OECD, 2006; Brinkley, 2006). This is consistent with Ireland's ranking on the European Innovation Scoreboard as an 'Innovation Follower' (Europa.eu, 2009). O'Malley *et al.*'s (2008) also note that Ireland, whilst experiencing high growth and innovation scores to 2008, achieved this paradoxically with low R&D spend. Eurostat (2007) defines knowledge-based industries even more broadly than OECD/Work Foundation (by including more traditional industries). On this measure Ireland is ranked lower at ninth of fifteen in Europe with 39.9 per cent of the workforce in knowledge-based industries. This fall in ranking on the wider Eurostat metric can be attributed to the inclusion of indigenous firms who dominate in the more traditional industrial sectors. This measure thus gives a more accurate view of the overall economy. These indices should be treated with caution given the conflicting definitions, methodologies and data collection techniques used. However they collectively show that Ireland's performance on the 'knowledge investment' and 'knowledge output' scores are below par for an aspiring knowledge-led economy.

As a small, open, trade dependent economy then, Ireland's performance on the knowledge-based indices ultimately manifests itself in its export performance. This occurs due to the close relationship between GDP, GNP and exports (Marin, 1992). In 2006 exports constituted 64 per cent of GDP (CSO, 2006; Enterprise Ireland, 2006). It is suggested - given the distortive impact of FDI on Ireland's GDP figures - that GNP or GNI is a more reliable indicator of the states ultimate economic performance. When this is done overall performance is less impressive (O'Hearn, 2000) but still comparatively strong (Smith, 2005).

An indication of the importance of exports to the Irish economy is its proportionally greater reliance on them compared to other countries such as Japan, one of the world's most successful trading nations and the US, the world's richest or even Sweden, the world's most knowledge intensive economy (WorldBank KAM, 2012). Ireland's export intensity expressed as a percentage of GDP is roughly 4.5 times the figure for Japan and 8.5 times that of the US and over 1.5 times that of Denmark (GlobalEDGE, 2007). Indeed Ireland places such heavy reliance on exports, compared to its EU partners that at 64 per cent it has one of the higher export to GDP ratios (Forfas, 2006). A summary economic profile of Ireland from IDA Ireland (2008) using the KAM framework (Worldbank, 2012) is provided in Appendix 1 to this chapter.

3.2 The direct contribution of FDI to Ireland's economic growth.

Closer analysis however of the growth in Ireland's exports reveals that much of it is accounted for by the subsidiaries of foreign-owned firms. Read (2004) notes that the determinants of FDI inflows to small states has received scant attention in the

literature. However, in Ireland's case, the consensus amongst policymakers and academics alike is that these inflows are a mix of efficiency-seeking and market-seeking FDI. These firms are drawn to Ireland for the low corporation tax rates (12.5%), access to the EU market, the availability of skilled labour and the supportive business environment (Breznitz, 2007, 2012). (See: Appendix 1 to this chapter also for further details).

Not surprisingly, FDI has also been primarily responsible for Ireland's elevated position on the 'knowledge economy' measures cited above and on globalisation indices such as the AT Kearney Globalisation Index (AT Kearney, 2009) which measures levels of international trade and investment intensity. Ireland was ranked as the 5th most globalised economy in the world in 2007. Indeed one notable feature of this performance relates directly to the size of the state. Seven out of the top ten most globalised nations have populations of less than 8 million, with AT Kearney asking why small countries rank so high, and noting in response that to be globally competitive countries like Denmark and Ireland '... have no choice but to open up and attract trade and foreign investment.'

Indeed O' Connor (2001:50) was moved to exclaim that in Ireland's case:

All commentators agree that Ireland's success in attracting Foreign Direct Investment is the key factor that has led to the major economic success in the last decade (p.50).

Smith (2005) cautions however, that Ireland's case cannot be used as a blueprint for other nations to follow - given the unique combination of exogenous and endogenous factors that helped create it. That it is no exemplar economy nor is it a showpiece for globalisation (despite its high ranking on AT Kearney index – *author*

added). Krugman (1997) however notes that the image of Ireland as the 'Celtic Tiger' may well have of itself contributed to growth. He points to the tendency of FDI to agglomerate in specific locations. A herd mentality tends to take hold once a location establishes with the 'early movers'.

In their review of the performance of small business, the Oireachtas (Houses of Parliament) Joint Committee on Enterprise and Small Business (2007) noted in consequence that:

The role of Foreign Direct Investment (FDI) in the success of the Irish export sector can hardly be overstated. Foreign-owned firms exhibit a greater propensity to export and have outperformed indigenously-owned firms on export markets (p.10)

These exports from FDI, according to the Enterprise Strategy Group (2004) in their review of industrial policy, account for most of Ireland's exports (89 per cent) by value. For the most part, they are goods and services which were designed elsewhere, to satisfy market requirements that were specified elsewhere, and sold by other people to customers with which the Irish operation has little contact, and over whom it had little influence. Ireland is merely the country of production.

Porter (1990: 679) *cited in* Doyle & Fanning, (2007) perceptively identified, even in 1990 (on the eve of the so called 'Celtic Tiger' boom) the issues facing Ireland in developing a balanced economic strategy between FDI and indigenous industry, when he wrote that:

A development strategy based solely on foreign multinationals may doom a nation to remaining a factor-driven economy. If reliance on foreign multinationals is too complete, the nation will not be the home base for any industry the results of not developing more advanced forms of competitive advantage is a cap on economic

development: rapid progress can be made, but it only goes so far ... In Singapore and Ireland, my view is that the shift has been too little and too late. Neither nation has truly committed to the slow process of developing a broad base of indigenous industry (p.679).

FDI has been attracted to Ireland since the 1960s following a radical change of policy from a protectionist agenda (for almost 30 years), to an export-led approach (Kennedy, 1998; Donnelly, 2012). The first wave of foreign manufacturers arrived in Ireland in the late 1950s after systematic cultivation by the Irish state with attractive capital investment grants and tax breaks. The first major investors were UK and German followed later by US corporations. O'Connor (2001) lists the reasons for Ireland's FDI success. These were a mixture of exogenous and endogenous factors coming together to create an opportunity which the Irish state was well placed to take advantage of. Endogenous factors were - Good industrial development policy, the success of the IDA itself, targeting of the electronics, chemicals and pharmaceutical industries, membership of the EU since 1973, expansion and enhancement of the education system, improved infrastructural communications systems, investment in infrastructure and other projects through the EU Structural Funds (Barry ,1999), fiscal reform especially after the financial crises in 1987, structural revolution in the economy, demographic dividend, national wage and salary agreements, commitment to technological development, revival of indigenous industry since 1980's and an English speaking workforce. Exogenous factors were – The sustained growth in the US economy from 1991 to 2001, changes in the underlying geography of the world economy, cultural similarity with the US and lasting peace in Northern Ireland (Peace dividend).

Finally Smith (2005) contends, in line with O'Connor (2001) that the Irish state through its policies and agencies has played *the* major role in Ireland's economic success by targeting and successfully attracting technology-driven FDI from sunrise industries. Ireland has therefore benefited greatly from the state's foresight in creating an attractive environment for FDI (See: IDA, 2012). From an employment viewpoint with over 150,000 employees in above average (industrial wage) employment (Forfas, 2005), the Irish state can point to real achievement in growing *employment*. However Ruane and Gorg (1999) note that whilst employment creation is the main yardstick by which FDI policy is measured, spillover effects and direct linkages to the wider internationally trading sectors of the economy must also be considered. Policymakers have attempted over the years to try and address the latter two issues (particularly linkages) with limited success (Crowley, 1996; Garhart *et al.* 1997; Barry, Bradley & O'Malley, 1999; Ruane & Ugur, 2005; Gorg, 2007). The increasing foreign-owned presence and sectoral agglomerations in Ireland has managed to dwarf the indigenous exports sector since the 1990s (Oireachtas Joint Committee on Enterprise & Small Business, 2007).

Total merchandise exports in 2006 were dominated by chemicals (49 per cent) and machinery and transport equipment (25 per cent) – both sectors dominated almost entirely by multinationals (CSO, 2007). Indeed Foreign owned firms accounted for 87 per cent of total value of merchandise exports in 2005.

Table 3.1 – Comparison of the direct* contribution of Irish owned v foreign owned Firms to the Irish economy (2006)

Details	Irish owned (Internationally traded) – Agency supported (www.enterprise-ireland.com)	Foreign owned – Agency supported (www.idaireland.com)
Employment 2006	151,710	153, 352 ⁺

Total Sales 2005 - (Domestic and Export) €	25bn	84bn
Merchandise	19.3bn	58bn
Services	5.7bn	26bn^
Exports €	9.6bn	79bn
Merchandise	7.6bn	55bn
Services	2.0bn	24bn
Export Intensity %	38.5	94
% of total exports	11	89
% Export growth 2000 – 2005	1.2	4.6
Expenditure in economy € – Payroll, Raw materials and local services	16.8bn	17.3bn
As % of sales	67	20
Purchases outside Ireland €	4.039bn	33.55bn
% of sales	16	40
Value Added	8.9bn	5.45bn
Primary destination of exports	UK/EU	EU/US

Notes to Table: * Only the direct economic contribution of each sector is considered as reliable comparative figures are not available for wider linkage and spillover effects from each sector. ^ Whilst the value of service exports have significantly increased it is unclear what the actual value generated from the Irish economy due to transfer pricing/Intellectual property policies and aggressive tax avoidance schemes employed by the multinational sector see: http://www.finfacts.ie/irishfinancenews/article_1024185.shtml.

+The figures shown here are for 2005 and provide a baseline for analysis but the overall trends from 2000 – 2011 are tracked at: http://www.finfacts.ie/irishfinancenews/article_1025535.shtml. Conflicting employment figures are provided by Forfas (2013:6). Overall the employment figures quoted above are circa 5% below those from the 2013 figures. (Source: Forfas, 2005 – Annual survey of Economic impact, CSO, 2007 - adapted by author)

Foreign-owned agency-supported enterprises accounted for 66 per cent of employment and 93 per cent of exports in internationally traded services (Forfas 2006). Table 3.1 compares and contrasts the *direct* contribution of both the Irish owned (indigenous) internationally traded sector and the foreign owned sectors to the Irish economy.

Ireland's Industrial Development Authority (IDA), as a deliberate policy, is attempting to increase the 'stickiness' of Foreign Direct Investment (FDI) projects by

trying to encourage these multinational companies to locate more value added functions like Research and Development (R&D), customer service and marketing/sales functions and/or other key corporate functions in Ireland so that they cannot be as easily uprooted as more basic operations and moved to lower cost locations.

FDI has performed well for Ireland over the last twenty years in terms of employment creation and inward investment and in helping diversify the geographic spread of Irish exports and lessening the states traditional dependence on the UK market (Breznitz, 2012). However the erosion of Ireland's cost competitiveness during the boom period 1993-2007 was a cause of concern. The effect of this loss of competitiveness has been exacerbated by the global slowdown in trade, recession and financial crises which began manifesting itself in earnest in 2008. Consequently unemployment in Ireland has increased from 4.6 per cent in 2007 to over 16 per cent in 2012 (CSO, 2012). In addition to the loss of cost competitiveness, Ireland's infrastructural, ICT and R&D deficits has also attracted most comment especially when compared to leading knowledge economy performers (NCC, 2006; Forfas, 2007; Aylward & O'Toole, 2007; ESRI, 2007; World Bank (KAM), 2007).

3.3 The direct contribution of indigenous industry

The contribution of indigenous industry to overall export performance appears disappointing for Ireland from a top line perspective (See: Table 3.1). The share of indigenous exports fell from 26 per cent of the total in 1991 to 12 per cent by 1998. In 2004 the share was virtually the same at 12.4 per cent (Oireachtas Joint

Committee on Enterprise & Small Business, 2007). Indeed indigenous exports grew in value terms just 1.2 per cent over the period 2000-2005 – an acknowledged boom period for the economy (Forfas, 2005). Entrepreneurship contributed significantly to domestic market growth before and during the period but not to export growth (Acs *et al.* 2007; Anyadike-Danes *et al.* 2011).

In 2005 indigenous exports were approximately 11 per cent of overall export value, falling to a low of 9 per cent in 2007. These figures however must be interpreted with caution due to the transfer pricing/intellectual property and aggressive tax avoidance practices of the multinationals based in Ireland (Hennigan, 2012; Palan *et al.* 2013). Despite its apparently declining contribution to overall exports sales values, the indigenous firms collective spend in the economy is just three per cent short of the contribution of the Foreign-owned sector located in Ireland in 2005 (Table 3.1). This suggests in effect that the internationally-trading indigenous sector spends 67 per cent of every euro of total sales generated in the Irish economy compared to 20.5 per cent for the multinational sector. The foreign-owned sector, in addition, spent 40 per cent of every euro of reported export sales on imports compared to an indigenous spend of 16 per cent. These figures serve to illustrate the potential that exists for improvement in indigenous industry's contribution to economic development through innovative entrepreneurship and scaling of export activities.

There are two further exogenous factors that could impact negatively on Ireland's future success in the FDI area. Firstly there are moves from core states such as Germany and France towards EU corporate tax harmonisation (Irish Taxation

Institute & the Institute of European Affairs, 2007), and secondly changes have been mooted in US corporate tax legislation which could restrict future FDI opportunities (Hennigan, 2012). This exposure to potential exogenous shocks is in line with the increased levels of vulnerability experienced by smaller states (Read, 2003) and should give further impetus to efforts to develop internationally-focused indigenous firms. Given the increasing global competition for FDI from lower cost countries, Cooney (2007) rightly questions what will happen if Ireland can no longer entice as many MNCs to locate in Ireland. He concludes that:

....it is imperative that Ireland develops its indigenous industry by engendering a greater number of [*innovative*] business start-ups and encouraging existing firms to grow through exports. But how can this be achieved when no entrepreneurship policy [*enterprise policy*] currently exists within government strategy? (*Foreword*)

The implications of the foregoing analysis is that – firstly Ireland has developed into a ‘knowledge economy’ (See World Bank definition in Appendix 1 to this chapter) on the back of FDI. However the MNC stock has not driven the country’s ‘investment in knowledge’ (OECD, 2007) to the same extent, and therefore Ireland lags behind in some key aspects of knowledge investment (O’Malley *et al.* 2008). This can clearly be seen on the indices from the Knowledge Assessment Monitor (Worldbank KAM, 2012) where Ireland ranks 11th in the world as a knowledge economy across 148 variables. Peer European competitors like Denmark, Finland and Sweden all rank consistently in the top five in the world. Leaving methodological and data considerations aside, this must be a cause of concern to Irish policymakers for the future.

3.4 Direct linkage and indirect linkages (Spillover Effects) and the Absorptive capacity of indigenous industry

A further aspect of FDI requiring consideration for the host country is the issue of direct linkages, which are expected to emanate from the creation of vertical linkages in the host economy. The scope for the creation of these linkages however, can be constrained by the shallowness of the economic structures in the small state (Read, 2004).

'Spillover effects' or indirect linkage effects from FDI (Ruane & Gorg, 1999) are also expected to be another beneficial spin-off from FDI. This relates to the technological, knowledge and business processes introduced into the host economy by FDI and the extent to which these proprietary knowledge assets 'spillover' into the indigenous base thereby increasing their international competitiveness (Kennedy, 1991; Crowley, 1996). Read (2004) notes that the magnitude of beneficial linkage effects are likely to be constrained by the absorptive capacity of their economies.

The empirical evidence to date in Ireland is mixed and suggests that expectations have not been met. It appears that linkages (direct and indirect) are at the lower end of the value chain (Garhart *et al.* 1997). Similarly Gorg (2007) concludes that the few studies (Kennedy, 1991; Barry, Bradley & O'Malley, 1999; Ruane & Ugur, 2005) using traditional approaches to measure spillover effects do not come up with overwhelming and unambiguous support for positive effects. Gorg and Strobl (2003) using different measurement methods, found that only firms in hi-tech industries benefit from MNCs in terms of having higher probabilities of survival.

They suggest that firms are more likely to benefit from technology spillovers if they have the necessary absorptive capacity (Cohen and Levinthal, 1990; Lane *et al*, 2002). Indeed Arnold *et al*. (2004) and subsequently (Forfas, 2005:30) specifically recognised the importance of developing this capacity in the case of Ireland when they found that:

Nurturing absorptive capacity is a key policy need in many countries, but is especially urgent in a place like Ireland where the uneven development of the economy means that many sectors need to catch up, and where there is a rich supply of MNCs providing opportunities for others to reap externalities. (p.30)

This linkage between MNCs and local indigenous entrepreneurs requires further empirical analysis and research before more definitive conclusions can be drawn. However, from a policy perspective, the Irish data is in line with international data which suggests that policy should focus on the absorptive capacity of the indigenous entrepreneurs, and the encouragement of vertical linkages in the economy (Gorg, 2007). However Lane *et al*'s (2002:M4) *cited in* Forfas (2005:11) contend that 'Absorptive capacity is a complex construct which is difficult to operationalise ...'

The view taken here of the absorptive capacity construct in this study is consistent with Bessant *et al*'s (2005) suggestion that the growth crises or 'tipping points' experienced by SMEs across the economy (which may need external knowledge to transverse) are generally of a *commercial* rather than of a technical nature. Thus it can be knowledge from potentially *any* source which helps remove or transverse the barriers to growth. Forfas (2005:28) concludes that:

An important aspect of absorptive capacity is the ability to identify and value external knowledge. Without this, the firm is forever lost in the 'learning paradox' of knowing too little to allow it learn (p.28).

Thus Smallbone *et al.* (1995) noted that the major differentiating factor between growth and non-growth firms was the leadership team's ability to develop and execute on their product/market strategies. O'Gorman (2006) adds that the strategy process is not the issue *per se*; it is the outcome of the process that is most important - the creation of sustainable competitive advantage. Building capabilities and skills to engender the ability to diagnose opportunities and develop competitive advantage is therefore the major challenge at firm and policy level (O'Gorman, 2012). Absorptive capacity levels within the leadership team underpin these dynamic capabilities.

3.5 Entrepreneurship capital and its importance for knowledge diffusion

Absorptive capacity then is a firm level construct which is connected to the wider economy through the 'knowledge filter' in the economy (Acs *et al.*, 2004; Acs *et al.*, 2012). The shorter the knowledge filter the quicker knowledge is diffused throughout the economy (Audretsch, 2007). The key to shortening the knowledge filter is the stock of entrepreneurship capital in the economy that is available to commercialise the created knowledge (Audretsch, 2008). High growth regions are distinguished by their relatively high investment in knowledge, low knowledge filter and high levels of entrepreneurship capital (Acs *et al.* 2004; Audretsch & Lehmann, 2005). The 'European paradox' of high investment in knowledge but low growth

rates is explained by the absence of high levels of entrepreneurship capital to shorten the knowledge filter (Audretsch, 2007).

The focus on FDI in Ireland, despite the well documented employment and investment benefits and attendant high rankings on 'knowledge economy' measures, has not acted as a catalyst to increasing the country's overall 'investment in knowledge' (OECD, 2007) to the extent desired as the knowledge created tends to remain proprietary to the MNC creating it.

Even so, Ireland has effectively 'bought-in' its high knowledge economy ranking through its FDI policy (Milner and Westway, 1993). Consequently Ireland lags behind in some key aspects of knowledge investment – particularly in relation to indigenous industry (O'Malley *et al.* 2008; Hennigan, 2012). In recognition of these knowledge investment gaps, public investment in higher education R&D has increased rapidly since 2000. This increased knowledge investment has been supported by policy innovations such as the introduction of the Programme for Research in Third Level Institutions (PRTL) and Science Foundation Ireland (SFI). Efforts to boost levels of business R&D and connectivity have also been intensified, with a particular focus on indigenously-owned and smaller firms (Edquist & Hommen, 2008). Despite this increased emphasis on knowledge creation - in-house R&D, new technology adoption and human capital development in indigenous firms, these developments come from a historically low base at state and firm level and will require time to develop (O'Malley *et al.* 2008). Initial emphasis appears to have been placed on the technology-driven sectors by policy makers. Audretsch and Keilbach (2004) caution that:

In a region with high level of R&D and low level of unemployment this objective

should rather be targeted towards knowledge-based entrepreneurship. There, entrepreneurship plays an important role in the creation of new products or technologies from publicly available technological knowledge. In regions with a high level of unemployment and low R&D intensity, policy should rather focus on “low-tech” entrepreneurship; a policy that aims to foster knowledge-based entrepreneurship to strengthen the economic basis in such a region can be expected to fail its objectives (p: 422)

Unfortunately Audretsch and Keilbach do not distinguish between exogenously and endogenously sourced entrepreneurship capital. If these are analysed separately – as in Irelands case (See: Table 3.1) – it is clear that science and technology policy choices for indigenous industry were made which were probably too narrowly defined and which did not pay sufficient attention to the inadequate linkages between FDI and indigenous firms and/or indigenous firms and the 3rd level sector (Hennigan, 2012). In addition the structure and performance of the indigenous sector exports were not given sufficient consideration. Whilst ICT, Pharma and internationally traded services are the best performing export sectors from FDI, the more traditional agri-food sector remains the consistently largest indigenous exporting sector by employment and value despite the growth in technology-intensive indigenous firms (CSO, 2012).

Audretsch *et al.* (2008) conclude:

Our results suggest that to focus policy solely on knowledge generation may not be sufficient to generate stronger economic performance. By putting more emphasis on entrepreneurship policy, [*knowledge diffusion and commercialisation*] policy-makers can facilitate the transformation of new knowledge into new products and technology that ultimately fosters regional economic performance (p.688).

Brinkley (2006) also reminds us that the knowledge economy is not just about knowledge-intensive industries but it is also about diffusing knowledge through innovation to more traditional industries also. There would appear therefore to be an opportunity for policy makers in Ireland to proactively facilitate and strengthen the links between indigenous entrepreneurship capital and MNC subsidiaries and the 3rd level sector to maximise the value of the new knowledge generated in the state. Acs *et al.* (2012) do show, using GEM data, that Ireland does have linkages between FDI and knowledge-intensive entrepreneurship which can be developed further. Indeed Robson and Gallagher (1993), Rugman and Verbanke (1993) and Rugman & D’Cruz (1993) also show the benefits that can accrue to SMEs from the presence of large multinational firms located in the state. However these potential linkages must be proactively pursued and developed.

3.6 Industrial Policy and indigenous firm development

Whilst the future industrial development of the state depends on knowledge creation, diffusion and commercialisation, the state has historically faced high levels of unemployment, emigration and economic crises on its economic development trajectory. It is therefore not surprising to find that ‘job creation’ has been elevated, from a policy perspective, to the *de facto* national objective (Breznitz, 2012). This has certainly been the case since the state embraced export-oriented industrial policy and free-trade principles in the late 1950’s (Stationary Office, 1958a, b). However the development of Irish industrial policy appears to have been heavily influenced from this period by the inherently contradictory ideology of ‘neoliberal developmentalism’ in pursuit of the loosely-defined national objective (Breznitz, 2012). This ideology is contradictory in the sense of a professed belief in free-

market principles, but with a strong developmentalist ethos. The Irish state consequently is often referred to as a 'mixed' economy.

The states' economic development organisations tasked with trying to achieve 'job creation' are consequently vested with immense power, influence and resources by the state. The MNC policy promises and delivers on substantial numbers of jobs and inward investment although spillover effects and direct linkages into the wider economy have been more limited than anticipated (Ruane & Ugur, 2005; Gorg, 2007). Indigenous industry, in contrast, promises not only smaller numbers of jobs per project but high failure rates and they remain problematic for policymakers to deal with.

MNCs thus gained policy priority whilst indigenous industry faced institutional discrimination with regards to tax rates, financial support and land allocation (O'Riain, 2004; Sterne, 2005). Whereas the Irish state sees its role as 'facilitating' the activities of MNCs in Ireland through its economic development agency - IDA Ireland, it takes a more direct 'developmentalist' approach with indigenous industry, through its development agency Enterprise Ireland (EI). Both agencies reporting since 1994 to Forfás, the national policy advisory board for enterprise, trade, science, technology and innovation in Ireland which in turn reports to the Department of Jobs, Enterprise and Innovation.

Indigenous industry, having grown under protectionist policies in the 1930s was then neglected through the 40's and 50's to the 1980's and only began to receive state attention and support long after national policy became outward looking and export-led (Breznitz, 2007). The 1973 oil crises, and the subsequent fall off in

indigenous exports, closures and the huge losses in employment in indigenous industry finally galvanised policy makers to question the states dependence on FDI. However it took the Telesis review of industrial policy in 1982 to finally bring indigenous industry's growth possibilities to policy makers' attention, and for subsequent state support to be forthcoming. However the criticism of the disparity in the levels of support available to FDI and indigenous industry continued until the late 1980's (Porter, 1990; Breznitz, 2012). In both policy makers and Irish investors eyes (Hennigan, 2007), indigenous SMEs were seen as the 'poor relation' and traditionally have been treated with lower priority than FDI by policymakers. This prioritisation in terms of 'job creation' has held since the radical change in economic policy in 1958.

The state did begin to adopt a more positive attitude to indigenous industry *after* firms from the emergent software sector began to achieve global success in the early 1990s, *without* significant state support (Sterne, 2004). Whilst the policy for attracting MNCs to Ireland is a deliberate and well developed one, the enterprise policy for indigenous industry remains emergent and fluid, fifty years on. This largely explains the plethora of micro-level policy instruments available to indigenous firms in Ireland and the lack of policy coherence at the state/indigenous firm interface (O'Gorman & Cooney, 2007) (See: Appendix 2 to this chapter on Enterprise Ireland supports for Irish firms scaling up – which included information on the tailored expansion packages which are structured as repayable equity grants or public venture capital).

To put this in context - from 2001 to 2006 - in the second phase of the so-called 'Celtic Tiger' boom - Irish investors had invested over €41bn in overseas commercial property whilst just €250m has been invested by Enterprise Ireland (on behalf of the state), in export development projects in the same period (Hennigan, 2007). Using GEM data for Ireland from 2001 to 2004, O'Gorman and Fitzsimmons (2007:48) were able to demonstrate that - in relative terms - informal investment in Irish SMEs is relatively low compared with other states. It appeared that long term indigenous export investment was being squeezed out of the economy by consumption, construction and property development (Hennigan, 2007). Worse, there appears to be no long-term vision of what contribution the state wishes indigenous industry to make. Some commentators and analysts have argued for a clear, coherent entrepreneurship or enterprise policy to guide enterprise development (Small Business Forum, 2006; O'Gorman & Cooney, 2007; O'Gorman & Fitzsimmons, 2007).

As a national economy then Ireland is over dependent on FDI for its export growth and international performance. Indigenous industry, despite decades of state investment and support in export development (but relative R&D *under* investment – Forfas, 2005; OECD, 2006; O'Malley *et al.*, 2008), continues collectively to underperform from an international trade viewpoint. If Ireland is to build on its achievements to date (driven by FDI) then indigenous industry will need to make a greater contribution than heretofore and a much greater emphasis and effort needs to be put into developing this indigenous capability (Enterprise Strategy Group, 2004; Best *et al.*, 2009). Despite the fact that the state has identified circa three thousand five hundred firms with the capacity to grow through internationalisation,

these firms are typically SMEs who are, in many cases under funded, internationally inexperienced and saddled with a small domestic and peripheral home market (Enterprise Strategy Group, 2004). There would appear to be significant growth constraints on these firms, which are reviewed in more detail in Chapter two and empirically examined in Chapters six and seven. These firms however are being actively encouraged to internationalise, despite the considerable resource and human capital related constraints (O' Gorman, 2012), by an institutionally strong state support system - driven by a developmentalist ideology (Breznitz, 2012). This is precisely what Telesis (1982) and Culliton (1992) warned against - the danger that strong agencies and weak firms might develop under a state-directed industrial policy regime.

If policy makers took a long term view (this is proving difficult given the maximum five year government election cycle), then it would perhaps be developing, as part of a comprehensive 'enterprise policy', a robust national innovation system (to support indigenous firms) (O'Malley *et al.*, 2008). This would ideally be easily accessible to entrepreneurial firms in the state, and would help, along with improvement in indigenous firms' absorptive capacities, reduce the knowledge filter in the economy and improve international performance. Instead the 'National Innovation System' or state support system has been allowed to evolve in an emergent fashion in the 'Enterprise policy' vacuum which has existed for over twenty years. This has resulted in the familiar 'patchwork quilt' of policy instruments in this area - also evident in other states across Europe (Bennett, 2006; O'Gorman and Cooney, 2007). Indeed *the Strategy for Science, Technology and Innovation* (2006: 8) stated that 'There are very real challenges ahead. Science,

Technology and Innovation (STI) in Ireland are still relatively underdeveloped’.

Given the acknowledged low spend of indigenous firms on R&D (O’Malley *et al.*, 2008), the weak links between the higher education sector and industry and the bureaucratic levels within the national innovation system and it is not unreasonable to question whether the state’s expectations of and aspirations for the international expansion of its SME base are well founded. O’ Gorman and Fitzsimmons (2007:47) conclude:

GEM suggests that there are a number of deficiencies in the delivery of government programmes targeted at entrepreneurs. These are a lack of coordination of the efforts of separate state agencies, a lack of market or sector experience among agency executives, and too much agency bureaucracy (p.47).

Brinkley (2006) reminds us that the knowledge economy is not only about knowledge intensive industries but it is also about applying knowledge through innovation to more traditional industries, to increase productivity and competitiveness. Thus a clear, coherent, easily accessible, national innovation development system could help in facilitating the development of these more traditional industries also (Edquist & Hommen, 2008). Dasgupta and Stiglitz (1980) note that market structures are created by the innovation game over time. Indeed, were the state fully committed to the development of increased innovation within firms it would perhaps take a more active role in making the state system available as a ‘testing ground and seed market’ for these firms (Storey & Greene, 2010). The question remains as to whether the implementation structures suggested can help deliver on these aspirations at the level of the firm or produce the step change in indigenous firm performance in the international marketplace that is required?

3.7 Enterprise policy?

As far back as 1982 The Telesis Consulting Group criticised Ireland's over-reliance on FDI and favoured a better policy balance between FDI and indigenous industry. It identified deficiencies in marketing, management and technology in indigenous firms. Subsequent reports, Culliton (1992); Enterprise Strategy Group (2004) and Small business Forum (2006) all identified similar deficiencies in the SME stock. The structural changes in the economy, particularly the move in indigenous industry to higher value added products and services over the twenty five years in question, has been achieved in an environment *without* a coherent indigenous enterprise policy (O'Gorman & Cooney, 2007). However there has been state agency involvement at every stage of the firm development process (Breznitz, 2007, 2012).

The Programme for Government (2007 - 2012) i.e. the implementation document or action plan for the National Development Plan – *Transforming Ireland – A Better Quality of Life for All* (2007 – 2013) does acknowledge (p.6) that 'The Government will continue to invest to enable Ireland to compete seriously as a 'Knowledge Economy'. Despite the high rate of indigenous firm formation (GEM, 2007), few are in internationally traded sectors, even fewer will develop into internationally competitive companies (Hennigan, 2007). The implementation agencies responsible for supporting indigenous exporters have approximately 3,500 – 5,000 clients in total, i.e. between 4 to 6 per cent of the indigenous (SME) stock (See: Table 1.1, Chapter 1). The OECD (2008, 2010) note that high-growth firms can account for up to five per cent of indigenous firm stock. It is these firms - and those that can be encouraged to join them in the coming years (new fast growing firms under five

years old -gazelles) - that will determine whether the indigenous sector can help address the imbalance in Ireland's export performance and economic development.

Whilst the NDP document (p.5) does mention that one of its key economic policies is to 'Develop a growing focus on the SME sector', the document focuses on the key inputs of upskilling, R&D and development financing – all important *inputs* for the competitiveness of SMEs. However nowhere in the document is mention made of SME internationalisation, or the need to improve the diagnostic capabilities, absorptive capacity or implementation skills of these firms.

In 2008 the Irish Government released its strategy document entitled - *Building Ireland's Smart Economy - A Framework for Sustainable Economic Renewal (2008)* – This is its action plan in response to the significantly changed international environment and which:

[It] sets out an ambitious set of actions to reorganise the economy over the next five years and to secure the prosperity of current and future generations. It sets out a framework to address the current economic challenges and to build a “smart economy” with a thriving enterprise sector, high-quality employment, secure energy supplies, an attractive environment, and first-class infrastructure.

The document is an attempt to articulate a vision of where the state might be heading in terms of its future export-led economic growth. It is intended to be read in conjunction with *Towards 2016 – The Ten- year Framework Social Partnership Agreement 2006-2015* (2006). The forecasts on which this document is based have been invalidated by the global economic crises but at least, in other respects, the 2008 document reflects the 'new' reality that exists.

From a policy viewpoint, it would seem important that the state makes it a priority to facilitate as many of these non-internationally trading firms as possible, to consider growing through internationalisation. O’Gorman and Fitzsimmons (2007) point out that Ireland requires not just more [*innovative*] entrepreneurs but more internationally growth-orientated ones i.e. *innovative entrepreneurs* with an ability to develop competitive advantage on bases other than scale or price. Indeed the Small Business Forum (2006) also recommended that the state needs formally to develop a National Entrepreneurship Policy, focusing on maximising the number of start-up businesses – particularly those aspiring to high-growth. It is questionable whether the state should be expending economic development capital and resources on *any* firm that does not have at least the ambition to grow and develop through internationalisation. This call is echoed, in an Irish context, by O’Gorman and Fitzsimmons (2007) when they state that Ireland needs more entrepreneurial firms who might be expected to make an *impact* on economic growth, and thus the call is for more potentially fast and high growth innovative and entrepreneurial firms. As a small open, trade dependent, economy the internationally trading sectors *must* take development priority if the returns on scarce resources are to be optimised (O’Gorman & Cooney, 2007).

And whilst this researcher would not subscribe to the rather deterministic Porterian view on the future of the Irish or Singaporean economies, considering the unforeseen transformation that Ireland has gone through since 1990, it would appear that Ireland still needs to properly grasp the nettle of becoming ‘truly committed to the slow process of the development of a broad indigenous base’ (Porter, 1990:679). Much progress has been made in developing and diversifying indigenous industry (Enterprise Ireland 2007). Whilst the sincerity of effort at the implementation agency level is not in question, it would seem that a step-change in political will, policy focus and resource commitment is required at this stage, if indigenous industry is to make a greater contribution than it has heretofore.

O’Gorman and Cooney (2007:19) in their review of industrial policy from the foundation of the Irish state note that:

Certainly in the case of Ireland, where there are different policies for different aspects of the entrepreneurial process, enterprise policy is not fully integrated into the nation’s economic fabric, nor are all the aspects of policy fully comprehensive, coherent or compatible with each other (p.19).

The absence of a coherent enterprise policy invariably leads to the smorgasbord of micro-policy instruments and interventions, which are continually developed and launched but rarely evaluated for impact in the public domain (See: Appendix 2 to this chapter on how Enterprise Ireland supports Irish firms scaling up).

Building Irelands Smart Economy (2008) introduces the ‘Smart economy’ (Ideas economy + Enterprise economy + Green economy = sustainable economic growth in future) - the so-called triple P of profits, people, planet (Natrass & Altomare, 1999; Kennelly & Bradley, 2005). However this document still does not provide a coherent and comprehensive ‘Enterprise policy’. There was reportedly one in development in response to the recommendations from the Small business Forum (2006). Indeed Forfas (2007) produced a report on the development of Entrepreneurship policy and on the supports available to Entrepreneurs. Calls for a formal stated policy were re-iterated also by O’Gorman and Cooney (2007) and O’Gorman and Fitzsimmons (2007). Finally in May 2013 a public consultation document was released on A *National Entrepreneurship Policy Statement for Ireland* (www.Djei.ie). The policy statement is due for publication in quarter four 2013. This may help re-focus policy-makers attention onto the increasingly important contribution that innovative

entrepreneurship and indigenous growth-oriented firms can make to the future prosperity of the state.

3.8 Summary and Conclusions

Whilst Ireland's economic growth to date has certainly been shaped by exogenous factors such as the rise in foreign direct investment, the Irish state has played - and continues to play – a central role in the economy. This is not least in the provision of a highly skilled and technologically adept work force and in the highly proactive and targeted industrial strategy since the late 1980s.

Deliberate state policy has played a vital role in Ireland's ability to attract international firms. This policy change occurred in the late 1950s following nearly thirty years of protectionism. Ireland deliberately targeted MNCs in technologically sophisticated sectors such as Electronics, pharmaceuticals and software and these have in turn made the major contribution towards the State's rapid economic progress in the 1990s and early part of the new century. FDI has been *the* major contributor in Ireland's classification as a 'Knowledge economy'. However this is not reflected in the wider economy as the state is regarded as middle tier in the 'investment in knowledge' (OECD) index and it is also regarded as an innovation follower in Europe (CIS).

Far from representing a model of neo-liberal free-market capitalism then, the Irish case highlights how state activism through its economic development agencies might contribute to economic growth. Whereas the Irish state sees its role as facilitating the activities of MNC's in Ireland, it appears to see its role as one of 'developing' indigenous industry development. However policies underpinned by

this contradictory 'neoliberal interventionist' or 'neoliberal developmentalist' ideology may be sub-optimal (Breznitz, 2007:2012).

FDI policy has been successful so far for Ireland on an employment level, however the state is constantly seeking ways to 'embed' this mobile investment more deeply into the economy (See: Table 3.1). Results on the benefits of direct linkage and indirect 'spillover' linkage effects of FDI have so far been below expectation – reflecting both the size of the domestic economy and the international experience to date. Approximately ninety per cent of Irelands' exports by value are accounted for by FDI, demonstrating once again the host country's overdependence on it.

International development of indigenous industry has proved to be more problematic for the state, despite the states active role in SME development since the 1980s. It is clear that enterprise policy has lagged behind FDI policy – indeed the country does not yet have a stated enterprise or entrepreneurship policy. Aspects of enterprise policy appear in other policy documents, but this policy area lacks a clear vision and coherence.

In the next phase of economic development it would seem imperative that indigenous industry is assisted through enlightened 'enterprise policy' to fulfil its potential as a *major* growth driver for the economy, to complement to a greater degree in the future the gains made by FDI policy to date.

To develop this enlightened enterprise policy requires more in-depth knowledge of the influencers, determinants (and barriers) of economic growth in small states, of indigenous firm growth in those states, of the internationalisation of those firms and of the role and impact of the state in assisting SME's grow-through-

internationalisation. A public consultation document on a national Enterprise policy statement was released in May 2013 for publication in quarter four which may refocus policy makers on the merits of indigenous industry.

Appendix 1 Economic Profile of Ireland (Source: IDA Ireland, 2008)

Ireland can now convincingly claim to be a knowledge economy. Its claim to be Knowledge-based Economy is reinforced by satisfying the World Bank Group's four key pillars of knowledge Economy:-

- 1) **An Economic & Institutional Framework** that ensures a stable macroeconomic environment, competition, flexible labour markets and adequate social protection. The 2007 Index of Economic Freedom, compiled by the Wall Street Journal and The Heritage Foundation, categorises Ireland as a 'Free' economy, and ranks Ireland 7th out of 157 countries worldwide. It also states that 'Ireland has one of the world's most pro-business environments, especially for foreign businesses and foreign investment' and that 'Ireland's policy framework promotes an open and competitive business environment'.
- 2) **A Quality Education System** that ensures that citizens are equipped to acquire, use, and share knowledge. The IMD World Competitiveness Yearbook 2007 ranks Ireland's education system 5th from 60 countries surveyed for meeting the needs of a competitive economy. They also rank Ireland 4th for level of university education attained.
- 3) **A Dynamic Information Infrastructure** that can facilitate the effective communication, dissemination, and processing of information. Ireland has significant international connectivity capacity to support current and future enterprise activity. High levels of capacity and diversity have resulted in strong competition and very competitive prices. Ireland currently offers the lowest international leased line costs in the OECD. Ireland also has an extensive national fibre network.
- 4) **Innovation Systems** that bring together researchers and businesses in commercial applications of science and technology. Science Foundation Ireland (SFI) invests in academic researchers and research teams who are most likely to generate new knowledge and leading edge technologies and also advances cooperative efforts among education, government, and industry.

General

Population in each Province 2006

Province	Persons	% Change in Population since 2002
Leinster	2,295,123	+9.0%
Munster	1,173,340	+6.6%
Connacht	504,121	+8.6%
Ulster (part of)	267,204	+8.3%
State	4,239,848	+8.2%

Source: Census 2006, CSO July 2006.

Largest Cities and Towns

Total Population (including suburbs or environs) 2006

City/Town	Population	City/Town	Population
Greater Dublin Area*	1,187,176	Tralee	22,744
Cork City	190,384	Kilkenny	22,179
Limerick City	90,757	Siligo	19,402
Galway City	72,729	Navan	24,851
Waterford City	49,213	Carlow	20,724
Dundalk	35,085	Naas	20,044
Drogheda	35,090	Wexford	18,163
Bray	31,901	Clonmel	17,008
Swords	33,998	Newbridge	18,520
Ennis	24,253	Longford	8,836

*The Greater Dublin Area includes Dublin City, Dún Laoghaire-Rathdown, Fingal and South Dublin.

Source: Census 2006, CSO July 2006.

Economy

Irish output growth returned in 2007 to rates consistent with the economy growing along its potential trend. The strong performance of the economy is best exemplified by employment growth of 3.8% last year, or 53,800 net job increases, with an average rate of unemployment of 4.5%. Output growth in 2007 was 4.0% in real GDP terms, driven in significant part by growth in construction investment and by a positive net trade contribution as the international economy performed strongly over much of the year. Inflation in consumer prices averaged 2.9% in 2007. The prediction for Irish output growth in 2008 and 2009 is not quite as favourable against the backdrop of a contraction in

the economy in 2008. Irish living standards, as measured by a metric like output per capita in purchasing power terms, is ranked 8th place among the top countries globally by the OECD.

Country	2006	Real GDP 2007	Growth 2008(F)	2009(F)
Ireland	5.7%	4.0%	1.5%	3.3%
UK	2.9%	3.0%	1.8%	1.4%
France	2.4%	2.1%	1.8%	1.5%
Germany	3.1%	2.6%	1.9%	1.1%
Netherlands	3.0%	3.5%	2.3%	1.8%
Spain	3.9%	3.8%	1.6%	1.1%
Portugal	1.3%	1.9%	1.6%	1.8%
Switzerland	3.2%	3.1%	2.0%	1.4%
USA	2.9%	2.2%	1.2%	1.1%
Japan	2.4%	2.1%	1.7%	1.5%
Euro Area	2.9%	2.6%	1.7%	1.4%

Source: OECD Economic Outlook No. 83, June 2008.

Inflation (HICP)

Country	2006	2007	2008(f)	2009(f)
Ireland	2.7%	2.9%	3.4%	2.1%
UK	1.3%	1.6%	1.7%	2.2%
France	1.5%	1.6%	2.1%	2.3%
Germany	0.7%	1.9%	1.6%	2.0%
Netherlands	1.7%	1.6%	2.4%	3.0%
Spain	3.6%	2.8%	4.6%	3.0%
Portugal	3.0%	2.4%	3.0%	2.2%
Switzerland	1.1%	0.7%	2.2%	1.5%
USA *	3.2%	2.9%	3.9%	2.2%
Japan *	0.2%	0.1%	0.9%	0.4%
Euro Area	2.3%	2.1%	3.4%	2.4%

Source: OECD Economic Outlook No. 83, June 2008. (*CPI)

Unemployment (% of Labour Force)

Country	2006	2007	2008(f)	2009(f)
Ireland	4.4%	4.5%	5.7%	6.5%
UK	5.5%	5.4%	5.5%	5.8%
France	8.8%	7.9%	7.5%	7.6%
Germany	9.7%	8.3%	7.4%	7.4%
Netherlands	4.1%	3.3%	2.6%	2.7%
Spain	8.5%	8.3%	9.7%	10.7%
Portugal	7.7%	8.0%	7.9%	7.9%
Switzerland	4.0%	3.6%	3.6%	3.8%
USA	4.6%	4.6%	5.4%	6.1%
Japan	4.1%	3.9%	3.8%	3.8%
Euro Area	8.2%	7.4%	7.2%	7.4%

Source: OECD Economic Outlook No. 83, June 2008.

Annual Average GDP Growth Rate 2000 - 2005

Country	%
Ireland	5.2
Spain	3.2
USA	2.4
U.K	2.3
France	1.5
Belgium	1.4
Denmark	1.4
Netherlands	1.2
Italy	0.6
Germany	0.6

Source: OECD Productivity Database, October 2006.

Exports/Imports of Goods and Services

	2003	2004	2005
Exports	€82,076m	€84,410m	€86,837m
Imports	€47,865m	€51,105m	€57,468m
Trade Surplus	€34,211m	€33,304m	€29,369m

Source: External Trade, Central Statistics Office, February 2007.

Destination of Exports, January - Nov. 2006

European Union	63.7%
USA	18.6%
Switzerland	2.7%
Japan	2.2%
Hong Kong/Singapore	1.4%
Rest of World	11.4%

Source: External Trade, Central Statistics Office, Feb. 2007.

External Trade

	Imports	Exports	Surplus
Sept. 2006	€5,094m	€7,297m	€2,203m
Oct. 2006	€5,142m	€9,913m	€2,771m
Nov. 2006	€5,224m	€7,150m	€1,926m
Dec. 2006	€5,300m	€7,380m	€2,080m

Source: External Trade, Central Statistics Office, Feb. 2007.
*Dec. figures are preliminary.

Main Points - Economy

- Between 1999 and 2004 GDP growth rates in Ireland grew faster than any of the OECD countries.
- The IMD World Competitiveness Yearbook 2007 ranks Ireland fourth for GDP per capita at Purchasing Power Parity (PPP), ahead of Switzerland (7th) and the UK (10th).
- According to the Economist Intelligence Unit Business Environment Rankings, Ireland will remain one of the most attractive business locations in the world throughout the period 2007-2011. Ireland is ranked 10th globally out of 82 countries.
- Ireland is ranked 14th by the IMD World Competitiveness Yearbook 2007 in terms of exports of goods as a percentage of GDP, ahead of Switzerland (20th) and the UK (47th).
- Ireland's unemployment rate of 4.4% is the fifth lowest within the EU 25 and compares to a euro-zone average of 7.9%.
- Current official forecasts are for 5.4% GDP growth in 2007, well above the expected euro-zone average of 2.2%.
- Ireland's budgetary balance is in a healthier state than most of its euro-zone partners with a debt to GDP ratio currently at 25%, the second lowest in the European Union. The Euro zone average is 70.5%.

Appendix 2

Enterprise Ireland financial supports for indigenous firms including repayable equity grants (Public Venture Capital)*

Established SME Funding

This section sets out the main funding supports and programmes for established small and medium sized enterprises in the manufacturing and internationally traded services sectors. An Established SME client is a company that is not a HPSU (High Potential Start-ups) client, has an established trading record, the company (or its group of companies) employs between 10 and 250 employees, has either an annual turnover of less than €50m or an annual balance sheet of less than €43m. Previous funding approved by Enterprise Ireland may impact on the firm's eligibility for the following supports. Firms are encouraged to consult with their [Enterprise Ireland Adviser](#) to discuss their requirements.

Financial supports (Grant and share investments) are grouped under the following headings:

- Market research and internationalisation supports
- In-company and collaborative research and development supports
- Supports to enhance and develop the management team
- Productivity and business process improvement supports
- Company expansion packages

The supports most relevant to this dissertation are:

Enterprise Ireland Tailored Expansion Packages

If an indigenous firm is undertaking or planning to undertake an ambitious expansion that will create employment and grow its sales in international markets, Enterprise Ireland can discuss a financial support package. Funding will typically be by way of grant and/or redeemable preference shares. However Enterprise Ireland also invests in ordinary shares and/or a combination of ordinary and preference. See: Enterprise Ireland annual reports 1999 – 2005.

Who is eligible for support?

