

Chapter 6

Australia's hidden giants – the Aussie "Mittelstand"

SHANE BAKER AND TIM MAZZAROL¹

Introduction

Manufacturing is a key element of any advanced economy. Not only does it add economic value to its host economy as both a producer and consumer, but it has spill over effects such as high levels of research and development (R&D) plus training of its workforce. Manufacturing also adds to the "complexity" of an economy, expanding the range of products, including high value elaborately transformed manufactures that the economy can produce (WEF-Deloitte, 2012).

In Australia, manufacturing is a larger employer than mining and agriculture, fisheries and forestry sectors combined, and contributes substantially more value-add to the economy than primary industries (DIISR, 2011). However, in Australia the proportion of GDP and employment contributed by manufacturing is reducing (ABS, 2015e). Some observers attribute this to the relative growth of the service sector, and the emergence of global manufacturing in locations such as China, while others suggest that in part, this reflects an underestimate of the increasing value of the services bundled by manufacturers with their tangible products. (Banks, 2011. p.11)

Despite these trends a cohort of Australian manufacturing companies appears to be thriving. Such companies are typically highly export-oriented, focussed on sustainable rather than rapid growth, and willing to make substantial investments into R&D, staff training and development. These firms are also privately-owned and do not appear to be seeking venture capital to fund their growth.

In many respects these firms resemble a cohort of predominately small to medium sized enterprises (SMEs) described in Germany as the *Mittelstand*. These firms are widely recognised as the backbone of the German manufacturing sector. In Australia, these firms are largely unknown despite their ability to demonstrate sustainability and dominance of specific niches within international markets, which has led to them identified as "hidden champions" by Petzoldt (2013). This was a term originally used to describe the *Mittelstand* firms in Germany and other European economies due to their strong contribution to the national economy, but relative lack of public profile (Simon, 1996).

¹ Shane Baker, University of Western Australia, shane.baker@research.uwa.edu.au

Tim Mazzarol University of Western Australia, tim.mazzarol@uwa.edu.au

This chapter provides an overview of the nature of manufacturing and its role in the national economy. It then examines the nature of the *Mittelstand*, with specific reference to how such firms are understood within the academic literature. A challenge for both researchers and those who seek to develop government policy is that the concept of *Mittelstand*, despite its common usage, is ill-defined and poorly understood. The purpose therefore of this chapter is to investigate the nature of these firms and how they might be defined. Within the Australian context our focus is on addressing the following primary question:

If Australian manufacturers that follow the *Mittelstand* model are more successful than their conventional counterparts, how can Australia encourage the creation of more *Mittelstand*?

In addressing this question, three additional questions are important to consider:

1. What are the characteristics of *Mittelstand* in Germany in particular, and similar economies, and what factors have led to the emergence of the *Mittelstand* class of companies in countries such as Germany, Austria and Switzerland?
2. Are there companies in Australia that are analogous to the German *Mittelstand*, and if so, what are their distinguishing characteristics, and what factors led to the establishment of these firms as *Mittelstand*-like businesses in Australia?
3. Does available data confirm that the Australian *Mittelstand* are exhibiting higher long-term growth and a greater capacity to cope with economic, technical, social and financial shocks than conventionally managed Australian businesses, and if so, what factors need to change at the firm and broader economy level to facilitate the establishment of more *Mittelstand* companies in Australia?

The chapter offers a potential framework for defining what might be described as an *Australian Mittelstand*, and how such firms may be classified for future research and policy development purposes is also outlined. We also provide several examples of possible *Australian Mittelstand* firms before drawing conclusions and implications for future research, policy and practice.

The unique nature of manufacturing

Manufacturing is an essential component of any advanced economy (Hausmann & Hidalgo, 2012), due not only to its economic contribution, but also the services provided by this sector to other parts of the economy. Manufacturing typically has a much higher investment in R&D, and enables other sectors via the purchasing of goods and services. It is also a substantial contributor to the training and skills development of the workforce. Furthermore, Kaldor's (1966) growth laws posit a positive correlation between manufacturing and productivity (McCausland & Theodossiou, 2012).

Although the proportion of GDP attributed to the Australian manufacturing sector and the size of its workforce relative to the wider economy is declining, the sector remains a substantial component of the economy and society. So what is meant by "manufacturing"? The OECD defines it as:

"... the physical or chemical transformation of materials of components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker's home, and whether the products are sold at wholesale or retail. Included are assembly of component parts of manufactured products and recycling of waste materials." (OECD, 2002)

Australian Bureau of Statistics (ABS) takes a somewhat narrower view, defining manufacturing as:

"...the making of goods or wares by manual labour or by machinery, especially on a large scale. The activity of manufacturing includes any activity that fits the definition of manufacturing, irrespective of whether the activity relates to private individuals, organisations whose principal business is not manufacturing (e.g. retailers), or organisations whose principal business is manufacturing. Excluded are any activities

undertaken by these persons and organisations that do not fit the definition of manufacturing (e.g. wholesaling or delivery activities of manufacturers)." (ABS, 2012)

Despite some differences both definitions involve a process of transformation. However, the ABS definition explicitly excludes non-transformational activities such as wholesaling or delivery activities. As is discussed below this is potentially problematic, and the ABS definition is not without its critics. For example, the Chair of the Productivity Commission Gary Banks commented:

"Furthermore, official employment numbers significantly overstate manufacturing's relative decline. Part of this is a statistical artefact, with many services once provided 'in-house' – such as transport, accounting, IT, legal, and design services – now being outsourced, and the jobs therefore no longer classified as 'manufacturing' in official statistics." (Banks, 2011. p.11)

Thus, while it seems likely that both the proportion of GDP and the proportion and absolute numbers of employees in Australia in manufacturing has fallen, it is possible that the fall in real terms is not as substantial as indicated by ABS statistics.

Other definitions take into account the growing importance of services provided concurrently with physical products. For example, Livesey (2006) differentiates between manufacturing and production, noting that production is but one element of manufacturing. Hence, for the purposes of this paper, where appropriate the Cambridge Manufacturing Institute's definition of manufacturing will be adopted that:

"...equates manufacturing to the full cycle of activities from research and development, through design, production, logistics and services, to end of life management, within an economic and social context." (Livesey, 2006)

While the ABS (2012) definition is focused on the production of tangibles, the Cambridge definition reflects a more comprehensive and somewhat more contemporary view of manufacturing. One that is consistent with the notion within marketing of "Service Dominant Logic" (SDL), which suggests that value is embedded not so much in the physical goods that are exchanged, but the co-creation of these goods and the relationships that take place between the producer and the consumer (Vargo & Lusch, 2004).

Knowledge and the importance of economic complexity

Knowledge, particularly, tacit knowledge is the key to a productive society. It is the knowledge embedded in and accessible within an economy that allows entities to choose to produce more (or less) elaborate products. Hausmann et al. (2011) observe that:

"...countries do not simply make the products and services they need. They make the ones they can. To do so, they need people and organizations that possess relevant knowledge." (p. 18)

It is axiomatic that the price paid for a product that is of low complexity and low knowledge intensity and can be produced by virtually any entity wishing to do so will be low. By contrast the price paid for a product requiring a complex, knowledge-intensive production system is likely to be high. The reason for this is that knowledge and skills are valuable because by their nature, they are difficult to transfer or acquire (Teece, Pisano & Shuen 1997, p. 526).

Manufacturing demands and promotes what Hausmann et al. (2011) refer to as a "complex" economy; a society with a wide range of skills and knowledge and the organisational capacity to combine these into products. Without a full "capability set", only a limited range of products can be produced. Complex economies produce high value elaborately transformed manufactures such as aircraft engines or medical imaging devices, machine tools or optics, while low complexity economies are limited to the production of commodities such as minerals and agricultural products. The consequences are profound as Hausmann et al. (2011) explain:

"The difference between the world's most and less complex products is stark. The most complex products are sophisticated chemicals and machinery that tend to emerge from organizations where a large number of high skilled individuals participate. The world's least complex products, on the other hand, are raw minerals or simple agricultural products. The economic complexity of a country is connected intimately to the complexity of the products that it exports." (Hausmann et al. 2011, p. 25)

Australia's level of economic complexity is ranked by Hausmann et al. (2011) as 79th out of 128 economies. This ranks Australia below such countries as Portugal (35th), New Zealand (48th) and Albania (58th), and well below the top five countries of Japan, Germany, Switzerland, Sweden and Austria respectively. This infers that Australia's standard of living relies on minerals, or what Hausmann et al. (2011) refer to as "geological luck".

This has implications for Australia's national innovation system (NIS) (Nelson, 1992; 1993), and the fostering of an entrepreneurial ecosystem (Isenberg, 2010; WEF, 2013). The NIS is enhanced by continuous investment in R&D that results in commercialisation and value added (Garrett-Jones, 2007). It is not essential that all firms are high-tech in nature, with many countries having a strong NIS that has been built primarily on low to mid-tech industries (Lundvall, 2007). However, there needs to be connectivity or linkages between the R&D being pursued by firms and the research being undertaken at universities and other publicly funded centres, with an accumulation of knowledge and technological sophistication (Porter & Stern, 2001). In the context of entrepreneurial ecosystems, (Mason & Brown 2013) describe such environments as:

"... a set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organisations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. the business birth rate, numbers of high growth firms, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment."

