

QUESTIONING THE VALUE OF GOVERNMENT SUPPORT FOR START-UP, KNOWLEDGE-INTENSIVE COMPANIES: EMERGING EVIDENCE AND FUTURE OPTIONS.

Mike Hefferan

Emeritus Professor, School of Civil Engineering and Built Environment
Queensland University of Technology, Gardens Point, Brisbane. Qld, 4000,
Australia. Email: m.hefferan@qut.edu.au.

Andrew Fern

M.Phil. Candidate, School of Design, Queensland University of Technology,
Gardens Point, Brisbane. Qld, 4000, Australia.

ABSTRACT Australian governments at all levels have identified the opportunity to broaden the economy through the support of entrepreneurial activity within knowledge-intensive business sectors. Many such enterprises were in an early, start-up phase. While much of this activity was initially focused in the capital cities, government regional support schemes were also introduced. A particular feature of many of those schemes was an uncharacteristic willingness by government to become involved in the direct financial and other firm-specific support for small, largely untested companies.

It is recognised that these sectors require different models of government support. Further, it would be naïve to believe that simple input–output relationships fully reflect the value of such economic and regional development programs. Nevertheless, given that many of these schemes have been in operation for some years, it is reasonable to ask if this type of government support, that particularly targets those start-up level firms, is well placed.

This paper represents the first publication from wider PhD and other investigations into these areas. Surprisingly perhaps, the research has found no truly comprehensive, longitudinal studies on the impact of such schemes anywhere in Australia. However, the recent emergence of significant research from elsewhere in the OECD now questions many of the underlying assumptions that have driven these types of initiatives as regional economic development tools. This paper, based on those studies and consultation with key informants, concludes that some reappraisal and re-alignment of these types of programs in Australia is now both timely and opportune.

KEY WORDS: Innovation, Knowledge economy, Entrepreneurship, Government business support, Start-up businesses, Australian regional development.

1. RESEARCH PURPOSE, QUESTION AND DEFINITIONS

This paper forms part of a wider research project that investigates various government business and regional development programs supporting contemporary ‘knowledge intensive’ firms. Doctorate research will also be involved. A first step was to consider the approach, basic philosophy, priorities and targeting of these programs, variants of which have been applied across many jurisdictions, in some cases for more than two decades. This component has included a review of recent literature and of published and unpublished data relating to support programs across various jurisdictions. The authors also had direct governance and other involvement under several such programs in Queensland which provided keen and immediate access to those initiatives.

The development, on sale and application of intellectual property and knowhow (‘weightless product’) is well recognised across the OECD as a key driver for contemporary economic growth, underpinned by breakthrough science and the ICT revolution (Leadbeater, 2000). Many of the firms that have emerged in these areas are small scale start-ups, often employing only a very small number of people. Blank and Dorf (2012) note that these firms differed markedly from the small to medium enterprises (SMEs) that are typically encountered in more traditional service, manufacturing and rural activities. They describe them as ‘temporary organisations’, rushing to market to secure a successful product or service in a replicable and scalable form. Given both the perceived importance of these ‘knowledge creators and leaders’ and the quite different business models involved, it is not surprising that government economic development agencies at all levels began to devise different support schemes and programs.

Some of these involved the realignment and refreshing of previously successful programs that encouraged generic research and problem solving, training, support for regional networks and regional and sectoral promotion. Additionally, however, there were a range of other initiatives introduced that were specifically directed at individual firms. This tactic was avoided in many previous schemes, given past criticism that it was effectively ‘using public funds to pick private winners’.

These contemporary initiatives included the flagship Commonwealth \$M83 COMET Commercialisation Scheme but cascaded down through a large number of state and regional-based ‘innovation’, ‘start-up’ and incubator support programs.

A surprising initial finding of this report was very limited formal performance reporting or review of these programs to date, past perfunctory financial compliance and reconciliations. The one exception identified was a review of the COMET scheme (ACIL Tasman 2008) though even in that case, review outcomes appeared quite generalised.

There were several important differences between many of these new initiatives and those typically provided as government business support in more traditional industries. In the first instance, there was now a willingness, indeed an enthusiasm, to invest in 'entrepreneurial' development in untried, small, start-up companies. This was often directed at the single enterprise level or, in the case of incubator facilities, provided support for a (relatively) small number of favoured firms. The traditional selection process for most government business support of the past required the recipient firm to have a proven capability, 'track record', adequate equity and, on the face of it, sustainability. Other criteria, based largely on the (apparent) potential of an idea, the enthusiasm of the proponent and a convincing business plan now often dominated selection criteria.