Tailored Company Expansion Packages are considered on a case-by-case basis. SME and large companies are eligible to apply for this funding if the firm is an existing manufacturing or eligible internationally traded services company employing ten or more people. Funding for firms with less than ten is available from the County and City Enterprise Boards which now also fall under Enterprise Irelands remit.

Typically companies are existing clients of Enterprise Ireland – circa 3,500 firms. <http://www.enterprise-ireland.com/en/Events/OurEvents/International-Markets-Week-2011/Financial-Support-for-Business-Start-ups-and-Growth-Companies.pdf>.

However, if the firm is not currently a client, it is advised to contact its local Enterprise Ireland regional office to discuss its expansion plans.

What expenditures can be supported and what is the maximum funding?

Enterprise Ireland Tailored Expansion Packages can support new or incremental investment in:

Capital assets and job creation

R&D

Training

Management Development

Consultancy

The amount of Enterprise Ireland funding will be determined by the;

Need for financial support for the project,

Anticipated growth targets,

Potential employment, and

Regional location of the firm in Ireland.

Typically funding for job creation and capital is in the form of redeemable preference shares*. Funding for recruitment of a key managers and training/management development is in the form of grant and funding for R&D is in the form of grant/preference shares*.

* Enterprise Ireland's Preference shares, unlike ordinary shares, have no ownership or voting rights. Enterprise Ireland's Preference Shares typically take the following form, Enterprise Ireland is entitled to receive dividends (based on an annual % coupon/interest rate) and seek repayment (redemption) of its investments at a specified time (Enterprise Ireland generally seeks redemption on the **fifth** anniversary of the investment). The dividend and redemption payments can only be paid out of **distributable** funds. In certain cases Enterprise Ireland will take equity shares in addition or in preference to preference shares if it deems it appropriate. The firm's stage of development will determine the type of share investment. It can also take cumulative convertible redeemable preference (CCRP) shares which can be converted to equity shares depending on firm performance. These apply primarily to HPSUs but the same principles are common to all stage investments. See: <http://www.slideshare.net/keithbohanna/enterprise-ireland-investment-process-the-legal-element> and <http://www.mirc.ie/mwep/documents/EIFinancialSupport.pdf> for further information.

* Sourced and adapted from: http://www.enterprise-ireland.com/EI_Corporate/en/funding-supports/Company/Eestablish-SME-Funding/

Chapter 4

Research methodology and Data Collection

The primary objective of this study is to investigate the role and contribution of public venture capital to the subsequent performance of growth-orientated indigenous Irish firms over the period 1997- 2010. In addition this study will attempt to identify those factors – other than public venture capital - that are the driving and restraining forces on indigenous firm growth. This chapter explains the research methodology employed to reach the objectives set for the study.

This chapter is structured as follows: Section 4.1 explains the research philosophy and strategy adopted in the study. The research design and process is outlined in Section 4.2. It also outlines the variables employed to investigate the performance of the firms in the study. Data sources are also discussed here. Section 4.3 explains the data generation and collection process whilst section 4.4 describes the choice of case-study methodology and provides an overview of the case-study design and cross-case analysis approach. Section 4.5 is a brief summary of the chapter.

4.1 Research philosophy and strategy

Johnson *et al.* (2004) suggest that there are two opposing research philosophies residing at either end of the research philosophy continuum. These are the positivist and interpretivist approaches. Positivist is the classic science based hypothetical- deductive approach - primarily associated with quantitative data analysis techniques. The diametrically opposed approach is the interpretive or inductive view which is traditionally associated with qualitative data analysis techniques. Much debate has taken place over the years amongst the research

community on the relative merits and de-merits of both qualitative and quantitative approaches (Hammersley, 2002). The emphasis in these 'paradigm wars' (Johnson & Turner, 2003) is misplaced. The issue to be addressed is – what is the most appropriate research strategy and design to answer the research question(s) posed by the researcher (Domegan & Fleming, 2009). In some cases quantitative approaches may suffice, in others qualitative approaches alone may be most appropriate. It is argued that both approaches can be integrated within one study if the research problem requires methodological triangulation to increase the validity and reliability of the study (Patton, 2002). This can then maximise the 'knowledge yield' of the research study (McCall & Bobko, 1990). This methodologically combined approach has increased in popularity in recent years and is now termed 'Mixed methods' research (Johnson & Onwvegbozie, 2004; Tashakkori & Teddlie, 2007; Plano Clark & Creswell, 2011). In sum, Johnson and Turner (2003) define the principles of this approach as follows:

Methods should be mixed in a way that has complementary strengths and non overlapping weaknesses. ... It involves the recognition that all methods have their limitations as well as their strengths. The fundamental principle is followed for at least three reasons: (a) to obtain convergence or corroboration of findings, (b) to eliminate or minimize key plausible alternative explanations for conclusions drawn from the research data, and (c) to elucidate the divergent aspects of a phenomenon. The fundamental principle can be applied to all stages or components of the research process' (Pg. 297).

This study therefore adopts a mixed methods approach as the most appropriate approach to answer the research questions posed and the research objectives set. The approach taken in the study is best described as a sequential explanatory research design (Saunders *et al.*, 2012:167). Quantitative analysis techniques will

be used in combination with qualitative semi-structured interviews and archival data (combined in case studies, cross-case analysis and contribution analysis) to provide the necessary methodological and data triangulation (Patton, 2002). This combining of the opposing positivist and interpretivist research approaches into one study serves to highlight the overall research philosophy of the researcher - which can best be described in research philosophic terms as pragmatic (Shields, 2004; Feilzer, 2010). Saunders *et al.* (2012) note that:

For pragmatists, the nature of the research question, the research context and likely research consequences are driving forces determining the most appropriate methodological choice (Nastasi *et al.*, 2010). Both quantitative and qualitative research are valued by pragmatists and the exact choice will be contingent on the particular nature of the research (p.164).

Qualitative data is used to corroborate quantitative findings or vice versa in mixed methods studies (Tashakkori & Teddlie, 2009; Bryman, 2012). Hence quantitative and qualitative approaches can be viewed as complementary methods in the sense that they use multiple measures to uncover variances or patterns in the data which a single methodological approach may not have identified (Creswell, 2009). In this study qualitative data is used to complement the quantitative study results. The aggregate quantitative results and analysis will be presented in Chapter five and the cross-case analyses (incorporating semi-structured interviews with CEO's of the individual case firms) will be presented in Chapters six and seven. Chapter eight concludes the empirical section of the study with a 'Contribution analysis' which combines all the empirical findings into a structured meta-analysis of the findings in the entire study. The analyses in Chapters six, seven and eight are underpinned by

ten descriptive case studies which are included as Volume two of this study. For confidentiality reasons these case studies will only be available to examiners.

4.2 The research design and process

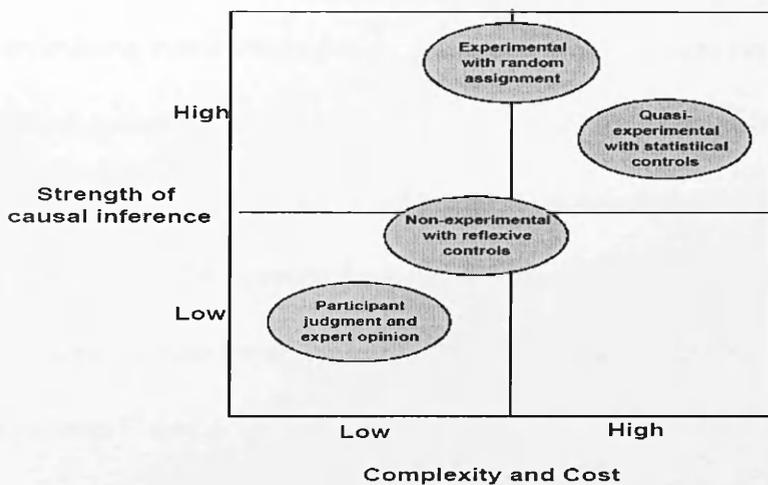
The research design can be exploratory and/or descriptive and/or causal (Saunders *et al.*, 2012). The design of this study is causal or explanatory. It employs quantitative data analytic techniques (Quasi-experimental), confirmatory qualitative techniques (case studies, cross-case analysis) and contribution analysis (Structured Meta – analysis), in addition to a proprietary dataset to answer the research questions posed and reach the research objectives set.

4.2.1 Design rationale

The first empirical Chapter in the study – chapter five, employs quantitative methods to model the geo-demographic variables identified in the literature as most likely to be the key observable determinants or key influences on firm growth performance (Delmar *et al.*, 2006). In particular this thesis investigates the role and contribution of public venture capital investment on firm performance – using the geo-demographic variables as control variables. The empirical literature indicates that, so far, the firm growth phenomenon appears to be ‘almost random’ (Coad, 2009), idiosyncratic (Dobbs & Hamilton, 2006) and measurement dependent (Delmar *et al.*, 2006). Attempting to evaluate the effects of state investment programmes on such an unstable dependent variable (Davidsson, 2004) is complex and difficult as there are myriad influences on and determinants of the performance of an SME - *other than that* of programme participation. These factors include the characteristics of the entrepreneur, the characteristics of the firm itself,

the strategies of the owner/senior management (Storey, 1994; Storey & Greene, 2010) and the sector and location of the business and the wider macro-economic conditions (Smallbone & Wyer, 2006). These external factors include the role of chance (Penrose, 1959; Porter, 1990), state support (Bennett, 2006) and industry sector (Jovanovich, 1982; Jovanovich & McDonald, 1994; McGahan, 2004). Dobbs & Hamilton (2007) therefore recommend longitudinal research designs as the only designs that offer the appropriate insights into the growth change process. The research design will, by necessity, require a number of trade-offs to ensure that the salient determinants – as identified in the literature –are included. The trade-offs in evaluation design are shown in Figure 4.1.

Figure: 4.1 Trade-Offs in Evaluation Design



(Source: OECD, 2004)

4.2.2 Quasi-experimental design options

The researcher would ideally opt for a true experimental design as the best way to establish the counterfactual (White, 2009). However, in reality, this is not always possible as random assignment between treatment and control groups cannot be

achieved to a satisfactory degree (randomisation is an essential requirement for true experimental designs) (Malhotra & Birks, 2009). In the absence of randomisation, the pragmatic researcher must be contented with quasi-experimental designs (non-random assignment) with statistical controls (Morton, 2009) (Figure 4.1). Quasi-experimental designs for evaluation purposes are broadly of two types – those based around comparison *across* time and these include the traditional ‘before-after design’ and ‘time series’ designs - in particular the ‘interrupted time series’ design. The second group of designs are those centered on comparisons *across different participants* and include Non-equivalent group designs (NEGD) and the ‘Regression-discontinuity’ design (Reichardt & Mark, 2004). The inherent deficiencies in the four prototypical designs mentioned above can be offset to differing degrees by adding design features such as treatment interventions, comparison groups, increased measurement occasions and /or different outcome variables. The addition of differing design features can blur the distinction between the two broad groups of quasi-experimental designs and add to the robustness of the results from quasi-experimentation. Indeed the four designs coupled to the four broad types of design features provide myriad design possibilities (Table 4.1).

Careful consideration of appropriate combinations of designs and features can reduce the internal validity threats (i.e. History, maturation, seasonality, testing, instrumentation, attrition and statistical regression) inherent in quasi-experimentation (*ibid: pg. 128-129*).

Morton (2009) concludes that:

Because quasi-experimental designs cannot establish a counterfactual situation with the same level of confidence as randomisation, the challenge is to identify and, as far as possible to minimise the effect of observable confounding or spurious variables. Little can be done about the effect of unobservable variables (Pg. 7).

Table 4.1 - Quasi-experimental evaluation design options and features for increasing internal validity

Design features → Design options ↓		Treatment interventions	Comparison Groups	Increased measurement occasions	Different outcome variables
Comparison across time	Before - After	The treatment intervention is the investment of ordinary and/or preference shares by the state	Not applicable in Irish industry as all firms receive state support	There are five annual measures of performance (ROIC) post state investment and two pre-investment	Shareholder Value creation/destruction as most appropriate dependent variable
	Interrupted Time series	Treatment intervention applicable for this design	Not applicable to this study	Requires large number of measurement occasions – not available for this study.	Requires stable dependent variable – dependent variable not stable in this study
Comparison across groups	Non equivalent group designs	As above	Non equivalent group possible but not appropriate for this study	Requires larger samples	Shareholder Value creation/destruction as most appropriate dependent variable
	Regression Discontinuity	As above	Information on firms receiving less than €635,000 not publically available	Requires larger samples	As Above

(Adapted by author from: Reichardt & Mark, 2004)

The approach therefore adopted by the researcher is contingent on the scale and nature of the programme or policy instrument for evaluation. ‘Hard’ (Financial) support programmes require ‘hard’ evaluative methods whilst smaller and ‘softer’ (e.g. training and development programmes) use softer evaluative methodologies (OECD, 2008). The methodological problems are compounded by issues around sample framing and response errors and selection bias. Valid comparison between

assisted firms and other firms (if available) can be affected by administrative selection, self-selection or moral hazard (Storey, 1988; Bennett, 1997). Curran (2000) therefore proposes the use of a combination of both quantitative and qualitative evaluation methodologies to offset the limitations of quantitative evaluation alone.

Thus quantitative analysis methods are often supplemented with qualitative approaches which add richness and depth to the outcomes of evaluation studies. They can also provide insights to organizational or behavioural change which are due to the intervention under evaluation. Qualitative methods can also help - if rigorously conducted - in reducing bias (Mays & Pope, 1995; Patton 2002). Used in combination in this study qualitative and quantitative (mixed) method designs provide a degree of triangulation not available through the application of a single research methodology (Bryman, 2009).

4.2.3 Quasi-experimental design choice

To solve the 'contribution' problem of what would have happened in the absence of state investment it is necessary to look at the firm performance (the dependent variable) before the state investment (pre-test measure) and after the state investment (post-test measure). Taking the mean performance post investment from the mean performance pre investment gives a 'Before and after' measure (Table 4.1) of any difference in performance *possibly* due to state investment (the treatment intervention). However there are other possibilities for the change in performance and these must to be controlled for. These include the demographic profile of the firm (Delmar *et al.*, 2006) and the firm's geographic location (Aoyama

et al., 2011). Using logistic regression it is possible to assess the relative influence (if any) of state investment on subsequent firm performance. The alternate approach is to use a control group or 'matched sample' - which did not obtain state support - but match the profile of the firms under study in other respects - to compare it with the treatment group. In theory this appears to be more robust. Storey (1998) however does acknowledge the difficulty of 'matching' firms, given the myriad factors to consider in relation to the characteristics of the firm, the characteristics of the Entrepreneur/Management/ownership, the nature of the business strategy and the external environmental factors facing the firm (See also: Smallbone & Wyer, 2006, 2012). Even firms in the same sector and locality may serve very different markets (Curran & Blackburn, 1994). Indeed Lenihan, Hart & Roper (2003) remark that this matching is even more difficult in Ireland due to size constraints and the fact that most growth-oriented firms have received state support of one form or another. Kinsella *et al.*, (1994) did undertake a matched control study on fast growth firms on the island of Ireland but the control group was from Northern Ireland (UK). Due consideration was not therefore given to the sectoral and wider host sovereign-state environmental influences on firm performance (Evans & Jovanovich, 1987; Porter, 1990; McGahan, 2004; Smallbone & Wyer, 2006; Hill & Jones, 2008).

The design choice then is between research designs across time or research design across groups (Table 4.1). This study chooses to apply the research-across-time methodology in the quantitative part of the study in Chapter five. This is the most applicable approach as it takes account of the recommendations in the firm growth

literature, the limitations on data availability and the research context in Ireland. Of the research-across –time options, the ‘Before – After’ design (with controls) is therefore the most appropriate approach for this particular empirical study given the firm population size, measurement occasions available and geo-demographic information available on each population unit (Table 4.1).

4.2.4 Firm performance measure

Using the before and after design (with controls) - this study takes as its key performance variable (the dependant variable), the creation or destruction of shareholder value (Arnold, 2009). Increased shareholder value is created by focusing on the Return on Invested capital (ROIC), profit growth over time and high profitability levels (margin) (Baldwin, 2002). (See: Appendix 1: Chapter 2 for details). These variables are recognized in publically quoted companies over many decades as the appropriate measures of shareholder value creation. The same measures can and should be applied to small and growing firms – notwithstanding the difficulties of accessing, using and interpreting accounting measures of profit in measuring shareholder value creation (Rappaport, 1998). This can be especially problematic in new technology–based firms (NTBF’s) (Audretsch & Link, 2011, 2012).

This need for focus on **profitable** growth and ROIC has only recently been acknowledged in the entrepreneurship/small firm growth literature as a priority in value measurement (Davidsson 2005; Davidsson *et al.*, 2009; Steffans *et al.*, 2009; Davidsson *et al.*, 2010). These authors recent empirical research results suggests that the pursuit of early profitability followed by ‘profitable growth’ rather than the pursuit of growth *per se* (which hopefully will lead to future profit – ‘bad growth’)

appears to be a more robust strategy for longer term survival of young, small, growth-orientated firms. Thus profit/invested capital related growth measures are important measures to track over time when researching growth patterns in small, growth orientated firms if shareholder or firm value creation is the focus.

Given the wide acceptance and understanding of the relationship between profitability levels, profit growth, capital invested and firm value in the strategic management literature (Hill & Jones, 2009; Johnson & Scholes, 2009) and the corporate finance literature (Rappaport, 1998, Baldwin, 2006; Arnold, 2009), it is appropriate that future growth performance measures in the firm growth literature have the:

'Explicit inclusion of *company value* in future work, as this is arguably a more terminal goal than either growth or profitability' (Davidsson *et al.* (2009:19).

4.3 Data Generation, Collection and Analysis

4.3.1 Data sources

A proprietary dataset was initially developed in Microsoft Excel and then transferred to SPSS20 for quantitative analysis. The dataset contains performance variables constructed from eight years financial information for all firms in the cohort. Both profitability and share value information was gathered for the two years preceding state investment to establish a base line or pre-investment performance measure. The year of the state investment was treated as year zero (the treatment intervention year). This was necessary to create a break between the 'before and after' performance measures and so develop an 'interrupted time-series logic' (Yin, 2009). Five years post investment data was also collected from the

annual accounts (the post – test measure) – i.e. The value of the shareholder funds on the balance sheet at year end and also the after tax profit for the year was extracted from the profit and loss accounts. The dataset also contains the salient geo-demographic variables for all 51 firms in the study (See: Chapter 5 for details). Information on each of the proposed explanatory variables was gathered from various sources such as the FAME database, Companies Registration Office (CRO), Visionnet, worldwide web, Enterprise Ireland Annual Reports (1998-2011) and the individual firm websites. Overall the period under investigation was 1997 – 2010 when the ‘before and after’ measure for each firm is included. All firms in the dataset were clients of Enterprise Ireland and had received at least €635,000 (IR£500,000) of public venture capital investment in one of the years 1999 – 2005 (Enterprise Ireland annual reports: 1999-2005).

Table 4.2 - Firm sector breakdown

Industrial Sector	No. of Firms	% of total	% of investment	Value €'000
Consumer products – Furniture/ceramic/carpet manufacturing	3	6	9	4591
Food and natural resources – Agriproducts/consumer foods/natural resources	7	15	20	10089
Cleantech, medical devices and industrial products manufacture	12	25	18	9161
Software, ICT and internationally traded services	29	54	45	22652
Total	51	100%	100%	50376

(Source: Enterprise Ireland, Fame database, Visionnet, CRO, Firm websites)

4.3.2 Data analysis techniques

Binomial Logistic regression

The logistic function (the dependent variable) is particularly useful as it can take as input any value from negative infinity to positive infinity whilst outputting values between zero and one (Garson,2012). This is the most appropriate model here - once the desired outcome is an estimation of whether shareholder value creation is preferable to shareholder value destruction (Arnold, 2007). The study is also interested in whether the states venture capital will be repaid and so this will also be of interest as an alternate dependent variable. The outcome categories can then be expressed as a dichotomous variable – was value created over the five years post state investment period (1) or was value destroyed (0). Whilst return on invested capital could in some circumstances be modelled as a discrete or continuous variable, it needs to be modelled in binary fashion in this case as some of the firms in the study had returned negative profit figures year on year which further exacerbated the shareholder value decrease over time. This meant that it was not possible to obtain meaningful Return on Invested Capital (ROIC) figures and thus a dichotomous variable is the only suitable choice in capturing the value creation/decrease construct in the cohort of firms in the study.

The outcome variable in binary Logistic regression differs from OLS regression in that is expressed in probabilistic rather than numeric terms and its outcomes needs to be interpreted differently (Garson, 2012). Since the probability of an event must lie between zero and one, it is impractical to model probabilities with linear regression techniques because the linear regression model allows the dependent variable to take values greater than one or less than zero (Collett, 2003).

Cross-case analysis

Case analysis is one of the most popular research designs in the social sciences (Yin, 2009) and the international business and management fields (Piekkari & Welch, 2011). Whilst case study design has traditionally been associated with qualitative research it has much wider application and can incorporate both qualitative and quantitative elements within an overall design.

Chapter six and seven in this study are cross-case analyses. Quantitative and qualitative data was collected on ten firms from the cohort of firms in the study. The resultant analyses were then written-up as descriptive case studies using Storey's (1994) and Smallbone & Wyer's (2006) framework. (See: Chapter 2: Literature review). The purpose was to identify possible determinants of and influences on the growth trajectories and growth experience of each firm. Data from these cases was then utilised in the cross-case analyses in Chapter six and seven and also as input to the contribution analysis in chapter eight. Since there were only fifty one firms in the study, it was appropriate to use a case study approach. The case study analysis also provides corroborative material for the quantitative findings in Chapter five. The primary data used in the case studies was collected through semi-structured depth interviews with current or ex-CEO's of the case firms – the key informant's (Marshall, 1996; Fletcher & Plakoyiannaki, 2011). This data was supplemented with archival information, information from the firm's literature and digital assets and reported information in the media. These provide the multiple sources of evidence suggested by Yin (2009; Chap. 4).

Contribution analysis

Chapter eight completes the empirical analysis in the overall study by conducting a contribution analysis (Mayne, 2001). This is a theory based impact evaluation methodology (TBIE) (White, 2010). It is a structured iterative analytic technique which looks at the 'theory of change' proposed by the policy instrument under analysis. It takes the evidence assembled in chapters five, six and seven and conducts a meta-analysis to answer – as definitively as possible - the research questions posed and objectives set at the outset of the study. Blaney and McKenzie (2007) make a distinction in TBIE between those approaches which are 'realist evaluations' (Pawson & Tiley, 1997) and those approaches that develop an explicit programme theory of change – (Chen, 1990; Weiss, 2000; Mayne, 2001). The approach which has gained in popularity since it was first proposed is Mayne's 'Contribution Analysis' which developed from his work on results monitoring systems. It was developed whilst he was considering what could be said about causality of an intervention when only monitoring (weak) data was available (Mayne, 2012). What distinguishes Contribution Analysis from other theory-based approaches in evaluation is its more systematic approach to arriving at credible causal claims.

Mayne (2012) notes:

From an evaluation perspective, the issue was what could be done to make credible causal claims in the absence of experimental approaches. Many evaluations seemed either to be silent on causality or, perhaps worse, made causal claims based solely on the views of interviewees (p.271).

The objectives articulated by Mayne agree in principal with both Storey's (2000) and the OECD's (2008) approach on impact assessment. However Mayne is more

pragmatic in recognizing the limitations on data availability and the difficulties in creating credible counterfactuals and thus estimating 'additionality' - particularly when myriad influencing and determining factors are considered. The aim of the analysis is to reduce uncertainty about the 'contribution' that the intervention is making to observed results through an increased understanding of why results did or did not occur and the roles played by the intervention and other influencing factors. In sum the analysis either confirms the postulated 'theory of change' or suggests revisions to the theory where results prove otherwise. Mayne (2012) notes that a 'contribution analysis' will rarely provide definitive proof. Causality is provided in probabilistic terms. The six stage process is an iterative process which builds a chain of evidence and argument to get to a conclusive situation where 'plausible association' does or does not exist (Hendricks, 1996). CA's six stage process which can be tailored for specific policies or programmes in differing fields (Delahais & Toulemonde, 2012; Wimbush *et al.*, 2012; Lemire *et al.*, 2012). The generic six stage process is as follows:

- Step 1: Set out the cause-effect issue to be addressed
 - Step 2: Develop the postulated theory of change and risks to it including rival explanations
 - Step 3: Gather the existing evidence on the theory of change
 - Step 4: Assemble and assess the contribution story, and challenges to it
 - Step 5: Seek out additional evidence
 - Step 6: Revise and strengthen the contribution story (Feedback loop to stage 4)
- (Source: Mayne, 2001, 2008, 2012)

For 'Contribution Analysis' scholars then *contribution* is defined as:

In light of the multiple factors influencing a result, has the intervention made a noticeable contribution to an observed result and in what way? (Mayne, 2012: p.273)

Thus the contribution to firm performance by policy instruments can be evaluated – taking account of the myriad influencing and determining factors present – irrespective of the quality of data and access afforded the researcher.

4.4 Firm case studies

This section describes the case study methodology employed in this study. Case study methodology is appropriate in this study for the following reasons: Firstly it provides a useful tool for investigating a contemporary phenomenon within its real life context as the boundaries between the two are not clearly defined (Yin, 2009). In addition multiple sources of evidence are used to compile the study including interviews, databases, firm records and media reports. This diversity of sources brings multiple perspectives to the same phenomenon and is appropriate in triangulating data (Patton, 2002). Secondly Case studies offer a richness and depth of information unavailable for example in survey data (Saunders *et al.*, 2009). It offers both quantitative and qualitative contributions to the overall study complementing the empirical work of Chapter 5. By including interview data it also allows the firm's founding entrepreneur's perspective on the drivers of the financial performance measures thereby offering rich insight and further data triangulation opportunities. Finally from an inductive research perspective, case study methodology allows examination of whether the case observations (individually, collectively or sectorally) are in line with existing theory or whether they raise some new theoretical possibilities.

The case study design

Researchers go about the process of selecting case study designs in a myriad of ways however the design must in the first instance be driven by the research question and research objectives of the study in question (Burton, 2000). The data in the case studies in this dissertation came primarily from quantitative and qualitative sources. Quantitative data was collected from the published financial records of the firm, from the FAME database, Visionet, CRO, firm websites and business media sources. The qualitative information came from interviews with the CEO's or ex-CEO/Founders of the firm under study. Interviews were conducted in 2010/2011 and were semi-structured in nature. This allowed the respondents to provide a broader range of information/opinions/views than a fully structured instrument (Domegan & Fleming, 2009). Although the overall structure of the topic list presented to the interviewee was guided by the literature and the overall research objectives, the respondents elaborated on the topics under discussion and this provided some unexpected additional information and insights on the research topics.

The questionnaire/topic list (See Appendix B) was designed to collect both qualitative and quantitative data focused on the explanatory factors for the firm's performance in the eight year period under review.

Selection of the case study firms

Case study information came from the proprietary dataset generated for this study. Ten in-depth interviews were conducted with the CEO or ex-CEO/founder of the firms under study. These firms were chosen by 'theoretical sampling methods' for their representativeness of the overall sectoral breakdown of the cohort of firms in the study (Pettigrew 1988; Eisenhardt, 1989). Whilst there is no ideal number of

cases, Eisenhardt (1989) recommends between four and ten noting that: ‘with more than ten cases, it quickly becomes difficult to cope with the complexity and volume of the data’ (P. 545). Thus this study utilizes the maximum number of recommended cases.

Table 4.3 - Firm sector breakdown and case selection

Industrial Sector	No. of Firms in study	% of firms in study	Case selection	% of cases
Consumer products – Furniture/ceramic/carpet manufacturing	3	6	1	10
Food and natural resources – Agriproducts/consumer foods/natural resources	7	14	1	10
Cleantech, medical devices and industrial products manufacture	12	23	2	20
Software, ICT and internationally traded services	29	57	6	60
Total	51	100	10	100

Data collection and case study implementation

Primary data collection in this study was based on two periods of fieldwork – Spring/Summer 2010 (Four interviews including pilot) and Spring/Summer 2011 (Six interviews). This primary research was preceded with a secondary data collection period (2009-2010) where the dataset for the study was constructed and the potential case interview candidates were researched and targeted. The history of each case firm was researched and the founders/entrepreneurs were identified. A majority of the entrepreneurs (6) were still working with the firms they had founded but a number (3) had moved on - but agreed to be interviewed about the period under study. Only one CEO interviewed was not the founding entrepreneur or part of the founding entrepreneurial team. This firm was one of only two PLCs in the study and the interviewee was the current CEO. The primary research period

was then succeeded with a secondary research period in Summer/Autumn 2011 on the ten firms - to complete the data collection on each case firm.

A contemporary approach was adopted in making contact with the targeted cases.

Firstly the relevant firm founder or current CEO was identified and then approached through the researcher’s professional network on LinkedIn (2012) – the business professional network site. This eventually led to three interviews. Those executives not on LinkedIn were sent a letter (See: Appendix A) requesting an interview.

Letters were then followed up by telephone if there was no response. This process eventually yielded the further seven interviews required. Each interviewee was then sent the topic list (See: Appendix B) in advance of the scheduled interview time and a consent form. All interviewee’s signed the consent form and agreed to have the interviews digitally recorded. The interview meetings were conducted in all but three cases at the firms premises, two were conducted in hotels and one was conducted at the interviewee’s private residence. Typically the interviews lasted between fifty to seventy minutes and consisted of forty two questions divided up into five sections as follows.

Table 4.4 Questionnaire Structure*

<i>Topic area</i>	<i>Number of questions</i>
Characteristics of Entrepreneur	10
Characteristics of firm	4
Management strategies	9
External environment influences	11
Growth experience	6
Final questions	2

* Ten interviews were conducted – 6 in the Dublin region, 3 in the Leinster region and 1 in the Munster region. A topic list (Questionnaire) is included in Appendix B.

The questions were developed from the literature and the study's research questions and objectives (See: Literature review in Chapter 2). The interviews were then transcribed and edited. A copy of the transcript was sent to each interviewee for comment in due course. All interviewee's agreed to continue participating in the study. The data from the interviews was then used in conjunction with the financial information and other secondary sources (firm websites, newspaper reports, state agency information etc.) to construct the ten case studies underpinning the cross-case analyses in Chapters six and seven and the contribution analysis in Chapter eight. The coding used in the case study analysis is outlined in Table 4.5.

Table 4.5: Selected Cases and Case coding

Case number	Code	Case number	Code
1	Food1	6	ICT2
2	Biotech1	7	ICT3
3	Biotech 2	8	ICT4
4	Consumer1	9	ICT5
5	ICT 1	10	ICT6

4.5 Summary and Conclusions

This chapter highlights the research methodology used in the four empirical chapters; five, six, seven and eight. It also covers the justification for employing a mixed methods research design. This design is appropriate for answering the research questions and reaching the research objectives in this study. The methodology employed also allowed for data and methodological triangulation possibilities which a mono method could not provide. In addition the chapter

explains the selection process for the firm case-studies, the case study data collection process, the implementation of the case study data analysis strategy and the use of a 'contribution analysis' framework to synthesise the empirical findings and also to bring the study to a close.

Chapter 5

The contribution of public venture capital to indigenous firm performance in the small late developing state – a quantitative analysis

The contribution that small and medium sized enterprises make to economic growth in developed and late developing economies has been well documented in the literature (Bolton, 1971; Birch, 1979, 1981; Storey & Johnson, 1987; Storey, 1994; Storey & Greene, 2010; Huggins & Williams, 2012). These studies have highlighted an important role for the state in fostering and stimulating growth in this sector (Lerner, 2009, Storey & Greene, 2010; Bennett, 2012). The argument runs that if enterprise is an important engine of growth in the economy and government policy helps shape this enterprise environment for entrepreneurs, *ergo* government policy is important for entrepreneurship and small firm growth. Policies which help stimulate entrepreneurial growth – both in terms of assisting new entrants and for accelerating the growth of existing incumbents – are therefore important (Minniti, 2008:779). The importance of effective enterprise policy is magnified when the case of the small open state is considered. This is because of the greater economic importance attaching to the SME sector in small states (Greene & Mole, 2006). The open question remains as to how to devise, implement and evaluate these effective policy measures? The objective of this chapter then is to evaluate the contribution of a policy instrument – Public Venture Capital (PVC) - to the shareholder value creating performance of established growth-oriented indigenous firms. Start-up firms and policy instruments such as seed funding, aimed at these firms are outside the scope of the study.

In their zeal to encourage entrepreneurial activity and stimulate export-led firm growth governments design micro-level programmes and policy instruments based primarily on perceived 'market gap' or 'market failure' arguments (Bennett, 2006; Storey & Greene, 2010; Murray *et al.* 2012). By attempting then to 'pick or make winners' (Carr, 2000a), policy-makers attempt to 'beat the market'. Murray *et al.* (2012) observe that:

In order to correct for perceived supply-side failures in domestic VC markets, several countries have set-up governmental VC organisations to invest either *directly* in nascent and young ventures or *indirectly* as a limited partner in specialist VC funds focused on young entrepreneurial ventures. Yet, state controlled investment programmes with civil servants identifying and supporting national champions via direct and preferential investment activities is now viewed with considerable circumspection (p.3).

Enterprise Ireland (EI)¹, on behalf of the Irish state, undertakes both types of investment referred to by Murray *et al.* with its 'Seed and Venture Fund' and its direct share investments in internationally growth-oriented firms. EI also directly invests in or has invested in over six hundred firms to 2005. It manages these investments directly on behalf of the State - although the state is not represented on the boards of the firms (Enterprise Ireland Annual Reports, 1998 – 2010). This chapter investigates the public venture capital investments in a cohort of these firms.

¹ Enterprise Ireland is the Government funded agency for indigenous industry support. It was formed out of the amalgamation of a number of development agencies. It is legally a subsidiary of Forfas: www.forfas.ie, the Government policy advisory agency, but reports to the Department of Jobs, Enterprise & Innovation. <http://www.djei.ie/>. It is essentially an implementation agency for government 'enterprise policy'. Its major remit is to help develop the internationally trading indigenous sector to grow its business by stimulating indigenous firms to become more innovative and competitive. See: www.enterprise-ireland.com.

This study will not be considering the 'seed and venture fund' in its analysis as it is outside the scope of this study but will include selected comparative information where appropriate.

5.1 The External Environment and Export Performance of Indigenous Firms

All of the firms in the dataset constructed for this study are located in the Republic of Ireland and are clients of Enterprise Ireland (EI). The macroeconomic situation which existed at the time of the study is shown in Table 5.1. (See also: Appendix 1 in Chapter 3 for a profile of the Irish economy).

Each of the fifty one firms in the dataset has received a minimum of £500,000(€635,000) investment in share capital (either equity, preference share or a combination of the two) from Enterprise Ireland on behalf of the Irish state to help accelerate their international growth and development (Enterprise Ireland, 2011).

Table 5.1 Ireland: GDP & GNI, 1997-2006

Year	GDP €bn	GNI €bn	GNI as % of GDP	GNI (at constant 2005 prices per capita €'000)
1997	68.1	60.8	89.3	24.1
1998	78.7	69.8	88.7	25.5
1999	90.7	78	86	27.4
2000	104.6	90.1	86.1	29.5
2001	116.9	98.9	84.6	30.2
2002	130.2	108	82.9	30.6
2003	139.4	119.1	85.4	31.8
2004	148.5	126.8	85.4	32.4
2005	161.5	137.5	85.1	33.3
2006	174.7	150.5	86.1	34.5

Note on table: In 2006, the GNI figure for Ireland was 86.1% of the GDP figure, which was broadly comparable with that observed in previous years (See Table 5.1). In 2006, the Irish GNI per capita figure was over 40% higher than the 1997 figure when measured in constant 2005 prices i.e. an average annual growth rate of just over 4% per annum (see Table 5.1)

(Source: CSO National Accounts, 2011- adapted by author)

Having gone through a rigorous selection process (See: Chapter 3: Appendix2), each of the firms can be regarded as internationally 'growth oriented' or having an 'entrepreneurial orientation' (Delmar, 2003). These are the potential high-growth – firms targeted by policy makers (Storey & Greene, 2010; OECD, 2010). These firms are prime examples of the Irish state's attempts at picking or more accurately making winners (Carr, 2005a). The years covered by the investment period are 1999 – 2005. This is important, since these years coincide with the so-called 'Celtic Tiger' boom years (Donnelly, 2012, Breznitz, 2012).

During the period of the study, the Irish domestic economy was growing at healthy rates on the back of strong international growth (Table 5.1). Each firm included in the study was identified from the Enterprise Ireland Annual Reports 1998 – 2005 (See: Appendix 1 in the annual reports). In each of the years under review (1999-2005) the maximum number of firms obtaining (€635,000) or more never exceeded ten firms nor fell below four (Enterprise Ireland annual reports, 1998-2006). The evaluation of the performance of these 'selected firms' - subsequent to the state investment- can also provide insights into the success or otherwise of the states selection process *and* the quality or otherwise of the pool of indigenous projects available for investment.

EI initially identified all firms obtaining over IRE100,000 (€127,000) in share investment in the 1998 to 2001 Annual Reports. From 2001 to 2008 however only those firms obtaining £500,000(€635,000) or over were identified. Aggregate information on shareholdings is only available in the annual reports until 2009 and individual firm allocations are not provided. There has been a progressive move

since the first annual report in 1998 to providing less and less information on individual firms. No reason has been provided for this move.

Having identified a cohort of firms obtaining €635,000 or over, the company's registration number was inputted into the FAME database (Bureau de Djik, 2011) and financial information (profitability and shareholder investment value) was gathered for eight years on each firm, i.e., two years pre-state investment, the year of the state investment and for 5 years post-investment. This allows a pre (before) - and post (after) - investment performance measure to be calculated for each firm. Missing data was obtained from the Companies Registration Office (CRO, 2011) and Visionnet database (Visionet.ie, 2011).

5.1.1 Indigenous firm Export performance

Table 5.2 shows the performance of export-oriented indigenous Irish industry over the period 1999-2005 against the positive macroeconomic backdrop of just over four per cent annual average GNI growth from 1997 – 2006 (Table 5.1). Figures for 2006-2010 are included as 2010 was the last year that financial data was collected for firms in the study i.e., firms receiving the state investment in 2005. These figures represent the performance of Irish firms who are clients of EI and thus are in the vanguard of the country's export-led growth strategy. The total turnover (Domestic and export) of all EI's client firms decreased by 1.3 per cent on average per annum from 1999 to 2005. Data for 2006 – 2010 was not provided by EI in their annual reports. When the export proportion of the total turnover figure is considered, export performance actually declined by 1.8 per cent on average per annum over the

same period while employment grew by less than one per cent to 2005. From 2006-2010 indigenous exports increased by eighteen per cent in value or 3.6 per cent on average annually. Employment decreased by 3 per cent over the same period.

Despite the increase in indigenous exports, the employment decrease indicates the difficulties that firms were experiencing on the domestic market particularly after the global financial crises in 2008.

Total exports (FDI & indigenous industry) increased by 29.5 per cent from 1999 to 2005 or 4.6 per cent (9.7 per cent for the five years from 2006 – 2010 or 2 per cent on average per annum) showing the divergence in performance between indigenous exporters and FDI firms to 2005. From 2006 – 2010 indigenous exports outperformed FDI in percentage terms. Indeed, the share of indigenous exporters as a percentage of overall exports declined from 17.5 per cent of overall exports in 1999 to 12.4 per cent in 2005 but recovered to 15.6 per cent of total exports by 2010. Anyadike - Danes *et al.*, (2011) further finds that new business creation or 'entrepreneurship' did not contribute significantly to economic growth to 2004. Economic growth then was driven by FDI, domestic consumption and a 'Construction bubble' during the so-called 'Celtic Tiger' period'. Indeed economic growth ceased to be export-led from 2001 signalling the growing domestic bubble forming. Pro-cyclical policy measures contributed to the already overheating economy (CSO, 2011).

The only sector to actually grow its exports during the period (1999 – 2005) under analysis was the software and international services area - albeit from a relatively

small base. Food and natural resources, consumer and industrial products all declined or remained static (See: Table 5.2).

5.1.2 Public venture capital investment for indigenous firms

In the investment period under study (1999 – 2005), EI invested €153,074,000 in direct share investments in Irish indigenous growth-orientated firms to stimulate increased growth. Thirty three per cent of the overall investment was invested in the fifty one firms in this study. These fifty one firms each received a minimum of €635,000 (IR£500,000) in share investment. On average this works out at €987,000 per firm. Over the period, Enterprise Ireland’s annual budget increased from 1999 to 2001 and then declined to 2005. (See: Table 5.3).

The positive macroeconomic situation (summarised in Tables 5.1) raises questions about the justification for state investment in individual firms - when the financial system was benefiting from a low interest rate regime in the eurozone.

It also raises questions about the ‘market failure’ or ‘finance gap’ argument forwarded by policymakers as justification for intervention in the marketplace (Mulcahy, 2005a; Bennett, 2006, 2012). This unique economic situation also creates an opportunity to analyse the possible contribution of public venture capital. It effectively creates the temporal conditions for the conduct of a ‘natural experiment’ on the firms obtaining public venture capital (See: Chapter 4 – Research Methodology for detailed explanation of the research methodology employed). The study then looks at the financial performance of these fifty one recipient firms for two years pre-state investment to establish a baseline and then for five years post-state investment (See Table 5.4).

Table 5.2: Indigenous firm performance - Turnover, Exports and Employment (1999-2010)

	1999*	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Indigenous firm- *** sales €m	25,180	23,700	24,400	24,900	25,100	24,400	25,800	NA	NA	NA	NA	NA
Sectors (€m)					\$\$\$							
Software & Int.	1,700	2,041	2,800	3,550								
Industrial Prod	7,700	5,971	6,390	5,860								
Consumer prod	2,700	2,017	2,090	2,020								
Food & nat.res	13,100	12,058	13,000	13,400								
Total outward export	66,956	83,889	92,690	93,675	82,076	84,409	86,732	86,772	89,226	86,394	84,239	89,240
performance (incl. FDI) (€m) (Merchandise only)												
Employment	135,878	147,035	148,792	143,924	142,045	140,798	139,830	141,091	153,760	145,758	133,523	137,241
Sectors					!!!							
Software & Int	12,423	19,554	20,918	21,424								
Industrial Prod	61,714	64,706	64,571	58,184								
Consumer prod	7,907	7029	6053	5768								
Food & nat.res	53,834	55,746	56,574	58,548								

Notes on Table 5.3:*** Indigenous industry is defined as clients of Enterprise Ireland - those firms in the Irish economy who are Irish owned and outwardly internationally trading. El estimate that they have between 3,500 to 5,000 client firms. Their performance is captured in an annual (self completion) survey by Forfas/El. The quoted figures cannot be independently verified. Technical details such as sampling methodology, response rates, confidence levels etc. are not made public. NA - not available - El stopped publishing client firm total sales figures in the 2005 annual report. \$\$\$ Enterprise Ireland ceased giving sectoral breakdowns of overall sales performance in their 2002 annual report. ^ Consumer products were amalgamated with food and natural resources from 2003. !!! Employment figures per sector were discontinued by Enterprise Ireland from their 2002 report. # Includes EU funding which significantly increases the 2000 El budget and accounted for the jump in investment value from 2000 to 2001. X From El annual reports - notes 16 or 17 to the Balance sheets 1999-2010. *From 2007. El reported sectoral export performance in changed sub sectoral combinations and has continued to do this through each year since. This makes year-on-year comparisons impossible from 2008 on. There are approximately 97,000 indigenous SME's in Ireland (European Observatory of SME's, 2010) ** Forfas/Enterprise Ireland Annual Business Review. Results are based on companies responding to the survey in 2010 (grossed up to reflect non-respondents). Results can vary from previous estimates due to revisions made by companies and differences in the profile of respondents from one survey period to the next.

This gives eight year's financial performance - which is a longer period than most studies cited in this area (Dobbs & Hamilton, 2006; Shepard & Wiklund, 2009). This is in line with Davidsson's (2004) and Dobbs and Hamilton's (2007) recommendation that 'longitudinal rather than a cross-sectional' approach is the required approach when studying the firm growth phenomenon.

Table 5.3: Performance of Enterprise Ireland (EI)* 1999 - 2005

	1999	2000	2001	2002	2003	2004	2005
Enterprise Ireland Budget** €'000	279,000	373,000 [#]	281,000	248,000	235,000	234,000	251,000
EI Share	123,651	134,256	145,655	158,576	166,642	178,994	184,984
Investment in indigenous firms at cost/(NBV in brackets)	(94,612)	(103,320)	(111,730)	(98,152)	(105,647)	(110,326)	(106,660)
Additional annual investment in firms (at cost) over previous year €'000	17,525 ^x	20,020	28,880	16,916	22,774	25,684	21,275
Firms in this study - annual value of investment €'000	3,663	5,084	11,786	4,885	6,786	7,535	11,368
- % of total annual increase in funding (50376/153074) i.e. 33% of all investments	21	25	41	29	30	29	53
Seed and venture fund (Outside scope of study) ⁺ Cost/(NBV) €'000	32343 (31030)	45389 (44601)	85985 (76950)	106305 (77493)	120508 (86454)	135519 (89114)	136373 (84677)

Notes on Table 5.4: The mission of Enterprise Ireland is stated to be: 'To accelerate [bolding author added] the development of world-class Irish companies to achieve strong positions in global markets resulting in increased national and regional prosperity' (EI annual report, 2008:1).

*In addition to providing funding for scaling indigenous firms, EI also provides grant assistance to firms for R&D investments. The focus in this study is on the possible impact of public venture capital provision only. See for example, EI annual report 2010: Page 21 for a breakdown of expenditure. www.enterprise-ireland.com/publications **Enterprise Ireland's budget is a grant-in aid from the Irish government, supplemented over the years by grants from the European Social fund (ESF) for development in peripheral and disadvantaged regions.

+ The seed and venture fund is targeted at High potential start-up in technology and life sciences sectors. EI invest in consortia of venture funds managed by private sector venture capital firms. Figures are included here for comparative purposes. The firms and funding investigated in this study relates to the 'scaling' funding activities of EI and the impact of its efforts however at least one firm included in the study had previously received seed funding under this scheme. In general individual firms funded under the scheme are not identified due to the commercially sensitive nature of the information.

Includes EU funding which significantly increases the 2000 EI budget and accounted for the jump in investment value from 2000 to 2001

X From EI annual reports – notes 16 or 17 to the Balance sheets 1999-2005.

5.2. Characteristics of the Dataset

The sectoral breakdown of the firms under study is set out in Table 5.4. Forty five per cent of the overall direct share investment is in the ICT sectors, due in the main to the belief (amongst policy-makers) that fast growth Firms (FGF) or high-growth firms (HGF) would emanate from these sectors. The literature would however point out that HGFs can occur in any sector, are not over represented in technology sectors but are indeed more prevalent in the service sectors (Henrekson & Johansson, 2010; Storey & Greene, 2010; Anyadike – Danes *et al.*, 20011). Employment grew over seventy two per cent in these sectors from 1999 to 2002 albeit from a low base (Table 5.2). Food & Natural Resources and Industrial Products (including Cleantech and Biotech manufacturing) both providing three times the employment of the ICT sectors in 2002 with industrial products declining overall by 6 per cent from 1999 (due to the demise of some traditional sectors) and Food and natural resource sectors growing employment by 9 per cent from 1999 to 2002 – the last year that employment figures, broken out by sector, are available.