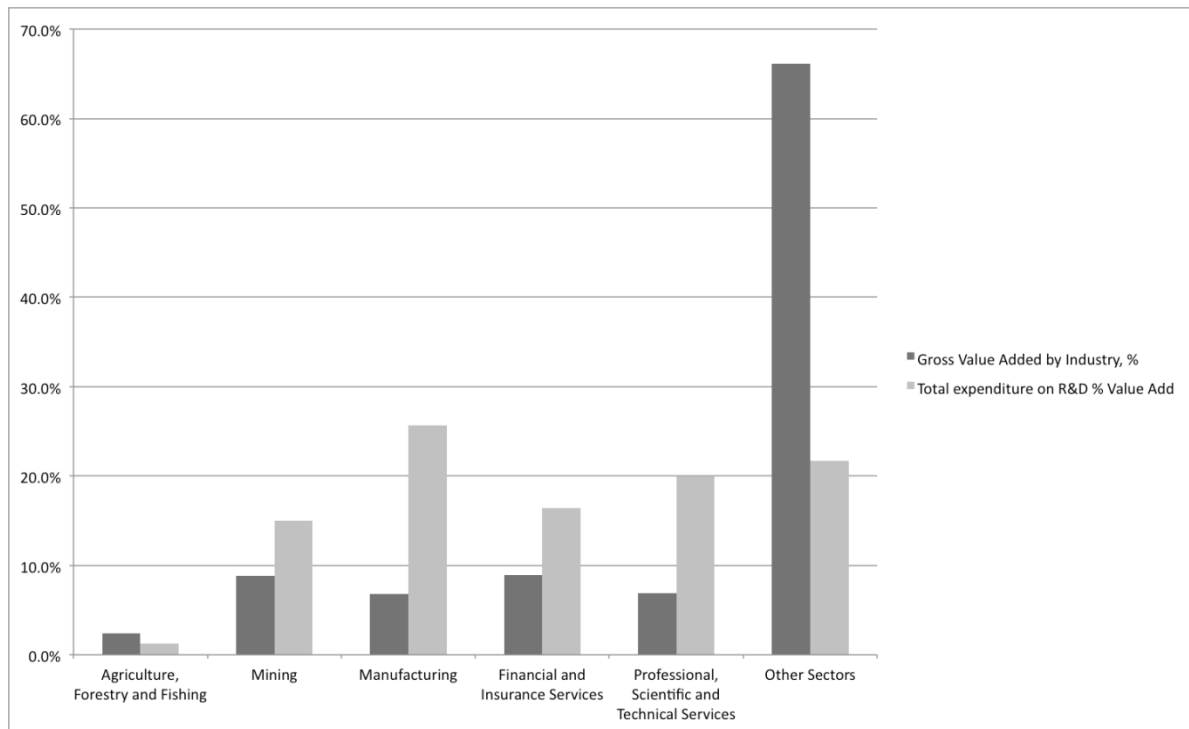
How manufacturing contributes to economic complexity

Manufacturing adds to a society's complexity in several of ways, with the net result as stated by Thirlwall (1983, p. 357) that "... manufacturing growth is the engine of GDP growth". The manufacturing sector contributes to its host economy in the form of industry value add (IVA) and the employment of a skilled workforce. As previously discussed, manufacturing also has a high level of investment in R&D. For example, in Australia the manufacturing sector's contribution to business expenditure on R&D (BERD) is significant, with over \$4.8 billion in 2013-2014 or approximately 26% of all BERD. By comparison mining's contribution to BERD was only \$2.8 billion or 15% of the national total (ABS, 2015f). This is illustrated in Figure 1.

It should be noted that the proportion of BERD funded by the manufacturing and the professional, scientific and technical services sectors increased in the period 2011-2012 to 2013-2014, while financial and insurance services remained steady and mining dropped from an apparent 22% to 15%. This is in keeping with suggestions from some analysts that the mining sector's investment in previous years in R&D may have been inflated in an accounting exercise aimed at tax minimisation (Green, 2015).

While such statistics reflect positively on the Australian manufacturing sector, it can be argued that measures of expenditure on R&D are not necessarily reflective of innovation taking place. Crosby (2000) describes expenditure as an "imperfect" measure of innovation, preferring to use levels of patenting, while acknowledging this measure is also problematic. Nevertheless, Australian patents data underlines the role of manufacturing in the Australian NIS, with IP Australia (2015) that manufacturing, along with the professional, scientific and technical services industries were the two sectors generating the most patents.

Figure 1 - IVA & BERD for selected Australian sectors 2013-14



ABS (2015f)

It could be argued that whether measured by BERD or patents lodged, manufacturing makes a substantial, even disproportionate contribution to innovation and R&D in Australia, and in so doing, helps in seeding an entrepreneurial ecosystem. Manufacturing is also a major contributor to skills development and training. For example, Karmel and Rice (2011) observe that by comparison:

"... the resources sector is in general a small player in the provision of apprenticeships and, moreover, it employs fewer apprentices than would be expected, given its share of trade employment." (p. 52)

The economic return provided by the manufacturing sector has been recognised by scholars for some time. In 1966, the economist Nicholas Kaldor proposed his "three laws" (Kaldor, 1966), which can be summarised as:

1. That the growth of a nation's manufacturing output and the growth of its GDP is positively correlated.
2. That manufacturing productivity growth is positively correlated with manufacturing output (Verdoorn's law).
3. That there is a positive correlation between a nation's nonmanufacturing productivity growth and its manufacturing output (McCausland & Theodossiou, 2012).

Given that these propositions were first made in 1966, they have been repeatedly examined and indeed, criticised. Nevertheless, drawing on those propositions and on data spanning 11 economies and nearly two decades, McCausland and Theodossiou (2012) concluded that:

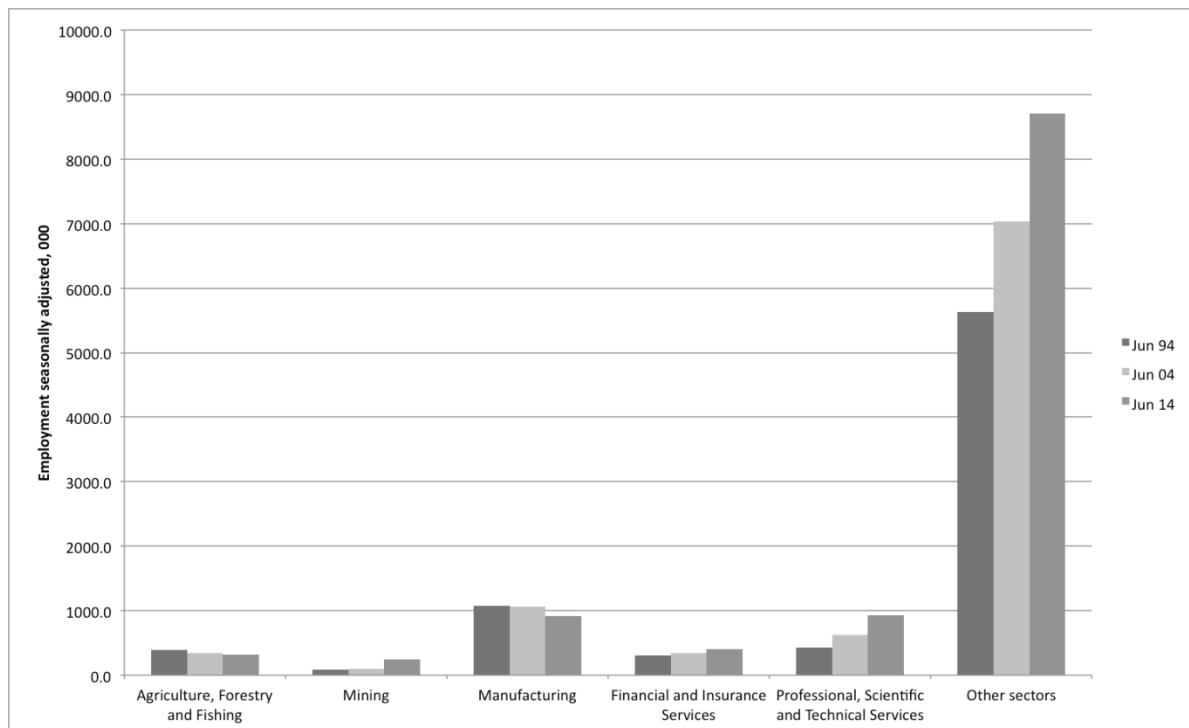
"...growth in manufacturing output is an important determinant of both productivity growth and GDP growth and that despite its increasing size, the service sector does not appear to play a similar role." (p. 91)

Other scholars have also supported the validity of Kaldor's Laws (e.g. Atesoglu, 1993). Furthermore, Crosby (2000, p. 262) concludes that "... increases in patenting activity lead to increases in both labour productivity and economic growth", albeit with a delay of years between investment and these outcomes. As noted above, Australian manufacturing is the sector with the equal highest level of patenting, and given the relationship between patenting and economic growth, this appears to be in keeping with Kaldor's Laws.

The status quo of Australian manufacturing

In recent years it has become popular for media commentators to dismiss manufacturing in Australia, talking of "rust belt" industries and tending to advocate an emphasis on resources, agribusiness and service sectors. For example, Baghai et al. (2014, p. 23) promoted concentrating on a "Fantastic Five" comprising gas, agribusiness, tourism, international education and wealth management which "...have the potential to be as big as mining". Curiously, despite common perceptions expressed in the Australian media of the importance of mining and agriculture, these sectors, while important, do not dominate figures for employment or contribution to GDP (see Figures 2 and 3).

Figure 2 - Employment seasonally adjusted in June 1994, 2004 and 2014

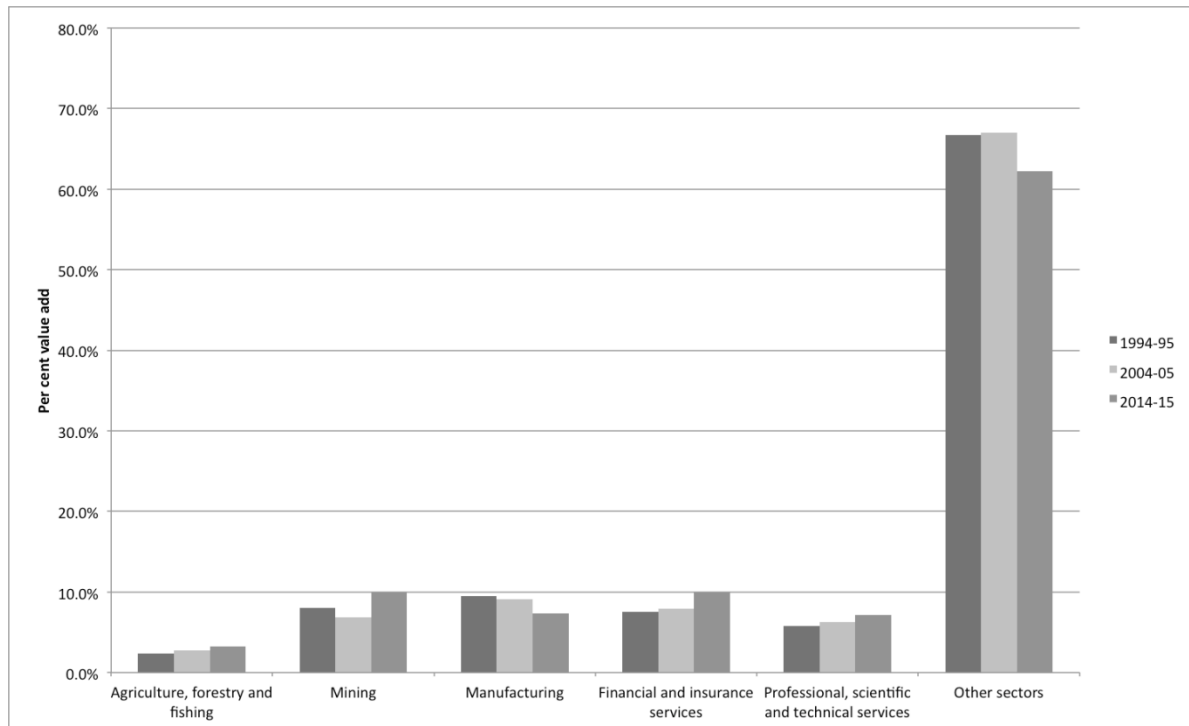


ABS (2015e)

Despite the optimism expressed by some commentators for rapid growth of the Australian economy based primarily on commodities and services, Kaldor (1966) would disagree. Further, more recent analysis in the relative benefits of foreign direct investment (FDI) into non-manufacturing versus manufacturing sectors supports his thesis (Wang, 2009).