The research question here investigates, through recent studies and investigations, whether this significant shift in targeting of government support towards small scale, start-up firms appears to be having the desired impact.

Elsewhere in the OECD, comparable support schemes have also been operating over some decades but, unlike Australia, comprehensive and longitudinal studies on their value have been published. These are considered later in this paper and notable contributions include the works by Nightingale and Coad (2013), Brown *et al.* (2017), Coad *et al.*, (2016) and Acs *et al.* (2016). Overall and as summarised below, these papers strongly contend that many of these major programs were arguably based on a number of fundamental misconceptions of these sectors and the firms within them and, to date, targeted support at start-up stages are not providing the impact initially envisaged.

This might suggest that some overall reappraisal and realignment of the Australian programs may be opportune, a sentiment shared by key Australian informants consulted as part of this work.

2. BACKGROUND

Certain words and terms have entered into the lexicon of regional and national economic development over the past decades and have become something of a euphemism for the leading edge of future prosperity.

‘Entrepreneurship’, ‘the knowledge economy’ and ‘high-growth start-ups’ have been accepted as the vehicles for a new and fundamentally different direction for the Australian economy, all underpinned by the increasingly globalised environment and the ubiquitous and pervasive role of information, communication and technology (ICT).

Business activity of any type has always involved elements of knowledge, skill and entrepreneurship (Van Doren, 1991). The current differentiation reflects a general shift in wealth creation opportunities from primary and manufacturing activities and towards ‘value adding’ using human resources and creativity in the development of ‘weightless’ services, systems and design for use across the wider economy and society (Leadbeater, 2000).

Against the backdrop of Australia’s relatively high cost base and its educated and skilled workforce, such new opportunities appeared almost self-evident. The United States experience provided models whereby academic, military, scientific and technical breakthroughs fused with different, fast moving corporate structures to create new sectors and corporations of global significance. These models showcased firms transitioning rapidly from start-up phases and growing into market dominance. They typically exhibited strong locational preferences and clustering characteristics (Porter, 2000; Moretti, 2013; Florida, 2002). On the face of it, their continued success provided templates for other OECD countries to emulate.

In Australia, governments also attempted to defend relatively small-scale industries and narrowly-based regional economies against rapidly advancing, global competition and were seeking to develop new or emerging, comparative advantages (Garnaut, 2013). On initial analysis and given the political imperatives to ‘do something and do something different’, a particular focus on support for these emerging sectors and firms appeared to hold real prospects of short and long-term benefit.

The business models and the process by which such start-up enterprises would be established and grow were, at best, indistinct and the names and concepts that accompanied them, ill-defined (Enright and Petty, 2013). Nevertheless, the vision of local firms rising from obscurity to world-wide success became the mantra of many new economic strategies. It seemed to reflect Schumpeter’s early 20th century ‘Creative Destruction’ model of economic development, successfully fusing innovation and new technologies with the sometimes-radical advancement of economic activity (McCraw, 2007). Such was (and still remains) the enthusiasm for

these ‘new wave’, human-resource based enterprises, that to even question the primacy of their economic impact was to attract criticism and, for government at all levels, the perceptions that they were out-dated and ‘out of touch’.

Words such as ‘innovation’ and ‘entrepreneurship’ have historically described the development and adaptation of new economic and other human and community activities. Now however, and with recognisable bias and positive predisposition, such terms were largely applied to this, relatively small, sector of the economy (Nightingale and Coad, 2013).

This paper recognises the exponential growth in knowledge-intensive sectors, the profound effect of breakthrough technologies and the novel, contemporary ways (including the role of certain start-up models) in which such knowledge can be transferred into commercial success. It further observes the pre-eminent role of the US, concentrated in some localities and regions, as epicentres of all of that. Common success factors here often related to breakthrough science (largely generated from public institutions) translated to the commercial market place by highly talented, innovative (and sometimes lucky) entrepreneurs (Mazzucato, 2013). It might be noted, however, that, downstream from the initial research breakthroughs, the success of those remarkable corporations and their clusters/regions were achieved largely without direct (i.e. firm, sectoral or regional) support from government (Moretti, 2013).

These observations emphasise the radically different business environment, corporate structures and product development strategies that now prevail in these sectors. Following on from that, the question for government was how it might target support and secure optimum outcomes for the economy and for government’s finite resources.

3. ‘REDISCOVERING’ INNOVATION AND ENTREPRENEURSHIP

There is nothing new about the concepts of ‘innovation’ or ‘entrepreneurship’, though their exact meaning and implications will always be the basis of discussion and debate.