Table 5.4 - Firm Sector Breakdown

Industrial Sector	No. of Firms	% of total	% of investment	Value €m
Consumer products – Furniture/ceramic/carpet manufacturing	3	6	9	4591
Food and natural Resources – Agri-products/consumer foods/natural resources	7	15	20	10089
Cleantech, Medical Devices and industrial products manufacture	12	25	18	9161
Software, ICT and Internationally Traded Services	29	54	45	22652
Total	51	100	100	50376

The public venture capital investment took place over the six year period 1999 – 2005 and is broken out over each of the years. Table 5.5 indicates the relative

importance of the 51 firms in the study when the overall investment in indigenous industry in the period under study is considered. On average, each firm received €987,000 in public venture capital investment, accounted for 33 per cent of total direct public venture investment but only represented eight per cent of total firm numbers receiving direct venture capital funding. Fifty four per cent of the public venture capital funding in the study was allocated to firms in the ICT and high-technology manufacturing sector firms (See: Chapter 5: Table 5.4). These technology-intensive firms represented 69 per cent of the overall *number* of firms in the study. Technology-driven firms receiving €773,000 (35) on average each compared to the more traditional firms who received €1,456,000 (16) per firm reflecting the sector, age and scale profiles of the respective sub groups.

Table 5.5 – Breakdown of Direct Public Venture Capital Investment - Scaling of Indigenous Firms by Year of Investment

Year	No. of firms receiving €635,000 or over*	% of total firms (n=51)	% of Investment 1999-2005	Value €m	Total extra share investment
1999	4	8	7	3664	17525
2000	4	8	8	5084	20020
2001	10	21	23	11786	28800
2002	5	12	10	4885	16916
2003	9	19	14	6786	22774
2004	9	19	15	7535	25684
2005	10	21	23	11368	21275
Total	51	100	100	50376	152994

* These 51 firms received 33 per cent of the overall share investment disbursed by EI to firms 'scaling up' over the 1999 – 2005 period. By the 2005 annual report (2005 figures), EI had made share investments in 577 firms under the €635,000 threshold in addition to 70 firms with investments over €635, 000. These investments were valued at cost €112,572,000 and €72, 412, 000 respectively. Average investment per firm was €195,098 under the €635,000 threshold and €1,034,457 above it. Mulcahy (2009;2011) also points out that EI client firms are 'entitled' to apply for grant support from EI's Research, Technology & Innovation (RTI) and R&D Capability grant schemes in addition to receiving equity investments. This study focuses on share investments only as grants are non-repayable and could be considered as a subsidy to the firm whereas share investment is expected to be repaid in due course based on performance after the post investment period. However the public venture capital has also been referred to as 'repayable equity grants' by EI (Brenzitz, 2007). Appendix 2 in Chapter 3 outlines the EI support system for indigenous firms in detail.

5.2.1 Geographic location of firms

The breakdown of the geographic location of the firms (Hoogstra & Van Dijk, 2004) (Table 5.6) shows the importance of the Dublin Region as an economic ‘agglomeration’ region. The majority of the Software and Technology firms reside in this area. The Leinster region of which Dublin is the major city is next. When this eastern region (Dublin and Leinster) is considered, it accounts for seventy two per cent of the total number of firms in the study and seventy five per cent of the state investment. Cork City, which is the main city in Munster and Cork County account for the bulk of the fifteen per cent of firms and twelve per cent of total investment attributable to Munster. The provinces of Connaught (6 per cent) in the west of Ireland and the counties of Cavan and Monaghan in Ulster (4 per cent) in the border region account for the remainder of the firms in the study.

Table 5.6 - Geographic location of firms

Location	No. of Firms	% of total	% of Inv.	Value
Dublin	26	51	50	25165
Leinster	11	21	25	12387
Munster	8	15	12	6284
Connaught	3	6	5	2571
Ulster	2	4	8	3969
Total	51	100%	100%	50376

5.2.2 The age profile of firms

The age profiles of the firms are displayed in Table 5.7. Fifty eight per cent of the firms in the study were five years or below in age. The majority of these firms were from the technology sector. These firms accounted for fifty one per cent of the total

state investment. Older firms are primarily from the more traditional sectors such as food, consumer and/or industrial products.

Table 5.7: Age of Firms (at time of State investment)

Age	No. of Firms	% of total	% of Inv	Value
Over 10	12	23	27	13676
5-9	10	19	22	11213
0-5	29	58	51	25487
Total	51	100	100	50376

5.2.3 Firm size at time of public venture capital (PVC) investment

Firm size is another key variable in the proposed model – it is included because of its prominence in the literature. Most studies on firm size however take the number of employees as a proxy for size (Davidsson, 2004). In this study, in line with the strategic focus on shareholder value creation, it is appropriate that the value of shareholder funds on the firm’s balance sheet is taken as a true measure of the size of the business at that point in time (Baldwin, 2002; Davidsson *et al.*, 2008; Hill & Jones, 2009; Doyle, 2010). The breakdown of the size of the firms in terms of shareholder value in the year preceding the state investment shows that sixty three per cent of the firms had created shareholder value at that point before the state investment. Twenty five per cent or thirteen firms had not reported financial results at this point, indicating the young age profile of this cohort. Twelve per cent of the firms had negative shareholder value, indicating that the firms were surviving on the goodwill or future expectations of their shareholders.

Table 5.8: Size of firms – Shareholder value – year preceding state investment

Shareholder value in €	No. of firms	% of total	Share of investment	% of Investment
Negative shareholder value – firm supported by shareholders (technically insolvent)	6	12	4973	10
0 shareholder value – firm just formed or no reported results as yet**	13	25	12034	24
Positive shareholder value – firm has retained earnings and received capital injections which increased shareholder value	32	63	33369	66
Total	51	100	50376	100

*Shareholder value is defined as the reported value of shareholder funds on the balance sheet at year end of the year preceding receipt of state investment i.e. Total assets – current liabilities = Shareholder funds.

** Firms have up to 18 months to file financial statements for a financial period.

The age and size spread of the firms in Tables 5.7 and 5.8 indicates the all encompassing nature of the funding options available from the State – be it early stage, follow-on or later stage growth funding. Sixty six per cent of the state’s investment in this study went to firms with positive shareholder value indicating that two thirds of the investment went to follow on and later stage growth funding. See Table 5.8.

5.2.4 Shareholder numbers in firms (Ownership)

The number of shareholders in the firm is an indicator of the team behind the venture (Directors) as most firms in the study are private firms, typically run by the investor(s) themselves. These firms are defined in the literature as ‘closely-held’ firms (Audretsch & Link, 2012; 2012). The firms survive with funding support from family/friends and/or angel investors and/or venture capital and/or the Irish State. Table 5.9 indicates that fifty seven per cent of the firms have between 1-5 investors with twenty five per cent of firms having six to ten investors. Essentially eighty six per cent of firms have ten or less registered investors at the beginning of the study period. New Technology based firms (NTBF’s) (Storey & Tether, 1998) typically have

higher shareholder numbers than more traditional businesses as they tend to compensate employees with share ownership/options in the early stages (in lieu of salary). If they have growth ambitions, they also tend to allow outside shareholders in to help fund growth – be it family/friends and/or angel investors and/or VC's (Berger & Udell, 1998, Mulcahy, 2005; Gompers & Lerner, 2010). The entrepreneurs cede partial control to try and accelerate shareholder value creation. An analysis of movements in the share register of small private or 'closely held' firms over time therefore can give possible insights into the financing strategy and growth performance of growing firms. The information provided here was accessed on the FAME database, (2008 – 12) and on the Visionnet, (2009-11) website. Both FAME and Visionnet's source data comes originally from information filed by the registered firms with the Irish company's registration office (CRO). Corporate enforcement has improved in recent years in Ireland and company information is now filed in a more complete and timely fashion primarily due to the focus in the Office of the Directorate for Corporate Enforcement on enforcing company law filing requirements for limited companies (See: www.odce.ie).

Table 5.9: Ownership of firms – number of Owners' two years before state investment

No. of shareholders	No. of firms	% of total
0 – not incorporated	2	4
1-5	29	57
6-10	13	25
10+	7	14
Total	51	100

5.2.6 Firm performance – dependent variables

Having analysed the characteristics of the dataset in terms of the geo-demographic and financial variables, it is also important to consider appropriate performance variables over the five year post state investment period of the study. This is the time-frame after which the firm - if it has grown successfully - is expected to begin paying back the share capital investment to the state. It is essentially the States 'exit mechanism' from its share investment in the firm and it also reveals the proposed 'theory of change' behind the programme. This implies that the state by 'picking and making winners' expects to generate a return on a higher percentage than the market.

If the firm has not generated sufficient retained earnings to repay the capital, has ceased to trade during the five year period or has been acquired, then the State - depending on the nature of its holdings - either retains its shareholding if the firm cannot redeem the shares - or loses its shareholding if it ceases to trade. In cases where the firm was acquired (trade sale), it depends on whether the sale was a distressed sale or not and whether the returns to the state were positive or not. In many cases, this is not possible to determine as these sales are conducted privately and contain confidentiality clauses.

In cases where a firm goes public by IPO, the State has sometimes retained its shareholding in the new PLC. Mulcahy (2005) has criticised the lack of transparency and discipline in the way the Irish State manages and reports on its portfolio of investments in indigenous firms. Indeed, she notes that the State agency responsible for managing these investments, Enterprise Ireland accounts for the public venture

capital in a highly unusual way. It does not disclose the values obtained for its share divestitures thereby giving no indication of its performance in managing its portfolio (per industry practice). In the accounts and notes to the accounts of its annual reports, Enterprise Ireland does however report the overall cost of its investments from the 1998 annual report on and does give a current book value for its share investments. These figures are provided in Table 5.3. In the 2005 Annual Report, cumulative shareholdings acquired by Enterprise Ireland were valued under the historical cost convention at €184,984,000. The net book values (NBV) of these shareholdings were valued at €106,660,000. This is an apparent write-down of €78,324,000 on the value of these investments. Breznitz (2007) interviewed the then CEO of Enterprise Ireland in 2005, who disclosed that Enterprise Ireland had made €250m for a 'sinfully small investment'. This is not evident from the Annual Reports as it is not reported in a transparent manner as an investment gain. Mulcahy (2005) and Breznitz (2007) noting that this reluctance to highlight investment gains probably reflects a state sponsored body's discomfort at showing 'profitable gains' to its paymasters and the public least it effect its subsequent funding and/or public perception. Horn (2011) reports that the current CEO of Enterprise Ireland claimed at the annual Engineers Ireland Conference (2011) that Enterprise Ireland is the largest venture capitalist in Europe - not just Ireland. There is however no clear evidence of the quality of the investments or of the investment returns or the impact (in terms of value creation within firms) of the States share investment performance. It simply is not publicly reported.

Investigating the relative contribution then of state investment to the performance of the top fifty one recipient firms is one of the objectives of this dissertation. Table

5.10 shows that forty of the fifty one firms in the dataset had not increased shareholder value in the five years post-state investment. This is cross-tabulated with 'Can the state investment be repaid'. The situation is more nuanced than the top line figure above suggests. For example, seven of the firms which reduced shareholder value still had the potential to repay the State after the five year post investment period as they had raised outside equity from elsewhere and thus had significant reserves (and shareholder support) but did not trade profitably in the period under study.

Table 5.10: Post - pre investment Performance Positive/negative ROIC * Can investment be repaid Cross-tabulation							
		Can investment be repaid?					Total
		Firm has capacity to pay back state	Not repaid - retained earnings not sufficient but firm survives	Firm stopped trading before 5 year period	Firm taken over by Irish firm before 5 year post investment period	Firm taken over by International firm or multinational before 5 year period	
Post - pre investment Performance Positive/negative ROIC	Return on Investment below 0	6	21	4	1	8	40
	Return on investment above 0	7	1	2	0	1	11
Total		13	22	6	1	9	51

Table 5.11 condenses the categories in Table 5.10 into a binary variable to ensure that this variable can be incorporated into the developed model. This transformation of the variable is necessary due to the small number of cases available for analysis in the dataset.

5.11: Post - pre investment Performance Positive/negative ROIC * State investment payback performance Cross tabulation

		State investment payback performance		Total
		Firm has accumulated losses or ceased trading	Firm has capacity to repay share investment/firm acquired/ remains trading	
Post - pre investment	Return on Investment below 0	25	15	40
Performance Positive/negative ROIC	Return on investment above 0	3	8	11
Total		28	23	51

5.2.7 Firm performance by sector and location

Table 5.13 shows the performance (value creation or value destruction) of the cohort of firms in the study by sector and geographic location of the firms. This Table gives an overview of the sectoral and geographic spread of the firms. The standout statistic is the clustering of the technology firms in the Dublin Region and the poor financial returns of this sector judged by the ‘shareholder value creation’ metric. This is explained by the significant human capital and R & D investment required in these firms to achieve Minimum Efficient Scale (MES) (Audretsch & Link, 2012). Those firms that raised venture capital in particular are seeking to grow sales and/or headcount in the shortest possible time with the expectation of a potential trade sale or an IPO. This strategy depends on investors retaining confidence in the firm as it continues its attempt to grow in an uncertain market, technological and competitive environment (Mohr *et al.*, 2008). In the study, for example, only three out of the twenty nine firms

from the ICT sector had increased the book value of shareholders funds through *profitable* trading by the end of the 5 year post state investment period.

**Table 5.12 - Post - pre investment Performance Positive/negative ROIC *
Geographic location of firm * Industrial sector of firm Cross tabulation**

Industrial sector of firm			Geographic location of firm					Total
			Dublin area	Leinster	Munster	Ulster	Connaught	
Consumer products	Post - pre investment Performance	Return on Investment below 0		2				2
	Positive/negative ROIC	Return on investment above 0		1				1
	Total			3				3
Industrial products	Post - pre investment Performance	Return on Investment below 0	3	3	3		0	9
	Positive/negative ROIC	Return on investment above 0	0	1	1		1	3
	Total		3	4	4		1	12
Food and natural resources	Post - pre investment Performance	Return on Investment below 0	2	1		0		3
	Positive/negative ROIC	Return on investment above 0	0	2		2		4
	Total		2	3		2		7
Software and ICT technology products	Post - pre investment Performance	Return on Investment below 0	19	1	3	1	2	26
	Positive/negative ROIC	Return on investment above 0	2	1	0	0	0	3
	Total		21	2	3	1	2	29

Thus the preceding analysis identifies a number of firm performance variables which can be tested. Firstly Return on invested capital (ROIC) can be used as a measure of the increase or otherwise of shareholder value, secondly profitability increase/decrease can measure whether the firm experienced profitable growth

during the analysis period. Thirdly shareholder book value itself can be evaluated to see if it increased or decreased post state investment. Finally repayment of the state investment can also be utilised as a performance measure of the cohort of firms ability to, at least, begin repaying the state investment after the five year post state investment period.

5.3 Empirical Model Development

This section will present the statistical models used in the quantitative part of the study. It is hypothesised that firm performance (Value creation/destruction - post state investment/ Repayment of state investment) is a function of the explanatory variables described below. The basic descriptive statistical model can take the following general functional form:

$$\text{Response variable} = \text{Systematic component} + \text{residual component}$$

Statistical models are based on experimental or observational data and are described as *empirical models* (Collett, 2003). The systematic component tries to explain how the variability in the response variable is associated with movements in the systematic component usually termed the predictor or independent variables. The residual component then accounts for the remaining non systematic variation (*ibid*). In a satisfactory model the systematic component will account for all non-random variation in the model. The proposed model for this study is as follows:

$$Y_{it} = f(a_i, s_i, o_i, se_i, i_i, l_i) \tag{5.1}$$

Where Y_{it} is the average increase/decrease in the return on shareholder investment after the state investment in firm i . The subscripts i and t represents a firm i and t

represents time (which is 5 years post investment less 2 years pre investment); a indicates the age of the firm; s indicates the size at time $t-1$; o signifies ownership structure at t_0 ; se is the sector of the firm; e indicates the level of state share investment through Enterprise Ireland; l is the regional location of the firm; The model can be more specifically stated as follows:

$$Y_{it} = c + \beta_1(\text{Age}) + \beta_2(\text{Size}) + \beta_3(\text{Ownership structure}) + \beta_4(\text{Sector}) + \beta_5(\text{PVC investment}) + \beta_6(\text{Location}) + \epsilon \quad (5.2)$$

A description of each of the variables and an explanation of their measurement is given in Table 5.13.

Table 5.13: Definition of dependent and explanatory Variables in model

Variable	Definitions and measurement
Firm performance (Y_{it})	<p>There were four possible dependent variables tested in the modelling process based on the literature review and the dataset developed. FY_{it} = Dependent variable per case \rightarrow [Post state investment performance (P_{it})/(IC_{it}) – Pre state investment performance ($P_{i,t-1}$)/(IC_{i,t-1})]. This gives the difference between the return on invested capital pre and post state investment and thus gives a measure of the impact or otherwise of the state investment in terms of return on invested capital and thereby value creation or value destruction.</p> <p>$P_{i,t}$ = Mean Profit (loss) after tax in 2 years preceding state investment (P) (year of state investment excluded).</p> <p>P_{it} = Mean profit for 5 years post investment excluding year of investment.</p> <p>IC_{i,t} = Invested capital in 2 years preceding the year of state investment (year of state investment is excluded)</p> <p>IC_{it} = Mean invested capital for 5 years post Investment</p> <p>Dichotomous scale is then applied to results to allow for use in binary logistic regression – binary variable where 1 = negative return below 0 i.e. mean decrease in return on capital invested between pre and post state investment. This amounts to value destruction in shareholder value. 2 = Mean Increase in return on invested capital between post and pre state investment.</p> <p>Three other performance variables are considered in this study. Firstly a dichotomous performance variable based on an increase in the mean book value of shareholder funds – from pre to post public venture capital investment is developed. 0 = Decrease in mean shareholder value, 1 = increase in shareholder value post state investment. The second performance variable considered is the firm’s ability to generate profits – 0 = firm generated losses post state investment, 1 = firm generated profits post state investment when compared to the pre-state investment. The third performance variable is the firm’s ability to begin repaying the public venture capital as required by the investment agreement (Investment payback); 0 = Firm has accumulated losses or ceased trading before 5 year period was up; 1 = Firm has the capacity to repay the share investment/Firm was acquired in the five year period/ Firm remains trading.</p> <p>Model 1 = Return on Invested Capital Model 2 = Share Value Model 3 = Profitability Model 4 = Investment Payback Ability</p>
Age	(Age) = Age of firm in years at the point of state investment. A categorical variable is developed for the model: 0-5, 6-10 and 10+ years.
Size	(Size) = Size of firm in the year before the state investment in terms of capital invested (Shareholder funds on Balance sheet) at year end preceding PVC investment year

Ownership	(Ownership structure) = 1, 2, 3, 4.... Number of discrete shareholders at year end before state investment
Sector	(Sector) = Consumer (1), Food and natural resources (2), Industrial products (3) and Software and ICT (4)
State Investment	(Amount of State Investment) = Actual amount of investment in euro at cost to state – All investment amounts will equal or exceed €635,000(IR£500,000). Categorical variable is 1= €636-1m, 2= €1m-2m, 3=€2m+
Location	(Location) = Province or area firm is located in – Greater Dublin(1), Leinster(2), Munster(3), Connaught(4), Ulster(5)

The relatively small population size (n=51) means that no normality assumptions can be made about the underlying distribution of the variables. Hypothesis tests were carried out on each independent variable to test for normality in the distribution of each variable. In most relevant cases it was found that normal distributional assumptions did not hold when the appropriate hypothesis test was carried out (Table 5.15).

Table 5.14: Results of Hypothesis testing on the independent variables in dataset performed by SPSS 20.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The categories of Age at time of state investment occur with equal probabilities.	One-Sample Chi-Square Test	.028	Reject the null hypothesis.
2	The categories of Industrial sector of firm occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
3	The categories of Geographic location of firm occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The distribution of Size 2 years before investment is normal with mean 2,124,902.00 and standard deviation 3,609,829.53.	One-Sample Kolmogorov-Smirnov Test	.032	Reject the null hypothesis.
5	The distribution of Ownership year before investment is normal with mean 5.73 and standard deviation 4.90.	One-Sample Kolmogorov-Smirnov Test	.117	Retain the null hypothesis.
6	The distribution of Value in euros of state inv. is normal with mean 987,764.71 and standard deviation 536,982.63.	One-Sample Kolmogorov-Smirnov Test	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

5.3.1 Logistic Regression

Ordinary least squares regression (OLS) is not appropriate as its basic *a priori* assumptions are overly stringent for the empirical data collected here. Its core underlying assumption of a linear relationship between the dependent and explanatory variables also requires the variables to have normally distributed data (Peng *et al.*, 2002c). A technique which relaxes these stringent assumptions whilst providing the requisite statistical power is logistic (logit) regression (Long, 1997; Menard, 2000; Garson, 2011). It is a generalised linear model used for binomial regression. The explanatory variables can, as in this case, be numerical or categorical or indeed combinations of both. Chapter 4 described the research strategy for this quantitative study.

Equation 5.2 therefore needs to be transformed into a logistic function to make it appropriate for this study. The equation transforms from $Y = c + \beta x + \epsilon$ (Equation 5.2) into the form:

$$\ln\left[\frac{P}{1-P}\right] = c + \beta x + \epsilon \quad (5.3)$$

Where: \ln is the natural logarithm, P is the probability that the event Y occurs, $P(Y=1)$ $P/1-P$ is the 'odds ratio'. $\ln [P/1-P]$ is the log odds ratio, or LOGIT function. All other components of the model are the same as the specified model in equations 5.1 and 5.2 above, although it is important to remember that while β performs the same function as in OLS regression, its interpretation is more problematic in logistic regression (Collett, 2003). Logistic regression is a non-linear transformation of the linear regression (Peng *et al.*, 2002a; Whitehead, 2011). It therefore calculates

changes in the *log odds* of the dependent variable, not changes in the dependent variable itself as OLS regression does (Garson, 2011).

When considering the overall explanatory power of the model, Whitehead (2011) recommends three suitable statistical tests. No one test can be relied upon on its own but a combination of the three gives a clearer indication of the explanatory power of the approach. These are:

1. The model likelihood ratio (LR), or chi-square statistic- it is:

$LR(i) = [-2 \log \text{Likelihood (of beginning model with no predictor variables included)}] - [-2 \log \text{likelihood (of ending model)}]$ where the model LR statistic is the distributed chi-square with the appropriate degrees of freedom in relation to the number of independent variables. The model in question's chi-square statistic can be used to determine if the overall model is statistically significant.

2. A second test of overall significance is available from the outputted classification table from the statistical package used. If the estimate is above .5 - the cut-off point, then the event is expected to occur. Below the cut-off point, it is not expected to occur. The overall percentage that the model predicts as correct, against the actual observed data, the better the model fit to the data. A more stringent test than the cut – off point is the proportional reduction in error measure (PRE) and this will be applied in this study (Garson, 2011).

3. The third test for significance is the (R^2) which is familiar to researchers using OLS regression. There are fundamental differences between this measure in OLS and logistic regression and so this test should not be relied upon on its

own. Firstly, these tests are regarded as 'pseudo' R^2 tests since the statistic depends on the beginning and end log likelihood functions. It does not explain the proportion of the variance in the dependent variable by the specific predictor variable as in OLS regression. It is also not possible to maximise the R^2 as is done in OLS regression. R^2 in logistic regression, for the reasons cited above, tend to have a much lower value between zero and one than true R^2 in OLS regression.

Peng *et al.* (2002a), Peng *et al.* (2002b), Peng *et al.* (2002c) and Whitehead (2011) recommend reporting the results of the logistic regression analysis in tabular form. The model assessment procedure is as follows: Firstly an overall evaluation of the logistic model is undertaken which is then followed by the measures of effect size findings.

A number of final issues in model building revolve around the relationship between the observations and explanatory variables – the event per predictor variable ratio (EPV). There is no universally-agreed figure however Long (1997) and Garson (2011) for example, recommend a ratio of 10:1 for categorical data modelling between the number of cases and the explanatory variables. Peng *et al.*'s (2002b) review of fifty two logistic regression studies, finds wide variations in the ratios applying and they also note that low ratios may lead to instability in the parameter estimates. However Vittinghoff and McCulloch (2006) question this 'rule of thumb' and note that in their analysis of empirical studies that there is no significant deterioration in accuracy when moving to a 5:1 event per predictor variable (EPV) ratio.

Finally as the model in this case is developed to test levels of association between Public venture capital and firm performance, the modelling procedure enters the independent variables in two blocks. The variable of prime interest is entered first.

The other variable – the control variables – are then entered as a block. The results obtained are then validated by entering the variables together and then by using a backward stepwise procedure.

5.4. Empirical results

5.4.1 Descriptive statistics

Table 5.16 outlines the descriptive statistics on the dataset. The variables are measured categorically and metrically depending on the variable in question. Table 5.14 provides a description of how the variables are measured. The mean age of the firms in the cohort at the time of entering the analysis period was 7.33 years with SD of 7.83 years and a range of 38 years - indicating the age variety of the firms in the cohort receiving Enterprise Ireland support. Size is measured in Euros. The mean size - in Shareholder funds – is €2,124,902 with a range from - €3,291,000 to €17,004,000 also indicating the varying financial strengths of the selected firms. The median ownership is four shareholders with a wide range from zero (Firm was not yet formed) to twenty one. The value of the state investment in the selected firms had a mean of €987,764 - with a minimum of €635,000 and a maximum amount of €3,263,000. €635,000 equates to IR£500,000 – the minimum amount received by any firm in the study. The categorically measured variables are also included for completeness however the descriptive statistics as less meaningful than the

metrically measured variables. For a normal distribution, the value of the kurtosis statistic is zero. Positive kurtosis indicates that, relative to a normal distribution, the observations are more clustered about the centre of the distribution and have thinner tails until the extreme values of the distribution. Negative kurtosis indicates that, relative to a normal distribution, the observations cluster less and have thicker tails until the extreme values of the distribution. Skewness is a measure of the asymmetry of a distribution. The normal distribution is symmetric and has a skewness value of 0. A distribution with a significant positive skewness has a long right tail. A distribution with a significant negative skewness has a long left tail. As a guideline, a skewness value more than twice its standard error is taken to indicate a departure from symmetry (SPSS 20). The skewness and kurtosis measures in Table 5.16, confirming the results in the hypothesis tests in Table 5.15 that the key variables are not normally distributed.

Table 5.15: Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
							Statistic	Std. Error	Statistic	Std. Error
Age at time of state investment	51	38	1	39	7.33	7.848	2.047	.333	4.715	.656
State investment payback performance	51	1.00	1.00	2.00	1.4510	.50254	.203	.333	-2.040	.656
Value in Euros of state inv.	51	2628000	635000	3263000	987764.71	536982.629	2.515	.333	6.857	.656
Geographic location of firm	51	4	1	5	1.92	1.197	1.248	.333	.691	.656
Ownership year before investment	51	21	0	21	5.73	4.899	1.598	.333	2.365	.656
Post - pre investment	51	1.00	1.00	2.00	1.2157	.41539	1.425	.333	.030	.656
Performance Positive/negative	51	1.00	1.00	2.00	1.3922	.49309	.455	.333	-1.868	.656
ROIC	51	3	1	4	3.22	1.006	-.823	.333	-.780	.656
Industrial sector of firm	51	1.00	1.00	2.00	1.5294	.50410	-.121	.333	-2.068	.656
Ave post - pre state investment binary	51	20295000	-3291000	17004000	2124902.00	3609829.525	2.139	.333	5.577	.656
Size 2 years before investment	51									
Valid N (list wise)	51									

(Source: SPSS20)

5.4.2: Logistic Regression analysis results

The independent variables were inputted into the logistic regression model specified earlier (See: Equations 5.1; 5.2 & 5.3). The data analysis package used to analyse the data was SPSS20. Four models were tested with different dichotomous dependent variables related to the objectives of the study. Table 5.14 explains the measures used for each variable. The models are coded as follows – note that the *predicted* category of outcome is first (1), the *reference* category is second (0):

Model 1: ROIC – increase in mean ROIC post state investment =1, decrease = 0

Model 2: Shareholder Value – increase in mean shareholder post state investment value =1, decrease = 0

Model 3: Profit – increase in mean profitability post state investment = 1, decrease = 0

Model 4: PVC Payback – does firm have the potential to payback state investment after five years/firm acquired = 1, does not/persistent loss makers = 0

Overall model significance

Based on the likelihood Chi-square statistic, only one model with all six predictor variables is significant; This is Model 2 (Shareholder Value) with p-value=0.031 < 0.05. This implies that at least one of the predictors in the model is linearly related to the log odds of the dependent variable. The model's Chi-square measures the improvement in fit that the predictor variables make compared to the null, or constant only, model (Table 5.17).

For small samples the likelihood ratio test is considered as a more reliable significance measure than the Wald statistic (Agresti, 1996) and is therefore more appropriate for this study.

The remainder of the analysis will therefore focus on Model 2.

Table 5.16: Omnibus Test for the overall logistic regression model(s) fit

Model*	Chi-Square	DF	Significance
Model 1 - ROIC	17.774	11	.087
Model 2 – Share Value	21.224	11	.031
Model 3 - Profitability	8.756	11	.644
Model 4 – State Investment Payback	15.951	11	.143

***Model 1:** ROIC – increase in mean ROIC post state investment =1, decrease = 0: **Model 2:** Shareholder Value – increase in mean shareholder post state investment value =1, decrease = 0: **Model 3:** Profit – increase in mean profitability post state investment = 1, decrease = 0:**Model 4:** PVC Payback – does firm have the potential to payback state investment after five years/firm acquired = 1, does not/persistent loss makers = 0. Independent variables for all models are: FIRM AGE, FIRM SIZE, STATE INVESTMENT, SECTOR, LOCATION and OWNERSHIP.

Significance tests

The Hosmer & Lemeshow Chi-square test of goodness-of-fit is an alternative to the omnibus test as an overall test of the significance of a logistic regression model (Menard, 2001). A well fitting model is non-significant by this test (Garson, 2011).

This model with p-value=0.0.457 > 0.05 is greater than the level of significance and therefore the null hypothesis is accepted. It further indicates that model prediction is not significantly different than from the observed values. The model fits the data (Table 5.18). This does not mean that the model explains much of the variance in the dependent variable, only that whatever variance it explains is significant.

Table 5.17: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	7.764	8	.457

This test is generally preferred over classification tables when assessing model fit particularly where the sample size is small (Agresti, 1996). However a classification table should also be included for completeness. The classification table (Table 5.19) is set-out here.

5.18: Classification Table^a

Observed	Predicted		
	Ave post - pre state investment binary		Percent Correct
	0= Decrease in shareholder value	1= Increase in shareholder value	
Ave post - pre state investment binary	0= Decrease in shareholder value (0)19	1= Increase in shareholder value (24) 5	(0) 79.2
	1= Increase in shareholder value (0) 6	(27) 21	(100) 77.8
Overall Percentage			(52.9) 78.4

a. The cut value is .500. The values in parentheses are extracted from the classification table for the null model (Constant only). The chance hit rate calculated by the proportional reduction in error (PRE) and is 48%. The model developed improves on the PRE by 30.4%, 5.4% above the recommended 25% improvement over the base vale suggested for well fitting models.

In sum, the results in Tables 5.18 and 5.19 taken together confirm that the model developed for this study fits the data well.

Measures of Effect Size

There is no direct comparison to the OLS R² in logistic regression and therefore the ‘pseudo R²’ developed for logistic regression model needs to be interpreted cautiously – it cannot be relied upon on its own (Peng *et al.*, 2002a). It must be considered in tandem with the other measures of significance.

Table 5.19: Model Summary^a

Step	-2 Log likelihood	Cox & Snell R ²	Nagelkerke R ²
1	49.300 ^a	.340	.454

a. Estimation terminated at iteration number 20 because maximum iterations have been reached.

The R^2 in this model is between .340 and .454. This broadly indicates that between 34 and 45.4 per cent of the likelihood of the increase in shareholder value over the five year post-state investment period is explained by the predictors in the model. This leaves large unexplained variation in the model but this is consistent with findings from other deterministic model studies in the firm growth area (Dobbs & Hamilton, 2007).

Using Maximum Likelihood Estimation

The predictor variable of prime interest in the study is state share investment (INVvalue). This is entered into the model in Block 2. The remaining five variables are entered in the first block (Block 1) as these are the control variables for state share investment. This sequential approach is recommended for control variables by Garson (2011). This 'before and after' quasi-experimental approach is explained in detail in the research design section in Chapter 4 - Research methodology.

It was found that the independent variable - Firm Age (AGE) - has a significant effect on the dependant variable in the model, $p\text{-value}=0.043 < 0.05$ (Table 5.21). That is; increasing the value of age will increase the log odds of the dependent variable in the study – shareholder value. This variable is a categorical variable which is categorised as follows: Age (1) = 0-5 years; Age (2) = 5- 10 years. Age (3) = 10 years+. Categorical variables must be interpreted in terms of the left-out reference category – as in OLS (Whitehead, 2011). Age (3) is not shown in the analysis as this is the reference category (SPSS20). Therefore the results for Age (1) ($p\text{-value}=0.024 < 0.05$) and AGE (2) ($p\text{-value}=0.042 < 0.05$) shows that the odds of increasing the log odds of shareholder value are reduced ($\text{EXP}(B) < 1$) by a factor of .095 and .075 respectively

for firms in the 0-5 and 5-10 year categories when compared to firms over 10 years+, all other variables controlled (Table 5.21). Thus the age of the firm when entering the public venture capital scheme is positively associated with the ultimate shareholder value creation outcome. Older firms are clearly a less risky bet. State investment (INVvalue) and the other control variables – SIZE, OWNERSHIP, SECTOR and LOCATION whilst contributing to the overall significance of the model were not statistically significant as individual predictors.

5.20: Independent Variables in the Equation (Dep. Variable: Shareholder Value increase=1; decrease = 0)

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age			6.299	2	.043			
Age(1)	-2.357	1.043	5.110	1	.024	.095	.012	.731
Age(2)	-2.596	1.279	4.118	1	.042	.075	.006	.915
SIZE	-1.131	.607	3.473	1	.062	.323	.098	1.060
SECTOR	-.336	.459	.536	1	.464	.715	.291	1.757
OWNERSHIP	-.057	.083	.476	1	.490	.945	.804	1.110
Location			2.615	4	.624			
Location(1)	1.366	1.082	1.594	1	.207	3.919	.470	32.665
Location(2)	-.512	1.160	.195	1	.659	.599	.062	5.820
Location(3)	.664	1.689	.155	1	.694	1.943	.071	53.234
INVvalue			.515	2	.773			
INVvalue(1)	-.591	.824	.515	1	.473	.554	.110	2.782
Constant	5.615	2.990	3.527	1	.060	274.426		

a. Note that the variable INVvalue (as the predictor variable of prime interest) was entered in Block2 of the ENTER procedure in SPSS20 which succeeds the control variable(s) entered in Block 1: AGE, SIZE, OWNERSHIP, SECTOR and LOCATION.

5.4.3 Stepwise procedure – Model validation

As data-driven methods, stepwise procedures are considered useful for exploratory or confirmatory purposes. Selecting model variables on a theoretical basis and using ENTER - is preferred to stepwise procedures which use algorithms and therefore can model noise in the data (Garson, 2011: 12). Stepwise procedures can help in validating the results of the ENTER procedure if they produce broadly the same result. Using a stepwise procedure (Backward Stepwise – LR), it was found that the model was statistically significant, $p \text{ value} = 0.011 < 0.05$ (Table 5.22).

Table 5.21: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Step	22.087	11	.024
Step 1	Block	22.087	11	.024
	Model	22.087	11	.024
	Step	-.741	1	.389
Step 2 ^a	Block	21.345	10	.019
	Model	21.345	9	.011
	Step	-1.418	1	.234
Step 3 ^a	Block	19.928	9	.018
	Model	19.928	8	.011

a. A negative Chi-squares value indicates that the Chi-squares value has decreased from the previous step.

Variable exclusion

In addition, stepwise procedures can help in clarifying the effects of the individual predictors on the model. Table 5.23 illustrates the change in the model log likelihood of excluding variables through the stepwise procedure. The lesser performing variables can thus be identified and removed. This allows the development of a more parsimonious model.

Table 5.22: Model if independent variable removed*

Variable	Model Log Likelihood	Change in -2 Log Likelihood	Df	Sig. of the Change
SECTOR	-24.590	.741	1	.389
Location	-27.657	6.877	4	.143
Ownership	-24.892	1.347	1	.246
SIZE	-26.463	4.489	1	.034
INVvalue	-26.351	4.263	2	.119
Age	-27.611	6.784	2	.034
Location	-28.407	7.635	4	.106
Ownership	-25.298	1.418	1	.234
SIZE	-26.575	3.970	1	.046
INVvalue	-26.770	4.360	2	.113
Age	-27.958	6.737	2	.034
Location	-30.231	9.866	4	.043
SIZE	-26.891	3.185	1	.074
INVvalue	-28.068	5.539	2	.063
Age	-28.998	7.398	2	.025

*Variables with the highest change in significance will be removed in the stepwise procedure.

Table 5.24 highlights the predictor variables having the least impact on the log likelihood of the dependent variable and these are thus removed from the final equation in the stepwise procedure. The variables removed are SECTOR and OWNERSHIP.

5.23: Variables not in the Equation

	Score	df	Sig.
Step 2 ^a Variables SECTOR	.735	1	.391
Overall Statistics	.735	1	.391
Step 3 ^b Variables SECTOR	.812	1	.368
Ownership	1.405	1	.236
Overall Statistics	2.016	2	.365

a. Variable(s) removed on step 2: SECTOR.

b. Variable(s) removed on step 3: Ownership.

The four remaining independent variables; INVvalue, AGE, SIZE and LOCATION are all retained in the final reduced model after SECTOR and OWNERSHIP are removed. The final step in the model development process is to re-run the reduced model using the ENTER procedure and the Backward stepwise procedure (LR) to validate that this model is indeed the most parsimonious iteration of the developed model. Both ENTER and Backward stepwise (LR) procedures produce similar results in the overall significance and goodness-of-fit tests. The correlation matrix included in the summary tables in Table 5.25 shows the strength of the linear relationship between the independent variables in the model. Logistic regression like OLS can have multicollinearity present. Whitehead (2011) suggests that if two variables are correlated at a rate > 0.6 then the least theoretically important of the two can be dropped. None of the variables in the model have correlation coefficients > 0.572 .

Table5.24: Summary Tables for the reduced final model (SPSS20).

Omnibus Tests of Model Coefficients

Chi-square	df	Sig.
15.827	7	.027
15.827	7	.027
19.928	9	.018

Model Summary

Cox & Snell R ²	Nagelkerke R ²
.323	.432

a. Estimation terminated at iteration number 20 because maximum iterations has been reached.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.432	7	.932

Classification Table^a

	Observed	Predicted				
		Ave post - pre state investment binary		Percentage Correct		
		= Decrease in shareholder value	= Increase in shareholder value			
Step 1	Ave post - pre state investment binary	= Decrease in shareholder value	17	= Increase in shareholder value	7	70.8
		= Increase in shareholder value	7		20	74.1
	Overall Percentage					72.5

a. The cut value is .500

Reduced model - Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age			6.313	2	.043			
Age(1)	-2.163	.981	4.863	1	.027	.115	.017	.786
Age(2)	-2.597	1.188	4.780	1	.029	.074	.007	.764
SIZE			2.955	1	.086	.403	.143	1.136
Location			5.047	4	.283			
Location(1)	-1.139	1.531	.554	1	.457	.320	.016	6.431
Location(2)	.867	1.651	.276	1	.599	2.380	.094	60.572
Location(3)	-1.131	1.714	.435	1	.510	.323	.011	9.296
INVvalue			.608	2	.738			
INVvalue(1)	-.649	.832	.608	1	.436	.523	.102	2.669
Constant	4.455	2.100	4.499	1	.034	86.065		

a. Variable(s) entered on step 1: INVvalue.

Correlation Matrix for the independent variables in the study (Reduced model)

	Constant	Age2(1)	Age2(2)	Location(1)	Location(2)	Location(3)	SIZE2	INVvalue2(1)
Constant	1.000	-.782	-.435	.132	-.182	-.191	-.905	-.201
Age(1)	-.782	1.000	.528	-.203	.148	.100	.572	.151
Age(2)	-.435	.528	1.000	-.252	.092	-.139	.274	.032
Location(1)	.132	-.203	-.252	1.000	.196	.168	-.229	-.164
Location(2)	-.182	.148	.092	.196	1.000	.128	-.001	.089
Location(3)	-.191	.100	-.139	.168	.128	1.000	.145	-.099
SIZE	-.905	.572	.274	-.229	-.001	.145	1.000	.074
INVvalue(1)	-.201	.151	.032	-.164	.089	-.099	.074	1.000

5.4.4 Overall findings from the empirical model and proprietary dataset.

The public venture capital variable (INVvalue), in itself, was not a statistically significant factor in determining the log odds of the firm performance (Irrespective of how performance was measured in this study). However, the age of the firms at the time of state investment was associated with the firms' ability to create shareholder value over time. Older firms of 10+ years (12 firms) had a more positive association with shareholder value creation than those categorised in the 0-5 years (29 firms) and 5-10 year (10 firms) categories.

Shareholder value creation in this case – and therefore the potential ability to repay the state investment from retained earnings - can only occur in two ways. Either the firm has survived and has sufficient reserves (from *profitable* trading and/or further shareholder injections of capital) to begin repaying the state equity injection, or it has been acquired by another firm (usually foreign-owned) which bought-out the existing shareholders (at a profit or a loss - including the state). If the firm has accumulated losses at the time of the state investment, and/or ceased trading during the analysis period, then it is clearly not in a position to begin repaying the state investment. From a multivariate perspective, the logistic regression model developed in the study is statistically significant. However the individual independent control variables of OWNERSHIP, LOCATION, SECTOR, SIZE and the variable of prime interest, STATE INVESTMENT all proved not to be statistically significant as individual predictors. In the final reduced model both the SECTOR and OWNERSHIP variables were dropped leaving AGE, SIZE, LOCATION and STATE INVESTMENT in the model. Thus the state investment variable had at best a marginal effect on firm performance.

Eighty percent of the cohort of firms in the study were in loss making situations after five years (41 firms) with twenty percent profitable (10 firms) - post state investment. The aggregate returns from the cohort – not-adjusted for time - were minus 11.86 per cent, indicating that in spite of the €50m+ injection of capital by the State into the 51 firms in this cohort, the overall return from the collective firm performance was negative. It further indicates that only larger (and older) firms (or firms taken over) were in a position to begin repaying the state investment. This suggests that in the absence of a windfall gains from share disposals, the state would not get a positive return on its investment in the expected time frame. It was also not possible to ascertain what returns EI made on the disposal of shares in the ten firms acquired during the period under study. Mulcahy (2005), Breznitz (2007) and Horn (2011) all question the lack of available information on this investment performance and they also question the unusual way EI reports on its shareholdings in its Annual Reports. Thus, a note of caution must be struck in making evaluations of the performance of the states share investment portfolio performance. The state might argue that despite the poor overall financial performance of the firms – which reflects the management teams inability in the majority of selected firms to create competitive advantage – that 88 per cent (45 firms) of the cohort *survived* the analysis period as independent businesses (35 firms) with 10 firms taken over (9 by international firms). However the sustainability of jobs in persistently loss-making indigenous firms or in loss-making subsidiaries of larger international firms is debatable.

EI does report on the cost and book value of its investments. Based on this it appears that it had already written off over €78m from the value of its share portfolio by

2005 (Enterprise Ireland, 2006; Table 5.3). There is no visibility of the quality of the returns or indeed of the success or otherwise of the investment strategy undertaken. There is also no history of EI seeking repayment of its shareholding to the detriment of a firm's survival. It can be surmised therefore that if the firm makes it through the EI selection process, it acquires a benign shareholder. Indeed it acquires an investor whose primary strategic interest is in 'job creation' or, at the very least job maintenance, but also one who is seeking positive returns on its investment. For the firm this is akin to acquiring 'soft' rather than the 'smart' money as the state investor does not bring the venture capitalists insights or discipline to the firm. The risk capital industry itself puts much emphasis on the 'added value' that its 'smart money' brings to the firm in terms of sectoral insight and investor/customer access (Gompers & Lerner, 2000; Mulcahy, 2005; Lerner, 2010; IVCA, 2012; EVCA, 2012).

5.5. Summary and Conclusions

This Chapter examines the geo-demographic and public venture capital variables that may be expected to influence or contribute to the creation of shareholder value in growth- oriented indigenous Irish SMEs. In particular it investigates the role and contribution of public venture capital investments to the performance of selected Irish SMEs over the period 1999 – 2010.

Ireland, as a small open state, reaped the benefits of the sustained growth and expansion of world trade which began in 1994 and lasted until the world financial crisis in 2008. Interest rates were at an all time low and capital availability for investment projects was high due to the benefits of euro membership during this

period. This created an ideal window for analysing the effects of public venture capital investment in indigenous growth-orientated firms through quasi-experimental research methods.

The descriptive analysis in this Chapter is based on the financial data of fifty one firms which received share injections of €635,000(IR£500,000) or more in one of the calendar years 1999 – 2005 from the State through its economic development agency for indigenous industry - Enterprise Ireland. Eight years financial data was gathered on each firm and post-pre state investment performance measures were developed as dependent variables. This indicated whether the firm had increased or decreased shareholder value in the period after the state capital injection. On this 'going concern' measure, forty firms had decreased shareholder value and eleven had increased shareholder value. The aggregate ROIC post – pre state investment return across all firms in the study was minus 11.86 per cent.

Logistic regression models were developed to test the association between firm performance (ROIC, Profitability growth, shareholder value growth and PVC payback ability) and public venture capital investment (with geo demographic control variables). Three models (ROIC, Profitability growth and PVC Payback) were shown not to be statistically significant. One model (Shareholder Value) was statistically significant indicating a relationship between the independent variables included in the model and the firms' performance as measured in this study. The overall model chi-square statistic showed a p-value of $0.031 < 0.05$. The model also had a pseudo R^2 of between 33% and 45.4% percent. The only statistically significant predictor variable related to shareholder value creation was its initial age at the time of the

states investment ($p\text{-value} = 0.043 < 0.05$). This result occurs in two ways – either the firm has survived and has sufficient reserves or new capital injections from other shareholders to begin repaying the state capital injection or it has been acquired by another firm (usually US).

The individual predictor variables of: public venture capital value (the primary variable of interest in this study) and the control variables of Ownership, Location, Sector and Age - were not found to be statistically significant as individual predictor variables. Backward Stepwise procedures were used to test for possible variable exclusion and to confirm the findings of the developed model. A reduced model, $p\text{-value} = 0.018 < 0.05$ eliminated the independent variables of Sector and Ownership whilst retaining Location, Age, Size and INVvalue. Investment value having a marginal effect at best on firm performance.

Sixty seven per cent of firms in the study are from the ICT/Biotech/Pharma sectors, reflecting the policy bias towards the technology-driven sectors in the national Innovation system. Of the forty firms decreasing shareholder value in the study, eighty per cent were from technology sectors indicating not only the emphasis on technology firms but also the higher 'risk profile' and younger age of the technology-driven business model.

The dominant presence of EI (on behalf of the State) in the risk capital provision market (Supply side) creates inefficiency in the market's operation within a small state. This illustrates a tendency in a small state towards oligopoly or monopoly in sectoral markets - owing to the small domestic market size. It is suggested that the role of the state in future might be to 'seed' or 'correct' market failure (where

indicated by empirical research) – but then to step back and let private sector competition drive the market development. Thus the findings in this chapter suggest that the venture funding of the international development of indigenous SME's - as an important part of the 'wider setting' of the national innovation system - might be more effectively provided through the financial market system and not directly by the state.

Chapter 6

The influences on indigenous firm performance in the small late developing state – a cross-case analysis

The cross-case analysis in this chapter complements the quantitative approach undertaken in chapter five. It also acts as a precursor for the cross-case analyses in Chapter seven and the Contribution analysis in Chapter eight. The objective of this chapter is to identify the factors, other than public venture capital, which differentiates between those firms creating shareholder value and those decreasing it during the analysis period. Using a smaller, representative number of cases drawn from the overall cohort in the study allows for in-depth analysis of the factors influencing indigenous firm performance.