As illustrated in Figures 1 and 2 manufacturing remains a substantial component of the Australian economy. In August 2015, manufacturing employed 917,600 people representing around 8% of the workforce (ABS 2015e). By comparison, at that time 231,200 were employed in mining, and 302,200 employed in agriculture, forestry and fisheries. In the period 2014-2015 the Australian manufacturing's industry value add was 7.4% of GDP compared with 10% for mining, and 3.2% for primary industries (ABS 2015c).

Figure 3 - Industry Value Add for selected Australian sectors 1994, 2004 & 2014



ABS (2015c)

Is Australian manufacturing in terminal decline?

As previously noted, official Australian statistics show the proportion of GDP contributed by manufacturing is reducing, with its IVA as a proportion of GDP falling (ABS 2015c). Similarly, in both the absolute and relative terms the size of the manufacturing workforce is apparently falling (ABS 2015e), although it remains a substantial employer, and to some degree, the reduction in numbers may reflect an underestimate of the value of the services bundled by manufacturing with manufactured goods by manufacturers (Banks 2011, pp. 10-11). This could be expected, given the explicit exclusion of services from the ABS definition of manufacturing noted earlier.

Nevertheless, the loss of key sub-sectors such as the withdrawal of Ford, General Motors-Holden and Toyota from the local automotive assembly industry (to take place in 2016-2017), can be expected to have a cascading effect across both the manufacturing sector and the wider economy. Anticipated losses may include reduced industry value-add, loss of employment, and loss of the services directly and indirectly provided by the automotive sector to the wider economy and society. With local production of motor vehicles to be concluded in 2017, up to 40,000 positions will be lost directly (Productivity Commission, 2014, p. 25), although across the economy, that figure may be much higher. The closure of Ansett in 2002, which resulted in the direct loss of about 16,000 jobs "... brought about an indirect loss of 54,880 jobs in 105 sectors of the Australian economy" (Valadkhani, 2003). If a similar multiplier effect applies following the closure of the automotive assembly plants, in the order of 137,200 additional positions will be lost, although others have estimated a combined loss across the Australian economy of as many as 200,000 positions (Porter, 2015).

A further impact of the closure of Australia's automotive assembly plants will be the effect on the balance of trade due to the loss of exports and import replacement. According to the publication

Key Automotive Statistics 2012 (Industry Department, 2013), the value of locally-made passenger motor vehicles and their derivatives was AUD \$5.37 billion, of which AUD \$2.14 billion was exported. Additionally, nearly AUD \$1.6 billion in automotive components were exported in 2012. While assembled motor vehicle exports will be lost when the local industry closes, it remains to be seen whether the Australian components industry can remain viable as manufacturers and exporters when local automotive assembly concludes. Hence, in a worst case scenario in which component manufacturers are unable to remain competitive exporters without the "base load" volumes provided by purchases by local vehicle "primes", the effect on Australia's balance of trade will be approximately AUD \$7 billion through loss of exports and increased imports of motor vehicles.

This loss of exports and inevitable increase in imports must be seen in the context of Australia's chronic deficit in its balance of trade in goods and services. According to Belkar, Cockerell and Kent (2007, p. 5) "Sizeable current account deficits have been recorded in Australia in almost every decade for at least 150 years...", which must be paid for either by increasing exports and/or reducing imports, and/or by accepting increased foreign debt and/or selling assets to overseas buyers (APL, 2015). Increased exports of non-rural commodity exports are unlikely to be a solution (Bullen, Kouparitsas & Krolkowski, 2014, p. 31).

Were additional markets to be found for Australian commodities such as iron ore or coal, several problems would remain. First, sellers of commodities generally are price takers. Recent experience with the price of iron ore is a case in point (Ingram, 2015). Second, demand for commodities such as coal and iron ore are to a degree contingent on factors such as technological innovation and environmental considerations, as well as price-based competition from other suppliers. Finally, in contrast with services or manufactures which can be produced repeatedly, minerals can only be mined once, which militates against long-term production. Given this context, the outlook for Australia is succinctly summarised by Green, Marsh and Pitelis (2015) as:

"...a third world scenario of reliance on the export of unprocessed raw materials [which] will not sustain a first world lifestyle based on imported consumer goods."

Added to this loss of jobs and economic production is the loss of economic complexity brought by the demise of the automotive industry, with the potential for a consequent loss of capacity to manufacture elaborately transformed and hence high value-add goods.

If national income is to be maintained and Australia's trade deficit is to be addressed, then increasing the volume of high value exports such as elaborately transformed manufactures (ETMs) could sustainably resolve the issue in the medium term. However, in the light of Australia's apparent lack of economic complexity, is the country capable of competitively manufacturing ETMs?

A preliminary investigation into this question undertaken by the authors found examples of Australian firms successfully exporting sophisticated manufactured products (see: Baker and Mazzarol, 2015, Table 3). Furthermore, several of the firms listed in Baker and Mazzarol (2015) appear to be a good fit to the German concept of "*Mittelstand*". In the following sections we examine this concept and how it is to be understood and defined.

The concept of the German *Mittelstand*

The *Mittelstand* have been acknowledged as having played a critical role in the 20th century in the economic growth of post-war Germany and more broadly Europe (Meyer-Stamer, 2000). Their history can be traced back to at least the 19th Century (von Saldern, 1992), having arisen from a conservative, middle-class artisan segment of the German people.

Despite the upheavals resulting from Germany being on the losing side in two world wars, the social and economic turbulence of the interwar years and the partition of the country following 1945, Berghoff (2006) suggests that the *Mittelstand* survived the turbulent years of the first half of

the 20th Century "relatively unharmed", and also avoided the long term historical trends that had threatened its existence (i.e. the rise of corporate giants, mass production and the managerial revolution).

The survival and success of the *Mittelstand* amid the destruction and chaos arising from the war is attributed to two key factors: firstly, deep social approval and political support; and secondly, the continuing demand for high quality specialised goods. This helped to foster a post-war "new" *Mittelstand* built on niche markets into which high quality, specialised manufactures could be sold.

Although the term "*Mittelstand*" is German for "middle class", it is much more complex, and possesses a strong and positive cultural subtext. According to Berghoff (2006, p. 264) it is a "...very attractive social concept". However, it is also used as a rather broad term to describe small to medium enterprises (SMEs) in countries such as Austria, Germany and Switzerland (Chemnitz, 2015), although its meaning is rather more than that.

According to Meyer-Stamer and Frank (2000), a definition of the *Mittelstand* is not simply about financial characteristics and must take into account convictions and attitudes. As discussed below, the core characteristics of the *Mittelstand* business model are the production of innovative, high quality, differentiated products that command premium prices and require a highly skilled workforce and strong entrepreneurial leadership.

Almost 99% of all German businesses are defined in that country as SMEs (Berghoff, 2006). Such firms have fewer than 250 employees and annual sales of less than €50 million. These businesses employ around 70% of the German workforce and contribute about 57% of value added. Furthermore, they are "...the backbone of the German apprenticeship system..." (Berghoff, 2006, p. 269) and provide most of the vocational training in that country. This reflects their crucial role in providing apprentices with the necessary work experience required to complete their qualifications. However, despite the apparent key role played by the *Mittelstand* firms, Berghoff (2006) notes the absence of an adequate definition, the refusal of the German Government to define the term, that:

"...there is no consensus among social scientists and statisticians" on the term, and that quite large firms are often referred to a "*Mittelstand*". (p. 270)

Despite this lack of definition, the quest for developing a *Mittelstand* within other countries in order to stimulate enterprise and replicate the success of Germany has seen much attention given to this type of firm. This has included non-German speaking nations such as the United Kingdom where the growth of "mid-sized companies" is now a subject of keen interest (Dakers, 2015). For example, in 2011 UK Chancellor George Osborne declared the need for Britain to emulate the *Mittelstand* (Kirkup, 2011).

This enthusiasm of political leaders to emulate the German *Mittelstand* ignores the problem that the sector lacks definition and reliable measures over the precise contribution that it makes to the German national economy (Audretsch & Elston, 1997). This remains important not only for assessments of the role played by the *Mittelstand* within the German economy, but also for countries that seek to emulate it and compare the performance of their own "*Mittelstand*" firms against those of Germany.

Defining the German *Mittelstand*

The characteristics of the German *Mittelstand* reflect their middle class, 19th Century origins. The literature suggests that a useful and obvious starting point for definition is firm size, with most definitions of *Mittelstand* highlighting their inclusion of SMEs. However, while some authors, and German government agencies in particular, tend to equate *Mittelstand* to SMEs (itself a poorly defined concept) (Reboud, et al., 2014), other authors accept the inclusion of large firms. Meyer-Stamer (2000) includes manufacturing enterprises of more than 500 employees,

McDonald et al. (2003) classifies as *Mittelstand* firms with 50 to 1,000 employees, and Logue et al. (2015) also state "...a firm with a workforce of over 1,000 can be considered part of the *Mittelstand*...".