Innovation, in summary, is the human ability to transform new ideas and concepts (i.e. ‘creativity’) into practical, value-adding actions, designs, product, processes, systems and services. The process of how innovation actually occurs varies from case to case but, in the contemporary environment, the drawing together of multiple disciplines towards a common end is normally involved (Baregheh *et al.*, 2009). ‘Entrepreneurship’ is, at its essence, management though, in the

contemporary vernacular, it is often associated with the strategic planning, development, financing and risk management of emerging, high growth enterprises (Ries, 2011). It is important to note however, that both terms belong to, and indeed are essential elements of, all business (and many other activities) in capitalist economies and communities.

Nightingale and Coad (2013) and Brown *et al.* (2017) observe that, over a relatively brief period of time, both terms have become almost exclusively the domain of new ventures and start-ups in the 'knowledge' sectors and have encouraged what Brown *et al.* describe as 'pseudoscientific facts', generalisation and perceptions that verge on folklore. These have had an enormous influence on subsequent political reaction and government policy.

In one form or another, business support schemes have been in place for many decades but, when applied to start-up firms, it may seem that the entrepreneurial virtues of those new enterprises are often accepted for their 'merit good and profile' rather than on the basis of the rigorous examination of the individual proposal (Holtz-Eakin, 2000).

In the face of new or unknown ventures, and with no evidence to the contrary, it is understandable that generalisations, pre-conceived ideas and positive biases can easily and quickly become tenets of mainstream belief. This is particularly true where governments are presented with seemingly important opportunities, such as support for new, potentially high-growth (sometimes even start-up) firms and sectors.

Fundamental misconceptions often arise here as regards the manner in which contemporary innovation is generated, developed and sustained. Many current start-ups emerge from interesting but sometimes abstract ideas, based very much on the creator's particular background and interests—as it is sometimes described, 'solutions looking for a problem'. Not infrequently, such initial proposals are without even initial market testing or assessment of commercial viability. Without confirmed demand, they lie, and should remain, as 'supply-side', creative ideas, not innovation in the wide, practical sense of that word (Lyons, 2016). Acs *et al.* (2016) consider this, in part, represents a social phenomenon with now large waves of young graduates unable to find permanent, highly paid work in rapidly changing mainstream industries and, instead, being attracted to less structured but high profile start-up businesses in fairly opportunistic ways.

Kealey (2008) recognises that in the research and development of new ideas, a proceduralist model, following a set of pre-determined steps, has little likelihood of success. Each case is unique, and the environment is too

volatile to produce a predictable, sequential development pattern. That observation is confirmed by Henreksen and Johanssen (2010), Ries, (2011) and Feld (2012) in their analyses of start-up businesses and communities where predicting the future path of individual enterprises seems particularly problematic.

Sometimes such ventures are formed as a relatively free-standing new product or venture ‘spinning out’ of an existing business. Occasionally, they emerge from a research institution or similar body. Cunningham *et al.* (2013) note however, that those occurrences are not as common as may be widely believed. A more likely source of sustainable innovation lies within existing companies where ‘innovation’ tends to be much more iterative and continuous, based around the refining of existing products and systems over time (Kealey, 2008). Even new product development will tend to be held within the parent company, particularly during the initial stages, until the viability of the concept/product is proven and before the costs of separate corporate establishment are incurred.

Both of these models—start-ups and spin-outs—have potential benefits and drawbacks. The freestanding start-up model allows for rapid responses to changing environments and markets; however, such firms may lack the long-term cash flow, adequate networks and the ability to identify and seize important opportunities. Those that form part of, or are closely aligned with, a parent company may avoid a number of those problems but, on the other hand, may be impeded by the level of overall supervision and institutional limitations put in place by the parent.

Kealey (2008) makes the further, critical observation that, historically, much of the best innovation emerged from the real-life solving of issues and problems already besetting particular firms, sectors, communities or regions. Typically, such activities not only assist and advance the firms involved, but will have positive spill-over and spin-out consequences of real and sustainable value. Following that line of argument, larger, established firms across existing sectors may well have a much more significant role in the innovation process and landscape in Australia than has been recognised (Enright and Perry, 2013). Perhaps the true situation is also clouded by the relatively small number of those bigger firms compared with the large number of SMEs.