6.1 The framework for the analysis: Cross – Case analysis

Researchers go about the process of selecting case study designs in a myriad of ways, however the design must in the first instance be driven by the research question and research objectives of the study in question (Burton, 2000). The relevant objective here is the second objective in the study which seeks to identify the influences on and the determinants of shareholder value creation in indigenous growth-oriented firms.

Ten in-depth interviews were conducted with the CEO or ex-CEO/founder of the firms under study. These firms were chosen by 'theoretical sampling methods' for their representativeness of the overall cohort of firms in the study (Pettigrew, 1988; Eisenhardt, 1989). Whilst there is no ideal number of cases, Eisenhardt (1989) recommends between four and ten noting that: 'With more than ten cases for cross – case analysis, it quickly becomes difficult to cope with the complexity and volume

of the data' (P. 545). Thus this study utilizes the maximum number of recommended cases. The cases selected for interview broadly mirrors the breakdown of the sectors featured in the overall study (Table 6.1).

Table 6.1 - Firm sector breakdown and case selection

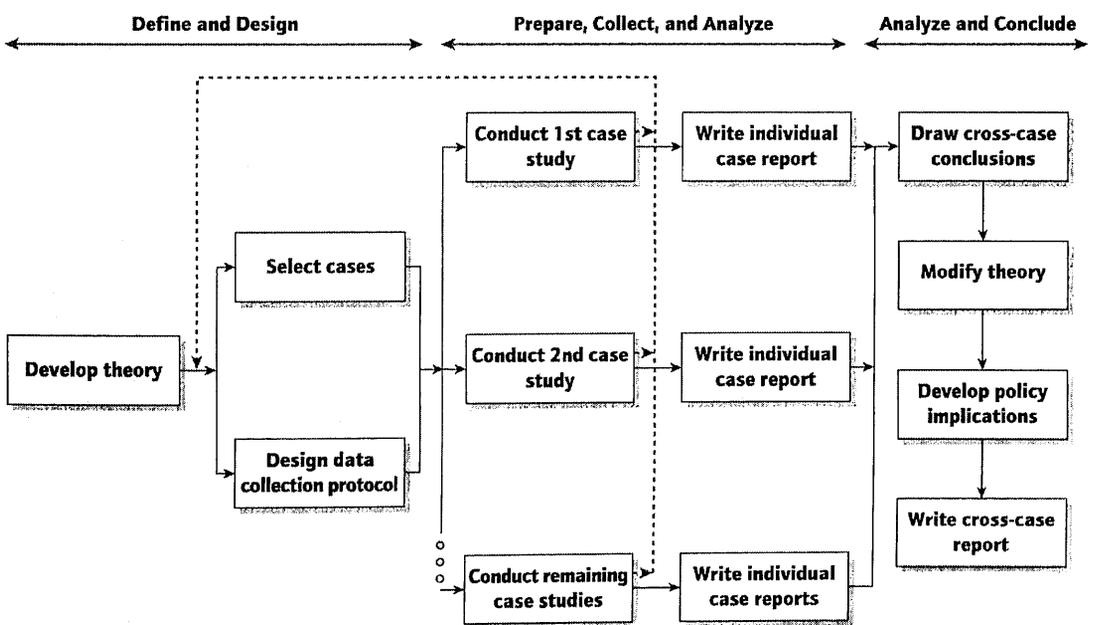
Industrial Sector	No. of Firms in overall study	% of firms in overall study	Case selection	% of cases
Consumer products – Furniture/ceramic/carpet manufacturing	3	6	1	10
Food and natural resources – Agri-foods/consumer foods/natural resources	7	14	1	10
Cleantech, medical devices and industrial products manufacture	12	23	2	20
Software, ICT and internationally traded services	29	57	6	60
Total	51	100	10	100

Yin (2009:156) terms the approach adopted in this study as 'Cross Case syntheses'.

The individual cases in this study are analysed using a uniform framework, which was developed by Smallbone & Wyer (2006, 2012). This framework is based on the pioneering work of Storey (1994). The topic list developed for the embedded depth interviews in the individual case studies is outlined in Table 4.4 in Chapter 4. These are the variable groups, broadly agreed upon in the literature, as determining and influencing firm growth performance. See Chapter 2 - literature review, in particular: Kinsella *et al.* (1994); Barkham *et al.* (1996); Smallbone & Wyer (2006, 2012); Dobbs & Hamilton (2006); Davidsson *et al.* (2006); Coad (2007, 2009); Davidsson *et al.* (2009); Steffens *et al.* (2009); Richard *et al.*, (2009); Brannbach *et al.*, 2010; Storey & Greene (2010).

Firm growth performance - as the dependent variable - is defined in this study as the creation of shareholder value (Begley, 1995, Rappaport, 1998; Baldwin, 2002; Hill & Jones, 2009; Arnold, 2009, Doyle, 2010). Each case then has a rich set of 'uniformly' analysed data which can be cross analysed for patterns, themes, commonalities or contradictions. The case analysis will then provide insight into the most salient determinants of and influences on firm performance in the selected cases and this can be contrasted with the aggregate findings in Chapter five. Figure 6.1 illustrates the approach adopted in this chapter to the analysis of the cases in this study.

Figure 6.1: Cross Case approach



(Source: Cosmos Corporation, 2009)

The structure in the chapter is as follows: Section 6.2 analyses the ten cases across the dependent variable – Firm Performance. Section 6.3 – 6.6 analyses the firms across each of the groups of possible explanatory variable groups – Characteristics of the entrepreneur, Characteristics of the firm, Management strategies and External environmental variables.

The ten cases in this study will be coded by broad industry sector to preserve the anonymity of the interview respondents and the identity of the individual firms.

Volume 2 of this dissertation – the individual descriptive cases identifying the firms and the Key informants - is available to examiners only:

Table 6.2: Case coding

Case number	Code	Case number	Code
1	Food1	6	ICT2
2	Biotech1	7	ICT3
3	Biotech 2	8	ICT4
4	Consumer1	9	ICT5
5	ICT 1	10	ICT6

6.2. Firm performance measurement

6.2.1 The shareholder value creators (3 firms)

Three firms in the cases analysed created shareholder value over the eight year period under consideration through *profitable* trading. One firm came from the agri-food sector (Food1), one from the ‘modern’ manufacturing sector (Biotech1) and one came from the ICT sector (ICT1).

Sections 6.4-6.6 will evaluate the possible determinants and influences on this growth and will differentiate between those firms creating shareholder value as defined in this study and those firms experiencing decreases in shareholder value.

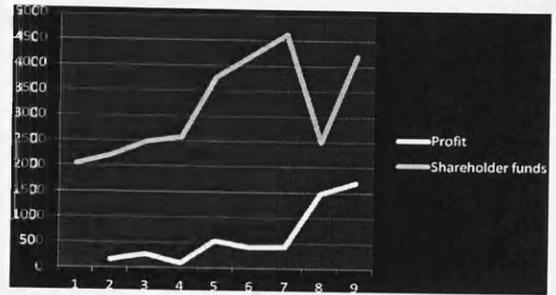
The three cases act across the growth dimensions – ROIC, Profit growth, Shareholder funds and sales growth as exemplars of how business growth can be *managed* for the creation of long term value creation – both customer and shareholder (Doyle, 2010).

Figure 6.2: Case Firms adding shareholder value

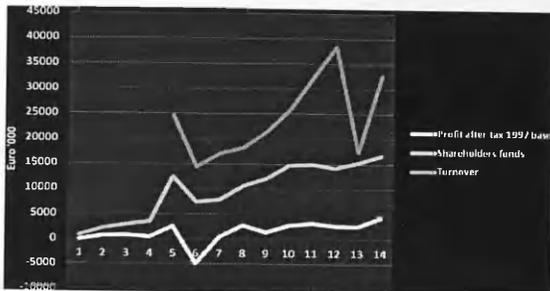
Food1



Biotech1



ICT1



(Source:CRO; Firm accounts; Fame; Visionnet)

The growth trajectory of the three are not entirely smooth (Figure 6.2) but even in periods of downturn – year seven in Biotech1 and Food1 and year 6 in ICT1 these firms still managed to maintain or return to profitability and return to a growth trajectory. The performance of each firm, along a number of salient dimensions, is set out in Table 6.3.

Table 6.3: Shareholder value creators over eight year period.

Case Firm	Age	ROIC %	Cumulative Shareholder Funds	Cumulative Profit	Sales generated In T+5	Employment At T+5
Food1	12	10	77671	7923	11730	68
Biotech 1	7	20	24350	4943	NA	25
ICT 1	6	8.7	71440	6250	25639	238

Notes to table: * Age is estimated at the start of the analysis period – two years before the public venture capital investment – this gives a base line for both the quantitative analysis in Chapter 5 and the cross-case analyses in Chapter 6 & 7.

The positive firm performance demonstrates the robustness of managements strategies for creating sustainable competitive advantage. Not only did the management team demonstrate their ability to accumulate resources for their growth plans but the subsequent performance also illustrated their ability to leverage these resources to create distinctive competences and build dynamic capabilities in their firms - ultimately creating sustainable competitive advantage and superior levels of profitability (O’Gorman, 2001; Hill & Jones, 2009).

Sector

Sectoral differences are important (Tybejee, 1994) as well as market focus (De Burca *et al.*, 2005) – the agri-food product is targeted at buoyant global consumer markets for the product category. Food1 also has a significant business-to-business relationship with a multinational corporation where its product is a key input into an iconic Irish product – owned by the MNC and also available on global markets. The biotech firm, on the other hand, is strictly business-to-business. It therefore has lower marketing intensity when compared to business-to-consumer businesses (Carroll, 1985). Its products are supplied into the pharma and viniculture sectors and are used in the test and measurement areas of these businesses. ICT 1 is the only ICT firm in the cohort of cases to achieve early profitability and to arrive in the analysis period in profit. It did experience a severe downturn in its fortunes in year six (See: Figure 6.2: ICT1) but subsequently returned on its profitable growth trajectory by winning profitable business on international markets. The business has been managed for profitable growth from the beginning (Davidsson, *et al.* (2009); Steffens *et al.* (2009). This firm is the most successful of all the firms in the cohort in terms of employment growth with 238 employees. However in terms of the EU categorisation

of firms, it would still be classified as a medium-sized firm with employment of less than 250 people.

Innovation and internationalisation

Innovation, in all three firms, is best described as incremental rather than breakthrough or disruptive (Mohr *et al.*, 2010). In internationalisation terms all businesses have followed the 'incremental internationalisation' (or stages of development) models proposed by the Uppsala (U) and Winsconsin (I) schools (Ibeh, 2012). This is the approach used to describe the internationalisation behaviour of more 'traditional' exporting firms – usually manufacturing (as in two cases here). It is noticeable here also that none of these firms has (or ever had) a significant domestic business and the growth strategy has always been internationally focused. The internationalisation process is therefore an accelerated form of incremental internationalisation.

6.2.2 Shareholder value decreasing cohort (7 Firms)

Figure 6.3 illustrates the growth trajectories of those firms who decreased shareholder value over the period under analysis. The factors behind this performance will be explored in sections 6.3-6.6 however it is appropriate, at this point, to consider contrasts in the performance here and performance with the three firms increasing shareholder value – figure 6.2. The seven firms profiled in Figure 6.2 come from three broad sectors – Biotech (one firm), Consumer (one firm) and ICT (five firms).

To allow for consistent time frame analysis, only the first eight years will be considered in each firm. However in cases ICT 1, 3, 5, 6 and Consumer 1 - subsequent years are included - to indicate the longer term trends in the key growth metrics (Figure 6.2 & 6.3).

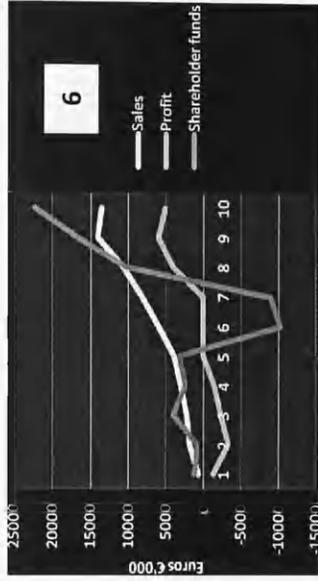
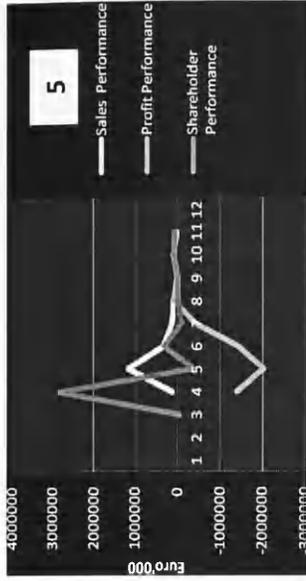
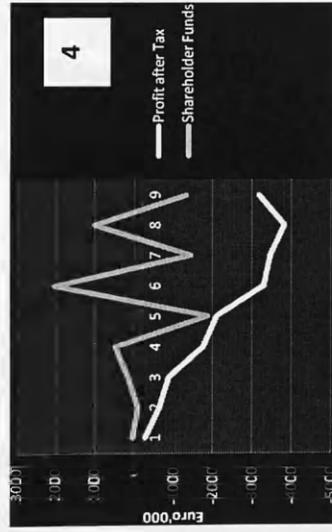
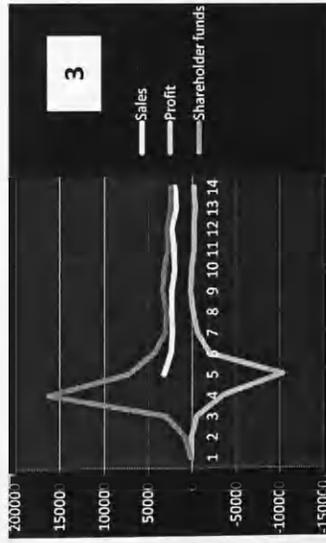
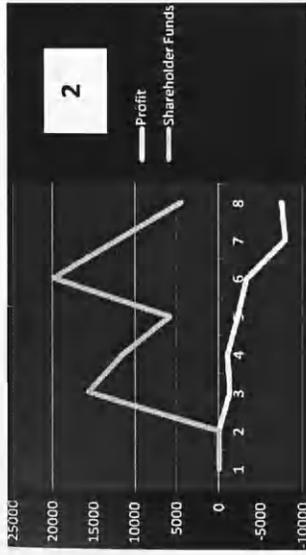
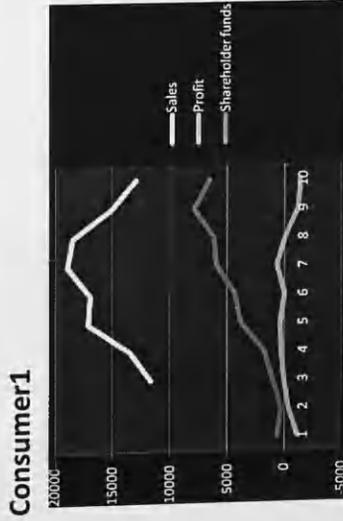
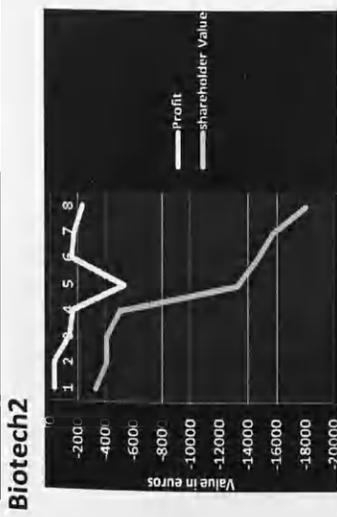
Sectors

ICT 2-6 are all firms active on the international information and communications markets. ICT 2, 3, 5 and 6 are all involved in the software sector and ICT 4 is in the telecommunications hardware design business. O’Riain (2004:56/77) noting the preference that the software industry has been given in Irish industrial policy when compared to hardware due to its high employment, knowledge content and relatively low capital investment.

The profiles of the firms are as follows:

ICT 2 is a communications software firm founded by an immigrant entrepreneur after his success at co-founding and selling on of a previous venture in Ireland. This firm was successful in raising two significant tranches of VC funding - year three and year six (Figure 6.3: ICT2) but the firm never reached profitability and at year eight the firm had a ROIC of minus 33 per cent. It was subsequently acquired for an undisclosed sum by a UK Corporation in year nine. It had one hundred employees at that stage.

Figure 6.3: Case firms decreasing shareholder value



ICT 3 is another software house, but of a much older vintage than the other software firms and was twelve years of age when it entered the analysis period. The firm was founded in 1985 by a UK national and was taken public in 2000 by the founder. It is one of only two PLC's in the case analysis. The firm thus raised significant funds on the stock market and proceeded to invest heavily in R&D and expanding rapidly in international markets. This resulted in immediate shareholder value destruction, catastrophic losses and the eventual departure of the founding entrepreneur by year five of the analysis period (Figure 6.3: ICT3). By the end of year eight the firm had a ROIC of minus 44 per cent and was employing 203 staff worldwide.

ICT4 is a telecoms hardware design firm which spun out of one of Ireland's leading universities. Figure 6.3:ICT4 shows the trajectory of the firm over the eight years of the analysis. Table 6.6 shows the key performance metrics of the firm – despite raising three tranches of venture funding the firm has managed to decrease shareholder funds to €233,000 on the balance sheet whilst accumulating losses of €16,250,000 after eight years in existence. In the eleventh year of its existence it was acquired by an Asian investment group within its industry for an undisclosed sum.

ICT5 is yet another software house that was just 4 years old entering the analysis period. The entrepreneur behind the business already had a successful consulting business and he used the funds from this, as well as raising outside funding, to seed development of a software 'product' (Figure 6.3:ICT5). With a high 'cash burn', significant accumulated losses and slower than expected sales, the founding entrepreneur eventually stepped down as

Table 6.4: Shareholder value decreasing firms over eight year analysis period[#]

Case Firm	Age	ROIC – %	Cumulative Shareholder Funds	Cumulative Net Profit	Sales Generated InT+5	Employment At T+5
Biotech 2	2	NA	-78073	-14548	-	11
Consumer	4	-4	37497	-1427	13010	24
ICT 2	1	-33.6	69325	-23302	10000 [^]	100
ICT 3	12	-44	379530	-167686	23400	203
ICT 4	1	-697	233	-16250	-	18
ICT 5	4	-184	2762	-5107	99	12
ICT 6	1	-206	2405	-4950	10676	55

Notes: # The case firms included in this cohort are those firms' who, over the analysis period- 8 years i.e. a period beginning two years before the state investment in the firm – returned a cumulative negative return on capital invested over the period. *Age is defined as age of firm two years prior to state investment and constitutes the age at the beginning of the analysis period. ^ No sales figures are published for this firm but sales peaked during the period at €10m.

CEO, only to be re-instated by the board a year later with the brief to find a suitable buyer for the firm. This was accomplished in year four and the firm was acquired by a US corporation from within the same sector (for an undisclosed sum). This US firm was subsequently acquired by another US corporation from within the sector. At its zenith in year two of its existence the firm employed 33. By year eight of the analysis period it employed twelve and had an accumulated return on invested capital of minus 184 per cent. Turnover peaked in year two at €1,159,261.

ICT6 is regarded as one of the great success stories of the Irish software industry. The firm was formed by two researchers from a leading Irish university – the technology was based on the researchers work within the university – which had originally been funded by EU research funds (Breznitz, 2007). The firm was ultimately sold in year seven of the analysis period for €110m to a major global player in the wider ICT industry. This is a multiple of over ten times turnover at the time and constitutes a healthy valuation. It employed fifty five by year eight. The two original founders had exited the business by year five and had no part in the subsequent sale. The graph in Figure 6.3:ICT6 shows the progress of the firm from a typical loss making start-up in years one to three to profitability from year four of the analysis period. The shareholder fund trajectory must be interpreted cautiously as the ‘apparent’ loss in shareholder value from year five to year seven in Figure 6.3:ICT6 is due to a change in accounting regulations and does not reflect the true value. All outstanding shares were acquired by the purchaser during year seven.

6.2.3 Cross case growth performance in context

Given the acknowledged idiosyncratic nature of the growth process in the firm growth literature (Smallbone *et al.*, 1995; Dobbs & Hamilton, 2006; Coad, 2009; Storey & Greene, 2010) – this observation holding irrespective of the growth measure applied (Absolute, relative, Log). It is not surprising then that there appears to be little pattern to the performance trajectories of the cases firms. Dobbs and Hamilton (2006) noting from their literature review, that it is ‘Idiosyncratic configurations of context specific variables that determine the growth prospects of small firms’. Storey & Greene (2010) adding the un-quantified but critically important influence of luck/chance/serendipity. However it is important to investigate - as in Chapter five - the potential determinants of and the influences on the shareholder value. One outcome of this analysis is that, in all cases, the management teams were successful in raising external finance (including state finance) to help fund their ventures (Brush *et al.*, 2009). This then must to be followed up with robust product/market strategies to create and capture value for the firm (Smallbone *et al.*, 1995; Brannback *et al.*, 2010). O’Gorman (2001; 2006; 2012) highlighting that subsequent profitability performance provides a measure of ‘management’s competence’ in value capture through the creation of competitive advantage. If the firm does not gain (sales) traction in the marketplace as in the cases; Biotech 2, ICT 2, 3, 4 and 5 - then the venture cannot generate adequate returns and thus generate internal finance to fund growth. External funding is therefore required to continue to fund the growth strategy – increasing external shareholder influence and power over the direction of the growth strategy. Figure 6.3 shows clearly the external ‘funding spikes’ in shareholder funds in cases; ICT2, ICT4 and ICT5.

Over time then the firm should ideally be moving towards 'self sustainability' – from a funding viewpoint. As turnover increases (Value creation), net profits after tax can increase, the firm becomes EBIDTA positive (Cash flow positive) and ultimately sustainably profitable (Drucker, 1985). To create shareholder value from this scenario, these profits must be re-invested and not disbursed.

Those firms experiencing persistent losses (See: Table 6.3-Biotech 2, ICT2, ICT3, ICT4 and ICT5) are thus dependent for their survival on the forbearance of their external investors - who are required to continue funding the venture in the hope or expectation of a future profitable trade sale. A trade sale is the most likely exit strategy as the value propositions of all of the case firms above can be described as *niche*. Given the scale of the ventures, the levels of finance raised and the economic size of the home market, this is to be expected (Armstrong & Read, 2003).

Smallbone *et al.* (1995:59) note in particular, in their study of high growth firms, that:

While it is the case that to survive over ten years all firms needed to pay some attention to products and markets, the best performing companies were those which were the most [*Pro – added by author*] active in developing new products and services for existing customers, developing new markets, broadening their customer base, taking steps to make their products more competitive and in managing their product portfolio (P.59)

Storey *et al's.* (1987) findings are consistent with the above findings and so those determinants of and influences on firm shareholder value creation will be analysed in sections 6.3-6.6 of this chapter.

As noted earlier, the management teams in all cases were successful in *raising* resources from outside investors for their growth strategies – three case firms created shareholder value over the eight year time period under analysis (Food1,

ICT1 & Biotech1), one case firm did so after the eight year analysis period (ICT6) and six firms decreased shareholder value in the analysis period with the financial metrics continuing to trend downward after the period – see Figure 6.3 (Cases: ICT2,3,4,5 Consumer 1 & Biotech 2). It is now appropriate to look at the background variables of the characteristics of the entrepreneurial/management team (Section 6.3), the characteristics of the firm - once founded (Section 6.4) and the characteristics of the external environment (Section 6.6), mediated through the strategies adopted by the leadership teams (Section 6.5) (Storey, 1994; Smallbone & Wyr, 2006). The growth inhibitors or barriers to growth (Arnold *et al.*, 2004; Forfas, 2004; Bessant *et al.*, 2005; Forfas, 2005) as perceived by the ‘key informant’ (Marshall, 1996) in each case will be investigated in Chapter seven. By differentiating ‘shareholder value creators’ from those ‘decreasing value’ along the above dimensions, it is possible to highlight the key differentiators of value creation in this cohort of firms – both for customer value creation and shareholder value creation (Doyle, 2010).

6.3. Characteristics of the Entrepreneur(s)

In small firms, growing or otherwise, the fortunes of the firm are intimately interlinked with the characteristics of the founding entrepreneur(s) (Delmar, 2006). Prior experience and embedded knowledge, skills and abilities (KSAs) in the founder and key staff (Coff, 2002) are therefore important factors when analyzing firm growth performance. Polanyi (1966) observes that firm KSAs can also be tacit as well as codified in nature and are therefore difficult to articulate and evaluate (Polanyi, 1966). Evaluating the contribution of human capital to firm performance becomes even more complex when the entrepreneurs and management teams ability to absorb new knowledge is factored in (Cohen & Levinthal, 1990). In small states, this

intimate relationship between the entrepreneur and the firm takes on even greater significance given the small states dependence on indigenous firms for export growth performance.

This section therefore profiles the entrepreneur(s) behind the case firms along a number of recognized human capital indicators to see if the profiles differ across the key entrepreneurial dimensions. The analysis will attempt to differentiate between those firms creating shareholder value and those who decreased value over the analysis period. Table 6.5 therefore highlights the human capital indicators which the literature suggests influence entrepreneurial performance. Unger *et al.* (2011) finding that knowledge/skills and task-related human indicators as more important than general human capital indicators and thus should be the focus of researchers attention in the future.

Table 6.5: Human capital and entrepreneurial performance

	Human Capital investment (Education & Experience)	Outcome of Human Capital investment (Knowledge, Skills & Abilities)
High task relatedness (To growing a business)	Technical education Business education Industry experience Start-up experience Management experience	Entrepreneurial knowledge, skills and competencies – novice, serial, portfolio? Bootstrapping skills Sector knowledge and skills Growth ambition/motivation – profitable growth/growth to profit? Leadership/managerial skills Strategic management skills Sales/marketing skills
Low task relatedness	General education General work experience Family background (Parental education) Recreational pursuits	General education qualifications Low task related knowledge and skills KSAs in recreational pursuits

Note to table: Current knowledge (the outcome of human capital investment) is more directly related to entrepreneurial performance than measures of pure past experience (Davidsson, 2004). Unless the learnings from past experience (Acquisition and transfer of knowledge) results in superior performance (related to the task at hand) then knowledge may be redundant or need to be unlearned. Future research should address the learning processes at play in entrepreneurial learning, their evaluation and improvement. 'A firm's willingness, effort and capability to learn fast and continuously are likely to be a key to sustained competitive advantage' (Unger *et al.*, 2011: 353). (Source: Unger *et al.*, 2011; Crook *et al.*, 2011, Wright *et al.*, 2012 - adapted by author).

Table 6.6 provides a comparative analysis of the case firms across the key dimensions of the characteristics of the entrepreneur, as identified by Storey (1994), Smallbone & Wyr (2006, 2012) and Storey & Greene (2010). (See: Table 2.1 - Chapter 2). These characteristics are subdivided firstly into the KSAs of the entrepreneurs; i.e. the outcome of human capital investments for business growth and, secondly, by human capital investment to identify the entrepreneurial factors which help differentiate between the performing and non-performing firms.

6.3.1 Entrepreneurial factors differentiating between performing and non-performing firms

The factors outlined in Table 6.5 can be utilised to compare and contrast those characteristics of the entrepreneur that might distinguish between those creating shareholder value over the analysis period and those that did not. A major problem in entrepreneurial research is trying to link entrepreneurial behavior to business performance (Delmar, 2006; Delmar & Witte, 2012). Trait approaches (distal factors)(Kets de Vries,1977; Chell *et al*, 1991; Ennew & Binks, 1998) are not sophisticated enough to explain the complexity of entrepreneurial behavior and thus cognitive approaches (proximal) in the form of cognitive motivation models have become *de rigueur* (Delmar, 2006). Research has thus moved from studying the personality of the entrepreneur to studying the situations which might lead to entrepreneurship – as theorized, for example, by (Shane & Venkataraman, 2000; Shane, 2003; Casson, 2003; Eckhardt & Shane, 2003) in their individual/opportunity nexus frameworks. However little research has been conducted on cognitive models

based on cognitive theory (Delmar, 2006) - much work therefore remains to be done and so any differences highlighted in this study must remain tentative.

Storey's emphasis on personal characteristics which influence access to resources helps in differentiating performance. Thus the growth opportunity as perceived by the entrepreneur(s) – contextualized by their particular situation may help in distinguishing between creators and decreasers of shareholder value in this study. Smallbone *et al.* (1995) adding that growth orientation *per se* does not lead to growth performance – it's the commitment of the entrepreneur(s) to expand the firm that is important. All of the firms in this study have a growth orientation - having raised outside capital (and diluted ownership) to help fund growth (Enterprise Ireland annual reports 1999-2005) but not all can be regarded as having achieved success as defined in this study. Shane (2003) dissects the characteristics of the entrepreneur relevant to uncertain growth opportunity exploitation into two broad factor groups of: psychological and non-psychological. Psychological factors are: Motivation, core evaluation and cognition ability and non-Psychological are: Education, career experience, Age, Social position and opportunity cost. These factors and other potentially relevant factors like portfolio entrepreneurship (Scott & Rossa, 1997) are analysed in Table 6.6.

6.3.2 Motivation of Entrepreneur for growth

The motivation of the entrepreneur is regarded in the literature as a potentially important antecedent of growth behavior (Shane, 2003; Storey & Greene, 2010). The 'pull' of market opportunity is regarded as having a superior outcome to entrepreneurship derived from 'push' factors such as unemployment (Shane, 2008:

123). The case studies analysed here all came to seek external funding for their growth strategy for 'pull' reasons. It therefore does not, of itself, help to distinguish between those who increased shareholder value and those who did not. It does highlight however the apparent *disconnect* between the desire for growth - all case firms display growth intentions by successfully raising funding for non-balance sheet assets (R&D – market & marketing assets, human capital) - and the actuality of achieving the desired growth (Smallbone *et al.*, 1995). Management strategy in the small firm is therefore of 'prime interest' in this respect (Storey, 1994; O'Gorman, 2006, 2012). This will be discussed in more detail in Section 6.5 of this study on management strategies in terms of 'management's competence' in conceiving and executing the Product/market strategy for competitive advantage (O'Gorman, 2001; Merson, 2011).

6.3.3 Leadership style

Entrepreneurial leadership style is closely related to the approach taken by the entrepreneur. Tannenbaum and Schmidt (1973) identify a number of leadership styles classified on a continuum from production-orientation to people-orientation – styles along the continuum are classified as autocratic, persuasive, consultative/participative and democratic. Kirby (2006) notes that it is generally accepted that the most effective leaders are 'open, candid and employee-centered' – however the style adopted depended on a number of situational factors. The key informant's (Marshal, 1996; Fletcher & Plakoyiannaki, 2011) in each case were asked about their leadership style and Table 6.6 - Section 8 summarises the response of the KI's and classifies it along the continuum described here. The entrepreneurial leaders in Food1 and Biotech1 and ICT1 – as the clear value creators – were all strong,

forceful personalities with clear visions for their businesses. In that sense their leadership styles appeared to be quite directive and therefore tended towards the production end of the continuum and is best classified as persuasive. Given the strength of the personalities and their influence on the strategic direction of the business it would seem that succession planning may well have a significant bearing on the future growth trajectories of these businesses.

The other cases exhibited varying degrees of classification along the continuum but most tended towards the mean of the scale with the technology driven firms exhibiting more 'employee centeredness' due to the fact that, in the main, the staff were highly educated and embedded with the tacit and systemitised knowledge of the firm.

Table 6.6: Characteristics of the Entrepreneurs *

Outcome of Human Capital Investment - Knowledge, Skills and Abilities (KSAs) of Entrepreneurs for profitable business growth		Firms decreasing Shareholder value							
Case Firms	Shareholder value creators	ICT 1	ICT 6	Biotech 2	Consumer1	ICT 2	ICT 3	ICT 4	ICT 5
Variables	Food1	Biotech1	ICT 6	Biotech 2	Consumer1	ICT 2	ICT 3	ICT 4	ICT 5
Type of Entrepreneur	Portfolio	Serial	Novice	Serial	Novice	Serial	Serial	Novice	Serial
Funding skills	Bootstrapped, then BES funding	Bootstrapping - consulting funded manufacturing start-up & product development	EC funding, state investment & VC	Bootstrapping initially but: early 'investment bank' funding in US for disruptive innovation at seed stage	JV between two established entities within the industry	Raised external funding from the beginning - 2 nd rounds was a record for Irish software house at €15m.	Bootstrapped initially (Founder) - PLC for 12 years	VC's in from start as firm was spun-out from University	Existing consulting business funded new firm initially - then Angel investor and then VC funding
Initial funding - internal/external									
Growth ambition/ Motivation - push/pull	Market opportunity based on PhD research	Market opportunity based on research and sector experience	University spin out based on research from University	Market opportunity based on University research and sector experience	JV Management opportunity and sector experience	Product/market opportunity based on sector experience	Managerial opportunity in loss making PLC	University spin out	Market opportunity based on sector experience
Leadership style	Persuasive	Persuasive	Consultative	Consultative	Consultative	Persuasive/ Consultative	Persuasive/ Consultative	Consultative	Consultative

Human Capital Investment - Education and Experience of Entrepreneurs

Variables	Food1	Biotech1	ICT 1	ICT 6	Biotech 2	Consumer1	ICT 2	ICT 3	ICT 4	ICT 5
Age of entrepreneur founding/joining business	41	46	40	28	42	49	41	38	53	39
Gender	Male	Male	Male	Male	Male	Male	Male	Male	Male	Male
Direct Family history in business - Parents	Yes – small business	Farming background	Not directly but Mothers family history of self - employment	No - history of teaching	No – History of teaching	Yes - father owned and ran own business	No – professional background	No – History of Teaching/coaching	No	No
Use of outside advisors/mentors	None acknowledged	Close cadre of personal advisers	No	Yes including Eiland state bank (ICC) at start-up	Not in industry	Within multinational group	Yes – mentor is ex-founding partner in previous business	None acknowledged	Yes – but for specific projects or problems	For specific purposes
Business networking organisation membership	Business education related only – MBA association	IOD, SFA, President of Trade association within his industry	IBEC, Software association Council	Yes within Industry	Does not business network in Ireland – no benefit to an international business – networks internationally within the industry	Chamber of Commerce, IOD, Board member of European Trade Association,	Chamber of Commerce, Software Association	Not within Ireland – International trade associations	Industry association, Chamber of Commerce	Industry association
Highest Level of educational attainment	PhD in business (USA)	PhD in science (Aus.)(1975)	IT Graduate (IRL)	PhD in science (IRL)	Bioengineering Graduate (USA)	Second level	Engineering graduate (UK)	Business graduate/Professional qualification (IRL)	Engineering Graduate (IRL)/MBA (UK)	IT Graduate/Business qualification (IRL)

Number of Founders	2	2	3	2	1	2	1	1	1	2	1
Previous business experience	University Lecturer MD of Exploration industry firms Portfolio entrepreneur. No previous experience in this business	Senior Technical civil servant and CEO of start-up overseas in area of technical expertise	Partner in IT consultancy in Financial services in Ireland, International IT consulting and selling experience in area of expertise	University lecturer & researcher in area of expertise	Biotech researcher in US & Ireland	Senior management in construction related industry	CEO of start-up - successful IPO	Finance director of US listed technology firm in US	Former CEO of Irish subsidiary Of US multinational	Management Consultant & CEO of IT services firm	
Nationality	Irish	Australian	Irish	Irish	USA	Irish	Asian	Current CEO Irish – Firm founded by UK national	Irish	Irish	

Notes to table: The characteristics of the entrepreneurs and the differentiating factors between the shareholder value creators and those firms decreasing shareholder value should not be considered in isolation of the other factor groups – firm related factors Section 6.4, Management strategy factors, Section 6.5 and external environmental factors, Section 6.6.

6.3.3 Financial bootstrapping experience

Finally a factor which was found to differentiate between performing and non-performing firms was the entrepreneurs' previous experience at successfully bootstrapping this and/or a previous business (See: Table 6.6 – Section 14). This experience allowed the entrepreneur to develop a 'profitable growth imperative' and to value the necessity of internal funding if they wished to retain control of strategic direction of their business. External funding could then be taken on at a time of their choosing. This occurred when their customer value proposition had been crystalised and they had established a competitive advantage in their respective niche markets. The entrepreneurial process for the performing firms – as evidenced by bootstrapping – is guided by 'effectuation logic' (Sarasvathy, 2012). This is where the entrepreneur grows the business in a controlled, emergent way based on their affordable loss rather than pursuing a deliberate 'grand vision'. This contrasts with the non-performing firms – mostly from the ICT sector who took on external funding (based on their grand vision) but before they were 'investor ready' or had their customer value proposition defined. When the businesses did not perform as expected, the external shareholders moved against the founding entrepreneur(s) resulting in the founding entrepreneur(s) parting company with the firm – this happened in ICT2, 3, 4, 5 and 6.

6.3.4 Entrepreneurship type – portfolio, serial or novice?

Finally, Table 6.6 shows that only one entrepreneur was a portfolio entrepreneur and his firm was a performing firm in the study. The other two performing firms were run by serial entrepreneurs, both on their second ventures. Clearly, all three had learned

how to run a *profitable* business from prior commercial experience. The literature suggests that the performance outcomes are generally superior for portfolio entrepreneurs than they are for novice entrepreneurs (Wright *et al.*, 2012). Whilst this may hold for portfolio entrepreneurs, the evidence so far in relation to the performance of other habitual entrepreneurial types, such as serial entrepreneurship over a novice, is less convincing (Ucbasaran *et al.*, 2006).

In the non-performing cohort, three of the firms had novice entrepreneurs and four had serial entrepreneurs leading the firms. Consumer1 and ICT4 had novice entrepreneurs who had significant prior board level management experience, whilst ICT6's leadership team had no prior commercial experience at all. ICT2, ICT3, ICT5 and Biotech2 were all run by serial entrepreneurs. However, the entrepreneur in ICT5 was the only one with previous experience at running a *profitable* business (High task relatedness/Outcome of human capital investment). The leaders in ICT2, ICT3 and Biotech2 all had prior experience in running NTBFs and therefore focused on raising outside capital and scaling up (High task relatedness/Capital investment). The entrepreneur in ICT5 commenting in hindsight on his performance in leading the firm.

.....profitability did not come into it I should have known and what I did was a matter of fascination for me coming out of a company that had to make a profit every year..... Having built one The value [*in the new business*] was based on some speculative model which has never been given a mathematical formula... (P.15)

Thus the findings here are consistent with the literature in confirming that differing types of entrepreneurship – habitual (portfolio and serial) or novice can result in differing performance outcomes for the firm. This depends to a small, but significant,

degree on how related the prior experience and KSAs of the entrepreneur is to the task of growing a profitable business.

6.3.5 In conclusion

Smallbone & Wyr (2006) note that whilst the characteristics of the entrepreneur profiled above have an influence on business performance, the magnitude of the effect from any or all of these factors is debatable. They state:

However whilst most of these factors [See: *Table 6.6 – author added*] can be shown to contribute to small business growth in one or more empirical studies, none appears to make a dominant contribution. Indeed the search for the identikit picture of the successful entrepreneur has not proved fruitful and, whilst undoubtedly relevant, the characteristics and previous experience of the founder appear to have only a modest effect on the success of the business in terms of its growth performance. (p. 105/106).

Storey & Greene (2010: p.265) having reviewed the extensive literature in the area also agree that with the exception of education, age, gender and employment status of the owner (See: *Table 6.5*) – however none of these factors differentiate between the performers and non-performers in this cohort (See: *Table 6.6*). The links between pre-start up factors and small business performance are difficult to identify with even these four factors providing only a modest insight into performance. Thus this study found that the differentiating factors between the leaders of the shareholder value creators and shareholder value decreasing firms related primarily to the motivation for growth and the leadership skills of the founding entrepreneurs. These factors combined with their previous bootstrapping experience allowed the entrepreneurs to conceive and deliver on a growth strategy for sustainable competitive advantage. These findings must not be considered in isolation but in

conjunction with the findings in Section 6.4 – Characteristics of the firm, Section 6.5 – Management strategy and Section 6.6 – The external environment.

6.4 Characteristics of the Firm

The characteristics of the entrepreneur discussed in section 6.3 acts as a backdrop to the formation of the firm. The characteristics of the firm are an important group of factors which become important once the firm is set-up by the entrepreneur(s). The firm is the key vehicle in the economy for transforming economic inputs into added value outputs and is thus the core unit of analysis in this study (Coase, 1937; Penrose, 1959). Mayer and Ottaviano (2007) also remind us that it is firms which trade and not nations and so the firm remains the appropriate unit of analysis.

6.4.1 Firm age and firm size

Age and size are regarded as two important and related variables when analyzing firm characteristics. This study is primarily focused on the ‘growth scaling’ of indigenous firms and thus age and size of each case firm are significant demographic factors for consideration (Delmar *et al.*, 2006).

Age

Younger firms are deemed to grow faster than older firms (Storey, 1994; Storey & Greene, 2010) – if they grow at all – but growth can be re-ignited in more mature firms therefore age *per se* is not an entirely reliable predictor of growth performance (Smallbone *et al.*, 1995; Smallbone & Wyer, 2006, 2012; Mason & Brown, 2011; Brown & Mason, 2012). The mean age of the case firms profiled here is five years but the ages range from one to twelve years entering the analysis period. Shareholder value creators however have a mean age of 8.1 years whilst the value decreasing

firms mean age is 3.5 years. The value decreasing firms are younger NTBF's who mostly come from the ICT industries.

Size

Size is generally estimated in the firm growth literature in terms of employee numbers (Davidsson, 1994). In this study however, in line with its focus on economic value creation and capture, shareholder funds are a more appropriate measure of firm size (Hill & Jones, 2009; Doyle, 2010). Food1, Biotech1, ICT1, 6, Consumer1, ICT2, 3, 4 all increased shareholder value (size) from year 1 to 8. Biotech 2 and ICT5 both decreased shareholder value over the period. Whilst eight firms increased shareholder value it is important to recognize (See: Figure 6.3 and Table 6.7) that only Food1, Biotech1 and ICT1 increased shareholder value through *profitable* trading – by not only creating customer value (through increasing sales) but also managing to *capture* value for the firm (through profitability and profit growth).

The other seven firms were dependent on external capital injections to increase the shareholder value as they did not create sufficient value through turnover/after-tax profits to capture value for the shareholders over the period. It is therefore important to explore the circumstances behind the growth/non-growth in each case and to identify possible themes or patterns in the firm characteristics data which might help differentiate between *value creation* and *value destruction*.

ICT3 is a case in point. This is a PLC which floated in 2000 and has cumulatively lost €180m over its life so far – yet taking a measure at the beginning and end of the analysis period does not reveal the true picture of the firm's trajectory or the associated influences on performance. Thus a business model (Zott *et al.*, 2011) may

be based on commercialising technology, which may not have a clear value proposition or where the proposition may not be adequately market tested or 'market –ready' (Merson, 2011:41/42). Indeed where the proposition is under-capitalised or badly executed it can result in value capture and realisation occurring ultimately not only outside the originating firm but also outside the state. Indeed five of the ten cases in the analysis were acquired by overseas corporations within the eight year analysis period (Table 6.8). ICT2 was acquired by a UK corporation, ICT 5 and ICT6 were acquired by US Corporations, ICT 4 was acquired by an Asian corporation and Consumer1 – a joint venture between and Irish and European partner was bought out by the overseas partner.

The remaining firms are either 'closely held'(Biotech1, ICT1) by the entrepreneurs themselves (Audretsch & Link, 2012) or the entrepreneur is a major shareholder supported by other small (Unquoted PLC) or venture shareholders – Food1 (Bought out after the analysis period) and Biotech2. The final firm is ICT3 which is a listed firm (PLC). See Table 6.7 for the geo-demographic profiles of the respective firms.

Table 6.7: Geo-demographic characteristics of the case firms

Case	Year of inc.	Size in €'000 at start of analysis period	Size in € at end of period 8 years	Size in € increase/decrease	Age at start of analysis period	Location	Legal form at start of analysis period	Legal form at end of 8 year analysis period
Food1	1987	6282	13994	+7712	12	Leinster	Private Limited	Unquoted PLC
Biotech1	1996	2487	4199*	+1712	7	Leinster	Private limited	Private Unlimited
ICT1	1993	748	14763	+14015	6	Dublin	Private Limited	Private Limited
ICT6	2000	1229	10568	+9339	1	Dublin	Private Limited	Subsidiary of US multinational
Biotech2	1998	(3291)	(17976)	(14685)	2	Leinster	Private Limited	Private Limited
Consumer1	1998	1030	6142	+5112	4	Leinster	Private Limited – JV Irish/European	Subsidiary of European Multinational
ICT 2	1999	0*	4539	+4539	1	Dublin	Private Limited	Subsidiary of UK Corporation
ICT 3	1985	1981	29568	+27587	12	Dublin	Private Limited	PLC
ICT 4	2000	37	992	+955	1	Munster	Private Limited	Subsidiary of Asian Corporation
ICT 5	1997	2814	82	(2732)	4	Dublin	Private Limited	Subsidiary of US Corporation

Notes to table: * ICT2 had not filed annual accounts before entering the analysis period. The analysis period begins two years before the state capital injection. ICT2 was given the state injection when less than three years in business. This can be contrasted with ICT3 and Food1 which were both fourteen years in business before receiving public venture capital.

6.4.2 Ownership change

Given the niche orientation, value creation performance and small domestic market, it is perhaps not surprising that so many of the cases – sixty per cent - were acquired by larger and better resourced international firms. Indeed, whilst the details of most acquisitions are not publicly disclosed it can be established through the case analyses and an examination of the growth performance of the individual firms (Figure 6.3) that ICT2,4,5 and Consumer1 were distress sales. From publicly accessible information it appears that ICT 6 and Food1 realised significant value for shareholders – both selling for premia of between 7-10 times shareholder book value (Details in case analysis in Volume 2). Thus value can be realized through ‘profitable’ growth over time or, as in ICT6, in one ‘trade sale’ transaction. The founding entrepreneurs in ICT1 and Biotech1 – the two top performing independently-owned businesses (See: Table 6.8; Figure 6.4) both bought out external shareholders and now have strategic control of their businesses. The differing trajectories of the case firms and the respective outcomes of each demonstrates the dynamic nature of both firm and industry evolution – and the unpredictability of that evolution in an increasingly globalised world.

Employment change

Figures 6.4 and 6.5 illustrate the employment performance of both cohorts of firms over the analysis period. It is noticeable that only one case firm (ICT1) moved beyond the EU definition of SME in terms of employment numbers (250 employees) and this took seventeen years to achieve.

Figure 6.4: Employment performance of Shareholder Value Creators



Figure 6.5: Employment performance of Shareholder Value Destroyers



Notes to Figures 6.4 and 6.5: Employment is a consequence of firm growth and shareholder value creation. Small firms in Ireland are not obliged by statute to provide employment numbers in their annual returns and thus the figures above were obtained from those firms reporting employment figures voluntarily or the figures were obtained through the interview process with key informants. Despite the sparse data available, a number of key observations can be made. Firstly the available figures mirror the growth trajectories observed in sales (where available), profits after tax and shareholder funds in Figures 6.2 and 6.3. The shareholder value creators – growing profitably – managed to also grow employment in a steady, unspectacular fashion. ICT1 is clearly the star performer by managing to create 292 jobs over 17 years from start-up. However it is neither a fast or high growth firm when viewed against the OECD definitions of both categories of firm -f 20 per cent growth per annum over three years. It has added jobs at 6 per cent per year on average since start-up. The other two value creating firms also creating jobs at comparable rates – Biotech1 at 6 per cent on average over 16 years and Food1 at 4 per cent over 24 years since start-up. The value decreasing firms show more volatile employment creation patterns than the value creators. Again Consumer 1's rapid decline between years 9 and 11 is a clear reflection of the downturn in construction in the Irish economy. Demand for this firms products are a derived demand from construction activity. The employment performance of the remainder of the firms reflects the growth-to-profit strategies employed by these firms. ICT2 is a case in point – it reached employment of 100 in five years but had accumulated losses of over €23m. ICT3 provides another example of how misleading employment can be as a performance measure when considered in isolation – it employed 203 employees by year 20 of its existence but had accumulated losses of just over €167m at that point. ICT4 had accumulated losses of €16m yet employed just 18 after 10 years. The growth performance of these firms can be considered as 'bad growth' and it brings the sustainability of the jobs created into question as the firms are kept alive through the largesse of their shareholders – public and private.