This is echoed by Berghoff (2006) who notes the nature of the German *Mittelstand* has changed significantly since the 1970s and many of what were formerly SMEs are now very large firms with global focus, albeit with a social and cultural orientation that had lost much of the original characteristics. This makes defining the *Mittelstand* even more complex. Berghoff (2006, p. 271) observes that a large, family-owned and managed firm is part of the *Mittelstand* if it retains its original culture including "...strong family values, a patriarchal culture, and an emphasis on continuity". Moving beyond size, the literature provides at least 18 distinct characteristics associated with the German *Mittelstand* which are summarised in Table 1.

Table 1 - Recognised characteristics of the German *Mittelstand*

Characteristic	Times Cited	References citing characteristic
Family owned	7	Berghoff (2006), BMWi (2013), Colli, Rinaldi and Vasta (2013), Fear (2014), Institut für Mittelstandsforschung Bonn (2015), Linnemann (2007), Venohr and Meyer (2009)
SMEs included	7	BMWi (2013), Bryant (2012), Fear (2014), Institut für Mittelstandsforschung Bonn (2015), Logue et al. (2015), McDonald et al. (2003), Meyer-Stamer (2000)
Generational continuity	6	Berghoff (2006), Bryant (2012), Linnemann (2007), Logue et al. (2015), Venohr and Meyer (2009)
Large firms included	6	Bryant (2012), Fear (2014), Institut für Mittelstandsforschung Bonn (2015), Logue et al. (2015), McDonald et al. (2003), Meyer-Stamer (2000)
Long term focus	6	Berghoff (2006), BMWi (2013), Bryant (2012), Institut für Mittelstandsforschung Bonn (2015), Logue et al. (2015), Venohr and Meyer (2009)
Niche product	6	BMWi (2013), Bryant (2012), Colli, Rinaldi and Vasta (2013), Logue et al. (2015), McDonald et al. (2003), Venohr and Meyer (2009)
Innovation	5	BMWi (2013), Bryant (2012), Colli, Rinaldi and Vasta (2013), Linnemann (2007), Venohr and Meyer (2009)
Cautious internationalisation	4	Bryant (2012), Fear (2014), Linnemann (2007), McDonald et al. (2003)
Enlightened patriarchy	4	Berghoff (2006), Logue et al. (2015), Simon (1992), Venohr and Meyer (2009)
Flat hierarchy / informality	4	Berghoff (2006), Linnemann (2007), Logue et al. (2015), Venohr and Meyer (2009)
Regional location	4	BMWi (2013), Fear (2014), Linnemann (2007), McDonald et al. (2003)
Services focus	4	Bryant (2012), Fear (2014), McDonald et al. (2003), Venohr and Meyer (2009)
Avoid debt / equity	3	BMWi (2013), Bryant (2012), Linnemann (2007)

finance		
Emotional attachment	3	Berghoff (2006), Institut für Mittelstandsforschung Bonn (2015), Venohr and Meyer (2009)
Close to customers	2	BMWi (2013), Logue et al. (2015)
Commitment to training	2	BMWi (2013), Bryant (2012)
Independence	2	Berghoff (2006), Bryant (2012)
Fast decision making	1	Linnemann (2007)

A schematic of possible relationships between these characteristics is presented at Figure 4.

The origins of these firms as SMEs bestow a mindset characterised by private, often family ownership, adherence to artisanal skills and the production of high quality specialised products sold for high margins in niche markets. However, there are other characteristics that have been used to define *Mittelstand*. Berghoff (2006) refines these to six characteristics:

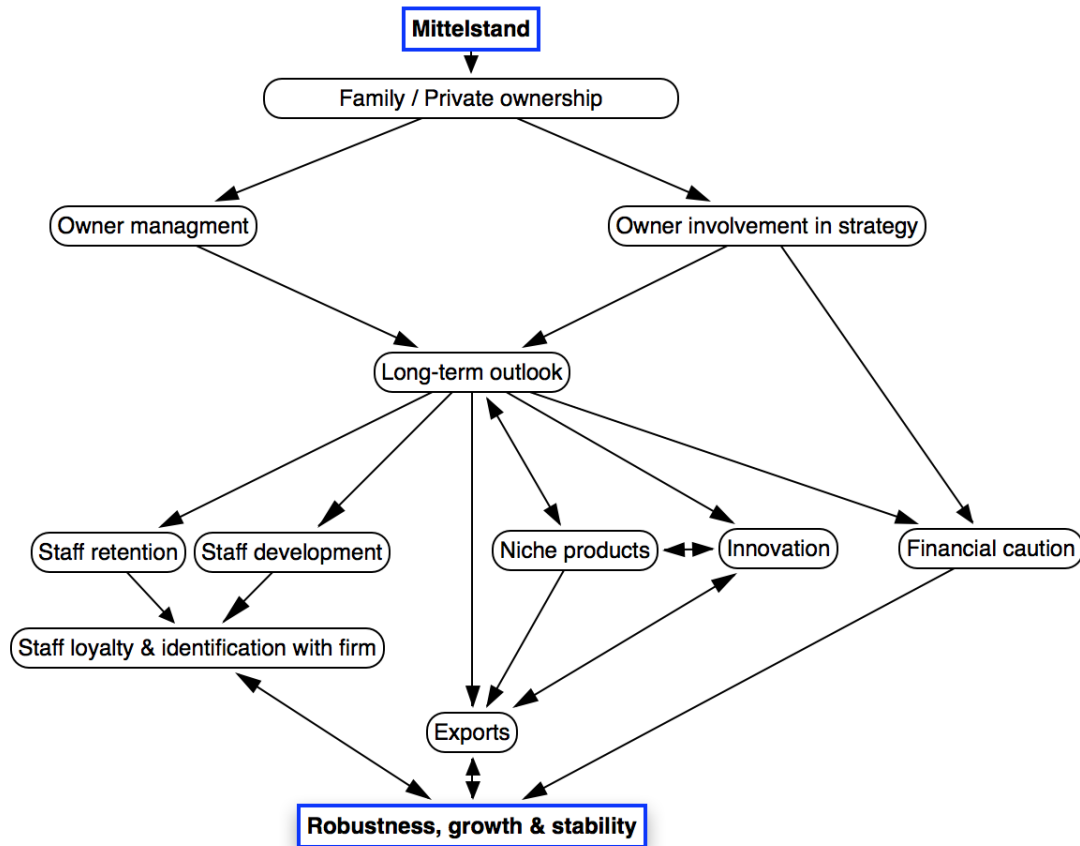
1. Family ownership;
2. Focused on long-term strategies;
3. Ownership that is emotionally attached to the business;
4. Intergenerational continuity of ownership;
5. An informal and patriarchal culture; and
6. Independence of corporate governance and control.

It appears that the critical characteristic of the German *Mittelstand*, from which the other aspects flow are in the areas of ownership and management.

Almost all German *Mittelstand* are family owned and many are actively managed by family member owners (Berghoff, 2006). Perhaps as a result, there is a strong emotional attachment to the firm and a strong sense of independence (BMWi, 2013). Such firms also tend to have a management outlook and planning style that is especially long-term with focused strategies and an SME-style close proximity to their customers, while also being regionally located and helping to support local communities (Berghoff, 2006). The *Mittelstand* are also identified as exhibiting "generational continuity" with many, as family owned firms, having survived the transfer of management across one or more generations of the owning family (Berghoff, 2006).

The *Mittelstand* management culture has also been characterised as "enlightened patriarchy", which has been described as "...the fatherly concern most *Mittelstand* managers feel for their employees and their employees' families" (BMWi, 2013). In keeping with this small business mindset and culture, other characteristics of the *Mittelstand* firm are a degree of informality and flat hierarchies (Simon, 1992), as well as fast decision-making (Berghoff, 2006). Perhaps reflecting their long-term outlook, these firms' human resources policies are characterised by stable employment and commitment to training (BMWi, 2013). Presumably as a result there is close employee identification with the firms (Linnemann, 2007).

Figure 4 - Schematic of *Mittelstand* Characteristics



As discussed earlier, the products produced by the German *Mittelstand* are often niche, with many feeding into the supply chains of larger firms (BMW, 2013). There is also a strong commitment to innovation and quality within the *Mittelstand*, reflecting the long history of an artisanal culture and mindset, and this is supported by strong investment in R&D (Blackbourn, 1977; Von Saldern, 1992). Traditionally the financing of these *Mittelstand* firms has been based on retained profits and bank financed debt with only limited recourse to third-party equity through venture capital investment (Audretsch & Elston, 1997).

Despite their humble origins, since the 1970s Germany's *Mittelstand* have become more focused on international trade, initially across Europe and then more widely into other countries (Berghoff, 2006; Parnell, 1999). However, they have tended to show a "cautious and sequential" approach to internationalisation, with some becoming "hidden champions" and some taking a multi-domestic approach to production as a means of being closer to customers, and thus becoming the aforesaid "pocket multinationals".

Not to be confused with high growth firms and "gazelles"

This growth and internationalisation could lead to confusion of *Mittelstand* with "high growth firms" (HGF), "gazelles" or *hidden champions*. HGFs tend to be smaller medium-sized firms (around 50 employees), more than five years old (Mason & Brown, 2013), and with average annualised growth greater than 20% per annum (OECD, 2010). A related term is "gazelle firm", which is described by the OECD (2010) as "...the subset of high-growth enterprises which are up to five years old." Hence, the definition of "Gazelle" used by the OECD and the European Communities / OECD (2007) is:

"All enterprises up to 5 years old with average annualised growth greater than 20% per annum, over a three year period..."

In this regard, gazelles have little in common with *Mittelstand*, which like HGFs are likely to be more than five years old and generally take a risk-averse approach.