The perception that the majority of the new firms and innovators are start-ups in the ICT and software development sector is also challenged by Henreksen and Johanssen (2010) who find that high-growth enterprises are present across all industries and sectors. Recent Australian work by Hendrickson *et al.* (2016) confirmed that such firms are to be found spread

across multiple industries, including many in service sectors (see Figure 1 below).

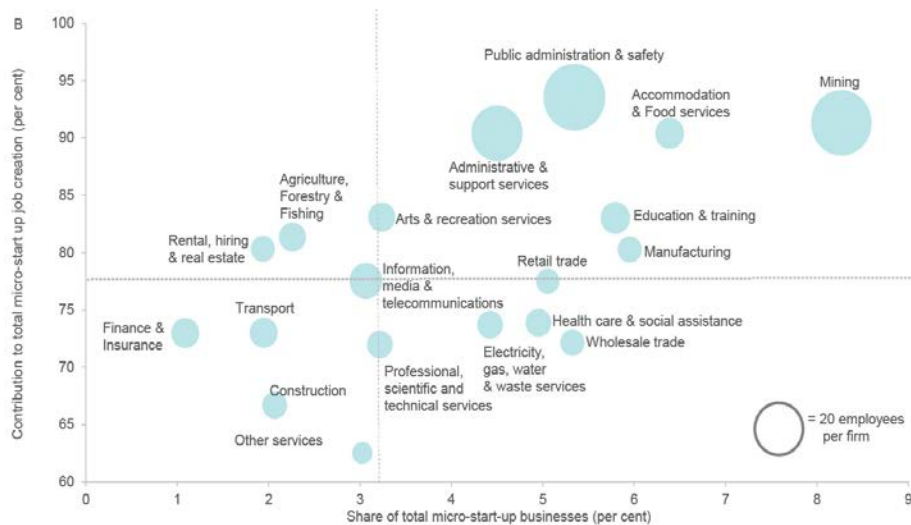


Figure 1. Five-Year Post-Entry Dynamics of Micro-Start-Ups by Share of Firms, by Industry from 2002-2011. The Size of Bubbles Represents the Number of Employees Created Per High Growth Firm Over Five Years. Source: Hendrickson et al. (2015).

A final key element in describing the rise of these ‘knowledge-intensive’ sectors is the critical importance of the discoveries and foundational research upon which complex, contemporary innovations are typically based. In her seminal work in this area, Mazzucato (2013) highlights that the majority of truly significant technical breakthroughs over recent decades (with the singular exception of pharmaceuticals) were sourced directly from (largely US), publically-funded, academic and military research. This critical, base knowledge was subsequently transferred, often at comparatively low cost, to the private sector. Even though such public organisations themselves have a less than stellar history of commercialisation, Mazzucato notes that it is somewhat ironic that the ‘flagship’ enterprises that have emerged as start-ups—Apple, Facebook, HP and many others—were, in reality, the commercial adaptors of publicly-funded breakthroughs.

3. GOVERNMENT POLICY DEVELOPMENT AND RATIONALE

Publically funded business support in Australia is undertaken at all levels of government, though differences in political philosophy and priorities frequently makes co-ordination and integration across jurisdictions difficult. Generally speaking, the Commonwealth tends to invest at a sector level and for major development and research enterprises. The States will typically provide specific grant, loan and other support schemes in areas of particular importance to each and at a scale that reflects the size and wealth of that state. Finally, local authorities may have a range of smaller scale activities supporting sectors of relevance to their region but, at the same time, often limited by geo-political parameters.

All levels of Australian government recognise the economic and political importance of micro, small and medium enterprises to regional business activity. Furthermore, many of the rapidly developing and sought after 'knowledge intensive' activities are perceived as being based around small, 'owner-operator' models. Faced with that perception, government prioritisation of direct support into those early stage enterprises has some initial rationale.

In considering the provision of such support, however, it needs to be recognised that the drivers and true objectives of any of these firms will differ fundamentally from those of government. For the former, the motivation is, understandably and quite appropriately, the secure generation of individual profit and wealth (Acs *et al.*, 2016). For government, key objectives relate to local job security and growth and the advancement of locally-based technologies and skills. It would be fairly naïve to believe that these diverse sets of objectives will always be complimentary.

A populist argument for support to start-up companies often rests in the generalised claim that government intervention addresses 'market failure', that is, that the normal market mechanism does not function or breaks down for reasons outside the control of those directly involved. This would appear to be a particularly weak argument, the counter being that market mechanisms are, in fact, working in a fairly predictable way and that few firms survive to maturity because of the typical problems of inappropriate product, poor management and insufficient cash-flow (Lyons, 2016). Generalised policy based on 'market failure' arguments should be treated with suspicion, though the government-sponsored protection of intellectual property rights, through the long development period in sectors such as bio-technology, may well have claims as 'special cases' (Kealy, 2008).