6.4.3 In Conclusion

Thus the characteristics of the firm which differentiated between shareholder value creators and shareholder value decreasing firms are twofold. Firstly in the value creators – the founder/entrepreneur remained in control of the firm and thus in control of firm strategy. Each entrepreneur had previous commercial experience and had financially bootstrapped this or other operations. The businesses were managed from the outset with a *profitable* growth imperative. The value decreasing firms on the other hand were in the main acquired by better funded overseas firms with value realisation occurring outside the state. Secondly both cohorts were distinguished by firm age. The value creators were on average older – eight years and over whereas the value decreasers were younger at three and one half years when the public venture capital was received.

6.5. Management strategies (Value creation and value capture).

Small, growing firms face ‘unknowable, unpredictable and open-ended change’ (Stacey, 1990). Storey (1994) noting that:

‘ To some extent ‘strategy’ in this context can be considered as asking the question - given the characteristics of the entrepreneur(s) and the firm – what managerial actions, once the firm has started, are likely to be associated with more rapid rates of growth? (p. 124/125).

6.5.1 Product/market strategy

Tables 6.8 and 6.9 analyses the various dimensions of firm strategy highlighted in Storey’s (1994) and Smallbone & Wyer’s (2006:59) firm growth framework. The firm’s strategy is its managements attempt at value identification, creation and

capture from its wider environment. At the core of management's corporate strategy is its product/market strategy. Smallbone *et al.* (1995) re-iterating that their study confirmed previous research in the area and noted that:

Whilst it is the case that to survive over ten years all firms needed to pay some attention to products and markets, the best performing companies were those which were the most active in developing new products and services for existing customers, developing new markets, broadening their customer base, taking steps to make their products more competitive and in managing their product portfolio (Smallbone *et al.*, 1995:59)

6.5.2 The value creators

Thus the value creators in this study Food1, Biotech1 and ICT1, although from different sectors - displayed similar characteristics along a number of product/market related dimensions (Table 6.8). Firstly their strategies were focused, differentiated strategies in that each clearly identified a niche for their market offerings *internationally*. They had clear customer value propositions (CVP) established. For Food1 and Biotech1 the home market was never a priority and ICT1 has a small amount of business in it. The growth ambition of the entrepreneurs from early in their firms' development was on developing international markets. The overall product/market strategy was focused on market development *and* product development (Ansoff, 1957). See also the note to Table 6.8.

These firms placed as much or more emphasis on market development than product development and in that sense they were market-focused. Food1 having active distributors and their own in-market staff in all key regional markets around the world, Biotech1 noting that they were active in sixty markets worldwide with fifty per

cent of sales going through their website and sales were ninety nine per cent export. The key informant in ICT1 noted that 'What we are doing is we're targeting English speaking countries as our priority. The [*United*] States being [*our*] number one [*priority*]'.

This clear focus is common to each of the firm in the 'shareholder value creating' cohort. It is allied to a focus not just on the 'growth imperative' but more importantly on '*profitable growth*' (Hill & Jones, 2009). This recognition and appreciation of the 'Profit imperative' can be attributed to the previous commercial experience of the entrepreneurs in these three firms and the fact that each is the controlling shareholder in the respective entities.

Growth must be profitable to allow the entrepreneurs re-invest the profits in the business to fund future growth, gain credibility with potential funders and/or investors and build shareholder value. The dimensions of strategy highlighted in Table 6.8 from Food1, Biotech1 and ICT1 suggest that the firms (despite the fact that two of the three are from technology sectors) are conservatively managed. This has implications for the scale of the businesses with ICT1 having 238 staff, Food1 having 68 and Biotech1 having 25 at the end of the eight year analysis period. See also Table 6.5 and Figure 6.4. for further details. Firm growth has been managed (Merson, 2011). One of the three key informants in this cohort noting however that:

'We have always had to have a profit – we were always paying our own way..... we don't sell cheap a good margin. I wouldn't be bothered doing it otherwise' (Pg.15/17).

All three leaders of the firms had previous experience of having to 'bootstrap' their operations and so each understood the necessity of managing the growth of the business (with the existing asset base) so that they did not end up 'overtaking' in expansionary times or carrying excess overhead in downturns. In less buoyant situations they focused on 'rightsizing' the operation in a timely fashion to restore profitability as soon as possible (See: Figure 6.2). This approach to business growth suggests that the growth strategy is underpinned more by effectuation logic (Sarasvathy, 2012) than by deliberate grand visioning.

Another of the key informants noting – after a severe downturn in growth and profits (The first recorded annual loss for the firm) that:

So for the years 04/05/06/07 we started to achieve (sales) growth levels of 20-25% which was much more manageable. So we are always now looking at risk as well as growth..... And making sure the balance is right (Pg.17).

Hill & Jones (2009) illustrate the tradeoff between profitability and sales growth rates – the firm needing to try and maximize long-run shareholder returns by seeking the right balance between firm revenue growth and profitability and profit growth (Appendix 1 – Chapter 2). Diminishing returns set in at high levels of growth as growth becomes more difficult for management to manage and the Penrosian curve kicks in (Penrose, 1959).

Growth opportunities were sought out internationally in the product/market space and the technology firms focused on marketing/selling directly to large corporates (ICT1) and through distributors/ own website (Biotech1).

The marketing intensity (Carroll, 1985) in these business models is relatively low (B2B) allowing the SME to develop close relationships with their channels and to focus their marketing spend in the most efficient way.

Food1 on the other hand is marketing intensive – selling ultimately into retail, as the key informant relates:

Production - we are fabulous, finance I have in order, we can't do any better than that - *but marketing is killing us big time* [italics added] absolutely and a lack of A & P, in other words getting it on the shelf is a huge problem and getting it off the shelf is my next problem - but how do you fix the first one?' (Food1:22/23).

For SME's then in a smaller state, a differentiated focused strategy in a business-to-business market is appropriate as they will not have the internal resources to invest heavily in the marketing of products targeted at end consumers whilst also investing in R&D and human capital development. Ultimately successful growth depends on the firm leader and management team embracing the 'profitable growth imperative' and having a clear vision of what the major shareholder/manager's objectives are.

Bhide (1996) encouraging entrepreneurs to establish clearly what they want personally from the business and their appetite for risk.

Table 6.8: Key aspects of Managements growth strategies

Section	Food1	Biotech1	ICT1
1. Product/Market Strategy for Survival & Growth*	Market penetration/ Market development	Product/ market development	Market development
2. Market focus	B2B	B2B	B2B
3. Sales/scale (Value creation) or Profitability (value capture) driven?	<p>Profitability – KI is a Director of 32 other firms – appreciation of ‘profit imperative’ (18/20).</p> <p>Yes – but KI attributes profitable performance to B2B business and growth in US consumption growth in category – neither of which were predicted by the firm (18/20).</p> <p>Formal – through the marketing Function (15).</p>	<p>Profitability – operation bootstrapped from beginning – appreciation of ‘profit imperative’ (15)</p> <p>Yes – Plans revolve around sales growth in existing markets and developing new products in new markets – distributors are key to new market development (16)</p> <p>Informal (16)</p>	<p>Profitability – operation bootstrapped from beginning – appreciation of ‘Profit imperative’ (17)</p> <p>Yes - So for the years 2004/5/6/7 we started to achieve growth levels of 20-25% which were much more manageable. ‘... so we’re always now looking at risk as well as growth..... and making sure the balance is right’. (17)</p> <p>Formal – ‘We have a team that does that’ (22)</p>
4. Formal planning	<p>Yes – but KI attributes profitable performance to B2B business and growth in US consumption growth in category – neither of which were predicted by the firm (18/20).</p> <p>Formal – through the marketing Function (15).</p>	<p>Yes – Incremental but changes on six monthly basis – new areas biofuels, test kits for allergens, aflotoxins, plant toxins (17)</p> <p>Other products protected by in house control of information (17)</p>	<p>Yes – Incremental ‘Yeah we do, we build a 3 year roadmap all the time’ ‘Because of where we are, so we’re not ground breaking but we do have a focus on innovation...’ (22)</p> <p>Yes – Two patents held and patents pending (22)</p>
5. Marketing research – formal/informal	<p>Yes – Incremental innovation – product development (20/21)</p> <p>No – ‘We should have and we didn’t We have a lot of innovation, a huge amount of innovation. All of which could have been patented to get your patent income – we never did it...’ (21).</p> <p>No formalised policy</p>	<p>Policy to Employ degree level rather than Ph.D and train them in (17)</p>	<p>Employ younger staff and train - as skill set required is not in country (22)</p>
6. Innovation policy – technology road map	<p>Home market not important from start – Export orientated priorities - US, Germany, France, UK (7/21).</p>	<p>In 60 markets – 30 distributors, 99% sales export – 50% of sales through website – Firm targets the cereal, food and Wine industries (18).</p>	<p>‘it’s global and what we are doing is we’re targeting English speaking countries as our priority. The States being number one’ (23)</p>
7. Patents held and number			
8. Human capital development policy			
9. Internationalisation strategy			

Section

Food1

10. Exit strategy? - IPO or trade sale?

'I entered the business to see if I could enter the business. I certainly entered the business as a proof in my strong belief in that indigenous entrepreneurs are a way forward (22)

Biotech1

'This was meant to be a business that's going to continue after I am gone. So that's my idea' (18)

ICT1

've missed that opportunity but we thought we'd IPO at the end of 2002, maybe 2003'

'To go IPO you really need to be a business of 60-100 million in terms of scale. And we've seen companies in Ireland who IPO'd and who haven't done anything

So it's something we'll keep in our minds probably to go down that route too because what I've done in the last 4 or 5 years is I've bought a lot of the shares back off the individuals' (21)

Notes to table: * Ansoff's matrix was used to categorise the product/market growth strategy types. Market penetration (Cell 1) describes strategies aimed at existing customer type in existing markets - this is defined as customers in the Irish market only. Market development (Cell 2) refers to marketing existing products or base technology into new markets - interpreted as international markets here. Product development (Cell 3) is developing new market offerings (Kotler et al., 2009) for existing markets and Cell four is where the firm diversifies from its core product/market business and develops new unrelated offerings to sell to unrelated markets. Given that the small, growing firm has limited resources at their disposal, the strategic choices made by management are crucial (O'Gorman, 2006), particularly in relation to its product/market strategy (North & Smallbone, 1995). A differentiated, focused strategy therefore suggests itself as the only viable strategy for a growth-orientated firm to adapt from a small, open state, particularly in relation to internationalization strategies - irrespective of sectoral focus (Carroll, 1985). A firm expanding into more than two quadrants simultaneously is unlikely to be sufficiently focused and consequently can be overstretched - resource wise (financial & Human). It must acquire more resources (By raising more outside capital) to take advantage of the perceived opportunities identified and pursued (particularly if the operation is loss-making) or management will need to re-focus on core business to create and capture value and manage growth in a controlled fashion (Doyle, 2008).

In the situation where the major shareholder/manager has directional control of the business (with shareholder support) – as in Food1, Biotech1 and ICT1 then the objective is the creation of shareholder value over the longer term. The major shareholder/manager wishing to create shareholder value and then realise it at some opportune time in the future or use it to fund further expansion and/or diversification. Section 10 of Table 6.8 indicates the exit strategy or other ambitions of the founding entrepreneurs. Biotech1's (18) key informant noting that:

This was meant to be a business that's going to continue after I am gone. So that's my idea'

The founder of ICT1 concludes:

We missed that opportunity but we thought we'd IPO at the end of 2002, maybe 2003.....

To go IPO you really need to be a business of €60-100 million in terms of scale. And we've seen companies in Ireland who IPO'd and who haven't done anything ... So it's something we'll keep in our minds probably to go down that route too because what I've done in the last 4 or 5 years is I've bought a lot of the shares back off the individuals (21)

And the Food1 founder explained his ambitions for starting the business in the first place:

I entered the business to see if I could enter the business. I certainly entered the business as proof of my strong belief that indigenous entrepreneurs are the way forward (22).

Whilst the ambitions of the 'Key informants' in the value creation firms differed in how they saw value ultimately realised - they were united in their pursuit of profitable growth - through focused, differentiated strategies in their respective

global product/market spaces. Bhide (1996) confirming that 'successful [*growth – italics added*] strategies provide clear direction, generate sufficient profits and growth, serve the enterprise in the long term and establish the right growth rate' (Cited in Merson, 2011:32).

6.5.4 The value decreasing firms

When this cohort is compared to the shareholder value adding firms it is noticeable that whilst these firms have similar product/market development strategies per the Ansoff (1957) growth matrix (See: Section 1: Table 6.7), they differ from the value adding cohort in the *focus* of these strategies. Whereas the value adding cohort and Consumer1 were focused on profitable (managed) growth, these technology-based firms were focused on 'scaling up' as rapidly as possible with the objective of extracting shareholder value ultimately from a single temporal event – a 'trade sale' or an IPO. The founding entrepreneurs demonstrating their growth ambitions and horizons by taking on angel and VC (and state investment – see: Chapter eight for further detail) investors and diluting their shareholdings (and their influence over the direction of the firm) in the process (Mason, 2006). Barker (2002) however suggests that '*bootstrapping*' the operation should ideally precede the introduction of sophisticated external shareholders as it clears away the clutter and forces the entrepreneur to prioritise and focus exclusively on developing the customer value proposition (CVP) and the customer base. The rigours of the 'bootstrapping' process forces the founder to prioritise selling and marketing to bring cash back into the business thus establishing the 'commercial imperative' which is a necessary precursor to the 'profitable growth' imperative and also gives the entrepreneur experience in managing the 'cash-to-cash' cycle (Christopher & Peck, 2003). It also

helps test the 'proof of concept' before 'scaling up' is attempted in earnest. Barker (2002) - cited in Merson (2011) - concludes:

.... a lot of entrepreneurs think they need money to build the business faster when they actually haven't figured out the business equation yet (Pg. 35)

Thus the ICT and Biotech firms in this cohort were successful in the first requirement of trying to build competitive advantage - raising finance to help drive growth (O'Gorman, 2006). Figure 6.3 illustrates the spikes in shareholder funds in ICT2, 3, 4, 5 and 6. Biotech2 showing a different trajectory (Increasing shareholder destruction from the start-up on the balance sheet). However the firm has a patent holding subsidiary also – see the details of the Biotech case in Volume 2) and the two firms need to be analysed together to see the true situation. Table 6.8: Sections 4-8 shows the key aspects of the product/market growth strategies of this cohort of firms.

These aspects are contrasted with the 'value creating' cohort to identify differentiating dimensions.

The dimensions considered are: Formal planning processes, Marketing research practice, Patent strategy, Human capital development and internationalisation strategy. However these strategy dimensions are best analysed in the context of subsequent performance of the implemented strategy. O'Gorman (2006) reminding us that the outcome of the strategies pursued reflect on managements *competence* and resource mobilisation abilities. The problem for these firms is not with the strategy development process *per se*. All firms from both cohorts claimed they had formal strategy plans particularly relation to those strategy elements like

Table 6.9: Key aspects of Managements growth strategies - shareholder value creators

Section	ICT6	Biotech2	Consumer1	ICT 2	ICT 3	ICT 4	ICT 5
1. Product/Market Strategy for Survival & Growth*	Market development	Market development	Product/ market development	Product /market development	Product/ market development	Product/ market development	Market development
2. Market focus	B2B	B2B	B2B	B2B	B2B	B2B	B2B
3. Sales/scale (Value creation) or Profitability (value capture) driven?	<p>Sales - 'I think our (initial) focus on profitability was very immature' We were looking at building a market and sales will come'. (13)</p>	<p>Sales - focus was on developing the concept -commercial considerations came later 'build it and they will come (because it is disruptive technological innovation)</p>	<p>Profitability - focus on enhancing shareholder value (14) - target is to double the value of the group every four years - implies growth of 20/25% per year.</p>	<p>Sales - 'When we started, I didn't really know what we were really going to do, and I often say this to people, that if you really want to start something, the best is to start something and then figure out where you want to get to' In fact, we should have been more focused on profitability and we should have been doing far better, but we were very sales focused. That was - that's a minus'. (18)</p>	<p>Sales - initially focus was scale when firm went public - it grew by acquisition but new CEO - in since 2004 has instilled a more commercial imperative on the firm</p>	<p>Sales - 'There was always a hope that the Company would reach a take off point. Yeah there was never an expectation that we would become a big profitable company. So the idea was - we bring in a disruptive technology....' ... Once we had that proven then you would sell it to a big semi-conductor company. Who would love to buy a chunk of business and a new technology' (16)</p>	<p>Sales - 'Absolutely ... did not come into it I should have known and what I did (then) was a matter of fascination for me because coming out of a co. that had to make a profit every year .. having built one .The value was based on some speculative model which has never been given a mathematical formula... (15)</p>
4. Formal planning	<p>Yes - 'we don't have a formal process but it's the two of us I think we have got a much more mature view on what it is we need to do it's about developing and learning'. (14)</p>	<p>Yes -initially not though- founder raised £1m from investment bankers in US without business plan (13)</p>	<p>'We actually have quite a formal process (14)... And we go through this and we cascade that right down to every employee in the company. Now that will take a few months. But everybody knows what's expected from them.....And it's all done by agreement, it's all consensus, we sit down with them and be realistic about</p>	<p>Yes - 'They (customers) came to us and they saw all our processes, they were just blown away. They said, this is a great company. And we put those processes in from day one, but that's because of our engineering background (20)</p>	<p>Yes - 'We sit down in September of every year. Assess how we have done our strategy wise, and where our strategy needs to be for December 18 months away. So that's our horizon ' (27).</p>	<p>Yes 'we typically have a three year plan. And it's been evolved since 2000' (17).</p>	<p>Yes - The firm did formally plan and this was driven from the KI's background and strength in planning. (The firm) had for example a Multi- language approach. They supported multi- languages from the very beginning (16)</p>

what they can achieve and then we also as part of that process look at whether they need training or help in (15) achieving those objectives .

Section	ICT6	Biotech2	Consumer1	ICT 2	ICT 3	ICT 4	ICT 5
5. Marketing research – formal/informal	Informal	Formal	Formal - including trend forecasting and quarterly conference – customers also involved in co-development process (16)	Informal – see comments above under sales (18/19) - 'Yeah, but I teach the reverse, and from time to time I do tell people the real truth, but because we always say, let's do the market research, let's see if there is a market for this, that's the proper way of doing things, 'right? But I feel that sometimes you have to jump in with your feet first, and then you figure out where the opportunity is' (19)	Formal – "it's a process more so than one person. Obviously (the person) who owns our marketing business strategy, her team are the repository for it but sources for it are everywhere'. 'I went and got three or four people outside of (the firm) who were strangers to (the firm) who had travel knowledge that I could validate my own travel knowledge with. They could educate me and help educate my team.' (27)	Informal – 'Yeah once or twice we've paid for market research reports more to give them to our VC's than to read them ourselves – (17)	Formal / 'Bottom – up and some top-down analysis from reports - so we did some reasonably formal research"
6. Innovation policy – technology road map	Yes – 3 year horizon, I view high res, 2 low res. (14)	Yes - see patent portfolio strategy below (14)	Yes - need to compete on technology and design (14) – cannot compete on price 'that's how we will differentiate' There is an open innovation policy in the group (16)	Yes – firm was strong on technology but it was to strong and it needed to be counter-balanced by strong commercial staff – which never happened (20)	Yes – product development has been scaled back since CEO arrived and he has moved to increase production, Componentis-ation, modularity scalability, configuration (17)	Yes – photonics – business model was to design products and sub-contract manufacture (16/17)	Yes – firm had technology road map (16)
7. Patents held	I view it entirely as an IP currency that has value when it comes to negotiations	Yes – founder/ inventor holds 25 patents in US – firm has separate subsidiary patent holding firm. 'The	No – 'it's not a prime motivation'.	Firm held two patents but did not leverage them	4 patents filed around merchandising capabilities. 'We probably don't spend enough time doing it. But	Yes – patent held on core photonics technology	Yes – , they had the opportunity to make a number of patent applications as it grew but the market was moving so quickly that when a

<p>potentially with larger companies and has value for VCs because it's a checkpoint that they're looking for (14)</p>	<p>patenting process is something that is really important. It's extremely important in our business ... I'm selling them patents.... but I have gotten a lot of experience from this company And without that and the way we strategised on setting up our patent.... Portfolio ... We wouldn't be where we are now'. (14)</p>	<p>It's definitely something that we do now that we didn't do in the past (28/29).</p>	<p>company announced a particular capability other competitor companies just copied that even though they did not have the software - they would say it was part of their plans for their platform. Patents therefore were not as valuable in this product /market space as other technology driven areas but still (the firm) made three patent applications (Patents pending) but these were never pursued to full patent. (15/16)</p>	<p>No - If there was a big enough market to sustain that level of employ mint we probably would have..... We never got to that stage actually". Employ ment in pre-acquisition times reached a maximum of 33. (16).</p>
<p>8. Human capital development policy</p>	<p>'You take on the best possible people And you invest heavily in that - timewise'. (14)</p>	<p>Yes - CED acts as coach to senior staff (20). 'We have a really poor output of IT Grads I can't get Irish guys'. (29).</p>	<p>The last few years we've been shrinking and so that combined with not having a very formal hierarchy. Hierarchical structure means there aren't opportunities to move up. So people are pretty much in the roles that they were hired into' (18)</p>	<p>Initially the firm targeted the domestic market in Ireland then the UK and Europe i.e. they looked at the European market as one market. They had to go for a chunk that big because they were targeting very large mobile operators and Banks as the product was an enterprise level platform (16).</p>
<p>9. Internationalisation strategy</p>	<p>US market always the major focus from day 1 - no advantage here the local market is too small (14/15)</p>	<p>Growth markets is China (25).</p>	<p>'If you really want to build an international company (from Ireland), you have to move out fast. We chose to go with Asia because the trend for mobile commerce seemed to be coming from Asia, so we picked Japan and Hong Kong and Singapore and places like that. It was key to win our first customer in Ireland, and we needed the reference.... only two customers in Ireland' (21).</p>	<p>1 think we had a focus on Europe and the US. Certainly Europe, at least European designers would have been, because we need to be designed in. Whatever we are doing we need to be designed in - and so our initial focus we actually had a great relationship with Grundig I remember - before they went bankrupt'. (18)</p>
<p>10. HR Policy</p>	<p>Group has global distribution - focus now is India, China. There is cache to owning European brands in these markets (17/18).</p>	<p>'If you really want to build an international company (from Ireland), you have to move out fast. We chose to go with Asia because the trend for mobile commerce seemed to be coming from Asia, so we picked Japan and Hong Kong and Singapore and places like that. It was key to win our first customer in Ireland, and we needed the reference.... only two customers in Ireland' (21).</p>	<p>Yes - there is a sophisticated HR policy in the group and the HR Director sits on the governing board 'people are very much the focus of the core values of the group' (17)</p>	<p>Group has global distribution - focus now is India, China. There is cache to owning European brands in these markets (17/18).</p>

<p>10. Exit strategy? - IPO or trade sale?</p>	<p>'You're forced to think in those terms when you're dealing with VC's because it's always about what exit are you aiming for.... Particularly in the early days....going public...seemed like an option and (now) the more likely exit is via some sort of trade sale'(15)</p>	<p>'I don't have an exact plan. I don't.... We could go public..... But I am not going to - I don't want to overcomplicate my life. I'll stick to what I do, which is developing. If I make money out of it, that's great. We will make money out of it'(16)</p>	<p>Not relevant as firm is a subsidiary of a European MNC</p>	<p>'... but I think we should probably have focused a little more on the exit strategy because - and that was the learning, the naivety, because if we were taking the company public, then this cap structure wouldn't have mattered because it would have flattened it anyway It only became an issue when an exit was possible through an acquisition (trade sale), so really, upfront, if we thought that, yes, that is a possibility, then we would probably have spent more time worrying about how the capital structure might look like' (21)</p>	<p>Firm is PLC since 2000 (3)</p>	<p>' We have this key bit of technology. And so eventually there was a trade sale, yeah effectively a trade sale. It didn't, it was a satisfactory exit for the VC's - they were very pleased. It didn't make the employees rich - we are all still here, they didn't pass anything on' (17).</p>	<p>The firm's strategy was not geared for an IPO - it was always in the Director's minds that it would perhaps be a trade sale. The Director's realised that once the firm's began to get noticed (technology wise) that they were a potential acquisition target (14).</p>
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Notes to table: * Ansoff's matrix was used to categorise the product/market growth strategy types. Market penetration (Cell 1) describes strategies aimed at existing customer type in existing markets - this is defined as customers in the Irish market only. Market development (Cell 2) refers to marketing existing products or base technology into new markets - Interpreted as international markets here. Product development (Cell 3) is developing new market offerings (Kotler et al., 2009) for existing markets and Cell four is where the firm diversifies from its core product/market business and develops new unrelated offerings to sell to unrelated markets. Given that the small, growing firm has limited resources at their disposal, the strategic choices made by management are crucial (O'Gorman, 2006), particularly in relation to its product/market strategy (North & Smallbone, 1995). A differentiated, focused strategy therefore suggests itself as the only viable strategy for a growth-orientated firm to adapt from a small, open state, particularly in relation to internationalization strategies - irrespective of sectoral focus (Carroll, 1985). A firm expanding into more than two quadrants simultaneously is unlikely to be sufficiently focused and consequently can be overstretched - resource wise (financial & Human). It must acquire more resources (By raising more outside capital) to take advantage of the perceived opportunities identified and pursued (particularly if the operation is loss-making) or management will need to re-focus on core business to create and capture value and manage growth in a controlled fashion (Doyle, 2008).

product/technology protection and development which was within their *control* (See: Table 6. 10 - Sections 4, 6 and 7).

However the entrepreneurial leaders in the value decreasing ICT and Biotech firms do not seem to have been able to develop a clear differentiated, niche product/market strategy for creating sustainable competitive advantage for their technology [See for example: Table 6.9 – Section 5 (ICT2), (ICT3), (ICT4); Section 8 (ICT2); (Biotech2)].

If the firm's objective is the creation of long term shareholder value through *profitable trading* (as in Food1, Biotech1, ICT1 and Consumer1) then the growth strategy must be an active market development strategy (Smallbone *et al.*, 1995) – market-pulled rather than technology/product driven. This has implications for resource allocation as marketing and market resources must be deployed to develop those target markets – particularly international markets - sometimes at the expense of R&D. If on the other hand the growth objective of the firm is clearly a 'Trade sale' or IPO in a short time horizon (3-5 years) then the strategic focus (as articulated in Section 3&9 in Table 6.10(b)) is not the creation of long term shareholder value through *profitable trading* but the creation of 'short-term' shareholder value through *capital appreciation*. This is a clear exit strategy. This approach has implications also for resource allocation as the drive is for 'scaling –up' the organisation to reach MES in readiness for sale. Typically resource allocation is biased in favour of R&D and Human Capital development (head count) and tends not to be driven by the 'profitable growth imperative'. Indeed traction in the marketplace (given the time horizon) is achieved in a number of cases by acquisition (from angel or VC capital

raised) rather than 'active market development' or organic growth – which would take longer (See: Cases: ICT2, ICT3, ICT5, ICT6). However Davidsson *et al.*,(2009); Steffens *et al.*, (2009) remind us that their empirical work in smaller states – Sweden & Australia demonstrates that firms who prioritise profitable development over scale development derive better long term value outcomes for the founding entrepreneur. Clues to the strategic thinking underpinning the strategies of the shareholder value decreasing cohort – which ultimately led to subsequent shareholder destruction (as defined in this study) is evident from the comments of the key informants in Section 3: Table 6.8 highlighted here:

ICT6: I think our (*initial*) focus on profitability was very immature' We were looking at building a market and sales will come (Pg.15)

Biotech2: – (*The*) focus was on developing the concept, commercial considerations came later 'build it and they will come' [*because it is disruptive technological innovation*] (Pg.16)

ICT2: When we started, I didn't really know what we were really going to do, and I often say this to people, that if you really want to start something, the best way is to start something and then figure out where you want to get to. In fact, we should have been more focused on profitability and we should have been doing far better, but we were very sales [*scale*] focused. That was – that's a minus. (Pg.18)

ICT4: There was always a hope that the Company would reach a take-off point. Yeah, there was never an expectation that we would become a big profitable company. So the idea was - we bring in a disruptive technology..... Then it would have made sense to a lot of people that once we had that proven - that you would sell it to a big semiconductor company. (p.17).

From these quotes it is clear that profitability or profitable growth was not a priority for these firms. Even the founding entrepreneur in ICT5 - who had previously led a

successful business and had 'bootstrapped' this operation - seemed to have been engulfed by the hubris of the times -the 'dot.com' era and the aggressive growth ambitions of his external shareholders. He reflected ruefully:

... profitability did not come into it ... I should have known and what I did (*then*) was a matter of fascination for me because coming out of a company that had to make a profit every year ... having built one..... The value (*in this business*) was based on some speculative model which has never been given a mathematical formula... (p. 15).

6.5.5 Differentiating strategic factors – Performing v non-performing firms

What seems then to differentiate the shareholder value creators then from the value decreasers in this study is the greater clarity in the product/market strategy's of the value creators - particularly the differentiated focus of the market-driven value propositions. The founding entrepreneurs of the value decreasers – (ICT2, 4, 5 and 6) all came from technical or IT backgrounds and had little or no direct sales/marketing functional experience. Having raised funding from experienced external investors (See Figure 6.3) - and committed to aggressive growth targets – despite the fact that they appeared not to have crystallised their value propositions nor deployed their marketing or market assets. These entrepreneurs found themselves under pressure as agreed revenue targets (under-pining the business growth plan) were missed and organisation growth needed to be funded from the externally raised capital. It is inevitable that when further follow-on funding rounds were required (due to the rate of 'cash burn' in the business and probably before it was initially planned) that the external shareholders would take the opportunity to force leadership change to try and boost or re-energise the firms revenue generation performance.

The downward employment decreases seen in ICT2,3, 5 and6 (Figure 6.3) during the analysis period indicating the extent of the 'scaling' focus in the growth strategy and the extent to which the growth strategy deviated from plan – forcing the need for the employment correction.

These corrections were made in a number of cases before or in tandem with changes in leadership and strategy direction (See: Table 6.9(b) for further details). One of the value creating entrepreneurs noting:

..... I really wasn't interested in taking any investors until I had some sense what the company was worth. Taking early investment is not wise unless you really need the money (Pg. 11).

Thus the growth strategies for the ICT and Biotech firm were heavily influenced by the external shareholders requirements to get above the MES (however quantified) as soon as possible. Gompers & Lerner (2001) noting that venture funding is a high-risk game but that the risks for the investor are not mitigated at the level of the firm (as for the entrepreneur) but at the level of the portfolio – this allows them to seek aggressive scale growth. VC's applying the 4:3:3 rule to spread their risk (Mohr *et al.*, 2009). These investors therefore have more aggressive growth targets and a shorter time horizon than individual entrepreneurs and thus the objectives of the funder and funded are not always congruent. When growth targets are not met it is almost inevitable that conflict will arise due to the divergent objectives of the entrepreneur and the investor (Merson, 2011). Indeed quotes from the key informants on the exit strategies of the firms in this cohort give real insight into (in hindsight) the uneasy

relationship between portfolio investors (VC's) and the founding entrepreneurs and the divergent motivations and objectives of both parties.

ICT6: You're forced to think in those terms when you're dealing with VC's because it's always about what exit that you are aiming for.... Particularly in the early days....going public... seemed like an option And (*now*) the more likely exit is via some sort of trade sale (15)

ICT2: ... but I think we should probably have focused a little more on the exit strategy because – and that was the learning, the naivety, because if we were taking the company public, then this cap structure wouldn't have mattered because it would have flattened it anyway It only became an issue when an exit was possible through an acquisition [*trade sale*], so really, upfront, if we thought that, yes, that is a possibility, then we would probably have spent more time worrying about how the capital structure might look like (21)

6.5.6 Funding the growth strategy

Mulcahy (2005) observing that in growth orientated NTBF's, fundraising and capital structure is a strategic management task that requires the same level of attention as growing revenues. Making a small technology firm 'investor ready' requires planning, foresight and experience. Unfortunately both the technology sector and the VC industry in Ireland are relatively young and the fundraising activities of the case firms ICT2,3,4,5, 6 (See: Figure 6.3) show that the combination of 'commercially unfocused' entrepreneurs and 'easy or premature' rather than 'smart' money provided by a domestic VC industry 'in its infancy' (*ibid*:194) - subsidised by the state (Enterprise Ireland Seed and Growth fund report, 2010) - is not a robust strategy for growth. Cullinan, the Chairperson of the Irish Software Association, in the Foreword to Mulcahy (2005b) highlighted the barriers to growth and the requirements for successful commercialisation of NTBF's in Ireland when she concluded:

The combination of these factors [*Challenges of being based in Ireland and having a young VC industry – author added*] require world class, execution focused, entrepreneurial skills in order to build a successful technology company of scale in Ireland (Pg. xiii).

Mayer and Ottaviano (2007) substantiate the above observation when they note that successful internationally growing firms are rare in Europe. When the difficulties of trading from a smaller state on the periphery of Europe is factored in - then it is the truly exceptional or, at least, the serendipitous firm which are likely to grow profitably through internationalisation from the smaller state.

The next section 6.6 looks at the environmental influences on case firm growth. This is important to investigate as small firms must adapt to their environment as they do not have the scale or resources to influence their environment. Increasingly a growing firms environment is 'unknowable and unpredictable' with open-ended change (Stacey, 1990) and this market, technology and competitive uncertainty makes the environment particularly volatile for NTBF's.

6.6. Environmental influences

Smaller firms need to adapt to their environment (Welsh & White, 1984) due to their limited resource base and uncertain external environment. In smaller states this need is even more acute. NTBF's are cases in point - given the combinations of market, technological and competitive uncertainty that they face (Mohr et al., 2010). The marketing competence of the entrepreneur or the broader leadership team (Lybaert, 1998) can therefore be a key discriminator between survival and failure as marketing is the firm's strategy interface with its environment (Stokes, 2000, 2006).

6.6.1 Sector importance

Sectoral variations can be expected to play a role in the growth rates of individual firms given the varying competitive and market growth rates in each product/market sector and sub-sector. Although Storey & Greene (2010) maintain that the empirical evidence of the impact of sector membership on firm growth is, as yet, unclear. Smallbone *et al.* (1995:60) however noting that 'It is the sector which defines the factor and technology choices' but they caution that high growth can be achieved by firms with a variety of size, sector and age characteristics. In this study growth was achieved by firms in the Food, ICT and Biotech sectors. Conversely firms in the ICT, Biotech and Consumer sectors decreased shareholder value (Table 6.11). Henrekson & Johansson (2009) note that it cannot be assumed that high growth firms will necessarily emanate from technology-driven sectors given the dynamic and uncertain environment (See also: Mohr *et al.*, 2010). Indeed these authors note that high growth firms are not overrepresented in technology sectors but appear to be in services. Bessant *et al.*, (2005) also acknowledge that much work remains to be done in researching this area but that barriers to firm growth identified in their research are more of a 'commercial' than 'technological' nature and thus intervention programmes may be predicated on questionable premises. Thus Section one, Table 6.10 shows that the broad sectoral breakdown that the firm belongs to does not distinguish between the shareholder value creators and decreasers in this cross case analysis *per se*.

6.6.2 Competition, Market and Industry factors

Table 6.10 - Sections 2-6 highlights the specific competitive, market and industry situation faced by the each of the case firms. As discussed in Section 6.4 and 6.5 of this chapter the cohort of cases firms are, without exception categorized as SMEs per the EU categorization. Despite the growth of the shareholder value increasers, none of the cohort moved from the SME categorisation by the end of the eight year analysis period. The EU categorisation terminates at 250 employees, Balance sheet total of €43m or Turnover of €50m (Eurostat, 2012). The highest turnover reached by the case firms was by ICT1 at €25m in year eight of the analysis period. Whilst firm performance (Section 6.2 of this chapter) is influenced by internal factors, it is also influenced by external environmental factors such as the competitive, market and industry situations faced (Demand conditions – Table 6.10 (Porter, 1980, 1985, 1990; McGahan, 2004; Johnson & Scholes, 2004) and the supply side factors (Host country characteristics – Table 6.11). In terms of the competitive situation facing the cohort of firms it can be seen that, as niche players, they all face varying levels of competitive intensity. However seven out of ten acknowledge that they face direct multinational (MNC) competition whether it is ICT, Biotech, Food or consumer sectors Food1, Biotech1, ICT1, (SVC) and ICT3, ICT4, Consumer1 and Biotech2 - all shareholder value decreasers, indicating that the markets for each of the products has formed and is moving, at varying speeds (See: Volume 2 case analyses for details) towards maturity. The remaining three firms (ICT6, ICT2 and ICT5) state that their competitors are SMEs or larger regional competitors indicating the niche nature of the market opportunities.

O’Gorman (2001) notes that firm growth may also emanate from growth in the served market itself - the ‘all boats rising’ effect. The shareholder value creators all

experienced market growth in their targeted markets during the analysis period. The three value creators addressable markets all growing for different reasons. Food1 for example was due to changing consumer tastes in the US market and the attraction of a younger demographic, causing likely supply shortages within the industry in the short term. Food1 had invested in laying down stock for maturity and this looks like a wise decision, in hindsight – the Key Informant attributing this not to strategic foresight but serendipity (Hill & Jones, 2009:104; Storey & Greene, 2010). Biotech1's target markets were sectorally diversified but were all in manufacturing industries supplying into the global food & drinks markets. The trend is for increasing requirements of higher quality food particularly in the developing world – higher quality proteins in particular (Bord Bia, 2012) and demand for the firms test equipment is rising on the back of this trend. ICT1 supplies into the global financial services industry which is moving increasingly towards an outsource model for IT software development. The firm is poised to benefit from this trend and it now has a global footprint to take advantage of diverse geographic opportunities.

Thus the market growth opportunities arose in differing ways for the case firms but each firm still needs to choose where and how to compete and then implement an appropriate strategy to capitalize on the identified opportunities (O'Gorman, 2001).

Table 6.10: Sections 1-6 outline the competitive, market and industry conditions faced by each case firm. It is noticeable that the US market is seen as the major priority target market of all the shareholder value creators (Food1, Biotech1 & ICT1). In the shareholder value decreasing firms, the US market is the primary focus of two of the seven firms (ICT6 & Biotech2). China is the major focus of two (ICT4 & ICT3)

Table 6.10: Environmental influences (Demand related) on firm growth

Cases	Food1	Biotech1	ICT1	ICT6	ICT2	ICT3	ICT4	ICT5	Consumer1	Biotech2
1. Industry Sector - UK SIC code	1591(3)	7310 (3)	7222 (3)	7221(3)	7200 (3)	7221 (3)	9305 (3)	7200 (3)	2630 (3)	2441 (3)
2. Competitive situation*	MNC's (European x2)	MNC (European x1)	US Software Corporations- LSF's**	UK Software corporation - LSF's	US Software Corporations - LSF's	MNC's - Mainly US	MNC x 1	Global competition - Large Software Corporations - 7 (US/Asia), 3 (European)	MNC's and Chinese Corporations	MNC's (US/European)
3. Sources of Competitive advantage	Quality, Product availability	Innovative Technology	Quality, Customer Responsiveness	Innovative Technology	Innovative Technology	Customer Responsiveness	Innovative technology	Innovative Technology	Product design/manufacturing efficiency	Innovative technology
4. Industry Evolution	Growing - Increasing US demand - target market 25-35 demograph ic/45% female(24)	Growing - depends on wine, feed, dairy, food industry growth (3)	Growing - insurance/financial services industry increasingly outsourcing IT software development (19)	Growing - Gaming industry	Dependent on demand in the global Mobile telecoms operator industry but niche, not mass market potential	Dependent on demand in the Airline and travel industry	Dependent on demand in fixed line telecommunications industry evolution	Dependent on demand in the global mobile operator and bank industry	Dependent on demand in the global construction/refurbishment industry	Dependent on growth in the non invasive surgery industry evolution (18)
5. Markets served in order of importance	US, Europe, Asia	US, UK, EU, Australasia,	US, Europe, Asia pacific	US, Europe, Japan (16)	US (40%), ROW (60%)	Global - but China is major growth market	China is major growth market	Germany	UK, Ireland	US, Europe, Asia
6. Key Customer dependence	Customers spread over three continents	Customers spread over three continents	Customers spread over three continents	Customers in Us, Europe and Japan	Global business	Global business	China	Germany	UK	Dependent on global distributor

Notes: * The European Union firm size categorization is used to categorise SME's and Large scale firms (LSF) - SME has less than 250 employees, LSF's are above this threshold. Numbers in parenthesis indicate the reference page in the individual case studies in Volume 2 of this study. ** LSF's are large scale firms.

6.11: Environmental influences (Supply side)-Ireland as a home base

Cases	Food1	Biotech1	ICT1	ICT6	ICT2	ICT3	ICT4	ICT5	Consumer1	Biotech2
1. Ireland as home base	Product must be manufactured in Ireland to be authentic (24)	Time zone benefit for major markets (20)	'In our SWOT - we have location as one of the weaknesses' (20), (23)	'... The advantage is more in the employment side than any other aspect'. (17)	'Personally I feel the best place on earth to set-up a company is the US because it's a homogenous market, it's a huge market....' (22) '... One of the big things going for Ireland, I think, is the support infrastructure'. EI overseas network (22)/(23)	'... I'm not sure being based in Ireland is a huge advantage'. (29) '... I think we have a really poor output of IT grads... There are so few of them'. 'Where Ireland has an advantage is culturally We are actually quite good communicators'. (30)	'... When you look at a set of (our) accounts. The big one is salaries.' (19) 'Being English speaking is good, being well connected is good... I think Irish people travel well...'. (20)	'It is not a disadvantage from a cost point of view but from an investment point of view. Our competitors were working with far more investment monies American VC's were typically putting over \$100m into companies like us ... we raised funds of a total of €7.2m...'. (17).	'Doing business in Ireland in the last couple of years has been difficult' (19)	'Ireland has, in terms of a workforce, what the firm needs, the more advanced stuff, it exists here'. (18). 'I wish we had more direct flights to places like Hamburg. We don't have direct flights all over Europe But other than that, it's a fine location'. (19).
2. Input costs	80% grain, labour & energy costs and environmental compliance costs (24)	EU Compliance costs are major gripe - also council rates payable for business (19)	Firm HQ in downtown Dublin - expensive leases, rates, people. '...Not a cheap country to do business in' (23)	Early days - ISDN line costs before broadband availability 'it was a real bugbear for us...' (16) '... same sort of person with same skill set in the States would have cost us twice what we were paying here' (16).	Hiring staff for software development in Ireland - firm set-up software development house in Sri Lanka to offset costs (22).	IT graduate recruitment a problem despite high unemployment - cost base has become relatively much higher post Celtic tiger period (29)	'... it certainly means that we can't think of manufacturing here ...'. (19) 'So the basic fact that salaries in Ireland cost so much - which is because living in Ireland costs so much'. (19)	Regulatory Compliance costs are too high (19)	'... Because I am dealing with high end guys, Now maybe we pay a bit more here, but it wouldn't be a disincentive or incentive for me to go anywhere else'. (18)	
3. Domestic market importance to business	None	None	Small	None	Small	Some	None	Small	Small	None
4. E-business capabilities	Website - for promotional purposes On Facebook, Twitter - important for	Website - Can purchase from site, 98% of orders and payment through	Website - Promotional	Website - '... everything we did in terms of our infrastructure has been as	Website subsumed into acquirers web presence	PLC Website	Website now part of acquiring groups web presence	Now part of Group Website	Group website and e-commerce strategy to transact business on line	Website - supported financially by EI (19)

	target demographic	internet (20)	much online as possible, customer relationship management, billing... (17).	1,155,000	635,000	698,000	700,000	640,000	with customers (21)	820,000
5. Public Venture Capital*	1,270,000	650,000	2,255,000	681,000	1,155,000	635,000	698,000	700,000	640,000	820,000

Notes: * The contribution of the Public venture capital variable is dealt with in chapter 8.

with various markets in Europe the focus of ICT5 and Consumer 1. Sixty percent of ICT2's business was in the Rest of the World – but primarily in Asia with forty percent in US – mainly through their acquisition of a US firm (Table 6.10).

6.7. Summary and Conclusions

This chapter investigates growth-orientated firm performance in the ten case firms in this study. The performance measure is shareholder value creation - after an eight year analysis period. Firms' with a positive return on invested capital (ROIC) after that period – achieved through *profitable* trading growth - were grouped in the value creating cohort. Three firms in the study (Food1, Biotech1 and ICT1 – See: Figure 6.2 & Table 6.5) qualified for inclusion in this group. The remaining seven cases all decreased - to varying degrees - shareholder value over the eight year analysis period through unprofitable trading – any shareholder growth was due to capital injections only. These were (ICT2, 3, 4, 5, 6, Biotech2 and Consumer1 – See: Figure 6.3 & Table 6.4) and they were grouped into the Shareholder Value decreasing cohort.

This chapter then analyses the possible determinants of and influences on firm shareholder value creation/destruction in these case firms (See: Volume 2 of this study for individual case firm profiles) utilizing a framework developed by Storey (1994) and Smallbone & Wyr (2006, 2012). It highlights those factors which differentiate, to some degree, between the shareholder value creators and the Shareholder value decreasing firms. Table 6.12 summarises the variables considered and highlights those which differentiate between the shareholder value adding firms and those who have decreased value. The cross-case analysis thus differentiates between the value creating/decreasing firms along a number of dimensions

highlighted in Table 6.12. Shareholder value creators were those case firms who returned a profit on shareholder investment by the end of the eight year analysis period through *profitable* trading (Table 6.5; Figure 6.2).

Table 6.12: Summary of differentiating factors – Shareholder Value Creation and Value Decreases

VARIABLE GROUPS	Characteristics of Entrepreneur	Characteristics of firm	Management strategies	Environmental influences
Chapter Sections	6.3	6.4	6.5	6.6
Influencing variables considered	First business, Gender, Age, Nationality, Motivation, Previous business experience, Portfolio, Family history, outside advisors, Business networking, Education, Number of founders, Learning ability, Leadership style Table: 6.6	Age, legal form, Size, Location. Table: 6.7	Strategy for growth, sales or profitability focus, Formal planning, Market research, Innovation policy, Patents held, Human capital development policy, Internationalisation strategy, Exit strategy – IPO/Trade sale Table: 6.8 & 6.9	Sector, Industry evolution, Competitive situation, Input costs, Geographic markets served, Domestic market importance, Market or customer dependence, E-business usage, Home location, Table: 6.10, 6.11
Shareholder Value Creators: : Food1, Biotech1, ICT1				
Differentiating variables	Growth motivation & Leadership style (Linked to Strategy) Financial Bootstrapping experience	Legal form (at end of analysis period): independent v Acquired by other firm Firm Age: (8.1 Shareholder Value creators v 3.5 Shareholder value decrease)	Growth Strategy: differentiated focus (Niche) – Profitable growth imperative (Creators) v Scale (Decreasers)	Market growth - but Shareholder value Creators proactively seized opportunity to create value through market-pulled strategy. Sector
Shareholder Value Decreasers: ICT2,3,4,5,6* Consumer1, Biotech2				

Notes: *ICT 6 had accumulated losses of €4.95m over the 8 year analysis period but was sold in year 7 for €110m to the investment fund of a Global corporation for a value of over 10 times turnover in year seven of the analysis period. It had destroyed original shareholder value to that point but realised significant value to them by the trade sale.