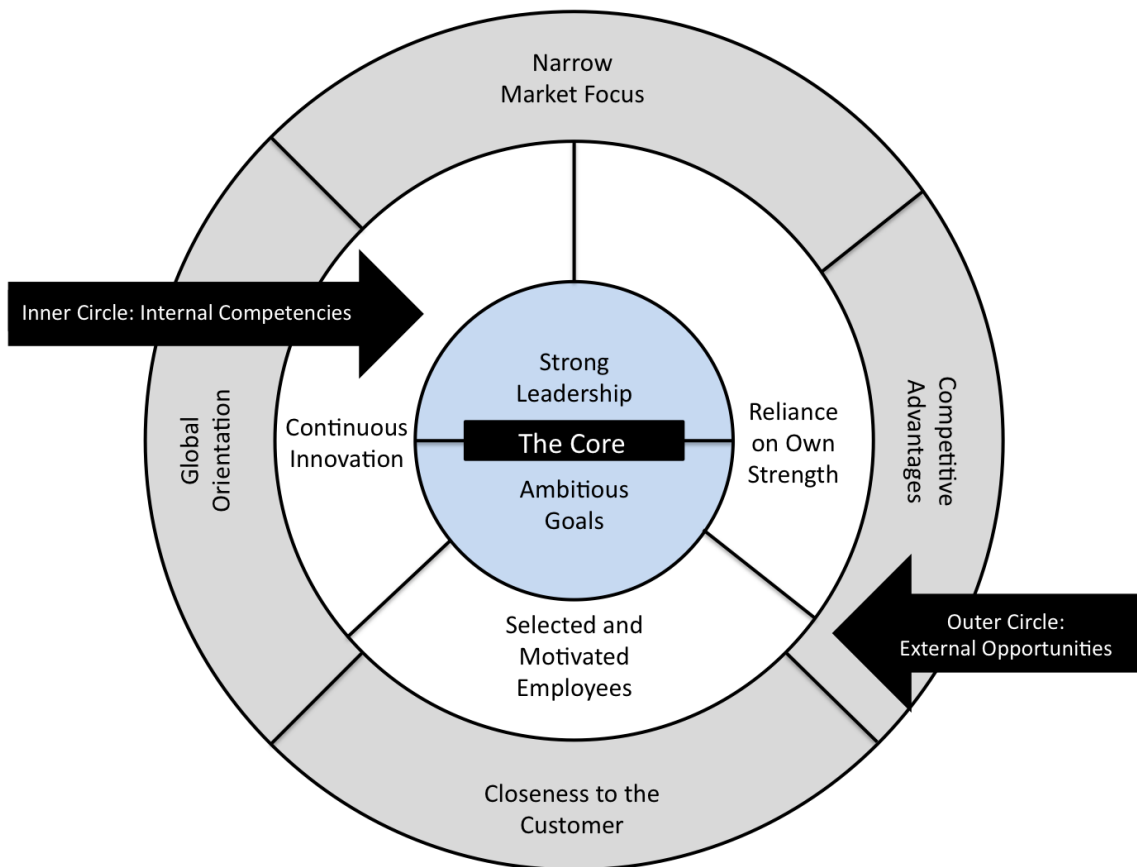
Hidden champions

The final business type that could be associated with the *Mittelstand* concept is that of "hidden champion" (Simon, 1992; 2009), and arguably this category has a substantial degree of overlap with the *Mittelstand*. Simon (2009) requires that a company must satisfy three criteria to be considered a "hidden champion":

1. It should be first, second or third in a global market or number one on its continent;
2. It should have revenue below US \$4 billion; and
3. It should possess a low level of public awareness.

In the context of Australia, given the modest size of the Australian economy and market, the first criterion must be treated with caution as referring to a company being "number one on its continent" is arguably only relevant in Europe, North America and Asia. In most segments, becoming one of the top three competitors in Australia, Africa or South America would be a relatively modest achievement and one that could not be compared to being a top three firm globally.

Figure 5 - Simon's "Hidden Champions' Three Circles"



Derived from (Simon 1996)

Using these criteria, Petzoldt (2013) has identified several *hidden champions* in Australia:

- ANCA (CNC grinding machines and systems).
- Aristocrat Leisure (gaming machines),
- CHEP (pallets and container services),
- CSL (blood plasma derivatives),
- Nufarm (herbicides) and
- Orica (explosives),

As shown in Figure 5 the characteristics shown in the "three circles" model from Simon (1996) suggest a high degree of overlap between the criteria for *Mittelstand* (see tabulated characteristics above) and for *Hidden Champion*. Presumably noting the shared characteristics of these types of firms, some authors suggest that all *Mittelstand* are *hidden champions*, which is clearly not the case. Simon (2009) refers to about 2,000 *hidden champions*, whereas *Mittelstand*, however defined number in the millions (see Simon, 2009). Hence it could be argued that while not all *Mittelstand* are *hidden champions*, globally, many *hidden champions* are *Mittelstand*. Indeed, Audretsch and Lehmann (2016) refer to a "subset of the *Mittelstand* companies" being *hidden champions*.

Competition models

That the *Mittelstand* are clearly competitive in their respective markets helps to explain the enthusiasm political leaders generally show for this type of business (Bryant, 2012). How the *Mittelstand* succeed requires further research, although the literature does provide some suggestions. For example, Barney (1986b) describes three models of competition. The first is *Industrial Organisation Competition* (such as espoused in Porter's "five forces" and which is referred to in later papers as *Structure-Conduct-Performance* (SCP), which assumes that a firm's success is determined by the structure of the industry in which it operates. The second model is that of *Chamberlinian Competition*, which looks to heterogeneity across firms' assets (including IP, reputation, etc.) to provide an advantage. Finally, there is *Schumeterian Competition*, which takes as its primary source of competitive advantage the firm's response to technological or market innovation and assumes competition which is neither stable nor predictable. Barney (1986b) acknowledges that firms face all three forms of competition from time to time and concludes that all of these types of competition can occur "at different times to different firms", and that in order to survive, firms must respond to the particular circumstances of their environment.

Fiol (2001) questions whether sustained competitive advantage can be achieved, preferring "renewable competitive advantage" which acknowledges that in varying conditions, firms may leverage off a temporarily strong position to obtain another, more sustained position of competitive advantage. In this, Fiol (2001) sees organizational identity:

"...as a core competency leading to competitive advantage by contextualizing and providing meaning to new adaptive behaviors." (p.693)

It provides a collective sense of identity and purpose and links participants to the firm. In that regard, one is reminded of the strong commitment within *Mittelstand* firms shown both by owners and their employees. This suggests that sense of belonging and shared purpose leads to a loyal, stable workforce which could lead to competitive advantage in challenging times. This would assist in retaining tacit knowledge within the firm. These human relations characteristics are reminiscent of the *Mittelstand*.

Barney, Wright and Ketchen (2001) compare resource-based theory (RBT) with three other models: SCP; neo-classical microeconomics (neoclassical price theory); and evolutionary economics. Each model shares the common assumption that resources and capabilities are heterogeneously distributed across firms. However, in contrast with neoclassical economics, RBT assumes some factors of production are inelastic in supply. It also assumes that some facilities can only be developed over a long period of time (referred to as "path dependence"), the manner

in which they can be developed isn't always clear (i.e. "causal ambiguity"), and some at least can't be bought and sold (i.e. "social complexity"). These theories contend that supply inelasticity can lead to higher than average profits and sustained competitive advantage for some firms. Again, the patient long-term development of intangible assets, including reputation is in keeping with a recognised characteristic of the *Mittelstand*.

In coping with challenges, firms develop "routines" (Barney, Wright & Ketchen, 2001) that may be more or less efficient than their competitors. Those less effective and efficient routines must either be replaced or the firm may fail. These routines are part of a firm's resources and capabilities. According to Barney, Wright and Ketchen (2001, p. 648), research shows that firms with routines built on path dependent, causally ambiguous, socially complex and intangible assets outperform those built on tangible assets alone. In this regard, Garnsey (1998, p. 527) describes these intangible assets as expertise and reputation, which could in part explain this high performance.

Achieving sustained competitiveness

Barney (1991) describes characteristics of a firm's resources (physical, intellectual and organisational assets) that will circumscribe its ability to achieve sustained competitive advantage (e.g. value, rareness, imitability and substitutability). Put simply, if firms in an industry are homogeneous, or the resources they can bring to bear are of little or no value or can be acquired or copied or substituted by competitors, then any competitive advantage will be ephemeral. Furthermore, the author also notes that Schumpeterian shocks may render a previously valuable resource less valuable. Hence, achieving competitive advantage under *Chamberlinian Competition* will rely on a firm differentiating itself from its competition. Barney (1986a, p. 656) also observes that firms with sustained superior financial performance typically possess core values about how to treat internal and external stakeholders that "...foster innovativeness and flexibility in firms".

Indeed, Barney (1986a, p. 660) adds that firms:

"...without such a supportive culture generally do not succeed in maximizing their productivity through their people. Firms that stay close to their customers typically are obsessed with customer service and satisfaction", which results in "...high sales and increased margins, [which] have a direct positive financial impact on a firm."

These characteristics of close engagement with both their own employees and other firms in the value chain are in keeping with the features of the *Mittelstand* described earlier. Furthermore, the competitive advantage resulting from such cultural resources may be protected by the inimitability of cultures (Barney, 1986a). In this, Teece, Pisano and Shuen (1997) have suggested that the value of firm culture is complex and subtle, extending beyond the simple acquisition and application of intellectual property.

This presumes that while physical and intellectual assets are important, the "soft technology" of culture is an essential catalyst in translating them into sustained competitiveness. A firm possessing these characteristics, which would appear to equip it to deal as needed with both *Chamberlinian* and *Schumpeterian* competition could maintain sustained competitive advantage. On this basis, the characteristics of the *Mittelstand* appear to be a good fit to the culture of the sustainably competitive firm.

Furthermore, *Mittelstand* firms typically engage in niche markets, and in doing so, one could anticipate this specialisation to provide insights into markets, products and processes. In this regard, Teece (2007, p. 1345) notes the value of "... special know-how— know-how that is difficult to obtain and apply" to plan, manage and apply a firm's assets. Tacit knowledge is a means to achieve sustained competitiveness as by definition, it cannot be transferred or acquired by competitors; except by acquisition of the human assets of the firm (Teece, Pisano & Shuen 1997, p. 526). The *Mittelstand* are characterised by training and retaining employees and focusing

on niche markets and products over the long term. Logically this should result in the acquisition of tacit knowledge that has the potential to provide sustained competitive advantage. This acquisition of knowledge is arguably analogous to the growth of complexity across competitive economies discussed above; presumably yielding competitive advantages for the firm as complexity benefits entire economies.