The priority assistance for ‘knowledge sector’ start-ups over recent years has included, among other things, grants and ‘soft loans’ to individual enterprises and the funding of free-standing incubation facilities for small numbers of resident enterprises. In the development of these programs, Ministers and their policy staff will often take direct advice from business leaders from that sub-sector which, even on the face of it, must raise conflict of interest issues.

Within these emerging sectors, widely-held preconceptions envisaged that the typical client firm will be a small, young, vibrant and free-wheeling business rapidly moving an innovative idea to market. That ‘image’ would often involve software development and visualise a location in some form of incubator or other network or cluster. Of course, that type of enterprise is plentiful and forms an important part of the contemporary business community. However, based on detailed research, Brown *et al.* (2017) and Acs *et al.* (2016) would hold, that that sub-group is over-rated in net economic value and is over-represented in available government support.

In a broader context too, there have been political and competitive-neutral criticisms of direct support to specific firms, considering it inappropriate to use public funds, in effect, as risk capital for private enterprise. There is also a brave presumption in this that government is in a position to make reliable assessments in such complex and novel areas.

Overall government regional economic strategies fall into two main categories (Popov, 2007). ‘Transitional assistance’ is typically applied in emergency situations, for example where difficulties or failures are experienced in a region or sector requiring government support to shift economic activity and jobs, hopefully to a more secure footing. The second, ‘transformational’, typically involves the longer-term rebuilding and advancing of a regional or state economy to meet new challenges or to secure new opportunities. The latter represents the more sustainable approach but involves a much more detailed strategy, more complex investment and longer timeframes, normally extending well past the normal electoral cycle. Government support for early stage businesses will often involve elements of both. Difficulties arise however because such programs typically run over an extended period and are often not completed nor properly evaluated by the time government changes and a new Minister takes over, almost invariably embarking on quite different programs.

Particularly in regional Australia, publically-funded universities should provide an important component of support mechanisms, creating

partnership with government and industry, business associations and individual firms (Etzkowitz, 2016). It is a matter of particular note that, while some universities do successfully support incubation facilities and all produce a valuable graduate workforce, they appear, overall, to hold, a quite marginal role in start-up and small business support. It might be argued that this is because regional universities are rightfully focussed on their mainstream, tertiary education role but, secondly, that they may have limited experience and little 'value-add' to start-up activities in any case.

While the latter point is certainly debatable, a more endemic reason lies in the segregation of funding support within the various cost centres of government; on one hand, those providing business development and enterprise support and, on the other, funding for tertiary education and research. Arguably, support and partnership opportunities are lost because of this difference and the varying priorities and requirements of different schemes.

5. EMERGING EVIDENCE

The Australian economy is largely based on SMEs with over some 88 per cent of all trading enterprises having less than 5 employees and only 0.2 per cent of enterprises having 200 employees or more (ABS, 2016). As significant as those statistics may be, size of itself is not a strong indicator of profitability, productivity, sustainability nor wider impact.

Contemporary start-ups in their initial stages of operation are correctly defined as 'SMEs', and will face all of the operational and sustainability challenges of any business. Brown *et al.* (2017) and Nightingale and Coad (2016), consider that strong paradigms or preconceived concepts drive an over emphasis on the value of support of young innovative firms. They also consider that there exists a data-driven bias to policy development of such support where the extraordinary success of an extremely small number of firms belies the real value and wider impact of the aggregation of such firms and activities across all regions.

There are practically no barriers to entry for such enterprises and, with limited resources combined with an often-untested product and market, attrition is extraordinarily high. Annual failure rates reported for general start-ups vary, but according to the Australian Bureau of Statistics, the annual exit rate of businesses is between 12–15 per cent. In the UK, Storey (2014) studied bank data of over 6 000 firms, tracking from initial start-up through to their sixth year in business. He found a closure rate of up to 14 per cent each year. Importantly, he also found that, after that 6-year period, only 1.2 per cent of those firms either had sales of over £1 million or 10

staff—demonstrating the low number of start-up firms that reach reasonable scale.

Many (though certainly not all) start-ups have little corporate governance or business experience. For many, the venture can represent something of a ‘race’ to an uncertain market against often unknown competitors. Sometimes, too, the enterprise has the quite modest objectives of securing an independent income for the owner and, if at all successful, the ability to on-sell any intellectual property (IP) created within a relatively short timeframe (Acs *et al.*, 2016).