This profit arose as a consequence of the firms' successful product/market strategies which were differentiated, niche strategies. They combine market development and product development strategies - per Ansoff's matrix (1957). These firms also executed on their strategy with a 'profitable growth' or 'commercial' imperative – the entrepreneurs having had previous commercial experience and all having 'bootstrapped' previous ventures. Each of the firms had management control of the strategy as two were privately owned and one was a non-quoted PLC. Although from different sectors, the Shareholder value creating firms operated in markets which experienced growth for differing reasons over the analysis period. Thus it was a combination of internal factors (Strategic Choice – where and how to compete) and external market and sectoral factors that influenced the firms growth performance.

Shareholder value decreasing case firms on the other hand came primarily from the ICT (5), Biotech (1) and Consumer (1) sectors and were younger on average than the value decreasing firms above (8.1 years v 3.5 years). The consumer products firm decreased shareholder value primarily due to the severe downturn in the construction sector. The remaining firms were from technology-driven sectors with each receiving early stage external funding. A common feature of these firms is that the external funding raised by them appears to have been *prematurely* taken on board - it was provided and accepted before the customer value proposition had been fully developed. Thus control of strategy direction was 'ceded' early in the growth process and was being driven increasingly by the external shareholders, once

projected performance failed to meet expectations (See: Table 6.6; Figure 6.3). Allied to this is the apparent lack of international customer-facing and commercial experience within the leadership teams. By the end of the eight year analysis period only one firm remained independent, two were taken over by US corporations, one by a UK corporation, one by a European corporation, one by an Asian corporation and one became a PLC. Value realization for shareholders in a majority of these firms therefore happened not only outside the original firm ownership structure but in five of the seven cases - also outside the state.

This chapter has investigated the determinants of and influences on growth-orientated indigenous firms in Ireland. It has highlighted the differentiating factors between those firms who increased shareholder value through profitable trading and those firms decreasing shareholder value. A combination of Factors – internal and external to the firm were found to be influential in subsequent firm performance (See: Table 6.12). Market growth was an important factor as ‘all boats can rise’ when growth occurs. Sector was also important as shareholder value creators came from the FOOD/ICT/Biotech sectors whereas bar Consumer (1), the remaining firms came from the technology sectors – ICT (5) and Biotech (1). Government support – financial and otherwise – may also be important and this will be considered separately in Chapter eight.

However what appears to be the biggest differentiator to firm performance (as defined in this study) is the product/market strategy adopted by the firms founding entrepreneur. There are a number of differentiating dimensions to this between the two cohorts captured in Table 6.12. The shareholder value creators were led by

'commercially' experienced entrepreneurs, with previous experience of financially 'bootstrapping' operations. These firms were on profitable growth trajectories at the outset of the analysis period. The shareholder value decreasing firms – bar one – had no 'bootstrapping' experience and limited frontline 'commercial' experience. The shareholder value creators also 'owned' the product/market strategy of the firm which was a differentiated, niche/focus strategy. They had all developed a clear competitive advantage. The shareholder value creators were not answerable to external (VC or Angel or state) shareholders who might unduly influence strategy. The shareholder value decreasing firms were beholden to such external investor forces. The value creators had a 'profitable growth' imperative derived from their previous bootstrapping experience - the value decreasing firms were scale-driven due to the portfolio agenda of the external shareholders.

It can be concluded therefore that whilst all growth-orientated SMEs, particularly in technology- driven sectors, face unknowable, unpredictable and open-ended change in their environment, the major internal differentiator between the shareholder value creators and shareholder value decreasing firms in this cross-case analysis chapter centers on the leadership team's ability to cope with, to predict, to comprehend, to deal with diversity in, and to respond quickly to changes in their firm environments to create sustainable competitive advantage.

Chapter 7

The barriers to growth performance in indigenous firms in a small late developing state – a cross-case analysis

This chapter follows on from the previous chapter and investigates the barriers to growth performance – real and perceived – in the case firms in the study. Barriers to firm growth are broadly subsumed under the two rubrics in the literature – internal firm related factors (Entrepreneur/firm/strategy) and external (Environmental) factors (Bessant *et al.*, 2005; Smallbone & Wyer, 2006, 2012; O’Gorman, 2006, 2012).

7.1 The growth experience

Table 7.1 shows that the Shareholder Value Creating firms (Food1, Biotech1 and ICT1) have all created, to some degree, shareholder value over the eight year analysis period by *profitably* growing their businesses.

When asked about the performance of their firms, the Key informants (KI) in the shareholder value creating firms – all attributed the profitable performance of their respective firms to a variety of differing factors. This accords with the literature in the area which suggests that measuring *success* is inherently difficult as it depends on the personal objectives of the owner(s) and is therefore highly subjective. However studies on the strategies of small firms, typically measure success in objective terms – using market, competitive or financial metrics (O’Gorman, 2012:394).

The KI in Food1 for example, noted that in his view, his growth ambitions for the firm have been retarded by a lack of good distributors for his product – the best performing having already been taken up by his Multinational competition. It is a

growth barrier that he cannot – due to lack of resources – surmount. He is also a director of thirty two other firms and so can be regarded as a ‘portfolio entrepreneur’ with a clear profitable growth imperative. Biotech1 on the other hand is a smaller firm than Food1 and this reflects the growth ambitions of its founder who notes that ‘he is not a businessman but a scientist in business’. It is, in his view, the development of his technology that drives him personally and by extension the business. His expectations of growth for his business have, in his estimation, been met and he will continue to conservatively grow the business in the incremental fashion which he has done to date. Finally the KI in ICT1 is, like Food1 more ambitious for his firm to grow and maximise shareholder value than the KI in Biotech1. He indicates (Table 7.1) that he originally intended to IPO but missed the market due to losing two major contracts and incurring losses (for the first time in the firms’ history). He notes that, in his opinion, if he were to IPO he would need to have turnover of between €40-60m. At the end of the analysis period in this study he was at just over sixty per cent of the minimum figure but it is important to note that the firm is being *managed* for growth of 20-25 per cent per anum.

Three firms - three different sectors, managed by three very different entrepreneurs from very different backgrounds and with differing growth ambitions for their businesses. What unites them is their collective ability to develop *profitable* growth strategies which created sustainable competitive advantage and profitability – despite the barriers or constraints – external and internal encountered along the way.

7.1.1 Growth experience of the Shareholder value decreasing firms

The growth aspirations of the entrepreneurs behind the shareholder decreasing firms are as varied as the shareholder value creating firms. However in most cases, growth - profitable or otherwise was not achieved - particularly in the technology-driven sectors. The unfulfilled aspirations are probably best exemplified by the following direct quotes or summaries of same from the KI's and their answers to the question as to whether the business had performed as planned;

ICT4: No- Firm is still in start-up mode after ten years – 'It has been a money sink to be honest'

ICT5: No – the firm did not reach its growth objective and was sold to a US corporation in year 4.

ICT3: No – The firm raised significant funds in flotation (IPO) but has not reached sustained profitability yet after twelve years.

Biotech1: 'I would have expected maybe to have grown a lot faster'

ICT2: The firm holds the record for raising outside equity funds in one funding round for the Irish software industry start-up at €15m but was eventually sold to a UK firm after sustained losses for an undisclosed sum

ICT6: The firm scaled as originally expected in its original market space – by acquisition and organically but revenue generation disappointed.

Consumer1: The Firm had to cease manufacturing due to contraction in construction sector in the British Isles

Apart from ICT6 - the growth expectations of the case firms above were not met.

Five of the firms are from the ICT, one from Biotech and one from the Consumer goods sector. Consumer1's contraction was due to a severe market downturn but the group behind the firm is a strong European group and so the firm will survive in distribution form until the economy improves when manufacturing may re-

commence. Production costs, regulatory costs and competitive practices on the home market were cited as barriers to growth by the consumer goods firm. Biotech2 is a medical device firm with patented technology, regarded as disruptive technology – growth has been slower than expected (Table 7.1) but shareholders have been patient despite the poor commercial results (See: Chapter 6 - Figure 6.3) so far. €15m in investment has been raised from three shareholders over the analysis period. However the survival of the firm – as an independent commercial entity - depends on continued shareholder support going forward as the entity is not self-funding.

The remaining firms are all in the ICT sectors and all these firms raised outside venture capital to help fund growth. Without exception, the ensuing strategies have not generated profitable growth. The KI in each firm was asked about the perceived barriers to growth (Table 7.2). Only one firm ICT5 indicated that they had not raised enough external funds to help fund growth. All others raised adequate funding with ICT2 raising €15m in one tranche, ICT3 securing €56m in flotation for acquisitions and ICT4 raising €9.6m and €5m in two funding rounds. Finally ICT6 obtained early VC funding shortly after set-up (Table 7.3 - Section 1.2).

Table 7.1: Firm growth experience*

Cases	Food1	Biotech1	ICT1	ICT6	ICT 2	ICT 3	ICT 4	ICT 5	Cons1	Biotech2
1. Has firm performed as planned over the eight year analysis period?	Scale driven – to get above MES – Lack of Distribution retarding growth expectations	Growth imperative per se is not driver – Technology development is. – expectations of entrepreneur met	Firm was on a high growth trajectory to year 6 – lost large contracts, suffered losses but recovered to continue growth	Grew as originally expected in original market space – by acquisition and organically	Firm grew by acquisition and organically, raised significant external funding but did not reach revenue targets	No – raised significant funds in flotation but has not reached sustained profitability	No- Firm still in start-up mode after ten years 'it has been a money sink to be honest'.	No – firm did not reach its growth objectives and was sold to US firm in year 4	Firm had to cease manufacturing due to contraction in the construction industry	'I would have expected maybe to have grown a lot faster' – key informant
2. Were there missed opportunities to grow?	Finding good international distributors and having finance to support them	Working on research projects with Universities – getting reasonable IP arrangements – variability per university – and country – lack of commercial orientation	Plan originally was to IPO – missed market and now managing business for growth. Firm lost two major contracts (unexpectedly) in year 6 resulting in losses (for first time) but recovered	Should have focused on market quicker – too much time building product	International sales effort not focused enough and sales resources spread to thinly – trade sale of firm also lost during period.	Demand downturns and expensive acquisitions were costly to firm	Firm made wrong strategic move in the marketplace and lost two years market development time	Firm claims basic cost of production is out of kilter with other European firms in their group due to input and regulatory costs – and anti-competitive practices on the domestic market in project business		

Notes to table: * The KI's in each case were asked the two questions analysed above. These questions provide the context for the perceived barriers to growth articulated by the KI's and captured in Tables 7.2 and 7.3.

7.2. Barriers to firm growth

The barriers to small firm growth can be subsumed under the rubrics of internal factors (owner- management and resource - acquisition related) and external factors (Rapidly changing environment, Industry structure, competition and market limitations – See: Chapter 2, Table 2.3). These factors will be analysed in the next two sections 7.4 and 7.5. when assessing their relative importance as growth inhibitors on the development of indigenous firms in the small, open state.

7.3. Internal barriers to growth

The KI in Food1 identified finance (Section 1.2, Table 7.3) as his major resource constraint. This is holding back his ability to find and support new international distributors. He advocates setting up an export credit insurance scheme and an SME bank to support internationally growth orientated firms and help surmount the ‘funding for growth’ issue. The KI in Biotech1 states that he intends his firm to continue on its growth trajectory by adding to its core competencies in genetic engineering and molecular biology. The firm is now well funded and generating internal funds to fund growth and the KI has lost some opportunities for growth trying to licence technology from Universities and he bemoans the lack of the ‘commercial imperative’ not only in Irish universities but also in Australian ones too. ICT1 intends to continue its growth trajectory by ‘productising and ‘regionalising’ (employing local staff) as the firm grows. The entrepreneur has repurchased shares from staff members and VC’s and now has overall control of the firm. The firm is profitable and generating internal funds for growth (Figure 6.2). Like Biotech1, ICT1 had difficulty recruiting experienced staff during the boom (pre-2008) when they

found it difficult to compete with the MNC's and the large corporates. This has abated now and recruitment is no longer a blockage on growth. The KI in ICT1 finally noted that the small domestic market and raising finance were still challenges for him. Overall, whilst the barriers or blockages identified for this cohort were significant nevertheless the leaders managed to overcome them and drive profitable growth.

7.3.1 The Shareholder Value decreasing firms

Having raised the requisite funding for their growth strategies – what barriers did the KI's in the shareholder value decreasing firms encounter in implementing their growth strategies? One issue common to ICT6 and ICT2 was their inability to recruit high quality sales staff in US and Japan (ICT6) and ICT2 (Worldwide). ICT3 also had problems with US staff whilst ICT4 and ICT5 did not gain traction either on the sales side. This highlights a problem for small overseas firm trying to recruit quality staff (market assets) in markets such as US and Japan. If an experienced sales person is successful in their home country – it is unlikely that they would leave a successful career for an unknown foreign start-up unless the offer or opportunity is exceptional. This is an issue not unique to Irish internationalising firms but is a particular problem for small firms from small states trying to gain sales traction in overseas markets – under time pressure from outside investors. Another strategy adopted by NTBF's to break into markets is to acquire smaller firms – this was a strategy adopted by ICT6 and ICT2. They used the money raised in funding rounds to fund these acquisitions. Both of these acquisitions gained the respective firms access to the US market. Indeed it was a strategy used by ICT3 also with the funds raised in flotation.

The KI in ICT6 notes:

The amount of the initial finance that we raised - we spent on interesting things. I think of the first amount of cash that we raised - I'd say we spent about 85 per cent of it on buying this new company and doing one trade show in the States. Building that initial momentum and appearance of US-ness, to the detriment of paying salaries and all the other things, which was tricky for the first year or so, but that, I think, was instrumental, and we got really lucky with our brand [*which was perceived as US – author added*] (ICT6 Case: p. 22).

Timing is also important and ICT6 indicated in Section 1.1 Table 7.4 that they did not commit to the US market quickly enough. ICT2 attacked too many markets simultaneously - ICT5 sold direct as did ICT4. Smallbone *et al.* (1995) re-iterate that the product/market strategy is *key* and that 'active' strategies differentiate – i.e. proactive strategies differentiate between growers and non-growers. It is clear that none of the ICT's product/market strategies of the Shareholder value decreasing firms lived up to *ex ante* expectations. Whilst the founding entrepreneurs came exclusively from technology backgrounds, they appear to have had little or no experience (except ICT5) of commercialisation (Adams *et al.*, 2005) and/or international marketing (Ibeh, 2006). These value creation processes are critical and need to be managed as assiduously as other facets of the business. Adams *et al.* (2005) noting that even in the literature on innovation management – that commercialisation is the least developed in terms of research focus yet 'innovation' as a value creation process fails if it is not successfully commercialised. The lack of traction in the marketplace then may be substantially attributed to the entrepreneur(s) lack of sales/marketing experience and a lack of experience in accessing and making appropriate acquisitions. Bessant *et al.* (2005) argue that the

barriers to firm growth appear to be more of a *commercial* than a technological nature. The inability to attract high quality customer-facing staff demonstrates the inability of the founding entrepreneurs to form, develop and 'balance' their management team with staff from differing functional backgrounds but particularly high-level experienced sales/marketing staff (Marlow, 2006; Smallbone & Wyer, 2006, 2012). The KI in ICT2 raised €15m in a single round of funding and yet even he noted:

Recruitment was never an issue apart from getting the right sales guy, do you know?
Good sales leadership (ICT2 Case: p. 27).

Thus, in most of the shareholder value decreasing firms acquiring financial resources appears to have been successful. All raised funding in the marketplace and the state to help fund the strategies for growth. Unfortunately none of the technology based firms in the cohort managed to create a sustainable competitive advantage – as evidenced by the collective lack of profitability. External factors will be considered next but the analysis of the internal factors indicates that the most significant internal barriers to growth appears to be the lack of 'commercialisation' skills and the absence of prior 'bootstrapping' experience in the top management teams. This might be expected given the technical backgrounds of all the firms' founders. However it may also point to substandard levels of absorptive capacity in the management teams. This deficiency in environmental scanning and diagnostic skills is consistent with the findings of earlier studies of indigenous firms by Arnold *et al.* (2004) and Forfas (2005).

Table 7.2: Internal firm barriers to growth*

Cases	Food1	Biotech1	ICT1	ICT6	ICT2	ICT3	ICT4	ICT5	Cons1	Biotech2
1. Constraints on growth? - Internal Owner – manager related and resource acquisitive										
1.1 Growth Strategy	Drive to get above MES – deliberate strategy – volume driven to get above break-even	Strategy is to add new core capabilities such as genetic engineering and molecular biology – deliberate strategy	Process of productising and regionalising (localising – local staff) as firm grows – deliberate to year 6 (See: Figure 6.3) and then emergent following losses and then deliberate again	Strategy was to grow in game space and then expand to other market segments like animation/film etc.	Strategy was to grow organically and by acquisition to IPO or trade sale – strategy not focused enough – vision not clearly defined and too ambitious	Firm's value proposition has been productised and is now scalable for delivery to differing customer segments – there was bespoke design per customer	Firm has never found a way of getting volume product into the market.	Growth strategy influenced by the VC's was too aggressive – founder would have grown more conservatively and sought earlier profitability	Firm has scaled back on manufacturing due to lack of demand – focuses now on sales and distribution of its parent groups products	Firm has target early adopters of their technology – they will then try to sell to the early majority in the market
1.2 Obtaining finance	Constant problem – personal guarantees in place even at end of analysis period – collateral based lending a problem. Funding for international business a problem. Export credit scheme needed. Specialised bank required for	Firm has been conservatively managed from start – debt avoidance where possible, profits retained and proportion on fixed deposit –has Finance Director, has significant fixed assets (collateral) and therefore seen as financially low risk	Firm bootstrapped originally – raised significant VC and state support over growth period – founder bought back shares from investors	Firm managed to bring in requisite external funding	Firm holds record for external capital raised by Irish software house	The firm floated in 2000 just before the market fall. It raised €56m for acquisitions	Firm raised enough funding to remain in business despite the poor trading performance	VC set high targets but did not add value – it was money, not 'smart money' – additionally the 'key informant' felt that they had not raised sufficient finance vis – a-vis their international competitors	Group is financially strong therefore funding was not a particular issue	Shareholders remain resolutely behind the firm despite the increasing shareholder – destruction – the firm has raised €15m in external funding from just three shareholders.

Cases Food1 Biotech1 ICT1 ICT6 ICT2 ICT3 ICT4 ICT5 Cons1 Biotech2

1.3 Recruitment and people management

No barriers on recruitment but delegation has been problematic

Was issue during 'Celtic Tiger' period – could not compete with multinationals for high end staff – firm dependent on founding entrepreneur – succession?

Finding experienced software staff with insurance industry experience – big firm mentality of recruited staff a problem in early years

Finding staff in US, in Japan also for sales offices.

Finding and recruiting sales staff – production no.

IT staff – graduates do not seem to be available

Never been a major problem given the slow growth of the firm – firm top heavy due to lack of growth

No major problem in recruitment

1.4

Operational Improvements

Brought in senior manager from GE to improve efficiency of manufacturing process

Firm scaled up too fast on production side and had to correct by letting staff go

Moved business model from a licensing model to a transaction-based model in year 6.

Quality and supply chain consultants used to improve operations over time

1.5 Formal systems

Business – originally craft based but move to more formalised structure with GE influence.

1.6 Other

Notes to Table: *Barriers to growth are barriers to growth as perceived by the 'key informant' (Marshall, 1996; Fletcher & Plakoyiannaki, 2011) in each case. The framework used for analysis is based on Bessant *et al.*, (2005); Smallbone & Wyer, (2006) and O'Gorman, (2006). Common variables of importance identified were: Obtaining finance, Formal systems, Strategy, Market entry, Operational improvement, People management.

7.4. External barriers to growth

As previously noted all three firms in the value creating cohort had commercially experienced leaders entering the analysis period for this study. 'Backcasting' (Storey & Greene, 2010) affords us the opportunity to observe that that all three leadership teams weathered whatever commercial storms the firms encountered during the period to return profitable growth over the period. This is a testament to the management teams' ability to cope with, predict, comprehend and deal with changes in the proximal and distal environments of the firm. It confirms the presence of sufficient levels of absorptive capacity in the management teams to deal with growth barriers encountered along the way (Bessant *et al.*, 2005) When questioned about perceived environmental barriers the KI's in the three firms all noted (See: Table 7.1) that, whilst growth plans had in two cases (ICT1 & Food1) not gone according to plan, that they had found ways to circumvent the barriers to growth and keep or return to a profitable growth trajectory. Biotech1 in contrast manages growth in a much more controlled fashion and thus is – size wise – a smaller firm (See: Figure 6.2). The KI in Food1 was the only leader to admit that despite his best efforts he could not solve his distribution issues in the marketplace (Table 7.4). He acknowledged that, given the scale of the market, the intense brand driven competition and the resources required - his firm would not satisfactorily solve this problem. It would take someone with greater marketing resources than he can access to resolve this. He reflects:

I didn't enter this business to make money. I entered this business to see if I could enter the business. I certainly entered the business as a proof in my strong belief that indigenous entrepreneurship is the way forward. And to see - and I've very specific

targets - to see could an Irish company become an internationally competitive export business. Because that's what the future is and the answer is 'nearly'- because we haven't got the distribution right yet and my fear and my expectation is that somebody will come in and take that off us one way or the other so I won't achieve it, because I'll fall down on distribution. (Food1 case: p.22/23).

In contrast to the demand side issue raised above by the KI in Food1, the KI in ICT1 noted that in his estimation the domestic market was a particular problem for businesses trying to scale-up. It has the obvious drawback of having a small population and therefore a relatively small number of financial institutions to sell into. He also commented however that, in his opinion, the *investment* market is a bigger blockage on growth. He notes:

... not so much even the size of the domestic market but the size of the investment market and the available pool, but still you see the Irish software guys keep comparing themselves to the American software Silicon Valley which is, you know, that's like the Premier League in where we're, you know, it's going to be hard for Ireland ever to get there because we don't have a natural [*Homogenous – author added*] market on our doorstep of 350 million people with a huge economy that the whole world looks to as a place to buy so we don't have that market on our doorstep and unless that chap is prepared to lift his boots and go to the States and live over there for a few years and go to the US as a lot of Irish people have done, to Silicon Valley, and raises money and builds his business and then come back here if he wants to. Otherwise he's got to face the fact that he's always going to be smaller than a US company. But if he can build a business that's sustainable and that's got a good strong model there's lots of places he can go without having to go to the States or even in the States and he can still win business because, you know, the US guys there's is a very fast growth trajectory and lots of their businesses are either sold or burnt very fast. (ICT1 case: p.29).

7.4.1 Shareholder value decreasing firms

The perceived external barriers to growth for the shareholder value decreasing firms mirror to a large degree the internal barriers highlighted by the KI's – particularly the NTBF's. Consumer1 differs again, in that, it was the only case firm with significant domestic business and the market contracted quickly and deeply. The firm was left with no other option but to scale back and re-group. Employment went from ninety six to twenty four in two years and so the external environment was a major driver in the scaling down of the firm.

The remaining firms are from the ICT sector (6) and the Biotech (1) sectors - all these firms experienced 'lack of traction' in their revenue generation attempts. Whilst they approached the internationalisation of their businesses in differing ways – ICT6 and ICT2 and ICT3 used a combination of organic and acquisition strategies in their attempts to grow – organic on world markets and acquisitive for the US market. ICT4 and ICT5 using an organic growth strategy to try and grow. ICT6 for instance found a German firm to acquire which opened up the US market for the firm. However they encountered difficulties in finding suitable in-market sales and marketing staff – as explained earlier in the perceived internal barrier analysis. The KI noted:

I can never actually put my finger on a time when we found it very difficult to find people in Ireland. The States - yeah. The States was always a challenge to find people in the States, and in Japan, setting up a Japanese office was always very tough because you're looking for Japanese people to essentially join a European operation which is very difficult. And since then I think that's probably been similar, although what we've focused on [*in his subsequent business – author added*] is hiring here and then moving people out to the States if we needed that to happen (ICT6 case: p.21).

Indeed a common thread with the technology-driven businesses is the unforeseen difficulties that they encountered in the global marketplace due; it would appear, to

a lack of experience, knowledge and research in the senior management team as to the requirements for successful targeting, entry and expansion into the respective overseas target markets.

The KI in ICT2 notes:

One of the things I did was to try and get into too many markets at the same time [*market skimming strategy*] because we had resources, so I went to Hong Kong, Singapore, everywhere. One thing I hadn't figured out is that there are costs associated with it, do you know? Really it would have been better to have two or three markets [*market penetration strategy*] rather than trying to be everywhere. As I said, I suppose it's easy in hindsight, but I think a clearer vision right from day one would have been very helpful for everybody, do you know? And that's coming back in terms of saying, okay, this is where we want to take the company to and this is what our exit strategy is, and I feel that our exit strategy there was probably wrong in thinking you're going to take this public (ICT2 case: p.27)

Thus, whilst the vagaries of the external environment – rapidly changing market, increasing competition and market limitations are all important factors, it is the leader or leadership team's interpretation of the opportunities and threats that the environment presents which is most important (Their diagnostic capabilities – Arnold *et al.* 2004) and the KI in ICT2 is honest in declaring that strategic mistakes were made (market skimming versus market penetration, organic versus acquisitive growth, wrong exit strategy etc.) as he clearly did not prioritise his target markets nor his growth strategy.

O'Gorman (2006, 2012) notes that two key strategic decision choices need to be made - *where* to compete and *how* to compete. These choices have a 'significant and lasting effect on the organisation and its performance' (*ibid*) and the ICT2 case is a

clear illustration where neither of these key decision choices were adequately addressed before the (well-resourced) leadership team began executing (on their flawed strategy). Success strategies for gaining clear competitive advantage by growing firms revolve around the implementation of a focused, differentiated niche approach (Sandberg & Hofer, 1987) – which clearly was not the case here.

ICT3 similarly raised significant resources in an IPO to execute on its 'strategy' for taking advantage of perceived opportunities in the US market except, as the current CEO noted:

We're a company that went public without a business plan. Lost \$180m. I mean, how hard do you have to work? xxxx didn't lose 180 million dollars by trying to take the big risk. It lost it by you know...the CEO's office was in xxxx. So my office, the first day I walked in, 1800 square feet! This company lost \$180 million and my office had its own bar in it! (ICT3 case: p.33).

ICT5 was another software firm which tried to enter the US market. The KI in this firm reflected on the difficulties encountered in setting up sales distribution channels:

Yea, I think the main difficulty there is getting a sales channel you can trust or even a direct sales person in place abroad who is unsupervised. No we did direct sales. [*Did this put a lot of pressure on the people here because you are travelling all the time?*]. Yes -we were doing sales at all levels - its complex selling (ICT3 case: p.22).

Unfortunately the KI in ICT5, like the other KI's in the shareholder value decreasing firms underestimated the time and effort and most importantly the *level of research* required to acquire the marketing and market assets required to execute the growth strategy – even if the requisite resources are raised – as in this case. The firm had received significant external investment funding and so the pressure was on for sales traction in the firms key markets.

Biotech2 on the other hand is trying to market a 'disruptive technology' in the medical device sector. The barrier to growth is essentially the entrenchment of the existing technology (inertia) even though Biotech1's technology is superior. It has a multinational partner to market the product but so far the product has been slow in gaining traction as it requires a significant amount of re-training and upskilling by surgeons. KI in Biotech2 notes:

..... so we're at the stage now where we've got the 10%, a lot of exciting guys [*early adopters*] but to get it downstream from them, we're going to have to make this device simple and reproducible to use. I'm making their life more difficult, the same way that laparoscopic surgery made it more difficult. It was a harder thing to do. There was increased incidence of bile duct injuries and – from whatever, so we have to deal with that. That's what we're focusing on now is getting to the 80%. So, no, it's – there's no problem getting into the market. You just have to make it happen (Biotech2 case: p. 24).

Biotech2 differs from the other value decreasing firms in that, apart from the sectoral differences, it is *disruptive* technology. Contrast this to the software products above which tend to be new applications of existing technology (Breznitz, 2007) and despite the medical devices benefits, it is taking longer than expected to become the hoped for 'industry standard' (Mohr *et al.*, 2010). In terms of the 'technology adoption lifecycle (TALC) it has yet to 'cross the chasm' and become mainstream (Moore, 1991). Should the technology gain traction the KI estimates the global market at between \$300-400m. Investors have remained patient to date and supported the firm despite the modest sales traction so far (See: Figure 6.3). Again the success or otherwise of the firm - in this case - will be majorly influenced by market related factors.

Table 7.3: External barriers to growth

Cases	Food1	Biotech1	ICT1	ICT6	ICT2	ICT3	ICT	ICT5	Cons1	Biotech2
1. Constraints on growth? – External Rapidly changing environment							4			
Industry structure, competition and market limitations										
1.1 New market entry	Took longer than expected – up to 18 months to generate revenue per new market. DISTRIBUTION still single biggest strategic issue			Breaking into the US. Not committing quickly enough to market	Tried to enter too many markets at same time without appropriate sales staff	China is new growth market for the firm		Complex sales process for software and firm never established appropriate channels – continued to sell direct		Slow take-up of new technology in lead markets
1.2 Other barriers external	Domestic Market size for business and raising finance					Demand for software product is derived airline and e-booking platforms			Demand for firms products is derived from demand for construction and property refurbishment markets	

7.5 Summary and Conclusions

Despite the diverse market situations facing the case firms, the international environment has an impact on firm growth in all situations - but to varying degrees. Small firms, by definition, must adapt to their environment. Small firms from small states must do so earlier and to a greater degree. The perceived internal and external barriers analysed in this chapter must be considered in tandem with the findings in Chapter 6 on the influences and determinants of small firm growth (See: Table 6.12). Dobbs & Hamilton (2006) noting that it is 'idiosyncratic configurations of context-specific factors which determine small firm growth'. Conversely it is unique 'configuration sets' of factors which act as barriers to indigenous firm growth. However in the cases analysed in this study it was found that value creators and value decreasing firms were differentiated in terms of barriers to growth along a number of dimensions.

Internal firm barriers

It is firstly the entrepreneur/managers ability to create *sustainable competitive advantage*, as evidenced by their ability to develop sustained and growing profitability over successive time periods which is the most important differentiator. Backcasting (Table 7.1) allows us to see the consequences of the strategy-in-action. The entrepreneurs behind ICT1, Biotech 1 and Food1 all demonstrated their abilities to develop *and* implement commercialisation strategies driven by the 'profitable growth imperative' (Table 7.1 & Table 7.2). This highlights the importance of the owner-manager related factors noted by Bessant *et al.*, 2005; Smallbone & Wyer, 2006, 2012; O'Gorman, 2006, 2012 in their typologies in Table 2.3. It was found in this chapter that the resource-acquisition barriers listed were less important in these

cases – it was *resource deployment* - as evidenced in the development of competitive advantage that mattered. The lesser impact of resource-acquisition may be explained by the fact that the analysis period of 1999 – 2005 (when state investment was made in the cohort of firms in the study) was a period when the Irish economy was growing at unprecedented rates and obtaining investment finance and other resources was less problematic than in slower growth or recessionary times.

External barriers

Shareholder value creators (ICT1, Food1 and Biotech1) were able to cope with, predict, comprehend and deal with environmental threats whilst maintaining or returning to profitability during the analysis period. ICT 2-6, Biotech2, had on the other hand, not sufficiently developed their value propositions or implemented robust strategies to create competitive advantage and profitability. This was primarily due to the leadership teams' lack of skills and experience in commercialisation strategy and/or international marketing. In addition, the management team had, in most cases, increasingly ceded strategic direction to outside investors over the analysis period. Consumer1 (as a value decreasing firm) is an outlier in the sense that the external environment changed so radically that it was left with little strategic choice but to scale back.

In conclusion

This chapter analysed the barriers to indigenous firm growth and found that it is a combination of external and internal factors which can retard profitable firm growth. Indigenous firms in small states face myriad external challenges from their host country and international environments in terms of rapid, open-ended change and

uncertainty, industry structural change, international competition and domestic market limitations. However it is the indigenous firms' ability to cope with these external challenges and still deliver sustained profitability through profitable trading which marks out the shareholder value creators from the value decreasing firms. This value creation ability is underpinned by entrepreneurial leaders whose growth strategies are differentiated niche with a clear value proposition, who have 'financially bootstrapped' previous operations, who have a 'profitable' growth imperative guiding strategy, who have retained strategic control of the business, who seized profitable growth opportunities from their product/market space, whose business is older (8 years+) and who retain significant ownership in the business. Conversely the value decreasing firms did not have the above profile and whilst they were younger in age (3 years +), their growth trajectories (Figure 6.3) suggest (apart from ICT6) that unless radical change occurred they will not create value as independent businesses. Indeed four of the NBTF's (ICT2, 4, 5 and 6) were acquired before the analysis period was complete. Finally the role of luck/chance/serendipity cannot be discounted and its importance increases depending on the levels of uncertainty encountered in the firms' environment.

Chapter 8

The role & contribution of Public Venture Capital to indigenous firm performance in the small late developing state – A Contribution Analysis

This chapter examines the relationship between public venture capital and firm performance within and across sectors. It is a meta-analysis of the findings in Chapters 5, 6, 7 and additional case material from Volume 2 not already utilised in the preceding empirical chapters. The analytic technique used to complete the empirical analysis in the study is 'Contribution analysis' (Mayne, 2001, 2008, 2012) – a theory-based approach to evaluation. Thus this chapter assesses whether the public venture capital policy did make a contribution to firm performance, collectively and individually in the study. 'Contribution analysis' is discussed briefly in the literature review in chapter two and in more detail in chapter four – the research methodology chapter.

The logical proposition - as set out in Figure 8.1 - and examined in this chapter is that the public venture capital 'contributed' (Mayne, 2012) to accelerating the creation of shareholder value in the individual case firms. The 'theory of change' for public venture capital intervention holds that the recipient firms invest the states' capital investment in R&D and human capital assets to drive growth – at an accelerated rate i.e. Has the intervention made a noticeable *contribution* to an observed result and in what way?

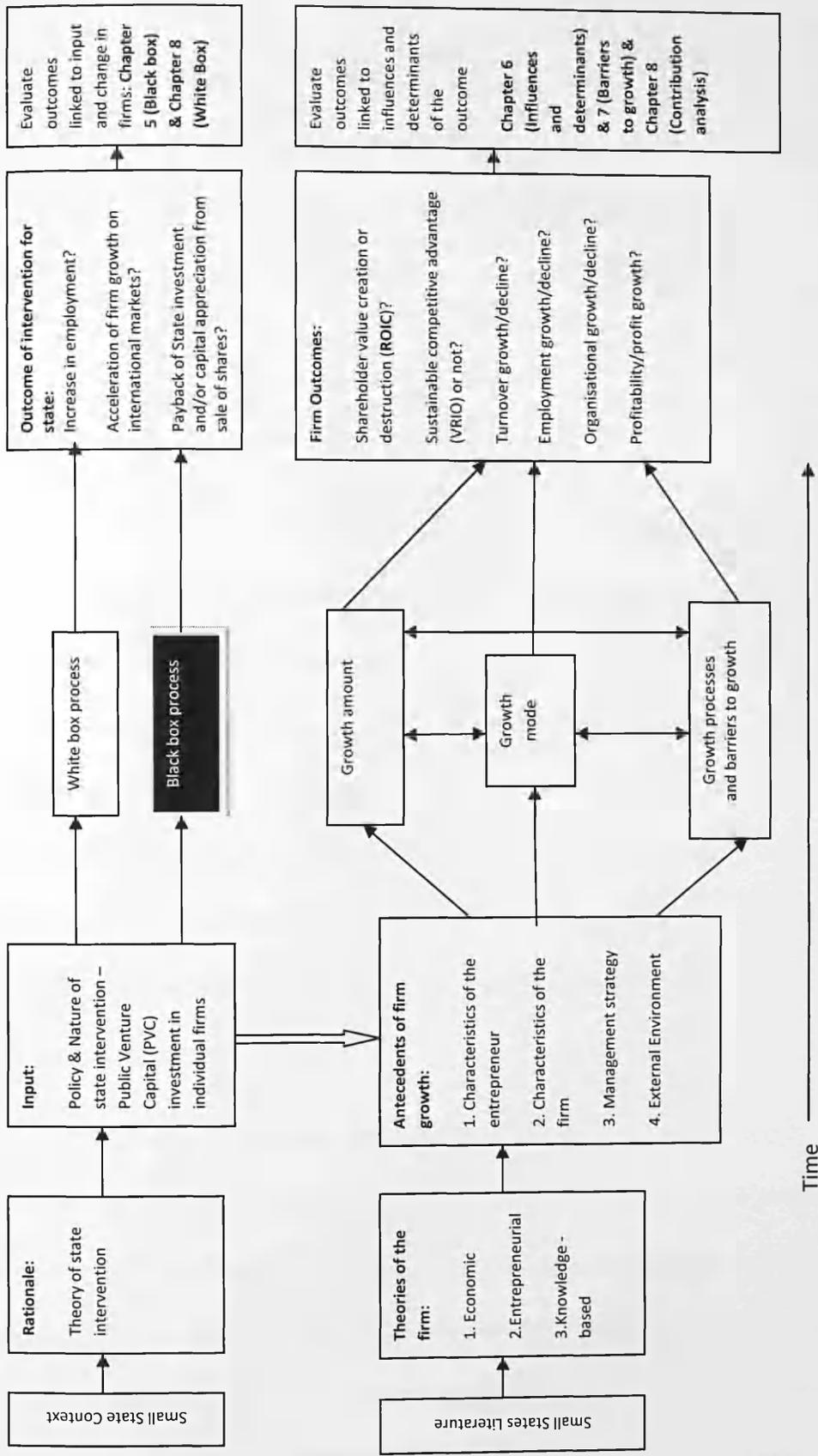
The second proposition investigated is that growth - oriented firms, by definition, require risk capital to fund accelerated growth. Does the fact that it comes from the state add value to the investment intervention? If it does 'contribute' in a significant

way then this constitutes a positive outcome for the policy. However if it was found that the intervention made a marginal or no identifiable contribution then it merely contributes towards deadweight and/or displacement in the economy. This would indicate that scarce resources are being sub-optimally allocated.

The triangulation of information (Datta, 1997) from the mixed research methods employed allows key inferences to be drawn on whether the public venture capital had a material effect on 'accelerating' or 'scaling up' of shareholder value creation *in the individual firm* and on whether 'direct state involvement' added to the value of the investment intervention.

The share investment is expected to be repaid five years after the investment period from retained earnings or in the event of the firm being sold (Enterprise Ireland, 2010). The extent of this *direct* intervention approach is unique to Ireland and the state had venture capital investments in six hundred and forty seven indigenous Irish firms valued at over €184m at cost in 2005. (Enterprise Ireland, 2005). EI claimed subsequently to be the largest venture capital company in Europe (Horn, 2011). This study is therefore unique in that the contribution of this type of state intervention to firm performance has not been empirically evaluated in Ireland before. However theory based evaluation (TBE) and 'logic models' are beginning to gain credence in the evaluation literature in Ireland. Lynch *et al.* (2009) propose a logic model for 'business networks'. This has not been empirically tested as yet (2012). Lenihan (2011) also proposes a logic model approach for evaluating 'enterprise policy' based on the Lynch *et al.* model. This also remains to be empirically tested.

Figure 8.1: Logic chart for Public Venture Capital policy in the Small State.



Source: Storey, 1994; Smallbone & Weyer, 2006, 2012; Davidsson et al., 2010, Hill & Jones, 2009; White, 2009; Mayne, 2001, 2012 - adapted by the author.

Given the focus then on public venture capital in the study – and its association with the strategic direction of the firm - the emphasis in this Chapter is on the potential contribution of the state investment at the enterprise level. This is in contrast to the many studies in the area which have focused on the project level (OECD, 2006; Clarysse *et al.*, 2006).

8.1 The firms in the study

The cases chosen for participation in the study were selected on ‘theoretical sampling’ grounds for their overall sectoral representativeness of the cohort of firms in the study (Glazer & Strauss, 1967; Pettigrew 1988; Strauss & Corbin, 1988; Eisenhardt, 1989; Patton, 2002). Whilst there is no ideal number of cases, Eisenhardt (1989) recommends between four and ten noting that: ‘with more than ten cases, it quickly becomes difficult to cope with the complexity and volume of the data’ (P. 545). Thus this study utilizes the maximum number of recommended cases. Table 8.1 illustrates the relationship between the overall cohort of firms (n=51) and the selected cases (n=10).

The four sectors in the study are each represented in the case analysis in this Chapter. The ICT sectors having the most cases (n=6) followed by the Industrial products (n=2) and Food (n=1) and Consumer products (n=1). Note however that whilst ICT represents 57 per cent of the number of firms in the cohort, the cases in this sector captured 67 per cent of the funding allocated to the selected cases. This illustrates once again, the preference of the state for firms in the ICT sector - particularly software firms (O’ Riain, 2004; Breznitz, 2007).

Table 8.1: Public Venture Capital by Firm Sector and by Case Selection

Industrial Sector	No. of Firms in overall study	% of firms in study	Case Selection from cohort	% of Cases selected	State Investment to cohort firms per sector €	% of Total investment	State Investment in case firms per sector €	% of State Investment to case firms per sector	Case code in sector
Consumer products – Furniture/ceramic/carpet manufacturing	3	6	1	10	4591	9	640	6	Consumer1
Food and natural resources – Agri-foods/consumer foods/natural resources	7	14	1	10	10089	20	1270	13	Food1
Cleantech, medical devices and industrial products manufacture	12	23	2	20	9161	18	1470	14	Biotech1, Biotech2
Software, ICT and internationally traded services	29	57	6	60	26535	53	6855	67	ICT1, ICT2, ICT3, ICT4, ICT5, ICT6
Total	51	100	10	100	50376	100	10235	100	10

(Source: Enterprise Ireland, Fame database, Visionet, CRO, Firm websites)

8.1.1 Financial performance of the case firms

Table 8.2 illustrates the financial performance of the selected case firms *before and* after state investment. Five firms – Consumer1, Food1, Biotech1, ICT1 and ICT3 were all profitable, to a varying degree, before the public venture capital investment. The remainder of the cases were unprofitable – See: Table 8.2 – column 4. The profitable firms were on average eight years old. The unprofitable firms were younger and on average were less than two years old.

Post-state investment, only two firms increased their mean ROIC – Food1 and Biotech1. ICT1 was close to breakeven and was on a growth trajectory and is therefore categorised with the performing firms. The remaining firms have significant accumulated losses post-state investment. All firms remained in business over the eight year analysis period although the ownership status of seven of the firms had changed over that period. This ownership change was due in the main to the poor financial performance of the founding management teams. This poor financial performance indicating the inability of the management teams to develop sustainable competitive advantage and thus profitability (Hill & Jones, 2009; Doyle, 2010) – (See: Chapter six and seven also for further details). Notable exception to the poor financial performance was ICT6 which was sold to the investment arm of a US multinational for €110m – over ten times firm turnover at the end of the analysis period.

Section 8.3 looks at the impact from a ‘contribution analysis’(CA) perspective of the public venture capital on the subsequent performance of the case firms.

Table 8.2: Case firm performance – Post-Pre Public Venture Capital investment

Case	Firm age	Pre-state investment performance*		Public Venture Capital investment		Post-state investment performance		Shareholder Value Creation		Employment at end of analysis period	Turnover at end of analysis period €'000	Ownership status at end of analysis period ^Δ		
		Profit €'000	Shareholder funds €'000	ROIC %	€'000	Profit €'000	Shareholder Funds €'000	ROIC %	Profit €'000				Shareholder Funds €'000	ROIC %
Consumer1	4	140	1415	10	640	(416)	6171	(6.7)	(556)	4756	(11.7)	24	NA	European Multinational (c)
Food1	12	546	6611	8	1270	1203	11327	11	657	4716	14	68	11730	Unquoted PLC (c)
Biotech1	7	182	2534	7	650	808	3102	26	626	568	110	25	NA	Private unlimited (c)
Biotech2	2	(298)	(3688)	-	820	(2513)	(10392)	-	(2215)	(6704)	-	11	NA	Private (u)
ICT1	6	589	3180	18.5	2986	505	10537	5	(84)	7357	(1)	238	25639	Private (u) UK
ICT2	1	0	0	-	1155	(4398)	10752	(41)	(4398)	10752	-	100	10000	corporation (c)
ICT3	12	1020	5147	20	635	(32998)	67887	(144)	(34018)	62740	(54)	203	23400	PLC (c)
ICT4	1	(464)	(36)	-	698	(2890)	31	(93)	(2426)	67	(362)	18	NA	Asian Corporation (c)
ICT5	4	(1711)	1208	(141)	700	(48)	5	(100)	1663	(1184)	-	12	99	US Corporation (c)
ICT6	1	(2296)	1075	(213)	681	596	(3848)	-	(1700)	(4923)	-	55	10676	US Multinational (c)

Notes to table: * Pre state investment performance is the mean of two years after-tax profit performance. Post-state investment performance is the mean of five years after-tax profit performance. ROIC is profit after tax expressed as a percentage of invested capital. Δ if ownership status changed then (c) indicates this. In all cases the ownership status changed from private limited except Consumer1, although private at inception it was also a joint venture between an Irish PLC and a European partner, which the European partner bought out before the state investment. (u) indicates that ownership status remains unchanged during the analysis period.

The focus will be on following the proposed 'theory of change' behind the policy and gaining informants perspective on the contribution of the state investment on the growth and development and/or survival of the case firms. This will be considered against the backdrop of the results from the overall cohort in Chapter 5.

8.2 The role & contribution of Public Venture Capital to indigenous firm performance

The Contribution analysis framework is complemented by the input/output analysis in Chapter five. This analysis in Chapter 5 investigated 'what' happened when the state investment took place. The analysis in this chapter attempts to explain the 'how' and 'why' of the state intervention.

The post investment period of five years is the period after which the firm should (per its contract with Enterprise Ireland) repay the share investment to EI. It is therefore an appropriate timeframe to evaluate the changes that have occurred in each case firm - to that point. However, it is important to remain cognisant of the limitations of 'back casting' as a research methodology and the influence of 'post facto' rationalisations (Halo effects) by the key informants (Storey & Greene, 2010:303/304).

8.3 Contribution Analysis

8.3.1 The cause-effect issue addressed

The state, through Enterprise Ireland, has a policy of directly investing in growth-oriented indigenous SME's to help 'accelerate' their growth. As the primary indigenous industry development agency EI declares its overall mission to be:

To accelerate the development of world-class Irish companies to achieve strong positions in global markets resulting in increased national and regional prosperity (EI annual report, 2008:p.1)

Established firms apply for investment on foot of a business plan and those successful in their application are regarded as high-potential 'scale up's' or potential fast/high growth firms. Separate venture capital investment schemes apply to help start-up businesses with seed funding requirements and these are beyond the scope of this study (See: Enterprise Ireland - Seed and Venture fund annual reports). The pro's and con's of state involvement in seed funding, including co-funding or hybrid programmes however have been well covered in the literature (Lerner, 2009; Murray & Liu, 2009; Murray & Lingelbach, 2010; Mason & Pierrakis, 2011; Murray *et al.*, 2012).

Picking and making winners?