Hence, the *Mittelstand* are well equipped to deal with dynamic environments comprising *Chamberlinian* (competition based on differentiation) and *Schumpeterian* (resulting from technological and market "creative destruction") competition. Moreover, their tendency to build tacit knowledge through specialisation, use of path dependent timeframes which are long-term and even intergenerational, training and retaining staff and R&D provides them with the potential to be formidable competitors within their chosen market place. However, whether they are any more successful than other firms in the SCP/Five Forces environment (rivalry, threats of new entrants, suppliers, buyers and threat of substitutes) described by Porter (1979; 2008) is unclear. One could question whether any small or medium-sized firm would have the resources to counter the five forces. Furthermore, as it is a largely passive approach to competition which is "far too reactive for long-term success" (Teece 2007, p. 1344), it may be inappropriate for firms to place a great deal of effort into such endeavours. In terms of dynamic environments, including a mix of competitive challenges, Teece (2007) observes:

"Dynamically competitive enterprises don't just build defences to competition; they help shape competition and marketplace outcomes through entrepreneurship, innovation, and semi-continuous asset orchestration and business reconfiguration." (p. 1344)

This is an active approach to competition, and one which firms conforming to the *Mittelstand* model seem well equipped to implement.

Is there an Australian *Mittelstand*?

If manufacturing in Australia is to survive and prosper it must become more competitive, focussing on innovation in terms of product, process and business model design. It must also adapt to new technologies and integrate into globally networked and interconnected world trade. Close proximity to customers, engaging in global supply chains and offering solutions, not simply physical products, are all essential factors for success (KordaMentha, 2013).

These requirements are a good fit to the characteristics of German *Mittelstand* described above, and there appear to be a number of Australian firms following this model. Hence the question: is it possible to identify an *Australian Mittelstand* and if so what might its attributes be?

In the pursuit of the rejuvenation of Australia's manufacturing sector, and given the dearth of large Australian manufacturing firms, it is tempting to simply seek the creation of more SMEs, particularly through the encouragement of high-growth "gazelle" start-up firms. However, this may not have the desired effect. For example, Shane (2009) has argued that encouraging more start-up activity is "bad public policy". His justification for this is that the evidence suggests most business start-ups are under capitalised, and their founders are not entrepreneurs. Any jobs they might create tend to be of low quality and most of these firms, should they survive their first three years, will most likely consolidate and contribute little more to employment.

Why then do governments view small firms and start-ups as a solution to unemployment and a panacea for flagging economic growth? The answer to this question has its origins in the work of Birch (1987) who undertook a study of labour market job generation in the United States over time. His work suggested that most of the new, net jobs created in the preceding decades had been provided by the small business and start-up sector rather than large established firms. In response governments around the world invested strongly in small business support and start-up programs, as well as triggering an academic interest in the study of entrepreneurship (Katz, 2008; Gillin, 1991).

Recent analysis of start-up firms and job creation within the United States suggests that most new businesses launched since the Global Financial Crisis (GFC) of 2008-2009 have employed relatively few people and that since 2006 the number of new employing businesses fell by around 27% (Reedy and Litan, 2011). In Australia an examination of longitudinal data suggests that most of the net, new jobs created in the period 2001-2013 were caused by a relatively few "Gazelle" firms. These young and fast growing firms only employed around 15% of the total workforce, but accounted for about 40% of all new job creation (Hendrickson, et al., 2015).

While it is accepted that a successful "gazelle" start-up will make a significant contribution to employment and economic growth, such firms are by nature highly risky and may not provide long-term secure jobs. Further, as noted by Shane (2009) there is no guarantee that more than a very small number of start-ups will be led by entrepreneurs with a focus on long-term growth. The OECD (2010) estimates that in any given economy the number of "gazelle" firms is unlikely to be more than 1% of all businesses by employment and less than 2% by turnover.

Nightingale and Coad (2014) highlight the importance of high-growth "gazelle" firms to the creation of jobs and economic growth. However, they also caution that many of the claims made for start-up entrepreneurship as an engine of economic prosperity are difficult to substantiate due to poor data quality, unrepresentative samples, extremely skewed statistics and problems with both definition and measurement methodology.

In a further study of over 158,000 early-stage companies across 10 countries it was found that after 5 years only a few firms made a contribution to job growth, with much of their contribution eroded by the job destruction created by the many firms that failed. Total job destruction was in the order of 65% after 5 years (Davila, et al., 2015). Another study that tracked the income earned by those who launched start-ups found that over a 20 year working life most were worse off financially than if they had remained in employment, with most start-ups remaining trapped in the "sub-50 employee" size range (Acs, et al., 2016).

Despite the impression of jobs growth and high value-add surrounding small business, in Australia most small businesses (62%) are non-employing (ABS, 2015d), and thus while 97% of Australian businesses are small (employing less than 20 people) (ABS 2015d), they collectively employ only 44% of the labour force (ABS 2015a) and produce 33% per cent of industry value add (ABS 2015a). Nevertheless, while start-ups may not of themselves be the answer to the creation of large numbers of jobs and high growth sustainable companies, they do play a role.

However, the *Mittelstand* is less about start-ups and more about SMEs that have the capacity over the medium to long term to sustainably grow and provide employment and in a way that most start-ups never will (Mason & Brown, 2013).

In order to conduct any study of *Australian Mittelstand*, it is necessary to define the business type or at least, describe its characteristics. Given that the manufacturing sector has been the primary source of much of Germany's *Mittelstand* (Simon, 1996), a fundamental criterion would be that they are in the Australian manufacturing sector; albeit while taking into account the official definitional issues raised above. Furthermore, given the recognition among scholars that the German *Mittelstand* is not restricted to SMEs, any definition of an *Australian Mittelstand* needs to focus on more than the numbers of employees.

From the literature examined to this time, and based to some degree on informal observations of apparent *Australian Mittelstand*, the following characteristics appear to be shared:

- They are typically manufacturing firms which are in private ownership,
- The owners are often either managers or closely involved in the management of the firm,
- They have a long-term outlook,
- They focus on niche products,

- They invest in staff development,
- They invest in innovation and R&D,
- They have a strong commitment to exporting, and
- They take a cautious and prudent approach to financial investment and management.

Informal observation suggests that *Australian Mittelstand*, in common with their German counterparts have a strong service ethic and appear to place a stronger focus on bundling product, services and support than is often the case with Australian SMEs. Thus it appears that by packaging solutions for their customers, rather than simply supplying manufactured articles, the *Mittelstand* gain competitive advantage.

Examples of potential Australian *Mittelstand* companies

Clearly, further research is required to understand Australia's successful manufacturers. Examination of the Australian manufacturing industry press reveals many companies of potential interest for case studies and further research. While more in-depth investigation of such firms is required, some potential examples of *Australian Mittelstand* companies can be identified in order to provide the reader with a clearer picture of what we are referring to in this chapter.

The ANCA Group

Headquartered in the Melbourne suburb of Bayswater, ANCA produces a range of computerized numeric control (CNC) tool grinding machines and associated control systems. The company was founded in 1974 by engineers Pat McCluskey and Pat Boland who combined their academic, technical and trade skills backgrounds to develop CNC systems. These systems were developed in the 1980s into a range of specialist precision machine tools used to produce cutting tools.

The ANCA Group employs approximately 800 staff worldwide and has offices in Japan, China, Taiwan, Thailand, India, Germany, Brazil, the United Kingdom, Mexico and the United States. Its group of subsidiary firms comprises ANCA CNC Machines, Tinfish Sheetmetal & Fabrication, ANCA Motion Control Systems and Techni Waterjet Water Cutters.

The success of the firm rests on high quality products, global, long-term customer support, and the flexibility and responsiveness arising from software development in-house which is tailored to the firm's sophisticated hardware.

Around 99% of the company's products are exported, including to iconic countries such as Germany, Japan and the USA.

Hofmann Engineering Pty Ltd

With its head office in the Perth suburb of Bassendean, Hofmann Engineering is a family-owned and controlled heavy engineering company. The firm was founded by two expatriate German brothers in 1969, and has since grown to employing over 500 people across Australia (e.g. Cheltenham and Bendigo in Victoria, and Newcastle in NSW), as well as Chile and India. The company is managed by the son of one of the founders.

Although its original focus was on specialist heavy engineering work for the mining sector, the company has recently applied its skills and capabilities to a wider range of customers in the defence, aerospace, transport and renewable energy sectors. In keeping with its *Mittelstand*-like behaviour Hofmann Engineering is strongly committed to quality and holds a substantial range of formal quality certifications and awards. It also maintains an ongoing commitment to skilling its employees and typically, 10 per cent are apprentices.

Among its product range are replacement parts for heavy mining and excavating equipment, mills, kilns and grinding machinery and parts, gears and gearboxes, bearings, machine tools and a range of components for wind turbines, power stations and oil and gas rigs.

RØDE Microphones

RØDE Microphones is a privately-owned and operated audio electronics company headquartered in the Sydney, NSW suburb of Silverwater. The firm has its manufacturing and support facilities in Sydney where it employs around 140 people. It also has offices in Seattle, Los Angeles and New York in the United States, and Hong Kong in China.

The company was founded in 1967, by husband and wife Henry and Astrid Freedman who migrated to Australia from the United Kingdom via Sweden in 1966. Originally called Freedman Electronics it was a pioneer in Australia in the manufacture, installation and service of a range of audio products and sound equipment.

With the death of Henry Freedman in 1987 the company's control transferred to his son Peter who initially struggled due to an economic downturn and mounting debts. In search of a product to help revive the firm's fortunes Peter imported a line of microphones from China and re-engineered them to improve their quality and performance. This new product sold well and was taking off "like a rat up a drainpipe". This led to the product being dubbed "Rodent-1" and from there the name for a subsequent product was RØDE NT-1 (Wikipedia, 2015).

From this innovation-led turning point RØDE has developed a reputation for producing high quality microphones and software for the recording and video industry, including innovative products for use on SLR cameras, iPhones and connection to computers via USB ports.

Over the years RØDE has been recognized for performance in both for design and business having received numerous Red Dot awards, Australian International Design awards and a number of exporter of the year awards. A key source of competitive advantage for RØDE is its manufacturing expertise taking the production of its products in-house rather than outsourcing, and focusing on robotic automation and attention to quality in order to deliver a best in class product.

Miller Camera Support Equipment

Miller is a manufacturer of specialist camera support equipment such as tripods, pedestals, fluid heads, dollies, spreaders and feet, hi hats and hard cases. The firm was established by Eric Miller in 1954 following his patenting of the first fluid head mountings for film cameras in 1946.

Miller has since become a global leading supplier to the world's film and TV production industry, and Miller tripod and camera support systems are widely used throughout the world by TV networks, film production houses, corporate, educational and government institutions. The firm's products are sold and supported in over 65 countries and are favoured for electronic news gathering and documentary film makers due to their relatively light weight, robustness, ease of use and quality of build.