In considering the start-up phase, Coad *et al.* (2016) undertook detailed, quantitative research, using mainly sales growth and banking data of over 6 500 start-up firms in Britain over a 10-year period. They concluded that it was extremely difficult, perhaps impossible, to accurately predict survival and success prospects of individual firms progressing through that phase. Certainly, some predictors of survival lie in the experience and business acumen of the principal, the voracity of the concept, finance available and the existence of a plausible business plan and timelines. Even then however, no reliable prediction could be made on a range of esoteric critical issues including further product development, the securing and defence of patents, the success or otherwise of any initial public offering (IPO), market testing, production issues, the actions and reactions of competitors and finally, the critical path timing for the development (Santarelli and Vivarelli, 2007).

For technology firms, industry figures vary. However, a Canadian study by Astebro (2003) found that of 1 095 inventors studied, 93 per cent failed before selling any product at all. This is in line with wider industry literature which tends to quote rates of 90–99 per cent failure rates of high-technology firms. Given that there are no reliable predictors of future performance, concentrated support for individual (start-up) firms of this type may seem to be a problematic use of public funds.

While the differences between mainstream SMEs and the preconceptions of ‘start-ups’, particularly in ICT and related sectors are recognised, Lyons (2016) believes that these can be overemphasised. He is highly critical of the often ‘favoured status’ and sometimes near-myths that surround technology start-ups. He notes that the obvious but specific success of certain regions such as Silicon Valley, Boston and Austin Texas, among others, is now being used as an image or persona by others to accommodate naïve and inappropriate corporate and management behaviour and over-confidence. The lack of structure, rapidly changing strategy and highly

individualistic and sometimes emotive approach taken are often accepted as ‘typical behaviour’ within start-ups. In Lyon’s opinion, they simply represent poor practice, regardless of the nature of the enterprise. Failure rates and, perhaps more importantly, the very small number of significant, sustainable successes emanating from such start-up environments attest to quite fundamental problems. These include an over-concentration on ‘supply-side’ rather than market demand and the critical importance of ongoing cash flow until sustainable profits are being secured.

An important, comprehensive international research paper, Acs *et al.* (2016), take an even more critical view of targeting of government business support into start-up stages and entrepreneurial activities. Confirming other research cited and interviews conducted as part of this research, they consider that start-up businesses of one or a few employees often exhibit quite low growth over the medium term. Further, such enterprises normally have a distinct lack of interest in networked innovation, past their immediate and short-term needs, to secure market acceptance for their particular product. The paper claims that, overwhelmingly, start-up entrepreneurs do not create significant value beyond private benefits. This is not to underestimate the importance of an entrepreneurial culture in the development process in any business, but they consider such activities as ‘routine’, that is, to the nature of any progressive business. They suggest that, rather than exposing government support funds to the high risks typically associated with early start-ups, public funds are much better directed at facilitating entrepreneurial networks across all businesses, linking specifically with what they identify as ‘knowledge externalities’—sources of support and partnership readily available through industry and professional associations and universities

Following on from these observations, it might be perceived that, in these start-up clusters too, there seems to be limited reference to, or integration with, the ‘Triple Helix’ approach (Etzkowitz, 2016) to benefit from university-industry-government innovation in a systematic or continuous way. This is perhaps surprising given that that general philosophy is so entrenched in the innovation ecosystem across the wider economy, particularly in well-established and successful sectors including advanced manufacturing, ICT devices, rural production and defence materiel.

Given the now substantial body of quality analysis questioning the value of public funding support direct to contemporary start-up companies, this research has engaged with and sort the reaction from a number of key informants involved at senior levels in these practice areas within Australia. They include academics, politicians and government officials,

recipient firms and those involved in incubation and other support schemes within these sectors.

From some sub-groups, the reaction was fairly predictable. Current, private sector beneficiaries of such support, including start-up firms themselves and the conveners of small, freestanding incubators and similar facilities typically reflected on the financially marginal nature of their activities and that any reduction of publically funded support would have dramatic effects on operations. Some considered that this represented a 'market failure' environment, though few could articulate an economic argument for this assertion. Importantly, many considered that the non-financial role of government in areas such as international promotion, regional identity and clustering and network development were critical but under-rated and under-serviced.

Interestingly, researchers involved in these study areas already recognised the lack of an evidence base for these investments. They confirmed the demonstrably high-risk of investments at that level and the quite precarious nature of entrepreneurial activity in start-up sectors.