The established firms selected for funding in this study are the potential 'winners' which the state wishes to back with public venture capital investment. The rationale for the policy is that growing firms, such as these – particularly those in technology driven businesses (NTBF's) - cannot access the necessary funds to underpin growth – in many cases due to lack of collateralisable assets. This is especially true for NTBF's. Debt financing is therefore not an option and so equity financing is seen the only viable option, particularly for research-based firms where internal funds may not be generated for many years (Storey & Greene, 2010). There is therefore a perceived 'finance or equity gap' blocking the growth of otherwise potentially successful businesses. This is interpreted in many states as a 'market failure' and in many countries – particularly in Europe, policymakers believe that the state must step in

and correct (Leleux & Surlemont, 2001; Murray *et al.*, 2012). Mulcahy (2005a:p.36), although referring to earlier stage funding, nevertheless outlines what she believes is the rationale behind the Irish state's policy and notes that her research identifies a number of complementary and contradictory rationales for why the Irish state (through EI) has become a 'Venture capitalist'. These are: 1. To close the equity gap, 2.To create a domestic venture capital industry 3.To smooth the cycles of the venture capital industry 4. To foster economic development and 5. To help firms compete internationally. Mulcahy questions the rationales or *raison d'être* above and concludes:

..... Based on a review of the evidence that the 'equity gap' is closed and that Ireland has succeeded in developing a vibrant and robust venture capital industry. These successes render EI's continued intervention in the VC industry difficult to justify based on the evidence, and make a strong case for discontinuing government funding of the industry. This chapter also examined whether continued state intervention was warranted based on goals of smoothing the cycles of the VC industry, economic development, or 'levelling the playing field' with other nations. It concluded that there is not a compelling case for intervention based on **any** [*Emphasis Author added*] rationale (Mulcahy, 2005a:p.54).

Thus the basic logic of the intervention is questioned and this will be examined further as the analysis progresses (See also: Breznitz, 2007, 2012; Horn, 2011).

The Irish state then has invested a minimum of €635,000 (IRP 500,000) in each of the firms in this study and the contract requires the firm to repay the share investment after five years from retained earnings. In addition to the goals cited by Mulcahy, state investment is expected to also help address the acknowledged underinvestment by indigenous firms in R&D – which is generally below the socially desirable level (Arrow, 1962; Metcalfe & Georgiou, 1998). The state reasons that by

making risk capital available (with stipulations for R&D and human capital spend only) for investment that the firms will 'scale-up' their R&D efforts and employ more staff. Curiously the firms are (officially) precluded from investing in market(s) or marketing assets – in the commercialisation of their knowledge assets - (The ultimate stage in the innovation process, Adams *et al.*, 2005). This has been shown, time and again (including this study – See:Chapter 6 & 7) to be a significant barrier to growth for Irish firms – particularly on international markets (Telesis, 1982; Culliton, 1992; Enterprise Strategy group, 2004; Forfas, 2004; Small Business forum, 2006).

Thus the expectation of the state in terms of performance is that the state will 'unblock' these supply-side market failures, which will unleash the latent growth on the demand-side in the potentially 'fast/high growth' firms – picked by the state. This will in turn create employment and value added in the economy. After five years the firm is expected (through profitable growth and/or trade sale/IPO) to payback the state. The state will take the funding and re-invest in new firms – picked by it and so the cycle goes on. Given that the investment is in 'risk' capital (and the state is sharing or mitigating the firms risk) and growing firms face 'unknown, uncertain' environments then failure of either the firm and/or the investment is possible – particularly in NTBF's. Arguably this could be seen as fostering a situation where losses are socialised and (most) gains are privatised.

Investments are made by the state in either preference and/or ordinary shares. The preference shares are normally cumulative preference shares which carry a coupon interest rate (Mulcahy, 2005a).The state, like standard VC industry practice in the US, retains the right to convert the preference shares to ordinary shares if it sees upside

potential or the firm cannot repay its investment. Both Mulcahy (2005a) and Breznitz (2007) highlight the potential for conflict in EI's dual role of economic development agency (job creation) and 'venture capitalist' (ROIC) within the economy.

Given the above background then the 'contribution problem' to be addressed is – what is the 'contribution' that public venture capital makes to firm growth performance - post-state investment and has it made a noticeable contribution to an observed result and in what way. The second requirement is to establish whether the funding was used for the purposes intended and thirdly this Chapter attempts to determine whether the source of the VC – public funding – added value to the firm.

8.3.2 Develop the postulated 'theory of change' and the risks to it including rival explanations – synthesise the existing evidence from Chapters 5, 6 and 7 on the 'Theory of change'.

Addressing the Supply-side problem

The rationale for the policy of public venture capital investment by the state emanated originally from a need by the state to divert funding from grant assistance (Precluded by the EU from 1999) to a new solution which would fall within EU regulations.

The theoretical rationale and context – for how the policy was to operate was explained by a former state executive who was involved in the planning of the scheme.

At the time it was a good idea, we had two problems we needed to deal with. First, there was political pressure after politicians became concerned when, on one hand, many software firms who got grants went bankrupt, and , on the other hand, a few were sold to MNC's, with the founders making a large profit. The second was the need of technology companies that do R&D to get a large quantity of capital upfront, which we could not do with employment grants, especially as software start-ups just do not

create that many jobs. Thus equity-based grants seemed like an ideal solution for both and could be worked within existing regulations. I also must say that in the beginning, when we did not make a profit, it worked like a charm (*cited in: Breznitz, 2007: pg184*).

Thus the rationale explained in this quote appears to accept that the primary barrier to indigenous firm growth is supply-side related and that providing repayable grants in the form of share investments will substantially help alleviate this problem. The most worrying aspect of the genesis of the policy is that it appears to have been initiated in response to political pressure rather than in response to 'empirical evidence' that there was a real funding or equity gap which required closing. The second reason given – that NTBF's did not fit the existing employment grant structures available - illustrates how deeply ingrained the 'grant mentality' is in Irish industrial policy-making bodies and by extension Irish indigenous industry (Mulcahy, 2011). It further demonstrates the widely accepted view in policy-making circles that the state *should* intervene at the micro-level in the economy - down to the individual firm level. This, despite the strong international evidence that micro-level interventions are not, in the main, empirically supported in the firm growth literature (Bannock, 2005; Storey & Greene, 2010; Davidsson, 2008; Bridge *et al.* 2009; Bill *et al.*, 2009). Indeed the state executives comments quoted above gives a good indication of how a scheme designed in response to political pressure brought the implementing organisation into an unintended new sphere of activity – venture capital. This resulted in the implementing organisation trying to reconcile its conflicting economic development and venture capital remits. The former state executive further noted that:

The problems started when EI holdings in a few firms were suddenly worth millions. The more EI turned into the most successful VC organisation in Ireland, the more

profits became a yardstick, with the result that investment decisions are becoming more and more conservative and profit-orientated. EI is now so obsessed about making money and does not care enough about the overarching goal that the state should have – the development and growth of the industry (*cited in* :Breznitz, 2007: p.184).

Share investment, in the form of repayable equity grants therefore was agreed as a way to correct the perceived ‘finance or equity gap’ for growth-through-internationalisation in technology and later traditional firms. A ceiling of ten per cent ownership was imposed on the state by the EU and thus it was envisaged that the state would become and remain a minority shareholder in the firm until the shareholding was sold. The state, in addition, did not take or seek a seat on the firms’ board and thus became a ‘benign’ investor in the firm.

One of the KI’s (6) noted:

What does tend to happen, and the things that can be difficult for smaller companies, is dealing with that sort of architecture and bureaucracy and having rules change underneath you and that sort of stuff.... yes they did [*invest in shares in the firm*]. Yeah, it was brilliant, because EI are a **very benign** [*Emphasis added by author*] investor. They're not going to be doing certain crazy financial engineering from the board perspective or anything like that, and it's not so much seen as a stamp of approval, but it's just seen as a – well, we're assuming you're going to get that. When a VC comes on board, they like to see their money being doubled up and they like the fact that it's coming from a very benign source. [*So they acted as kind of a catalyst to draw the money in*]. They can do. Absolutely, it's just seen as more value for money for the VCs.

In the ICT and Biotechnology sectors, EI on behalf of the state has invested, and invested again in succeeding funding rounds, in growing firms to help fund growth.

Figure 8.1 sets out the ‘theory of change’ applicable to this policy.

The theory of change requires the state to intervene to help fund firm growth. It invests taxpayer funds in individual firms in the expectation that the firms' leadership and management team has the ability to identify and exploit growth opportunities in international markets for the firms' product/market offerings. The 'logic chart' in Figure 8.1 clearly shows the number of potential confounding and influencing variables involved in the growth process. Context-specific configurations of these variables combined with an unspecified amount of luck can produce an overall positive result of sales, profit, employment and ultimately shareholder value creation (Dobbs & Hamilton, 2006; Storey & Greene, 2010; Smallbone & Wyer, 2012). The state's expectation is that the firm will grow as expected/predicted that it will then be in a position to repay (or begin repaying) the share investment (plus coupon interest – if preference shares) back to the state. In reality the state, like VC's, will adopt a portfolio approach to its investments risk (Mohr *et al.*, 2010). In the VC sector, this model requires close micromanagement and intimate sectoral knowledge to work. Information asymmetries associated with investing in NBTF's in specialist areas by VC's are mitigated by specialising sectorally and by having deep insights into the technology roadmaps of the ICT, Biotechnology and Cleantech sectors in particular. VC's succeed by 'adding value' in terms of management advice and access. They sit on the Boards or have nominees on the board of all their investments. They are active investors and will take decisive action if the aggressive growth targets (towards their profitable exit) are not met. Behaviourally they are the polar opposite to 'benign' investors. They perceive that their funding is 'smart money' and they have a defined time horizon for their investments (Gompers & Lerner, 2001; Mulcahy, 2005(b); Gompers *et al.*, 2006). The Irish state and the local

fledgling VC industry on the other hand are inexperienced in this sector (Mulcahy, 2005a; Breznitz, 2007). The local industry is populated primarily by ex-bankers and fund managers from outside the venture industry and thus the industry does not, as yet, have the embedded knowledge or experience required to drive the firms to profitable exits on a consistent and large scale. One KI (3) noted:

Most 'venture capitalists' (*in Ireland*) are fund managers and accountants. They can't coach executives. They don't have the experience. They have never done it, they need to have people like me to be quite frank with you who can coach leaders and quickly be able to get the guy and say --'Look we think this fifty million dollar company has potential - and we are willing to put five million into it, not three hundred thousand!

Enterprise Ireland (Formed in 1998), as the state agency implementing the states share investment policy would appear not to have the in-house venture capital expertise either, as its staff come originally from technical or marketing backgrounds but at this stage – given public sector recruitment embargoes - most are long term public servants. It is the classic Weberian structure. Lerner (2002) muses:

Why one would want to encourage public officials instead of specialized financial intermediaries (venture capital organisations) as a source of capital in (early-stage investments) is not immediately obvious (Lerner, 2002:p. 74)

These limitations in the state support system have been recognised and EI's seed and venture funds (outside the scope of this study) are now managed, per Lerner's (2009) recommendation, jointly with VC industry involvement (See also: Murray *et al.*, 2012). This however has also been problematic (See Breznitz quote below). The VC involvement has been primarily 'local' so far and so the 'added value' is questionable (Breznitz, 2007). Indeed EI's influence in the local market is now so

pervasive that its current chief executive (2012) claimed, at a major industrial conference in 2011, that EI was the largest venture capital company in Europe (Horn, 2011). This claim was based on the scale of funds invested - but not on the *performance* of the funds. The lack of performance reporting (non-industry standard), exit discipline and transparency around EI investments have been heavily criticised (Mulcahy, 2005a; Breznitz, 2007:178 Horn, 2011). It would seem that it suits the state's (Government, policymakers and development agency) purpose to be opaque about its investment performance as it apparently does not wish to publicise its (windfall) gains or investment losses. Breznitz (2007; 2012) points to the unusual situations that can arise when the state intervenes in providing venture funding:

EI, in one of the most paradoxical twists of the Irish neo-liberal interventionist [*Developmentalist, 2012*] ideology, claims on the one hand that the state can and should take stakes in private companies. However, adhering to neo-liberal principles on the other hand, EI wishes to avoid a situation in which a government agency determines the market capitalisation evaluation of a private company. This creates a situation in which the firm seeking EI aid must find private market investors that would resolve the private valuation process. Only then will EI join the investment round on the same valuation basis. Many investors, though, agree to invest only in companies that have already received EI's seal of approval. This seemingly Catch – 22 situation is even more complex when we realise that EI is in itself the single largest financier of the Irish VC industry . Hence, in many cases EI actions make the Irish VC industry even more conservative in its investment decisions than it already is (Breznitz, 2007:p.181/2).

A final point on the rationale behind the theory of change is worth mentioning.

Enterprise Ireland is a development agency which also makes investments as a public venture capitalist. This, as pointed out by Mulcahy (2005), creates an inherent conflict with its original economic development remit. The tension between these

conflicting remits tends to manifest itself in various ways such as: investments in VC funds and firms with explicit regional investment objectives; an opaque valuation policy that mitigates the political risk of lower returns and an ad-hoc policy that neither maximises returns (per market driven VC's focus on small number of high potential firms) nor prioritises economic development (funding less attractive firms) (*Ibid*: p.56). It is not clear where, when and in what circumstances either of these conflicting objectives takes precedent.

In a small state which has historically faced high levels of unemployment, emigration and economic crises on its economic development trajectory, it is not surprising to find that 'job creation' had been elevated, from a policy perspective, to the *de facto* national objective. This has been the case since the state embraced export-oriented industrial policy and free-trade principles in the late 1950's (Stationary Office, 1958a, b). However the development of Irish industrial policy appears to have been heavily influenced from this period by the inherently contradictory ideology of 'neoliberal developmentalism'. This is a local ideology that developed to pursue the loosely-defined national objective (Breznitz, 2012). Consequently the states' economic development organisations tasked with trying to achieve this objective are vested with immense power, influence and resources by the state. The MNC policy promises and delivers on substantial numbers of jobs although spillover effects and direct linkages into the wider economy have been more limited than anticipated (Ruane & Ugur, 2005; Gorg, 2007). Indigenous industry, in contrast, promises not only smaller numbers of jobs per project but high failure rates and they remain problematic for policymakers to deal with.

MNCs thus gained policy priority whilst indigenous industry faced institutional discrimination with regards to tax rates, financial support and land allocation (O’Riain, 2004; Sterne, 2005). Whereas the Irish state sees its role as facilitating the activities of MNCs in Ireland through its economic development agency - IDA Ireland, it takes a more direct ‘developmentalist’ approach to indigenous industry through Enterprise Ireland (EI). Both agencies reporting since 1994 to Forfas, the national policy advisory board for enterprise, trade, science, technology and innovation in Ireland.

Providing public venture capital is therefore a micro-level supply-side intervention to help reach this national ‘job creation’ objective. However it is suggested here that equal focus should be given to the demand (firm) side of the firm growth equation. Helping firms grow *profitably* creates sustainable employment and thus the focus on job creation *per se* may be misplaced as sustainable jobs are a *consequence* of profitable growth and shareholder value creation.

Addressing Demand – side issues

External funding however is but one variable (from the external environment of the firm) which can possibly influence the growth trajectory of the firm and its attempts to create long-term shareholder value. Storey (1994); Smallbone & Wyer (2006); Storey & Greene (2010); Carter & Jones-Evans (2012) all highlight the myriad factors - both internal and external - which can influence the growth behaviour of the firm. These factors are categorised into the four broad but related areas of: the characteristics of the entrepreneur, the characteristics of the firm, managements’ strategy and external influences. Figure 8.1 shows these factors as antecedents of

firm growth but Storey and Greene also delineate these as pre-start –up factors, at start –up and post start –up factors. Chapter five in this study investigated the influence of the state investment on the performance of the cohort of firms in the study, using the geo-demographic profiles of the cohort of fifty one firms as control variables and found that there was no statistically significant relationship between the state’s investment and subsequent firm performance. However the state investment variable was retained in the most parsimonious model developed and so it can be concluded that the state investment variable made a marginal contribution to the model at best.

The cross-case analyses in chapters six and seven conclude that the biggest differentiator to firm performance (as defined in this study) is the product/market strategy adopted by the firms founding entrepreneur. There are a number of differentiating dimensions to this between the firms creating shareholder value and those decreasing it. These dimensions are summarised in Chapter 6 - Table 6.12. The shareholder value creators were led by ‘commercially’ experienced entrepreneurs, with previous experience of financially ‘bootstrapping’ operations. They were on profitable growth trajectories at the outset of the analysis period. The value decreasing firms – bar one – had no ‘bootstrapping’ experience and limited frontline ‘commercial’ experience. The value creators also ‘owned’ the strategy of the firm which was, in each case, a differentiated, niche/focus strategy aimed at creating customer value propositions and sustainable competitive advantage. They were not beholden to external (VC or Angel or state) shareholders who might unduly influence strategy. The value decreasing firms were beholden to such external investor forces. The value increasers had a ‘profitable growth’ imperative (based on their

bootstrapping experience). The value decreasing firms were scale-driven - this strategy was heavily influenced by the investment portfolio agenda of the external shareholders.

The implications of the above findings are that 'profitable growth' can come from a variety of sectors – and in a variety of ways. There are myriad factors at play in determining and influencing the growth performance of the growth-orientated indigenous firm but that the product/market strategic competencies of the leadership team is key - with customer-facing competencies and capabilities a necessary requirement. All firms in the study (n=51) were successful in raising funding and accumulating resources to underpin growth but only a minority could generate a profitable return on the capital base accumulated over the eight year period under analysis (even with state support). This suggests that policy interventions, if appropriate, need to focus on developing the firms' ability to diagnose and validate potentially profitable growth opportunities. The findings in this chapter suggest, in line with the findings in Chapter five and seven that blockages to growth in indigenous firms do not centre on 'availability of finance' *per se*. This was only referred to by the *growing* firms. However the *timing* of capital injections appears to be important. The major barrier to growth would appear to centre on the inability of the leadership teams in seventy per cent of the case firms analysed here (and seventy nine per cent of the overall cohort of firms in the study) to develop - through their strategies a sustainable competitive advantage *ergo* 'long term' profitable customers (Drucker, 1985). Indeed the collective evidence gathered here points to a lack of 'Well thought out, well managed projects' (Walsh, 1985) and thus a shortage of 'investor – ready' firms (Mulcahy, 2005) as the primary blockage on

indigenous performance in the period under study. This may well be highlighting the 'Limited endowment of managerial resources' available (Penrose, 1959) and the deficiencies in absorptive capacity levels (Arnold *et al.*, 2004; Forfas, 2005) - not just in individual firms but in the wider economy.

The findings are therefore suggesting that external capital (from where ever it is sourced) is best utilised by firms (from differing sectors) who have a clear product/market strategy and whose management team have the collective ability to implement that strategy. Bessant *et al.*, (2005) reminding us from their review of the literature to that point, that barriers to firm growth tend to be of a *commercial* rather than a technical nature and Henrekson and Johansson (2008, 2010; Mason & Brown, 2012) noting that fast or high growth firms can come from any sector - and that if any sector is overrepresented then it is in the service sector and not NTBF's *per se*. Those firms which decreased shareholder value in the case firms (and in the overall cohort – 63 per cent) in this study came primarily from the technology driven sectors and the leadership teams in all but one case firm lacked commercial experience.

8.3.3 Assemble and access the contribution story, and challenges to it. Seek out additional evidence, if available

The analysis so far has noted that state funding 'contributed' to the creation of shareholder value in the profitable case firms (3) but not in a material way as the projects would have progressed anyway according to the KI's.(See: Tables 8.3, 8.4 & 8.5). The quantitative analysis in chapter 5 showing that it made a marginal contribution to the overall cohort.

As the shareholder decreasing firms (7) - (see: Table 8.2) were not 'investor ready' (Mulcahy, 2005a) in terms of the development of their product/market strategies, the funding from external shareholders did not 'contribute' to shareholder value creation but merely added to the pressure on the management team to scale-up from an employment perspective. It can be argued that the state funding in these cases merely exacerbated the situation - especially where the state invested as part of a funding round with the VC's. This situation also placed EI in a conflict situation as it tries to reconcile the development needs of the firm with the 'return maximisation' imperatives of the VC (Mulcahy, 2005a; Breznitz, 2012). However it must be pointed out that, despite the poor overall financial performance that each of the ten case firms remained in business at the end of the analysis period (and 45 from 50 of the overall cohort in one form or another). These case firms remained in business not because of their trading record (apart from the three self funding firms) but due almost entirely to the support of their external shareholders. It is also important to note that four of the ten firms (all ICT) were 'taken over' by overseas corporations' post-state investment (with 9 firms in the overall cohort experiencing the same outcome) and whilst the purchase consideration was made public in one case (ICT6), the remainder were not made public. It can be reasonably assumed - given the firms performance to that point - that they were primarily distress sales (See: Table 8.2). Considering the level of state support for these firms - in terms of repayable and non-repayable grants, 'soft supports' and the states investment in the wider innovation eco-system (O'Malley *et al.*, 2008) – it is reasonable to question where the ultimate value in the firms is realised. Is the state inadvertently helping 'fatten-up' indigenous firms (with tax payers funds) for consumption by overseas firms

(Mason & Brown, 2010). This is worth noting given the low IPO success rate of Irish firms (Mulcahy, 2005; Breznitz, 2007; 2012). The state however did help in funding the creation of ‘jobs’ (See: Chapter 6: Figures 6.4 & 6.5) and it is a ‘cost per sustainable job’ calculation that EI uses as one of its own metrics in its annual report (Enterprise Ireland, 2010). However it is questionable how ‘sustainable’ these jobs are if the host firms are persistent loss makers.

To provide further evidence of the ‘contribution’ or not of state funding to the performance of the case firms, the relevant sections have been extracted from the Key informant interviews in the ten cases (Full case analyses available in Volume 2 of the study). In each case the key informant was asked a series of questions (See: Appendix B for the complete topic list) on their perception of the contribution of the state funding to their respective firms. They were also asked about the nature of their relationship with the State agency providing the funding – Enterprise Ireland. Their responses are categorised by sector.

Tables 8.3, 8.4 and 8.5 then summarise the responses and these are added to the evidence base in this analysis. Table 8.6, 8.7 and 8.8 analyses the responses of the KI’s to the question of how the state might assist firms in future.

Table 8.3: Traditional industry firms – The contribution of public venture capital

Traditional industry Case firms	Would you have undertaken the investment if EI funding was not available?
Consumer1 €640,000	‘The amount was irrelevant actually. I couldn’t tell Enterprise Ireland the amount was irrelevant but it actually was. (laughter). We would have done it anyway but it was important, it was significant in the way that by them coming on board - it was seen very positively in xxx ...’ (22)

Food1
€1,270,000

'It was marginal for us yeah.' (27)

It was new management. It was xxxx and the new xx guy said well why are you not getting money from Enterprise Ireland yeah because we do a huge amount of R&D in terms of product development, label development. And process development, actually no we got process grants as well. For putting in more efficient processes' (27).

The traditional cases had one firm which was profitable and one which declined overall but both acknowledged that the investment by the state – in retrospect – did not make a difference. Consumer1 acknowledging that the investment would have preceded anyway - a clear case of 'deadweight'. However the investment proved important for other reasons – see Table 8.3. The KI in Food1 indicating that it was the introduction of new management who were aware of the 'support' available that helped raise the funding from the state.

Table 8.4: Biotech firms – The contribution of public venture capital

Biotech industry Case firms	Question from Topic list – Would you have undertaken the investment even if EI funding was not available?
Biotech 1 €650,000	We would have, but it would have been at a slower rate .To be quite honest, you wouldn't be taking grant money unless you really needed it because there's a lot of paperwork. And you would have to stop and say am I getting more from this than it's costing me. If projects were not successful, you could spend a whole load of time apologising. So I would have no interest at this stage in any grant support, I like the independence, we are very fortunate that we can afford to fund the things we need to do (21) 'It made no difference. It helped, but we would have done it anyway' (20).
Biotech 2 €820,000	'... I think it was basically cash. Yeah, they have stock as a result of that. Preference shares. I think they own 3%.....' (20).

Again the Biotech firms differ in performance and attitude to the state support.

Biotech1, as a successful firm indicating that the funding helped accelerate the growth of the firm. Interestingly the KI refers to the funding as 'grant' money when in fact it is a repayable share investment or equity-grant. The KI in Biotech2 indicating

that the investment helped but that he would have been able to raise the funding anyway. His technology is disruptive and so the firm has been well supported by shareholders over the years.

Table 8.5: ICT firms – The contribution of public venture capital

ICT Case firms	Question from Topic list – Would you have undertaken the investment anyway even if EI funding was not available?
ICT1 €2,986,000	'They have a decent size shareholding. No, no it doesn't make any difference but it was welcome at the time. And it was kind of ... they haven't ever interfered although now I don't know because of the financial difficulty this country is in, we can certainly give them a partial exit if they wanted it but they've haven't asked for it. I don't know if they need the money or not. Yeah, they probably should be asking us for money because they've got lots on their agenda in terms of creating jobs with new start-ups and all that but they're not'.
ICT2 €1,155,000	'For us, not, because we were very well funded. In fact, both our rounds were oversubscribed, but I wanted them in. But we didn't really want them in for the money... Often the EI people are embassy staff in a number of Asian countries, you know? And that really helps to open doors, and then we went on a lot of trade missions. Again organised through EI. '(24)
ICT3 €635,000	Yes – clearly plans were afoot to go public when EI invested – it is not clear whether they were party to these plans.
ICT4 €698,000	'I don't know - we would certainly have taken an early dip and whether that would have discouraged us to the point that it would have broken up. Or whether we would have struggled on until we got VC funding, I don't know". <i>So it was timely?</i> It was certainly timely at the start as you know. You know like any intimate relationship. At the start and at a couple of other times you know. They gave money that was significant in itself and they gave the name of support which was significant' (24).
ICT5 €700,000	'We were looking for our final round of funding and we had at the time a couple of new major customers who, although not signed up were almost over the line we needed the funds as well - we had two VC's in at the time and Enterprise Ireland was another option and they liked what we were doing. We had a relationship with them all along because we were doing it mainly for export markets. We said that we were raising funds and did they want to be part of it and they said yes. They had the same type of shares as the venture capitalists ... which were preference.
ICT6 €681,000	'It's very hard to say. If we hadn't gotten it, we would have still done what we've done, even if we'd had to go back to the capital market earlier or find other alternative investors or who's to say if we hadn't got the EI investment that we wouldn't have got the VC on board. It's very hard to say. Yeah. I think this sort of thing is a really important catalyst. In any sort of forum where I've had an option to sort of speak about this, I do emphasise how important that source of capital is to companies' (21).

The ICT firms again indicating collectively that (bar ICT4) they would have raised the funding elsewhere for their plans. ICT1 and ICT6 were firms that ultimately grew and both of their experiences with EI were interesting. ICT1 is regarded as being skilled at extracting funding from the state- realising that they are taking on a benign investor (Mulcahy, 2009, 2011). ICT6 indicates that the state investment helped leverage VC

investment. However the KI in ICT3 indicated that the VC industry was using the state investment to mitigate their risk and that he had been at presentations where the VC firms were upfront about this. The responses here indicate the policy-in-action across six ICT firms. For those who grew their business (ICT1 & ICT6), the state investment appeared to contribute to the firms' growth and expansion. For the remainder of the firms it appears that it contributed to their survival – one IPO'd and the remaining three were eventually taken over by overseas firms.

Table 8.6: Traditional Industry case firms – The funding process and the use of public venture capital

Traditional industry Case firms	Have you received share investment support from Enterprise Ireland and what was it used for?
Consumer1 €640,000	<p>'I mean I had a choice when we separated before the joint venture. I had a choice to either move to IDA or stay with Enterprise Ireland. And I know both agencies pretty well. You know because I've worked with both so my choice was to stay with Enterprise Ireland. Now there were two reasons for that, one was the network of overseas offices. Okay and the second were; at that time Enterprise Ireland had a very strong technology department (22).</p> <p>'Yeah - they invested because we were expanding. And also because the joint venture had dissolved. We went back to them and we said look - well actually they approached us and asked us what our plans were and we explained' (22).</p> <p>'....and because we were building a new plant at the time so they came in with a mix of employment grants and preference shares'. (22)</p>
Food1 €1,270,000	<p>'Enterprise Ireland for about 15 years never supported us at all because they said it couldn't work. Then at one stage they gave us a one million Irish pound preference share loan (€1,270,000) which we are now repaying, in the last two or three years with new management. They have become much more supportive - well also because they see it's not going to go bust. So they support us, now quite significant money but equally well we are very active for them not only through Enterprise Ireland but Bord Bia (The Irish Food Board) (25)'. Warehouse. I'm fairly sure I can't even remember, it's probably 15 years ago now (it was 10) that's how it can be repaid now, so with the €600,000. What's the coupon on that? 5%. This was fixed. Yes which I'd rather not because it's money I'd use elsewhere but they want it - they insist on it - €600,000 I'd put into marketing. I'd build another warehouse'(25)</p>

The funding was used to help build a factory and a warehouse according to the KI's in the traditional firms. The equity investment was intended to support R&D and human capital development. It appears that there was a liberal view taken of what constitutes R&D.

Table 8.7: Biotech case firms – The funding process and the use of public venture capital

Biotech industry Case firms	Have you received share investment support from Enterprise Ireland and what was it used for?
Biotech 1 €650,000	'The last grant (<i>Share investment</i>) we had was for €650,000. Most of this was a redeemable research grant and the remainder a low interest loan. <i>Enterprise Ireland annual report in 2005 records it as a direct equity investment in the firm.</i> That was a low interest loan, they would have had shares in the company had we not paid it off. So we just decided that we still like to be independent' (21). Funds were used to help build a molecular biology laboratory.
Biotech 2 €820,000	'... it helped to have them in the early days. But, I mean, Enterprise Ireland, other than money, is of no – has never been any use to us at all. I don't mean that in a bad way. It's just that they tend to – I don't know. Money is probably the best way to support people, but again, they don't know. They'll give money – they don't have the time to get into my business (20). Funds were used for R&D.

Again funds were used to help build a laboratory and R&D in Biotech1 and for R&D in

Biotech2 who notes that EI did not add any value – it was just the money.

Table 8.8: ICT case firms – The funding process and the use of public venture capital

ICT Case firms	Have you received share investment support from Enterprise Ireland and what was it used for?
ICT1 €2,986,000	'...and all of a sudden they changed and said we'll give you the headcount grants but we want 5% as well. They started taking shares. <i>Preference or ordinary shares is it?</i> Ordinary shares mainly. When they continued to put money in, any time anybody put money in (VC's) they put money in and anytime we got grants they looked for shares so they've ended up with quite a big slice of xxxx, over 10%, and they have some preference shares because they even came in on that investment round. When really I didn't see the need for that but they wanted to do that as well, but they were very strong on us - they thought they were going to make a fortune on us (24). ite funny - I approached them for headcount grants which they were giving to everybody (24).
ICT2 €1,155,000	The pre-investment situation is unusual in that xxxx was only formed in 1999 and yet EI invested €1.155m in the firm (24). However this was during the dotcom era (1999/2000) and there may have been a certain amount of 'irrational exuberance' in the backing of the firm – considering the firm held the record in Ireland for raising money for a technology start-up at €15m. Enterprise Ireland joined the fray (<i>despite the private investment raised</i>) (24). 'EI invested when the institutional investors come in, they would invest too - but they had invested it based on, I think it was based on headcount, and then separately they gave you an R&D grant as well. All of the money raised from EI effectively was used for employing people and also then R&D as well' (24)
ICT3 €635,000	'XXX is a classic example - it got €635,000 off Enterprise Ireland in 1999....."We're a company that went public without a business plan. Lost \$180 million Raissing six hundred thousand euro's – from the state in a company that had huge ambitions clearly because it went public in two thousand whatever'. (31, 33). Share capital raised was spent on Headcount and R&D.
ICT4 €698,000	'There was funding from Enterprise Ireland and I suppose it's like any relationship - they were key at the start. We mightn't be here but for that very early support' (20). "Yeah we had an angel let's say who funded the first cheque and we were being promised money by a big VC and it was slow coming. And in the end it never came and E.I. came in - in that gap. So

then eventually other VC's came in. And then their imprimatur was on it and therefore other people followed in so it worked in that way' (23).

Share capital raised was spent on R & D and market development.

ICT5
€700,000

'We had a relationship with them all along because we were doing it mainly for export markets. We said that we were raising funds and did they want to be part of it and they said yes. They had the same type of shares as the venture capitalists ... which were preference'. (18)
.... I want to emphasise one thing ... Enterprise Ireland were the one organisation external to us that were unbelievably supportive in terms of help, in getting contacts abroad, they were very proactive, very helpful and I think they still are..' (18, 20).
R & D and customer development as product was bespoke initially.

ICT6
€681,000

'They are a great advantage for Ireland. I know from talking to other people (*from other countries*) that very few countries have that degree of **connected** support for small enterprises starting up, and we've used, I think, just about every scheme that has been going. It's worked out really well and I think – and vice versa as well, through other concerns, but no, we've always found Enterprise Ireland to be – it's a dual thing because dealing with the individual is absolutely fabulous, particularly their remote (*overseas*) offices have always been very helpful'(17). The availability of scheme's - brilliant, but then there's always – it still is a public service, it still has to dot the I's and cross the Ts - it still has to answer to EU law and all that (18). R & D and headcount.

The ICT firms, like the biotech firms as technology intensive firms were early (in their growth trajectories) seekers of outside equity. EI engaged with each in different contexts. The funding in all cases appeared to have gone into R&D and human capital and in two it also spilled over into market development.

8.3.4 Is there any additional evidence to add?

The KI's finally were asked what role they foresaw or would recommend for state support in future. Interestingly *none* mentioned equity or grant support for established firms going forward. It is maybe a sign of the growing maturity of the entrepreneurial base that they don't see grant support or state share investment as a panacea for their growth funding ills. The case firms, broadly speaking, would like to see an environment in the state which is conducive to doing business. This would include competitive input costs, fair regulation and incentives geared to export orientated firms and to those creating wealth. They see the state agencies in a 'facilitating' role for growth-orientated firms. The detailed comments from the KI's are set out in Tables 8.9.

Table 8.9: The future role of the state in assisting growth-oriented firms

**TRADITIONAL
INDUSTRY CASE
FIRMS**

How can the State help growing firms in future?

Consumer1

Yeah I think the state does a lot of things right but you know they've got to address this issue of regulation, they've got to address the issue of the costs of Governance here. I mean if they don't it holds a dim future for us. We can't go on paying some of the kind of bills that we are paying every day. We have to address **cost of energy** which is obviously very high and before we stopped manufacturing - our energy costs per square metre was twice what it is in Germany. Germany is as the top end you know' (26).

Food1

'... **export credit guaranteed insurance** without a shadow of a doubt for us. They produced a false report which says it's not needed; of course it's not needed if you are a multi-national but what you do is you just give it to indigenous enterprise' (27).

'... I think our **12 and a half per cent is going to go up, I don't understand why shops and banks and restaurants should be paying 12.5% corporation tax, why?** No sense at all, this is passing the parcel of money. Whereas you know anything that incentivises the entrepreneurship side of it or the guy who's making the decisions is positive so it really is affecting behaviour - otherwise the system here is good' (28).

**BIOTECH CASE
FIRMS**

Biotech1

The support is fantastic when you need the grant support. However I do think that the reporting requirements on companies are onerous' That's probably it, like the grant support was fantastic, when we got it we really needed it. And it's probably I'm talking now as a person who doesn't need (now) it but if I needed it I'd be saying well that's fantastic' (23)

Biotech2

'I guess at the end of the day, hands off. I do believe - I'm one of those - I'm old enough to remember JF Kennedy and ask not what your country can do for you, what you can do for your country kind of thing, but, okay, enough of that idealism. The reality is that what they can do it make it a more investor-friendly place. So it's actually - it's a good thing for people to invest money in start ups. Actually, the tax thing helps as well regarding the patents and IP as well'.

ICT CASE FIRMS

ICT1

'No. I think the first thing is to get the environment right. For the last 10 years they've got it totally wrong and a guy like me who is an entrepreneur should be really wealthy and should be hitting golf balls somewhere'. (26)

ICT3

'I have met Hugh Cooney (the *Chairman of Et*). I've actually gone and met him and said "guys, I think some of the stuff you have done is great. I think you are failing here because you are not changing the pervading culture around how to build great companies - quickly." (31)

The biggest thing they can do is provide leadership and leadership in terms of, let's set the bar. Let's say "we're going to make Ireland Inc a twenty billion dollar business" as opposed to Ireland technology Inc as it simply isn't going to happen as opposed to a two billion dollar business. Let's change the culture' (34).

ICT4

'A lot of the procedural things and a lot of the culture is that they are going to use Government money to tell business men how they should be running their businesses. That culture needs to be tackled, I think' (25).

ICT5

'At that point if they were to then facilitate you raising funds - not necessarily give you funds - they would build strong relationships with those providing funds and they could act as a middleman and potentially if there is some residual funding required there might be some option of funding from them but not as primary source at that point (24). (Do you still see them involved at the VC stage?). That kind of support should be for foreign market entry. Another role could be as facilitator of management training and as a developer of formal standards - that's what they should be encouraging' (24).

Firm and state co-evolving relationship

The relationship then between the indigenous firm and Enterprise Ireland (on behalf of the state) is an intimate – though not always a smooth one (as explained by an ICT KI's). It also appears that the relationship is of a *developmentalist* rather than of a facilitative nature. The negotiating process between the state and the firm is interesting in that it clearly displays the imbalance of power in the relationship between the firm and the state and the weakness of the firm's position when seeking state support.

There was funding from Enterprise Ireland and I suppose it's like any relationship - they were key at the start. We mightn't be here but for that very early support. [*Did they come to you or did you go to them?*]. I mean I was on the course that they were sponsoring and so I'd be meeting them there. And I knew them from the Industry association. So you know, we knew each other. They were very supportive very early on and they continued to support - there is a frustration that you have dealing with these organisations - you meet the sales person and they tell you how wonderful they are to support you and then you get the contract and it has lots of fine print and then you start working and you try to claim the money that you were promised and you are meeting a totally different department and they just point to some line in the fine print of the contract and for that reason it turns out you owe them money instead of them owing you money. And you know - we've had some, I would say, very bad experiences. Where we dealt with their representatives and were told to prepare a proposal and you know you work with your contact guy. [*Development advisor*] Yes the Development advisor and he advises you what to put in your proposal - oh no that wouldn't fly - you know. We can't fund that type of activity but you change what you are going to do and you put in a proposal and he discusses it with his manager and he comes back and he says - really we would want you to do something else so you scrap that and you do something else. It's time - and then you finally get one that he goes to his board with and his board turn it down!

The process clearly leads to frustration on the part of the firm as having put significant effort into putting a business plan together and 'form filling' it finds that its request is turned down.

A firms' success in extracting funding from the state depends in many cases on the quality of their relationship with the agency – in this case all EI client firms have a 'Development advisor' who is their primary point of contact with the agency. The relationship does not always run smoothly and the difference between the 'commercial' world and the 'non commercial' is stark. The KI concludes:

If I was a CEO or a senior sales manager, did a big negotiation with a customer back and forth and negotiated the contract and the board turned it down he would almost feel he had to quit - but the Enterprise Ireland advisor says "yeah you lose some you know" - it's just, I don't think a board should work in the way. Enterprise Ireland - they make a big thing of having an external board. You know external people sitting on the board, on these boards, it's not the top board it's the.....The investment boards yeah, but you know I think a board should set policy for the advisors - it should be a major disaster if an advisor brings a proposal to them, either he didn't understand the policy they said rather than them all taking it and coming in and voting and this one get's voted in, that one get's voted out. We've also had, as I say, good experiences -and very bad experiences. And you have that sort of love/hate relationship.

Thus with no overt 'Enterprise policy' in the state (O'Gorman & Cooney, 2007), a loosely-defined national objective and a neoliberal developmentalist ideology guiding it and it is little wonder that firms are faced with a 'patchwork quilt' of micro-level interventions. Thus policy, such as it is, is emergent rather than deliberate and appears to be driven by the economic development implementation agency. This helps explain the inconsistency in the relationship between the agency and the client firm explained by the KI above. Another KI (3) – who had a track record of raising venture funds in the US noted the dysfunctional situation that can be created when the state is involved in the venture funding market (compared to the US).

On indigenous technology firms:

We bleed them through the Enterprise Ireland system from the research grant for €100,000. And the problem is it creates a culture where the venture capitalists sit outside it and go “Well why would I put money in when I can wait for Enterprise Ireland to put their 600k in and then I will come in.

On EI:

... and they either invest and believe that you can do it or they put a guy in who can do that, or they won't [*invest*]. But they won't sit there and try and *bat* [*Researcher added*] you away with €300,000 and go “well why won't you go away”? You got to build...you got to have strategy. Its called venture - which means there needs to be risk. I think Enterprise Ireland have failed at that.

On Irish VC's:

All those venture capitalists raise money off money that Enterprise Ireland gives them. So they get twenty million off Enterprise Ireland and then they go raise another eighty. They go out and their tagline, I've seen their presentation says, “Irish Governments is already funded, has already guaranteed 20. We're raising”

Breznitz (2007) concludes:

In sum, it seems as if the co-evolutionary process of state-industry relations is now out of step. With EI's centrality in each and every point of the system and with its new zeal for profit-generating investment, one must wonder whether the future development of the indigenous software industry in Ireland [*and all other sectors – added by author*] is now in danger of suffering a stage two failure – the inability of the state to relinquish its own powers over the sectoral industrial system (Breznitz, 2007:186).

8.3.5 Can the contribution story be revised and strengthened or changed?

The case firm evidence

Table 8.10 summarises the findings of the ‘contribution analysis’ process outlined in steps one to five. This tells in broad outline the ‘contribution story’ relating to the Irish states policy of investing venture capital *directly* into individual firms. The logic chart set out in Figure 8.1 outlines the ‘theory of change’ which shows that the states

micro-level public venture capital policy was initiated to help accelerate growth in the targeted firm-to 'scale-up' faster by closing the equity gap – even though the initial inspiration for the policy was to find another route to directly funding firms when non-repayable grants were disallowed by the EU. This inadvertent move or 'policy drift' brought EI into the 'venture capital business' as it sought ways to help stimulate job creation. EI has since morphed into the biggest provider of VC in Europe (Horn, 2011).

The analysis of the financial results of the case firms (See: Table 8.2) indicates that two out of the ten firms increased their return on shareholders' funds post-state investment and thus eight did not. The two firms which did increase shareholder value indicated that they would have undertaken the investment anyway. The eight with negative returns did not make use of the state funding to drive profitable growth and in five of the eight cases they merely helped accelerate the shareholder destruction. Indeed it is clear from the case analysis that the firms were not 'investment-ready' (Mason & Harrison, 2001; Mulcahy, 2005a; Mason & Kwok, 2010) as their customer value proposition (CVP) had not been sufficiently developed and validated in the marketplace when the funding was taken on board. Only one case firm had moved (on one factor – Balance sheet total) beyond the EU definition of an SME. All others – after the analysis period, had remained below the key thresholds of 250 employees, €50m turnover and a €43m balance sheet total. Thus none of the ten case firms grew to become, per EU definition, a 'large firm' and so - if the state funding did help to accelerate the growth of case firms (as in the two profitable firms) – it made a marginal contribution in terms of helping to scale the firm. In all other case firms it contributed to increased R&D and headcount spend (and thus firm

scale) but not to *profitability* or *profit growth* and ultimately shareholder value creation.

The overall cohort evidence

In the overall cohort, 40 of the 51 firms decreased shareholder value with four of the 40 ceasing trade and eight taken over by international firms. Forty five of the 51 firms remained trading after the analysis period with 10 taken over by other firms - nine international.

Overall the aggregate ROIC Post – Pre state investment return across all 51 firms in the study (EI invested €50,376,000 in 51 firms) was minus 11.86 per cent. This does not account for any windfall gains by EI as these are not publically disclosed (Mulcahy, 2005a).

In addition the logistic regression model developed in the study and described in Chapter 5 found no statistically significant relationship between state investment and firm performance as defined in this study.

Many of the non-technology driven firms in this study would not be considered as appropriate firms for VC in a private sector driven market. Thus the chain of evidence gathered here suggests that the required ‘theory of change’ for the Public Venture Capital policy is not verified in this analysis. Indeed the result of the six-stage ‘contribution analysis’ is that the state’s public venture capital policy is not reaching the primary objective envisaged for it – to close the perceived ‘equity gap’ for growth –oriented indigenous firms.

Table 8.10: Summary of the contribution of Public venture capital investment funding to the case firms performance.

Output measures

Case and firm age

Input measure

Age at time of investment in parenthesis	State investment €1,000	What was investment used for?	Would you have undertaken the investment anyway if EI funding was not available?	Have you been financially supported by any other state agency besides EI?	How might the state help growing firms in future?	Mean Shareholder Value Creation Post-Pre investment	Employment at end of analysis period	Turnover at end of analysis period €'000	Ownership status at end of analysis period [^]		
						Profit/Capital invested	ROIC	Ability to payback state share investment			
Consumer1 (6)	640	Factory build	Yes	No	Less onerous regulation	(556)/4756	(11.7)	Y	24	NA	European Multinational (c)
Food1 (14)	1270	Warehouse	Yes	Bord Bia (Food Board)	State Export Credit Insurance scheme	657/4716	14	Y	68	11730	Unquoted PLC (c)
Biotech1 (9)	650	Laboratory	Yes	No	Enterprise Environment	626/568	110	Y	25	NA	Private unlimited (c)
Biotech2 (4)	820	R&D	Yes	No	Enterprise Environment	(2215)/(6704)	-	N	11	NA	Private (u)
ICT1 (8)	2986	Headcount	Yes	No	Enterprise Environment	(84)/7357	(1)	Y	238	25639	Private (u)
ICT2 (2)	1155	R&D and Headcount	Yes			(4398)/10752	(41)	N	100	10000	UK corporation (c)
ICT3 (14)	635	R&D and market development	Yes	No	Leadership	(34018)/62740	(54)	Y	203	23400	PLC (c)
ICT4 (3)	698	R&D and customer development	No	No	State as facilitator	(2426)/67	(362)	N	18	NA	Asian Corporation (c)
ICT5 (4)	700	R&D and customer development	Yes	No	State as facilitator	1663/(1184)	-	N	12	99	US Corporation (c)
ICT6 (3)	681	R&D	Yes	No		(1700)/(4923)	-	Y	55	10676	US Multinational (c)

Notes to table: See KI responses in step 5 to each of the factors above. ^ C= changed status, u = unchanged

The public venture capital was expected in turn to help ‘... accelerate the growth of the development of world-class Irish companies to achieve strong positions in global markets resulting in increased national and regional prosperity’ (Enterprise Ireland annual report, 2008) thereby contributing towards the national objective of ‘job creation’ (Breznitz, 2012). Murray *et al.*, (2012) noting that:

A clear lesson from the experience of advanced Western economies is that supply-side measures alone cannot create a viable VC industry. In addition there has to be major changes to the environmental ecosystem that also allow for significant improvements in the quality and prospects of the firms seeking VC finance (Murray *et al.*, 2012; p.17).

Thus cognisance must also be taken of the drivers and constraints on firm performance other than external financial resources (See: Chapters 6 & 7). This study identified and highlighted the deficient diagnostic capabilities and implementation skills of the leadership teams in indigenous growth-oriented firms as the primary factor in the sub-optimal firm performance. The owner-manager related barriers which retard the development of sustainable competitive advantage can be addressed by increasing the absorptive capacity of the leadership team and/or by facilitating the provision of resources to overcome growth constraints (Arnold *et al.*, 2004; Bessant *et al.*, 2005).

Storey and Greene (2010) are therefore persuaded that there is, on balance, an economic case to be made for public support for technology businesses in terms of early stage R&D support, justified on spillover grounds and funding uncertainty – essentially justified on ‘market failure’ grounds. They cite some support for loan-guarantee schemes also. However Bannock (2005), Davidsson (2008), Bridge *et al.*

(2009) and Bennett (2012) all broadly agree with Bill *et al.* (2009) when they note that:

Numerous research studies have failed to find any positive correlation between support measures and development programmes on the one hand and firm growth and development on the other (Bill *et al.*, 2009: p.1136).

Storey and Greene (2010) note the dearth of rigorous evaluation methodologies applied to micro-level policies either – most evaluations only reporting the views of recipients. This despite the fact that the OECD (2004) advocates a robust six stage evaluation process developed by Storey (2000).