At the heart of the firm's success are its manufacturing facilities located in Sydney. Here the firm uses CNC-machining and "rigorous quality assurance procedures" to ensure that all parts meet the most stringent of tolerance tests. As the company website explains:

"All components of the Miller camera support equipment range are CNC-machined, then stringently tolerance tested before installation into sub-assemblies. Light, strong, dust proof and corrosion-resistant, all Miller camera support components are chosen for their ability to maintain strength and shape characteristics under the harshest temperature variations and climatic conditions." (Miller, 2016)

The company claims to have had a "revolution in its manufacturing process" over the past three years that enables it to offer a three-year warranty on all parts and labour for the fluid head,

tripod and accessories range of products. In addition to its Australian-based operations the company has support facilities in the United Kingdom and the USA.

Maton Guitars

Based in the Melbourne suburb of Box Hill, Victoria, Maton is a manufacturer of guitars and related string musical instruments. The company was founded in 1946 by Bill May, a local jazz musician, woodwork teacher and luthier. He had already been operating a business making and repairing custom guitars known as "Maton Stringed Instruments and Repairs", but as that business expanded his older brother Reg joined him to found the "Maton Musical Instruments Company".

Maton remains a 100% family owned Australian business and is now managed by the founder's daughter Linda and her husband Neville Kitchen. According to the company website the core philosophy of Maton was developed by Bill May from its inception. This was a vision of making hand crafted guitars at an affordable price that were as good as any in the world:

"His philosophy still rings true today: 'If you make a good guitar, the right guitar, people will want it.' Bill May's philosophy meant that 'precision in work is very important. Individuals are important - I must have them. I feel it is the right way of life for a man to come and work and to give his ability to a job which means something to him and something to the end user.' (Maton, 2016)

Such a statement is in keeping with the recognised characteristics of the *Mittelstand* including owner involvement in the firm, niche products, and enlightened patriarchy, a focus on quality and service, and emotional attachment.

The firm employs around 70 staff who produce about 8,000 guitars per year; about one-third of which are exported. Maton's main points of competitive advantage include its focus on high quality instruments, the use of Australian native woods and the endorsement of noted performers such as John Butler, Neil Finn and Paul Kelly.

Comparing example firms with the proposed Australian *Mittelstand* criteria

As discussed in the introduction to this chapter, further research is needed before the existence of an Australian *Mittelstand* is fully defined, identified and understood. However, based on the examples of Australian firms that appear to be *Mittelstand*-like, some comparison with the key characteristics of German *Mittelstand* firms can be made and this is outlined in Table 2.

Table 2 - Three possible Australian *Mittelstand* and key characteristics

Criterion	ANCA	Hofmann	RØDE
Private/family ownership	✓	✓	✓
Owner involvement in firm management	✓	✓	✓
Long-term outlook	✓	✓	✓
Focus on niche products	✓	✓	✓
Staff development	✓	✓	r.c.
Innovation and R&D	✓	✓	✓
Strong commitment to exporting	✓	✓	✓

Cautious and prudent approach to finances	✓	✓	r.c.
---	---	---	------

r.c.: Requires further research for confirmation.

Only by further investigation will it be possible to examine again these criteria, the other firms mentioned, together with a number of other potential Australian *Mittelstand*.

Discussion and Conclusions

Isenberg (2010) has provided a list of prescriptions to be followed when trying to create an entrepreneurial ecosystem. The first of these is not to try to "replicate Silicon Valley" and focus on high-tech software or IT companies. The conditions that created America's Silicon Valley technology cluster are unique and cannot be easily replicated elsewhere (even in America). Instead the ecosystem needs to be shaped around the local conditions and built on the industries that are already present or that are naturally emerging. A third prescription is not to pour too much public money into the ecosystem. If money is too easily obtained it is likely to reduce the firms' natural resilience and promote the establishment of lazy and uncompetitive businesses. However, once a firm emerges from its early years and demonstrates that it has the capacity for growth it should be supported. It is important to get "wins" in the form of successful firms that are local to the region and can serve as role models and potential "keystone" partners for the ecosystem.

Isenberg (2010) also suggests that culture is potentially the biggest obstacle to fostering entrepreneurial ecosystems. In this case he advises those seeking to foster their emergence and growth to "tackle culture change head-on". Newly created firms should be allowed to get exposed to the "rigors of the market" as soon as possible, to help strengthen their leadership. Yet the process of building an entrepreneurial ecosystem is more indirect than direct. They should not be "over-engineered" and facilitation and support is best undertaken with a light touch. What government agencies can do is focus on reforming the country's legal, regulatory and bureaucratic systems.

If these prescriptions are applied to Australia it is clear that many of the conditions found in the United States are not found in Australia. While in all three economies, SMEs (according to their respective definitions) constitute about 99.6% of employing firms (ABS 2016; US Census Bureau 2016; Institut für Mittelstandsforschung (IfM) Bonn 2016), the US is different. Audretsch and Lehmann (2016) observe:

"[In the USA] Those entrepreneurial start-ups that do survive tend to grow into larger enterprises, ultimately displacing the larger firms with their antiquated products and services. In the American context, small business is really about new business ..."

By comparison, in Germany:

"...stability is more characteristic of SMEs, and the frenzied turbulence and turnover that are characteristic of small business in countries such as the United States is more the exception than the rule."

Australia is similar to Germany in the sense that the economy is dominated by large numbers of small and medium firms. Like Germany, few Australian companies grow to large, even global size. However, as illustrated in the examples described above Australia has *hidden champions* (Petzoldt 2013) and, it seems likely to have its own set of *Australian Mittelstand* firms.

The results of preliminary investigations of firms such as ANCA, Hofmann, RØDE and Maton are consistent with the characteristics that broadly define *Mittelstand* companies. All are privately owned manufacturers that still have the original founders or their children actively engaged in the firms' management. They also focus on niche products and seek to build their success on high quality and investment in innovation. They also export a high proportion of their products and have established themselves as leaders in their designated target niches. Their

growth has been significant but steady and sustainable rather than the fast and furious expansion of the "gazelles".

Thus, it may be more appropriate for Australia to recognise and embrace the steadily growing medium and large *Australian Mittelstand* and seek to establish an entrepreneurial ecosystem conducive their creation and growth, rather than attempting to emulate the USA. In a similar vein, the corollary of favouring the "high potentials" in Australia is to encourage the types of firms which are likely to thrive in the Australian ecosystem. In the Australian context, this is more likely to involve export-orientated small firms with the ambition and culture needed to grow to medium or even large firms. Finally, Australia already has "wins on the board". As previously noted, Australia has a number of "hidden champions", which by definition have a low profile.

Arguably, it is time for Australia to stop hoping for the appearance of indigenous analogues of Apple, Microsoft, Hyundai or Bombardier, and instead, to recognise and celebrate ANCA, CHEP, CSL and RØDE; firms which model the characteristics needed to succeed globally. By recognising that Australian firms can succeed on the global stage and seeking to understand how these businesses came to be, Australia may have a strong, sustainable, *Mittelstand*-based economy.

Next steps

Having identified an apparent *Australian Mittelstand* group of companies, the next task is to estimate how many such firms might exist within the Australian manufacturing sector, and to learn more about their characteristics. Examination of the manufacturing industry newsletters and other "grey" literature suggests that while not necessarily common, Australia has substantial numbers of these firms.

A key research task is to understand how these companies emerged so far from the home of the *Mittelstand* in Europe's manufacturing belt, and how extensively they have been established in Australia. Learning more about their emergence and formulas for success will provide important data to help shape future public policy.

Future research will need to engage both quantitative and qualitative methodologies in order to collect sufficient data for appropriate triangulation. This is important, because in order to fully understand the nature and origins of *Australian Mittelstand*, they must be placed in context. Included in this work should be an analysis of official statistics to better understand the nature of the Australian manufacturing sector. Longitudinal survey data from the ABS may allow the development of a taxonomy and profile of Australian manufacturing firms; the overwhelming majority of which are SMEs, and a proportion of which are expected to be *Australian Mittelstand* and/or *hidden champions*. Such an examination will help address the questions:

- Are there companies in Australia that are analogous to the German *Mittelstand*, and if so, what are their distinguishing characteristics, and what factors led to the establishment of these firms as *Mittelstand*-like businesses in Australia?
- Does available data confirm that the *Australian Mittelstand* are exhibiting higher long-term growth and a greater capacity to cope with economic, technical, social and financial shocks than conventionally managed Australian businesses, and if so, what factors need to change at the firm and broader economy level to facilitate the establishment of more *Mittelstand* companies in Australia?

This work will help provide important findings for both policy and practice in relation to the future of Australia's manufacturing industries. The withdrawal of the three large motor vehicle manufacturers from local production over the period 2016-2017 will see the loss of significant numbers of skilled jobs, and risk the closure of most of the smaller firms in the supply chain.

Perhaps of greater concern is the potential loss of enabling resources such as engineering, manufacturing and design capability following the departure of such "apex" manufacturers.

As discussed above, both the literature and the available official statistics underline the importance of manufacturing both in terms of its current contribution to national welfare and to economic and social options arising from economic complexity. Thus, the sustainability of the Australian manufacturing sector is important to the long-term economic prosperity of the country. Manufacture of elaborately transformed goods is a critical element in the maintenance of "complexity" in the economy, and if lost, it is unlikely that the services, agriculture, mining and energy sectors will be able to fully replace this.

The enhanced understanding of the profile of Australian manufacturing and the likely identification and characterisation of the *Australian Mittelstand* can be used to raise the awareness of and provide a model for successful Australian manufacturing firms which may have resonance among individual firms, industry as a whole, policy makers in the bureaucracy and politicians. In particular, an increased level of industry and public awareness of the nature and number of these cohorts of *Mittelstand* and *hidden champions* may also increase the probability of more managers and founders modelling their firms on one or both paradigms. By raising awareness, and providing carefully calibrated and targeted assistance, Australia can have more *Mittelstand*, *gazelles* and *hidden champions*, and many fewer of the types of firms described by Nightingale and Coad (2013) as "marginal undersized poor performance enterprises" or "muppets".