Specific comments were difficult to secure from either political leaders or public servants working in these areas. While their motivation and often enthusiasm and confidence was genuine, there was general uncertainty about the validation and long-term sustainability of many of these current support schemes.

Finally, comments were sought from key informants within institutions, including certain regional universities, local authorities and development agencies, who were already successful in supporting start-ups and SMEs. Here there was significant criticism of what they saw as an unfair bias towards support for early, private start-up firms and new, free standing incubators and similar facilities. This sub-group noted that there were numerous, past examples across Australia where such short-term, reactionary initiatives and schemes had shown poor results and ended in failure. They considered that such contemporary support was often politically and regionally motivated with little prior analysis or recognition of existing successful programs. The lack of integration and co-ordination between research/tertiary education and industry support funding was also confirmed as an issue which, overall, was producing sub-optimal, regional outcomes.

7. POSSIBLE REALIGNMENT AND MODIFICATION OF SUPPORT

Overall, it could be concluded that a bias now evident in the support of early stage start-ups does not appear to be justified and represents high risk. This is a result of, not only the very high attrition rate of such enterprises, but also the inherent difficulties of identifying the likelihood of future success, sustainability and impact of individual firms from among the large number and diversity of start-ups in that phase at any particular time. The use of more traditional and rigorous support mechanisms, targeting later stage enterprises and innovations within existing, successful companies, would appear to be a better option in the allocation of public funds.

In a semi-planned economic environment such as that in Australia and its regions, there is a general willingness to let market demand and the working of the price mechanism dictate private sector investment and production decisions. At the same time and as noted above, there are also sound reasons for supporting the transformational moves of the national and regional economies towards higher value-add, knowledge-intensive activities.

Research cited in this paper would conclude that the current targeting of support of start-up businesses may not be as effective as the original policy makers would have envisaged. It would appear that some realignment or evolution of existing schemes could be effected fairly simply and without significant delays nor additional costs. Under existing support schemes to individual firms, existing commitments would, of course, be honoured but many of these are of limited duration in any case.

Future expenditures and programs would have greater impact if they incentivised activities known to be of common benefit to this type of enterprise rather than to individual firms. Any firm should undergo the normal rigors of market selection and proven private investment support (e.g. through a successful IPO) before direct government support is considered. As noted in empirical research referenced elsewhere in this paper, generic government support would be of particular value in skills development, in corporate governance practice and, particularly, in human capital development appropriate to those types of firm.

Sometimes the most effective support is not simply financial but rather, involves government agencies using their unique position to facilitate and support networks. They can provide conduits between new and established firms and with research and tertiary education institutions, particularly those within that home region. Similarly, valuable generic support can include sectoral and regional promotion aimed at attracting investment and

new business and in providing common user facilities relevant to the sectors and firms in that location.

In all of that, the position and regional co-ordination ability of local government is essential, but, arguably, has been under-estimated in many past programs.

8. CONCLUSIONS

There is no doubt that, in the context of Australia's small, open, resourced-based economy, business and government activities that sustainably broaden the economic base are to be encouraged. This is particularly the case in regional areas where the existing high levels of specialisation increase the vulnerability of that economy to a range of global, economic and physical changes. In all of this, start-up businesses in what are generically identified as 'knowledge-intensive' sectors seemed to show particular promise. They have been the subject of various types of government support, often aimed at assisting individual enterprises.

The surprisingly limited performance reviews of government support programs aimed specifically at new start-ups makes an analysis of those programs difficult. However, recent, comprehensive international studies would now question the value of targeting support at that early stage of a firm's development, given the remarkable volatility, lack of predictability and failure rate of enterprises engaged in these activities.

The need for wide, analytical reporting on these expenditures of public funds is an obvious first requirement here but, more widely, strategies to reduce the exposure to the high risk-low probability start-up sector should now be closely considered. In their stead, there would appear to be sound innovation/entrepreneurship support opportunities available that would focus more on larger, established regional businesses. These would improve clustering, networks and common research opportunities and bring together new and existing firms, relevant regional institutions and universities as genuine partners.