Thus the findings from the contribution analysis in this chapter – which is essentially a meta-analysis combining the empirical findings from Chapters 5, 6 & 7 and additional case material (Volume 2 of study) in a structured theory-based evaluation (TBE) framework – finds no significant contribution to the acceleration of indigenous firm growth from the public venture capital policy intervention in the study period.

8.4 Summary and Conclusions

This chapter has outlined the theory-based approach to evaluating the contribution of public venture capital to firm performance. The technique used is 'Contribution Analysis' – a six stage approach developed by Mayne, 2001. Firstly the logic of the proposed 'theory of change' was illustrated in Figure 8.1. This indicated that the public venture capital was intended to 'accelerate' the growth of the targeted firms by providing share investment for R&D and human capital. The assumption made is that lack of financial resources or the 'equity gap' is the major blockage on growth-oriented indigenous firms. Although commercialisation is considered a key barrier to

successful implementation of innovation and growth – marketing and sales related spend was excluded as allowable spend. The logic map in Figure 8.1 also shows the large number of confounding factors present that can influence the firm growth process – external funding (from whatever source) is but one.

The ‘contribution analysis’ approach is a meta-analytic framework which synthesises and analyses the evidence from the empirical Chapters 5, 6 & 7 and additional case material from Volume 2 of the study to answer the question of whether the public venture capital intervention made a noticeable *contribution* to an observed result (firm performance) and in what way?

All ten case firms analysed in the study (See: Chapter6 &7 and Volume2) were selected from the overall cohort of 51 for their representativeness. Each of the ten firms survived the post state investment analysis period of five years but only two firms increased their shareholder value through profitable trading (See: Tables 8.1; 8.2 & 8.6). Eleven out of the 51 in the overall study created shareholder value. Five case firms were acquired by overseas firms (9 from 51 in the overall study), two went public (IPO) and one became an unlimited firm. Six out of 51 firms in the cohort closed during the analysis period. None of the firms in the study grew beyond SME status in the analysis period (Only three did in the overall study). Whilst the timing of the state investment was considered important in a number of cases, the key informant indicated in nine of the ten cases that the investment would have proceeded anyway (See: Table 8.3 &.4). Six of the ten case firms have the ability to begin repaying – to some degree - the state share investment after the analysis

period but only two could begin to do so from *retained earnings* as envisaged in the programme design.

The aggregate ROIC Post – Pre state investment return across all 51 firms in the study (EI invested €50,376,000 in 51 firms) was minus 11.86 per cent which is non-performing when viewed from an investment portfolio perspective. The logistic regression analyses in Chapter 5 also found no significant association between the value of public venture capital and the firm performance measure utilised in the study.

The 'Contribution analysis' shows that the primary rationale for the policy – to close the perceived equity gap for growth-oriented firms – did not hold in the analysis period. This period (1999-2005) was a period of unprecedented economic growth in Ireland with low interest rates and high liquidity. Availability of capital was found therefore not to be *the* major barrier to growth performance in the period.

The evidence presented in the cross-case analysis in Chapter 6 (See: Table 6.12) and Chapter 7 (See: Table 7.2) and summarised here in Chapter 8 (Section 8.3) suggests that the key differentiators between performing and non-performing firms was not financial or resource constraint *per se* but the product/market strategy pursued by the founding entrepreneur(s). Performing firms created sustainable competitive advantage and shareholder value through a profitable growth strategy. Non-performers - primarily from the technology driven sectors - were loss making and thus decreased shareholder value in the analysis period by pursuing a *growth to profit* strategy. Other important differentiators were the commercialisation and financial bootstrapping experience of the performers, the control of ownership and

strategy, the relative age and sector and the diagnostic capabilities for opportunity and threat identification. Taken together these factors indicate that the major constraining factor on indigenous firm growth would appear to be the lack of 'well thought out, well managed projects' (Walsh, 1985).

The states involvement in the VC funding market - through EI as a public venture capitalist – also had a distortive effect on the risk capital provision market in Ireland in the analysis period. Whilst the state has been successful in seeding a VC industry in Ireland in the late 1990s (Mulcahy, 2005a), its continued presence after 14 years has not only caused market distortion – particularly around deal pricing , valuations, exit policy and performance metrics – but it has also distracted it from its original remit as an economic development agency. The states continued presence in providing direct venture capital has continued to perpetrate a 'grant mentality' and dependency culture not only in the client firms but also in the fledgling VC industry. This conflict between EI's economic development goals (Job creation) and its pursuit of 'returns' on its venture capital investments appears to create confusion and uncertainty in its relationship with its client firms. EI's original mandate, as an economic development agency (1998), did not include 'venture capital funding'. The origin of how this dual mandate arose is explained in the Contribution Analysis – Section 8.3. EI's current remit, though conflicting, puts the agency in an all-powerful developmental role with client firms as the agency, on behalf of the state, is involved in all stages of firm growth and in most of the early stages of the firm financing cycle also (Breznitz, 2012).

It would appear, based on the evidence presented here in the meta-analysis, that it is now time for the state to review the effectiveness of its micro - level policies given the weight of evidence, both in this study and internationally, questioning the rationale behind and effectiveness of micro-policy instruments. It is suggested that the state requires a deliberately-stated 'profitable firm centric' rather than 'job centric' enterprise policy to offer clear guidance to its implementation agency. Clear policy guidance would then deter the implementation agency from leading policy into areas outside its remit and expertise. An enterprise policy would also prevent it from adding to the plethora of micro-policy instruments currently available to indigenous growth-oriented firms.

Finally it is suggested that this enterprise policy be developed along Simonian (Simon, 1968) lines so that as policy is developed - based on rigorous analysis of theoretical and empirical evidence and sound 'theories of change'. The policy results must then be rigorously evaluated as part of the industrial policy process. Policy learning can then take place. This then will feed into future industrial policy development thus qualifying it as 'evidence-based'. This will ultimately lead to improved outcomes from the state/firm co-evolving relationship.

Chapter 9

Indigenous Firm Performance & Public Venture Capital in Ireland: Policy Implications

This chapter addresses the policy implications arising from the empirical findings in Chapters 5, 6, 7 and 8 of this study.

In an increasingly globalised 21st century, R&D-intensive and rapid innovation-based industries are pushing the technological frontier further and at a faster rate. In such circumstances, a small late-developing state such as Ireland which aspires to be a sustainable knowledge-driven economy is required to have more sophisticated national economic objectives than simply 'job creation' and GDP growth.

From an industrial policy perspective, it is important that innovative entrepreneurship and growth-oriented indigenous firms - as key drivers of future growth - have their roles articulated in deliberate policy terms. It is suggested therefore that Irish policy-makers prioritise the development of an enterprise or entrepreneurship policy which articulates a clear vision for the contribution of these key constituencies to economic development. This deliberate entrepreneurship and firm-centric policy should be based upon facilitating the development of profitable, high and fast growth indigenous firms on their growth trajectories. This contrasts with the emergent 'job-centric' policies historically pursued in Ireland.

Further, it would seem appropriate that this important value creating constituency are directly represented at the highest levels of government so that their interests can be directly considered in the formulation of fiscal, taxation, competition, regulatory and emigration policy.

9.1 The Future Role of an Economic Development Agency for Indigenous Industry in Ireland

The analysis in the empirical chapters in this study indicates that the State's attempts at combining the incompatible developmental and venturing remits have been shown to create confusion and inconsistency in the State/firm co-evolving relationship. This suggests that new institutional arrangements will be required going forward to rectify the situation.

The dominance of EI as an agent of the state – and the largest venture capital firm in Europe (Horn, 2011) in the supply side of the Irish SME financing market signifies a 'market failure' not of the 'equity' or 'hard capital rationing' type but one of a more systemic nature. It signals the malfunctioning of the risk capital market for growing firms (Leleux & Surlemont, 2003) in the economy. In most developed states, risk capital is provided primarily by the private sector – even if it is initially seeded by the state (Leleux & Surlemont, 2003; Barry & Topa, 2006; Breznitz, 2007; Senor & Singer, 2009; Lerner, 2009; 2010). Indeed, Levine (1997) notes the direct relationship between the development of a states' financial system and economic development.

Even if the state intervenes and seeds a 'market failure' situation - as the Irish state did when seeding the infant VC industry in the 1990's (Barry & Topa, 2006) - it should, in the interests of market efficiency, step back and allow the private sector to drive the development of the market. This will ensure that perceived market failure is not replaced by government failure (Senor & Singer, 2009). Enterprise Ireland is now in its second decade in the venture capital market and continues to deepen its involvement.

Withdrawal from the venture capital role would allow Enterprise Ireland, *as an economic development agency*, to redefine its relationship with its client firms from its current directive approach to a more facilitative one (See: KI comments in Section 4 of Chapter 8 - Contribution analysis). It would also allow it to re-focus on its development agenda around uncontested 'market failure' areas such as the facilitation of high potential start-ups (HPSUs), business R&D under-spend and in-market support for firm internationalisation through its overseas office network, the building of stronger linkages with the FDI base and facilitating access to public procurement for SMEs.

Finally this refocusing in approach would also have the benefit of lessening indigenous firms dependence on grant-aid (Mulcahy, 2009; 2011, 2012) and also eliminate the Irish States subsidising of private sector venture capital investment.

9.2 Indigenous Firm Development in Ireland – Policy Implications (Supply-Side)

The primary role of the State, from a supply-side perspective, is to provide a conducive macro-economic environment and regulatory framework for competition to flourish in all sectors of the economy (Lerner, 2009; Storey & Greene, 2010). In particular, the State must ensure that the financial system has the institutional arrangements and liquidity to provide the necessary private sector funding for the international development of indigenous firms (in all sectors) as an important element in the 'wider setting' of the National Innovation System (Lundvall, 2010). The functioning of the market system is even more important in a small state, like Ireland, given the increased levels of social cohesion found. A greater tendency

therefore exists for the state to intervene in areas best left to the market to arbitrate. The industrial history of the Irish State since it became outward focused in the 1950's (Donnelly, 2012; Breznitz, 2012) demonstrates that the contradictory 'neoliberal developmentalist' ideology that took hold in that period still pervades industrial policy thinking today (Breznitz, 2007; 2012).

The empirical findings in this study mirror those of studies in other jurisdictions in confirming that micro-level policy interventions are shown to make marginal or no identifiable contribution to firm performance (Bannock, 2005; Davidsson, 2008; Bill *et al.*, 2009; Bridge *et al.*, 2009; Bridge, 2010). Micro-level policy instruments are also not rigorously evaluated for policy learning purposes (Storey & Greene, 2010). For these reasons, it is suggested that, in future, 'hard' micro-level interventions in Ireland are only utilised in severe capital rationing or economic crises situations. If utilised then they should be rigorously evaluated using theory based evaluation (TBE) (See: Chapter 8).

9.3 Indigenous Firm Growth Performance in Ireland – Policy Implications (Demand-side)

In addition to the institutional deficiencies in the State support system, the empirical evidence presented here also finds that there were deficiencies in the dynamic capabilities and core competencies of the selected indigenous firms in the study. The firms in the study were selected for support by the State as potential 'fast or high growth' firms. The selection of the firms in the study shows a bias by the state for the technology sectors in general and the software sector in particular (See: Chapter 5). The State, by investing in 'selected' firms is intervening in the more efficient market process of allocating scarce resources from less innovative to more innovative actors

within the state (Schumpeter, 1934). It therefore runs the risk of creating deadweight and/or displacement and filling a perceived 'equity or finance gap' which may not exist (Murray *et al.*, 2012).

More importantly, the performance outcomes demonstrate the inability of the majority of leadership teams in the case-study firms to create *competitive advantage* through the strategy-making process. As potential high growth firms, all firms in the study were successful in raising funding and accumulating resources to underpin growth but only a minority could generate a profitable return on the capital base accumulated over the eight year period under analysis. The role of policy-makers at the micro-level in the small state, would appear to be to 'facilitate' growth-oriented firms to develop their diagnostic capabilities and implementation skills to identify and surmount those barriers which retard the development of sustainable competitive advantage. This can be achieved by assisting in increasing the absorptive capacity of leadership teams and/or by facilitating the provision of resources to overcome growth constraints (Arnold *et al.*, 2004; Bessant *et al.*, 2005). This type of intervention, if appropriate, is best achieved by providing firm owner-managers with opportunities to develop the requisite diagnostic capabilities and resource acquisition skills. This will then underpin effective strategy development and implementation to create competitive advantage (O'Gorman, 2012).

Providing resources, particularly financial, to firms with strategic and structural deficiencies (e.g. young and/or internationally-inexperienced) without correcting for these weaknesses, can be expected to lead to a higher probability of such firms being unable to reach their projected growth targets (See: Chapters 5, 6 & 7). Requiring

small firm owners to produce formal plans however, will not help them address and correct the strategic and structural deficiencies identified above. 'Soft' micro-level interventions may be appropriate in helping address the strategic and structural deficiencies of indigenous firms but should be utilised only where the private sector is incapable or unwilling to address the validated need.

Given the heterogeneous requirements of the SME sector, the State would be well advised to avoid 'hard' micro-level interventions in the future except in the most extreme situations (Bennett, 2012). Profitable growth can come from a variety of sectors – and in a variety of ways. There are myriad factors at play in determining and influencing the growth performance of the growth-orientated indigenous firm but the product/market strategic competencies of the leadership team is key - with customer-facing capabilities a necessary requirement. '

Finally the case-study evidence suggests that the State should, given its rich firm-level data bases, actively engage in empirical evaluative research with the local and international academic communities. This will allow greater involvement by the academic community in 'evidence-based' policy development (Mason & Brown, 2011). This would in turn improve the states' level of insight into SME growth performance and the contribution that Government macro and micro-level policy might make to that performance. Adopting this Simonian approach (Simon, 1968) will allow appropriate iterative policy learning which can input into future 'evidence-based' policy making and thus facilitate future 'rapid policy deployment' in Ireland.

9.4 Summary & Conclusions

This chapter addressed the policy implications emanating from the empirical findings from chapters 5-8.

Enterprise policy has evolved historically in the Irish state in an emergent and fluid fashion since the advent of the states export-oriented industrial policy in 1958. It is suggested that a deliberately stated enterprise or entrepreneurship policy is now required to provide guidance and coherence to the state support system for growth-oriented indigenous firms.

As a consequence of this historic lack of policy guidance, the institutional arrangements which evolved in Ireland to support indigenous industry are operating sub optimally. Enterprise Ireland (EI) – the implementation organisation to emerge from the evolving policy process - now has responsibility for the economic development of indigenous industry *and* public venture capital. This was shown to create conflict and inconsistency in the state/firm co-evolving relationship.

Withdrawing from public venturing would allow EI to re-define its relationship with its client firms from a directive to a facilitative approach and also allow it to focus exclusively on its economic development remit.

The findings in this study further corroborate the findings in other jurisdictions on 'hard' micro-level policy interventions, namely that there is no evidence as yet of their contribution to individual firm performance. It is therefore suggested that rigorous theory-based evaluation (which there is also no strong evidence of) is required to build up the evidence base. In the absence of such evidence it is further

suggested that micro-level instruments might only be utilised by policymakers in severe capital rationing or economic crises situations otherwise there is a risk of misdiagnosis of the causal issue and the potential for the creation of deadweight and/or displacement.

The primary role of the state, from a supply-side perspective, should be to provide a supportive macro-economic environment and regulatory framework for competition to flourish in all sectors of the Irish economy. In particular the state must ensure that the domestic financial system can support the international development of its indigenous stock as an important part of the wider setting of the national innovation system.

The empirical evidence presented in this study demonstrates the difficulties faced by the state in attempting to pick and make winners. In the past the state has biased its choices towards the technology sectors in general and the software industry in particular. In future policymakers must take a broader view of the knowledge-creation and diffusion possibilities of all sectors with internationally trading potential. High and fast growth firms can emanate from a variety of sectors – and in a variety of ways (Mason & Ross, 2010).

Finally the performance of the firms in the study demonstrates the inability of the majority of leadership teams to create competitive advantage through the strategy process in the period under analysis. Policy interventions, where appropriate, must focus on developing the skills and capacity of the leadership teams to identify, validate and exploit profitable growth opportunities.

Chapter 10

Indigenous Firm Performance & Public Venture Capital in Ireland: Conclusions & Implications

The Irish State has been actively attempting to stimulate increased export activity by its indigenous stock of firms since the late 1950s. This was done to help achieve the national mission of 'job creation' (Breznitz, 2007, 2012). While indigenous exports have increased substantially in value since then and the composition of those exports has evolved into more technology-driven sectors, the prognosis is not all positive. The contribution of indigenous exports has reached a plateau in recent years, growing by just 1.2 per cent in value between 2000 and 2005 – an acknowledged boom time for the Irish economy (Forfas, 2006). The contribution of indigenous industries to overall exports in 2009 stood at nine per cent by value, down from 26 per cent in 1991 (Forfas, 2009). These trends reflect the increasing dependence of the Irish economy on multinational enterprises. They also call into question, not only the international competitiveness of Ireland's SME stock, but also the role and effectiveness of the State support system for indigenous firm development in Ireland. If international competitiveness needs to be built upon improved levels of productivity and innovation then, in Ireland's case, it is indigenous industry where the greatest improvements in competitiveness can be made (Small Business Forum, 2005; Forfas, 2007). Small and medium-sized firms account for 99.5 per cent of Ireland's firm stock, 66.5 per cent of its industrial employment but only 55.6 per cent of value added to the national economy (Chapter 1:Table 1.1, Deakins & Freel, 2006).

The contribution of Government support – particularly direct public venture capital – to indigenous firm growth and development in Ireland and other smaller states is therefore an interesting area that has been given insufficient emphasis in the firm growth and SME policy literature. This thesis contributes to closing this research gap by analysing the contribution of direct public venture capital to indigenous firm performance in Ireland. This chapter restates the principal research questions and objectives and reviews the research methods deployed in the study. The main sections of the Chapter summarise the empirical results and discusses their implications.

10.1 Indigenous Firm Performance & Public Venture Capital in Ireland: Objectives of the Study

As noted in Chapter 1, this study is based on the central research questions of: *What role does public venture capital play in accelerating the growth performance of indigenous growth-oriented SMEs in the small late developing state and how might its contribution be evaluated at firm and policy level?* Three related research questions are framed around the factors which positively influence indigenous firm performance, the barriers to firm growth and the possible lessons for other small sovereign states and self-governing regions from the Irish policy approach.

More specifically, these research questions are stated as research objectives. The principal objective of the study is to evaluate the role and contribution of direct public venture capital (as a policy instrument) in stimulating or accelerating the growth performance of Irish growth-oriented SMEs. A second objective is to identify other possible factors that positively influence the performance of growth-oriented SMEs in Ireland whilst the third objective is to establish the possible factors

constraining the growth performance of indigenous Irish SMEs. Based upon the empirical findings for Ireland, the next objective is to recommend a future role for State support in the growth and development of SMEs. The final objective is to assess the extent to which the lessons learned from the Irish experience are applicable to other small later developing states.

The study uses a proprietary dataset of fifty-one Irish firms (67 per cent technology-based and 33 per cent from traditional industry). Each firm received public venture capital from the Irish State - a minimum of €635,000 (IR£500,000) up to a maximum of €3,291,000 in one of the calendar years 1999–2005. The mean public venture capital investment per firm is €987,000. These share investments were provided through the Irish State's economic development agency for indigenous industry – Enterprise Ireland (See: Chapter 5, Table 5.16).

The firms selected for investment by Enterprise Ireland are prime examples of the Irish State's attempt to 'pick and make winners' (Carr, 2000a) and are thus an appropriate firm population for study. This cohort of firms allows clear distinctions to be made between those firms creating shareholder value through *profitable* trading and those firms decreasing shareholder value over the analysis period. The fifty-one firms in the study received 33 per cent (€50.4m) of the total direct venture funds dispensed (€153.1m) to individual firms in the analysis period 1999- 2005. This, in spite of accounting for only 8 per cent of the total number of firms supported by the end of the analysis period. The State therefore signalled that it viewed these firms as having the greatest potential for 'fast or high growth'.

All major Irish indigenous exporting sectors are represented in the study; policy-makers demonstrated a clear selection bias for younger technology-based firms – particularly those from the software sector (O’Riain, 2004; Breznitz, 2007, 2012).

Fifty-four per cent of the public venture capital funding in the study was allocated to firms in the ICT and high-technology manufacturing sectors – a total of 35 firms, with an average investment of €733,000 per firm. The sixteen firms in the traditional sectors received €1,456,000 on average per firm, reflecting the age, scale, sectoral and capital intensity differences between the two groups.

The study uses a ‘mixed method’ research design which facilitates a triangulation approach (both data and methodological). This approach utilises a combination of complementary quantitative and qualitative research methods to increase confidence in the overall research findings.

In this study, triangulation is achieved in a number of ways. In data terms, this is done by collecting differing types of data relating to the participant firms. Financial and legal data, such as profit and loss statements, balance sheets, articles and memorandum of association and share registers, are combined with press data, archival data, key informant interview data and database sources to provide a richness and credibility to the study that a single source could not achieve. In methodological terms, the study is careful to combine quantitative and qualitative techniques, such as logistic regression, case analysis, cross-case analysis and contribution analysis to provide the requisite internal validity and reliability.

10.2 Indigenous Firm Performance & Public Venture Capital in Ireland: Principal findings

This section summarises the principal empirical findings of the study in order of importance.

Finding 1 is on the Policy Rationale & Policy Development Process for Public Venture Capital Support in Ireland

Finding 2 is on the Role & Contribution of Public Venture Capital to Indigenous Firm Performance in Ireland

Finding 3 is on the Factors Differentiating between Performing & Non-Performing Firms in Ireland (Cross-Case Analysis)

Finding 1: On the Policy Rationale & Policy Development Process for Public Venture Capital Support in Ireland

Industrial Policy Rationale & Evolution in Ireland

Ireland is a small state that has historically faced high levels of unemployment, emigration and economic crises in its economic development trajectory. It is therefore not surprising to find that from an industrial policy perspective, ‘job creation’ has been elevated to the *de facto* national objective. This has certainly been the case since the Irish State embraced an export-oriented industrial policy and free-trade principles in the late 1950s (Stationery Office, 1958a, b). The development of Irish industrial policy in this period however, appears to have been heavily influenced by the inherently contradictory ideology of ‘neoliberal developmentalism’ in pursuit of the loosely-defined national objective (Breznitz, 2012). Consequently the Irish State’s economic development organisations tasked with trying to achieve this objective have been vested with immense power, influence and resources. The policy towards foreign multinationals promises and delivers on providing substantial numbers of jobs although the related spillover effects and direct linkages into the wider economy have been more limited than anticipated (Ruane & Ugur, 2005; Gorg,

2007). In contrast, indigenous industry in Ireland promises not only smaller numbers of jobs per project but higher corporate failure rates and thus they remain problematic for policy-makers to deal with.

Foreign multinational enterprises therefore gained policy priority in Ireland.

Indigenous industries, on the other hand, have faced institutional discrimination with regard to tax rates, financial support and land allocation (O’Riain, 2004; Sterne, 2005). Whereas the Irish State sees its role as facilitating the activities of the multinationals through its economic development agency – IDA Ireland - it takes a more direct ‘developmentalist’ approach to indigenous industry through its development agency, Enterprise Ireland. Since 1994, both agencies have reported to Forfas, the national policy advisory board for enterprise, trade, science, technology and innovation in Ireland.

Enterprise Policy in Ireland: Emergent & Fluid

The Irish State first began to adopt a more positive attitude to indigenous industry *after* firms from the emergent software sector began to achieve global success in the early 1990s *without* significant state support (Sterne, 2004). While the policy for attracting foreign multinationals to Ireland is a deliberate and well developed one, the enterprise policy for indigenous industry remains largely emergent and fluid, fifty years on. This helps explain the plethora of micro-level policy instruments available to indigenous firms in Ireland and the lack of policy coherence at the State/indigenous firm interface (O’Gorman & Cooney, 2007). The subsequent lack of rigorous evaluation of these micro-level instruments (Lenihan & Hart, 2006) can also be explained by the lack of policy guidance and the absence of an evaluation culture.

This emergent micro-policy approach therefore brings the economic development agency into areas outside its originally intended remit and expertise in pursuit of the national 'job creation' objective (Section 8.3).

Public Venture Capital in Ireland as a Micro-Level Policy

As a consequence of its attempts to help accelerate the international growth of indigenous firms through direct share investments, the Irish State finds itself with an investment portfolio of over six hundred *direct* investments (2005) in indigenous firms (Table 5.3). Enterprise Ireland's entry into the venture capital market on behalf of the State in 1998 originally arose from Ireland's attempts to remain within EU state-aid rules on grant aid. It achieved this by replacing non-repayable grants to firms with repayable equity grants. These repayable grants were subsequently amalgamated into a share portfolio with share investments that Enterprise Ireland inherited on its formation from the Industrial Development Authority (IDA). Share acquisitions in indigenous firms on behalf of the State originally began in 1988. Consequently the Irish state has become the largest venture capital company in Europe in terms of the numbers of projects funded (Horn, 2011).

Economic Development & Public Venture Capital in Ireland

The Irish State entered the venture capital market in Ireland originally to correct a perceived 'market failure' (Mulcahy, 2005a) - fourteen years later, it remains the largest domestic player. The Irish State's continuing presence causes market distortion around deal pricing, valuations, exit strategy and performance reporting (Chapter 8:Section 8.3, Mulcahy, 2005; Breznitz, 2007). This 'policy drift' into public venture capital has resulted in a broadening of the economic development agency's

remit. It is now responsible, by default, for economic development *and* for generating financial returns as a public venture capitalist – all with respect to the same cohort of growth-oriented firms. It is unclear which role takes priority in any given situation and this involvement places the State in a difficult position when economic development objectives clash with the venture financing objectives of its implementation agency. This dual mandate has had a detrimental effect on the co-evolving relationship between the Irish State and the growth-oriented indigenous firm (Chapter 8 – Section 8.3.5; Breznitz, 2012).

Sustainable Job Creation in Ireland as a Consequence of Profitable Growth

The Irish State's logic for financially supporting indigenous firms is to close the perceived 'equity gap' that exists for them. Investing in these firms, it is argued, stimulates them to accelerate their international growth. This has the theoretical effect of increasing employment and contributing towards the national objective of 'job creation'. The State's focus on job creation *per se* as an overarching objective however, appears to blind it to the myriad other factors besides State investment that might determine or influence job creation by indigenous firms (Figure 8.1).

Sustainable jobs are a *consequence* of profitable growth and value creation by indigenous firms and it is therefore not an appropriate measure of growth and value creation. This study demonstrates that the 'chain of logic' in value creation is important; i.e., 'profitable' firm growth leads to the creation of sustainable competitive advantage which leads to shareholder value creation and this, in turn, leads to increased employment once the value is retained in the firm (Chapter 2: Appendix 1). The primary long-term objective of industry policy therefore should be to facilitate the 'profitable' international growth of the maximum number of growth-

oriented indigenous firms (Chapters 6 & 7) given their disproportionate contribution to economic growth (See: Table 3.1).

Finding 2: The Role & Contribution of Public Venture Capital to Indigenous Firm Performance in Ireland

Having outlined the findings on the policy rationale and policy development process, it is possible then to summarise the findings on the role and contribution of the public venture capital investments to subsequent indigenous firm performance.

Indigenous Firm Performance in Ireland

Eight years of financial data was gathered on each firm in the study (n = 51) and a post minus pre State investment performance measure was developed as a dependent variable. A before-and-after measure indicates whether a firm increased or decreased shareholder value in the period after the public venture capital injection. Based upon this 'going concern' measure, forty firms decreased shareholder value and eleven increased shareholder value. The aggregate ROIC post minus pre State investment return across all firms in the study was minus 11.86 per cent. This indicates that, in the absence of windfall gains (which are not publically disclosed), the cohort of firms in the study have collectively been unable to begin repaying the Irish State's investment after five years (post- investment) from retained earnings as envisaged (See: Chapter 5: Section 5.2). Considered as a portfolio of venture capital investments, this cohort of firms would therefore be considered as non-performing – on the basis of its collective trading performance (Mohr *et al.*, 2009:4).

Firm Performance & Public Venture Capital in Ireland

The logistic regression model developed to test the relationship between State investment value and Shareholder Value (Model 2) was found to be statistically significant, $p\text{-value}=0.031<0.05$. 'Pseudo' R^2 (32.35 – 43.2%) and Hosmer & Lemeshow goodness-of-fit statistic = .457>.05. The classification table classified 78.4 per cent correct which is well above the chance 'hit rate' (PRE) for the null model of 48 per cent. Well fitting models are 25 per cent or more above the base rate. The statistical significance of the model held when the model was run entering all independent variables in two blocks and when using a backward stepwise procedure. There was one statistically significant predictor variable - Firm age, $p\text{-value}=0.043>0.05$. Although contributing to the overall significance of the model, all other control variables and the variable of prime interest – State investment was not statistically significant for this cohort of firms.

In conclusion, the model developed for this study suggests that Public Venture Capital (PVC) made a marginal contribution at best to indigenous firm performance.

Finding 3: On the Factors Differentiating Between Performing & Non-Performing Firms in Ireland (Cross-Case Analysis)

This study also investigates other factors besides public venture capital that are regarded in the literature as influencing factors on indigenous firm performance. Ten representative case-study firms drawn from the overall population of the 51 firms in the study were selected (See: Chapters 4, 6 & 7). The performance measure considered is shareholder value creation (as in the overall study). Those firms with a positive return on invested capital (ROIC) from *profitable* growth were grouped into one cohort. Three firms in the study (Food1, Biotech1 and ICT1 – Chapter 6: Figure

6.2 & Table 6.5) qualified for inclusion in this group based upon their profit generation performance. The remaining seven cases all decreased – to varying degrees – shareholder value over the eight-year analysis period through unprofitable trading. Any shareholder value growth recorded by this group was a result of further capital injections only. These were (ICT2, 3, 4, 5, 6, Biotech2 and Consumer1). See Chapter 6: Figure 6.3 & Table 6.6). These seven firms were grouped into the Shareholder Value-decreasing cohort.

The influences on firm shareholder value creation or value decrease were then analysed in these case firms (See: Volume 2 for case-study firm profiles) utilising a framework developed by Storey (1994) and Smallbone & Wyrer (2006). The cross-case analysis highlights the factors that differentiate between the performing and non-performing firms over the eight-year analysis period. Chapter 6: Table summarises the variables considered in the analysis.

The 'Profitable Growth' Imperative & Defined Product/Market Growth Strategy as Key Differentiators in Ireland

The cross-case analysis differentiates between shareholder value creators and firms decreasing shareholder value along a number of related dimensions (Chapter 6: Table 6.12). Shareholder value creators are those case-study firms that returned a profit on shareholder investment by the end of the eight-year analysis period through *profitable* trading (Chapter 6: Table 6.5 & Figure 6.2). These profits arose as a consequence of the firms' successful *product/market* strategies, all of which were differentiated, niche strategies (Smallbone *et al*, 1995) and which created sustainable competitive advantage. The profitable growth firms all combined market development and product development strategies (Ansoff, 1957). These firms also

executed their deliberate and/or emergent strategies with a clear 'profitable growth' or 'commercially-driven' imperative (Davidsson, 2005; Davidsson *et al.*, 2008a, 2008b, 2010; Steffans *et al.*, 2009). This contrasts with the scale-driven 'grow to profit' strategy pursued in the majority of non-performing firms.

The performing case-study firms included here were able to maintain or restore their profitable growth in spite of the constraints that they encountered along the way.

The *resource-acquisition* barriers listed in Chapter 2: Table 2.3, particularly capital acquisition was perceived by both value creators and value decreasees alike to be less influential in the analysis period. It was the quality of the resource *usage* and deployment - through strategy development and implementation - which was regarded as most important. Firm leadership competence therefore, including its diagnostic, analytic and absorptive capacities and capabilities, are captured in the strategies pursued (O'Gorman, 2001). The lesser impact of resource-acquisition barriers may be explained by the fact that the investment analysis period 1999 – 2005 was a time when the Irish economy was growing at unprecedented rates. Obtaining investment finance and funds from outside sources was therefore less problematic in Ireland than in time of slower growth or recession (Finfacts, 2012).

Financial Bootstrapping Experience as Key Differentiator in Ireland

The entrepreneurs behind the profitable case-study firms all had previous commercial experience and had financially 'bootstrapped' (Bhide, 1992; Winborg & Landstrom, 2001; Harrison *et al.* 2004) their current or previous ventures. They therefore had a clear vision and realistic growth ambitions for their ventures, as well

as the skills/experience to achieve their growth aspirations. The entrepreneurs in the non-performing firms, on the other hand, lacked international customer-facing and commercial experience. The majority of the owner/managers came from either operational, technical or research backgrounds (See: Chapter 6: Table 6.5). In particular, the ICT case-study firms appear to have experienced major problems hiring board-level sales/marketing staff thereby impairing their market opportunity identification and customer acquisition capabilities. The leadership teams were therefore unbalanced. These findings are consistent with the contention of Bessant *et al.* (2005) that the barriers to small firm growth are *commercial* rather than of a technological nature. In small states, this commercialisation barrier is exacerbated when the shallow pool of leadership talent is factored in.

Firm Ownership & Control of Strategic Direction as Key Differentiator in Ireland

The founding entrepreneurs in the profitably performing firms all retained ownership control of their businesses to the end of the analysis period. Two of the firms remain privately-owned and one was a non-quoted PLC with a loyal shareholder base.

A common feature of the non-performing firms however, was that the external funding raised appears to have been *prematurely* taken on board; in hindsight, the firms appeared not to have been 'investor ready' (BWCA, 2003; Mulcahy, 2005a).

Funding was provided by investors and accepted by the founding entrepreneurs before a clear customer value proposition (CVP) had been developed. Control of strategic direction was thus 'ceded' early in the growth process and was being driven increasingly over time by the external shareholders. This happened in those case-study firms where the growth performances projected by the founder(s) failed to

meet investors' expectations and the internally-generated funding remained inadequate to fund growth (Chapter 6:Table 6.4 & Figure 6.3).

By the end of the eight-year analysis period, only one case-study firm from the non-performing cohort remained independent. Two were taken over by US corporations, one by a UK corporation, one by a European corporation, one by an Asian corporation and one became a PLC. Value realisation for shareholders in these firms therefore occurred not only outside the original firm ownership structure but also, in five of the seven cases, outside the State.

Firm Age/Sector as Key Differentiator in Ireland

The case-study firms that experienced shareholder value decreases came primarily from the ICT (5), Biotech (1) and Consumer (1) sectors. These firms were younger on average than the value-creating firms (a mean of 3.5 years versus 8.1 years respectively). The consumer products firm (Consumer1) decreased shareholder value primarily as a result of the severe downturn in the construction sector and was forced to scale back its operations significantly while staying in business. The remaining firms were from technology-driven sectors with each receiving early-stage external funding which 'encouraged' the firm along a 'growth to profit' trajectory. One ICT firm - ICT6 - was just reaching profitability by the end of the analysis period while the remaining four ICT firms remained on loss-making trajectories until their acquisition by overseas firms. The Biotech case firm (Biotech2) remains independent, loss-making and dependent upon the continued support of its investors for survival (Table 6.4 & Figure 6.3).

Market Growth as Key Differentiator in Ireland

Each of the shareholder value-creating firms, while from different sectors, operated in markets that experienced growth over the analysis period; with each of these firms capitalising to some degree on the growth opportunities that this presented. These strong performing firms were found to be capable of dealing with environmental threats and were able to recognise, evaluate and grasp environmental opportunities while maintaining or returning to profitability during the analysis period. They therefore displayed 'diagnostic capabilities' for opportunity and threat identification (Arnold *et al.*, 2004; Dimov, 2012). On the other hand, shareholder value-decreasing firms from the technology-driven sectors did not develop and implement robust strategies to create sustainable competitive advantage.

In almost all cases, the non-performing firms experienced difficulties, for the reasons explained, in gaining sales traction. While international markets were buoyant in most sectors, the ICT firms in particular, were attempting to market software and hardware products and services utilising established technologies. As the markets had formed, they therefore encountered competition and /or customer resistance to their value propositions. The Biotech firm (Biotech2), markets a disruptive technology which has yet to be established as the dominant design in its sector owing to end-user resistance; investors have however continued to support the firms' efforts.

Implications of the Findings for indigenous Firm Growth in Ireland

It is possible to conclude from the evidence found in the quantitative, cross-case, contribution and underlying case analysis (Volume 2) that the primary growth constraint in the study period was internal firm-related factors rather than external

resource availability. The primary barrier to firm growth in the period would appear to have been a lack of 'well thought out, well managed projects' (Walsh, 1985). The evidence further suggesting that it was the ability of the individual firms' leadership teams to develop competitive advantage through the strategy process which differentiates the profitable from unprofitable firms.

10.3 Policy Implications for Other Small Developing States

The policy implications of the empirical findings in Chapters 5-8 for Ireland are addressed in Chapter 9. Although this study is a case analysis on Ireland, there are resonances for other small open states from the findings in this study. Those small states wishing to maximise the value-add from their stock of indigenous firms, must firstly create an institutional framework and innovation eco-system which incentivises and facilitates the development of knowledge-intensive entrepreneurship, fast and high growth firms and firm internationalisation. This is best done by having a deliberately stated Enterprise Policy to guide policy actions. The small states taxation, emigration, regulation, fiscal and competition policy will all impact on growth-oriented firms and therefore this key wealth generating constituency's interests should be separately represented at the highest political levels.

Secondly, it is recommended that Enterprise Policy at the micro-level should focus on shareholder value creation (as defined in this study – See: Chapter 2: Appendix 1) rather than on firm growth *per se* - as a necessary precursor to sustainable job creation. Shareholder value can best be created (and retained in the state) by facilitating and incentivising the entrepreneurial leaders of fast and high growth firms

to build businesses where appropriate, to IPO. Small states, based on the findings here, should avoid the temptation to use 'hard' micro-level policy instruments as there appears to be little or no empirical evidence as yet to show that they work in practice. They can - in the worst case be counter-productive - creating deadweight and/or displacement. Additionally, their use fosters a grant or hand-out mentality in indigenous firms and an interventionist ethos in policy implementation bodies – particularly in the absence of clear Enterprise policy guidance. Capital rationing or economic crises situations would appear to offer the only justifications for their use. 'Soft' micro-level policy instruments may be appropriate if they can be shown to help develop competitive advantage in indigenous firms. Either way, small states should inculcate a strong and transparent evaluation culture so that industrial policy interventions, where appropriate, are rigorously assessed for performance and policy learning purposes.

10.4 Limitations of the Research

Although this study is comprehensive in addressing the research questions posed, it does have a number of limitations from a data and methodological perspective.

These limitations are acceptable given the novel nature of the research area.

Data Issues

In terms of data, the study depends upon the number of firms obtaining over 0.5m Irish Pounds (€635,000) in public venture capital during the analysis period (1999-2005). This data was extracted from the Annual Reports of Enterprise Ireland and cross-referenced to the FAME database to create a unique proprietary dataset for

the study. The total number of recipient firms came to fifty-one from 1999 to 2005 – representing 33 per cent of the total direct public venture capital invested in the period under analysis. Information is not publicly available for firms receiving less than 0.5m Irish pounds for this period. In addition, only two years financial data was available for the selected cohort of firms – pre-State investment. This was owing to incomplete filings of annual returns in the early part of the period under review. Sufficient data was collected however, to establish a baseline of data for the pre-state investment period. This dataset provides important new evidence on the role and contribution of public venture capital investment to indigenous firm performance in Ireland and also provides a baseline for future research on the subject.

Methodological Issues

The methodological limitations of the study stem directly from the data limitations outlined above. The variables analysed in the dataset are of a non-parametric nature. A robust non-parametric quantitative technique, in addition to qualitative case, cross-case and contribution analysis however, are employed to mitigate the effects of the limitations of the proprietary dataset. In spite of these limitations, the study is an important addition to the empirical knowledge base in this currently under-researched area. This study also has resonance in the wider ‘Policy evaluation’ and ‘small firm growth’ empirical literature.

10.5 Avenues for Future Research

To the author’s knowledge, this study is unique in its use of the combination of data analysis techniques employed to answer the research questions and research

objectives. It is thus an example of how mixed methods can be used to answer complex research questions in future research at the public policy and small business interface in small states such as Ireland.

Additionally the study raises a number of interesting questions on the development of Innovative entrepreneurship, growth-oriented Indigenous firms and early internationalisation in small states. Comparative studies with other late developing small states would yield further insights into the behaviour of these key engines of economic growth in small states. It would also extend the generalisability of the results to other small economies.

A lack of funding and time limitations have prevented further research in the present study but the research techniques and approach adopted here serve as a useful blueprint for future studies in each of the research areas mentioned, both within and between small states.

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Appendix A

[Full name]

[date]

[Official title]

[Firms name]

[Mailing address]

[Mailing address]

[mailing address]

Re: Indigenous Firm growth in a small, open knowledge-based economy

Dear [Name]

I am writing to you to request your participation in a nationally important research project on the drivers of growth in established Irish based businesses. This study is being conducted by me, Tony Buckley, <http://ie.linkedin.com/pub/anthony-buckley/13/360/506> as part of my dissertation for the award of PhD in management in Lancaster University Management School <http://www.lums.lancs.ac.uk/phd/profiles/anthony-buckley/>.

My research is fully supported by my employer the Dublin Institute of Technology. See: http://www.dit.ie/study/postgraduate/browse/programmes/title_545.en.html

If you are willing to participate I will arrange for a convenient time and place to conduct an in-depth interview lasting around 60 minutes. The interview will explore the growth path of your company since the turn of the century. I have already accessed the public documents on your company and so the interview will focus on the influences on and the determinants of the company's performance as perceived by you.

With your consent I would record the interview with the undertaking that it would not be available to anyone other than me and the transcribers. A copy of the typed transcript will be provided to you to check for accuracy and to add any additional comments. Names of businesses and people can be withheld. The project has received approval from the research ethics committee in Lancaster University.

I will contact you next week to see if you can participate and if possible we can arrange a time and place to meet.

Yours sincerely,

Anthony Buckley

Consent form

Lancaster University Management School

Consent form for participation in a research study

Title: Indigenous firm growth in a small open knowledge-based economy

Researcher: Anthony Buckley

Supervisors: Dr. Robert Read, Mr. Paul Ferguson

Purpose

The purpose of this research is to enhance the understanding of the growth paths of indigenous Irish firms. The aim of this interview is to gain additional insights and information on the critical incidents in the subject firms' history that influenced or determined firm growth - be it negative or positive.

Voluntary participation

Participation in this study is voluntary at all times. You may choose to not participate or to withdraw your participation at any time.

Questions

Any questions regarding the study please contact

Authorisation

I have read the information in this consent form and the accompanying letter. All my questions about the study and my part in it have been answered. I freely consent to take part in this interview.

If I sign this form, I do not lose any of the rights that I would otherwise have as a subject in a research study.

Printed name of Interviewee:

Signature of Interviewee:

Date

I confirm that I have adequately explained the research and the subject has consented to participate:

Printed name of Researcher:

Signature of Researcher:

Date:

Appendix B

Interview topic guide –

Introduction

This study is part of requirements for PhD in management at Lancaster University – supervised by Mr. Paul Ferguson and Dr. Robert Read. See:

<http://www.lums.lancs.ac.uk/profiles/anthony-buckley/>

- Aim is to increase understanding of growth patterns of internationally trading Irish firms and the influences on and determinants of that growth.
- Interviews with firms in the technology intensive (ICT, Cleantech and Lifesciences) and traditional sectors (Food/natural resources/consumer) will be undertaken to examine the drivers of and constraints on the respective firms growth trajectories.
- In the final report your company and you can remain anonymous if you so desire.
- You do not have to answer any questions that you do not want to.
- I would like your permission to record the interview. This will only be listened to by me, possibly my Supervisors and a professional transcriber. You will have the opportunity to review the transcript to provide any corrections or additional comments. I also plan to take notes during the interview. My work is conducted in line with the research ethics standards of Lancaster University
<http://www.lums.lancs.ac.uk/>
- Have you any questions at this stage?
- Will you please sign the consent form?

Interviewee information:

Name				
Current position				
Gender	M/F	Age range	Founder	Y/N
Time with firm				
Previous positions with firm				
Prior experience/employment				

Highest level of educational attainment	
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Interview questions:

Characteristics of the founder(s)/Entrepreneur(s):

- Is (was) this the first business ever started by the founder(s)?
- What motivated the founder(s) to start the business [Unemployment, opportunity, dissatisfaction, freedom, money – explain?]
- Are you actively involved in any other businesses at the moment (directorships/advisory) – Portfolio approach?
- What is (was) the main benefit to you of running your own business?
- How would you describe your leadership style?
- Family business history?
- What outside advisers to the business do you have?
- Are you a member of any business networking organisations -
- elaborate, general/industry specific?
- Have you made any major mistakes (in the running of the business) along the way and what did you do to correct them?

The firm's growth path to date:

Characteristics of the firm:

- Can you explain how the organisation is structured at moment – how has it evolved since 2000 (This will differ per firm) in terms of employee numbers and roles?
- Can you elaborate on the roles and responsibilities of the senior management team – how has this changed since 2000 – what functions have been added and in what years?
- Do you have more time now to focus on strategic issues than you have had in the past – explain what has enabled this?
- How would you describe the culture in your organisation – how has it changed since 2000

Management Strategies:

- Can you articulate your strategy for survival and growth – how has it evolved since 2000
- Would you describe the approach as driven primarily by sales growth or profitability growth?
- Do you formally plan – please explain your system and the planning horizon? How has planning evolved since 2000?
- Do you undertake marketing research – formally/informally - elaborate?
- Do you have an Innovation policy (including technology roadmap as appropriate)?
- Do you or the firm hold any patents – how many and for how long?
- Do you have a human capital development policy – what training, development, up skilling and teambuilding, coaching/mentoring does the firm undertake?
- Do you have an internationalisation strategy? What percentage of current consolidated turnover is accounted for by international sales? How does it differ from 2000?
- Do you anticipate the firm going public or do you have a different growth path in mind for the next 3-5 years– elaborate?

External environmental influences and constraints:

- Describe the competitive situation you face currently – how has it changed since 2000? What would you describe as your competitive advantage – how has it evolved since 2000?
- Comment on the input costs to your business relative to your closest international competitors– highlighting any major differentials?
- What geographic markets do you serve in order of importance – how has this changed since 2000?
- What % of total turnover is generated in Ireland – how much in 2000? Do you have a major Irish competitor
- Does anyone customer or geographic market account for more than 30% of total turnover
- Is your location a competitive advantage or disadvantage? Has e-business had an impact on how you conduct your business?

- Have you received support from Enterprise Ireland (financial or otherwise) - please detail as best you can?
- What was the investment used for and what difference did it make – can you quantify?
- Would you have undertaken the investment anyway if EI funding was not available?
- Have you been supported (financially or otherwise) by any other state agency that you can recall?
- How might the state help in future?

Growth experience since the turn of the century:

- Growth phase - Can you recall what led to the increase in growth? Why did this increase stop? What sort of staff was added at that time - Management (Technical and /or commercial) roles or support staff?
- Decline phase – what led to the decrease in growth?
- What was happening in the stable/steady period?
- Overall has the business performed as planned or as expected?
- What do you consider to be the major constraints, if any, on growth in the period since 2000 in terms of:
 - **Recruitment**
 - **Delegation**
 - **Growth strategy**
 - **New market entry**
 - **Obtaining finance**
 - **Operational improvements**
 - **Other - elaborate**
- Were there any periods when there were opportunities to grow and these were not taken up – why, what, when?

Final questions!

- Anything else you would like to add or anything important on the subject that we have not covered?
- Would you like to receive a transcript – by e-mail or post?

Many thanks for your input and co-operation – the information provided will enhance the findings in the study.

Appendix C

Individual case analysis outline – Details in Volume 2.

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