REFERENCES

- ACIL Tasman (2008). Evaluation of Commercialisation Emerging Technologies (COMET) Program. Melbourne.
- Acs, Z., Astebro, T., Audretsch, D. and Robinson, D. (2016). Public Policy to Promote Entrepreneurship: A Call to Arms. *Small Business Economy*, 47, pp. 35-51.
- Australian Bureau of Statistics (ABS) (2016). Counts of Australian Businesses, Including Entries and Exits. Jun 2012 to Jun 2016, cat 8165.0, Online version accessed 11 November 2017, <http://www.abs.gov.au/ausstats/abs@.nsf/mf/8165.0>.
- Åstebro, T. (2003). The Return to Independent Invention : Evidence of Unrealistic Optimism, Risk Seeking or Skewness Loving? *The Economic Journal*, 113(484), pp. 226–239.
- Baregheh, A., Rowley, J. and Sambrook, S. (2009). Towards a Multidisciplinary Definition of Innovation. *Management Decisions*, 47(1), pp. 1323-1339.
- Blank, S. and Dorf, B. (2012). *The Start-Up Owner's Manual Vol. 1: the Step-by-Step Guide to Building a Great Company*. K & S Ranch Press, California, USA.
- Brown, R., Mawson, S. and Mason, C. (2017). Myth, Busting and Entrepreneurship Policy: Case of High-Growth Firms. *Entrepreneurship and Regional Development*, 29(5-6), pp. 414-443.
- Coad, A., Frankish, J., Roberts, R. and Storey, D. (2016). Predicting New Venture Survival and Growth: Does the Fog Lift? *Small Business Economics*, 47(1), pp. 217-241.
- Cunningham, P., Gok, A. and Laredo, P. (2013). The Impact of Direct Support to R and D and Innovation in Firms. *National Endowment for Science, Technology and the Arts (NESTA) UK*. Published Working Paper. 13-03.
- Enright, N. J. and Petty, R. (2013). *Australia's Competitiveness: from lucky country to competitive country*. CPA Australia, John Wiley and Sons, Singapore.
- Etzkowitz, H. (2016). *The Triple Helix University-Industry-Government Innovation in Action*. Routledge. USA.
- Feld, B. (2012). *Start-up Communities: building an entrepreneurial eco system in north pacific*. John Wiley and Sons, New Jersey, USA.
- Garnaut, R. (2013). *Dog Days: Australia After the Boom*. Redback Books, Collingwood, Vic, Australia.

- Hendrickson, L., Bucifal, S., Balaguer, A. and Hansell, D. (2016). Employment Dynamics of Australian Entrepreneurship: A Management Perspective. *Technology Innovation Management Review*, 6(6), pp. 33-40.
- Henrekson, M. and Johansson, D. (2010). Gazelles as Job Creators: A Survey and Interpretation of the Evidence. *Small Business Economics*, 35(2), pp. 227-244.
- Holtz-Eakin, D. (2000). Public Policy - Towards Entrepreneurship. *Small Business Economics*, 15(4), pp. 283-291.
- Kealey, T. (2008). *Sex, Science and Profits*. William Heinemann, London, UK.
- Leadbeater C. (2000). *Living on Thin Air: The New Economy*. Penguin Press, UK
- Lyons D. (2016). *Disrupted*. Atlantic Books, New York
- Mazzucato, M. (2013). *The Entrepreneurial State: Debunking Public vs. Private Myths*. Anthem Press, London, UK.
- McCraw, T. K. (2007) *Prophet of Innovation: Joseph Schumpeter and Creative Destruction*. Belknap Press, Cambridge, MA, USA.
- Moretti, E. (2013). *The new Geography of Jobs*. Houghton Mifflin Harcourt Publishing Company, New York, USA.
- Nightingale, P. and Coad, A. (2013). Muppets and Gazelles: Political and Methodological Based Biases in Entrepreneurial Research. *Industrial and Corporate Changes*, 23, pp. 113-143.
- Popov V. (2007). Shock Therapy Versus Gradualism Reconsidered. Lessons from Transition Economies after 15 years. *Comparative Economic Studies*. 49(1), pp. 1-31
- Porter, M. E. (2000) Location, Competition and Economic Development: Local Clusters in a Global Environment. *Economic Development Quarterly*, 14, pp. 15-34.
- Ries, E. (2011). *The Lean Start-Up: How Today's Entrepreneurs use Continuous Innovation to Create Radically Successful Business*. Portfolio Penguin, USA
- Santarelli, E. and Vivarelli, M. (2007). Entrepreneurship and the Process of Firms' Entry, Survival and Growth. *Industrial and Corporate Change*, 16(3), pp.455-488.
- Storey, D.J. (2014) Understanding the Small Business Sector: Reflections and Confessions. *Swedish Entrepreneurship Forum*, pp. 21–33.
- Van Doren C. (1991) *A History of Knowledge: Past, Present and Future*. Random House Press.