Implications for education, policy and practice

While further research is required before definitive recommendations can be made, it would seem reasonable to assert the following:

- As discussed above, appropriate firm culture is the key to establishing a business as either an *Australian Mittelstand* or a *hidden champion*.
- This in turn requires that prospective business owners be aware of these models. It is wasteful and unreliable to assume future founders will "reinvent the wheel".
- Raising awareness is a role both for government and industry. Publicising successful manufacturing firms and the manner of their success can only assist new businesses to adopt appropriate models.
- When teaching business skills and entrepreneurship, universities and other tertiary education providers, need to include exposure to the *Mittelstand* and *hidden champion* models rather than a more simplistic focus on start-up ventures and "gazelles".
- Without awareness of these models, prospective entrepreneurs and business founders are unlikely to adopt these models.

References

- ABS (2012) *What is Manufacturing?*, Australian Bureau of Statistics, [available online] www.abs.gov.au
- ABS (2015a) *Australian Industry, 2013-14 (8155.0)*, Australian Bureau of Statistics, AGPS Canberra, [available online] www.abs.gov.au
- ABS (2015b) *Australian National Accounts: National Income, Expenditure and Product, June Quarter 2015 Cat. No. 5206.0*, Australian Bureau of Statistics, AGPS Canberra, [available online] www.abs.gov.au
- ABS (2015c) *Australian National Accounts: National Income, Expenditure and Product, Dec 2014 Cat. No. 5206.0*, Australian Bureau of Statistics, AGPS Canberra, [available online] www.abs.gov.au

- ABS (2015d) *Counts of Australian Businesses, including Entries and Exits, Jun 2010 to Jun 2014 - 8165.0*, Australian Bureau of Statistics, AGPS Canberra, [available online] www.abs.gov.au
- ABS (2015e) *Labour Force, Australia, Detailed, Quarterly Cat No. 6291.0.55.003*, Australian Bureau of Statistics, AGPS, Canberra [available online] www.abs.gov.au
- ABS (2015f) *Research and Experimental Development, Businesses, Australia, 2013-14 (8104.0)*, Australian Bureau of Statistics, AGPS Canberra, [available online] www.abs.gov.au
- ABS (2015g) *Construction of the Expanded Analytical Business Longitudinal Database, 2001-02 to 2012-13*, Information Paper, Australian Bureau of Statistics, CAT.8171.0, AGPS, Canberra.
- Acs, Z., Astebro, T.B., Audretsch, D.B., Robinson, D.T. (2016). *Public Policy to Promote Entrepreneurship: A Call to Arms*, Duke I&E Research Paper No. 16-9; HEC Paris Research Paper No. SPE-2016-1137.
- APL (2015) *Balance of Payments*, Australian Parliament, Department of the Parliamentary Library, [available online] www.aph.gov.au
- ABS 2016, *Counts of Australian Businesses, including Entries and Exits, Jun 2011 to Jun 2015 - 8165.0 in 8165.0*, vol. 2016, Australian Bureau of Statistics, Canberra, [16 February 2016].
- Atesoglu, H.S. (1993) "Manufacturing and economic growth in the United States" *Applied Economics*, 25(1), 67-69.
- Audretsch, D., & Elston, J. (1997) "Financing the German Mittelstand," *Small Business Economics*, 9(2), 97-110.
- Audretsch, DB & Lehmann, EE 2016, *The Seven Secrets of Germany - Economic Resilience in an Era of Global Turbulence*, Kindle edn, Oxford University Press, New York. [20 January 2016].
- Baghai, M., Redhill, D., Richardson, C. & Vorster, G. (2014), *Positioning for prosperity? Catching the next wave*, Deloitte Touche Tohmatsu Ltd, Sydney.
- Baker, S., & Mazzarol, T. (2015) "The Australian manufacturing Mittelstand: An initial exploration", *28th Annual SEAAANZ Conference 2015*, 1-3 July, Melbourne.
- Banks, G. (2011) *Industry assistance in a 'patchwork economy'*, Productivity Commission, Melbourne, Australia.
- Barney, J., Wright, M. & Ketchen, D.J. (2001) "The resource-based view of the firm: Ten years after 1991", *Journal of Management*, 27(6), 625-641.
- Barney, J.B. (1986a) "Organizational Culture: Can It Be a Source of Sustained Competitive Advantage?", *The Academy of Management Review*, 11(3), 656-665.
- Barney, J.B. (1986b) "Types of Competition and the Theory of Strategy: Toward an Integrative Framework", *Academy of Management Review*, 11(4), 791-800.
- Barney, J.B. (1991) "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, 17(1), 99-120.
- Belkar, R., Cockerell, L. & Kent, C. (2007) "Current Account Deficits: The Australian Debate", *Tenth Annual Conference of the Central Bank of Chile, 'Current Account and External Financing'*, Research Discussion Paper RDP 2007-02, Reserve Bank of Australia.
- Berghoff, H. (2006) "The End of Family Business? The Mittelstand and German Capitalism in Transition, 1949-2000", *The Business History Review*, 80(2), 263-295.
- Birch, D. (1987) *Job Creation in America: How Our Small Companies Put the Most People to Work*, New York, The Free Press.

- Blackbourn, D. (1977) "The Mittelstand in German society and politics, 1871–1914," *Social History*, 2(4): 409-433.
- BMWi (2013) "German Mittelstand: Engine of the German Economy", in *Facts and Figures about Small and Medium-sized German Firms*, Federal Ministry of Economics and Technology (BMWi), Berlin, Germany, p. 17.
- Bryant, C. (2012) "A model that everyone wants", *Financial Times*, 7 August 2012, p. 12.
- Bullen, J., Kouparitsas, M. & Krolikowski, M. (2014) *Long-run forecasts of Australia's terms of trade*, The Treasury, Canberra, Australia, p. 48.
- Colli, A, Rinaldi, A & Vasta, M 2013, *The only way to grow? Italian Business groups in historical perspective*, [18 March 2015].
- Crosby, M 2000, 'Patents, Innovation and Growth', *Economic Record*, vol. 76, no. 234, pp. 255-262.
- Dakers, M, (2015) "Britain's mid-sized companies overtake the Mittelstand by revenues", *The Telegraph*, [available online] www.telegraph.co.uk
- Davila, A., Foster, G., He, X., and Shimizu, C. (2015) "The rise and fall of startups: Creation and destruction of revenue and jobs by young companies." *Australian Journal of Management* 40(1): 6-30.
- DIISR (2011) *Trends in manufacturing to 2020: A foresighting discussion paper*. Canberra, Future Manufacturing: Industry Innovation Council, Department of Innovation, Industry, Science and Research (DIISR).
- European Communities / OECD (2007) *Eurostat – OECD Manual on Business Demography Statistics*, 2007 vols, Office for Official Publications of the European Communities, Luxembourg. [27 March 2015].
- Fear, J (2014) *The secret behind Germany's thriving 'Mittelstand' businesses is all in the mindset*, Conversation, The. [6 March 2015].
- Fiol, C.M. (2001) "Revisiting an identity-based view of sustainable competitive advantage", *Journal of Management*, 27(6), 691-699.
- Garrett-Jones, S. (2007). Marking time? - the evolution of the Australian national innovation system, 1996-2005. *Science, Technology Policy and the Diffusion of Knowledge: Understanding the Dynamics of Innovation Systems in the Asia-Pacific*. T. Turpin & V. Krishna (Eds.). Cheltenham, UK, Edward Elgar Publishing: 1-44.
- Garnsey, E. (1998) "A Theory of the Early Growth of the Firm", *Industrial and Corporate Change*, 7(3), 523-556.
- Gillin, L. M. (1991) "Entrepreneurship Education: The Australian Perspective for the Nineties," *Journal of Small Business & Entrepreneurship*, 9(1): 60-72.
- Green, R. (2015) *Does manufacturing have a future in Ockham's Razor*, R Williams, Australian Broadcasting Corporation, Sydney, Australia, [19 April 2015].
- Green, R., Marsh, I. & Pitelis, C. (2015) "Future skills, industry policy and a new social contract", in *Australia's future workforce?*, Committee for Economic Development of Australia, Melbourne.
- Hausmann, R. & Hidalgo, C.A. (2012) *Essay – Economic Complexity and The Future of Manufacturing*, Geneva, Switzerland.
- Hausmann, R., Hidalgo, C.A., Bustos, S., Coscia, M., Chung, S., Jimenez, J., Simoes, A. & Yildirim, M.A. (2011) *The Atlas of Economic Complexity - mapping paths to prosperity*, Centre for International Development, Harvard University

- Hendrickson, L., Bucifal, S., Balaguer, A., & Hansell, D. (2015) *The Employment Dynamics of Australian Entrepreneurship*, Research Paper 4/2015, Office of the Chief Economist, Australian Government, Department of Industry and Science, Canberra.
- Industry Department (2013) *Key Automotive Statistics 2012*, Australian Government Department of Industry, AGPS, Canberra.
- Ingram, T. (2015) "Iron ore miners at a 'perilous' cross-road", *Sydney Morning Herald*, The, 24 August 2015.
- Institut für Mittelstandsforschung Bonn (2015) *What is meant by "German Mittelstand"?*, Institut für Mittelstandsforschung (IfM) Bonn,. Available from: <[http://en.ifm-bonn.org/definitions/ - c779](http://en.ifm-bonn.org/definitions/-c779)>. [6 March 2015].
- Institut für Mittelstandsforschung (IfM) Bonn, *Overview - SMEs*, Institut für Mittelstandsforschung (IfM) Bonn. Available from: <[http://en.ifm-bonn.org/statistics/ - accordion=0&tab=0](http://en.ifm-bonn.org/statistics/-accordion=0&tab=0)>.
- IP Australia (2015) *Australian Intellectual Property Report 2015*, AGPS Canberra.
- Isenberg, D. J. (2010). "How to start an entrepreneurial revolution." *Harvard Business Review* 88(6): 40-51.
- Kaldor, N. (1966) *Causes of the slow rate of economic growth of the United Kingdom: an inaugural lecture*, Cambridge University Press, UK.
- Karmel, T. & Rice, J. (2011) *The economics of apprenticeships and traineeships*, National Centre for Vocational Education Research, Adelaide, Australia.
- Kirkup, J. (2011) "Business must copy the Germans, says George Osborne", *The Telegraph*, 16 September 2011 [available online] <http://www.telegraph.co.uk/>
- Katz, J. A. (2008) "Fully Mature but Not Fully Legitimate: A Different Perspective on the State of Entrepreneurship Education," *Journal of Small Business Management*, 46(4), 550-566.
- KordaMentha (2013) *Australian manufacturing. Redefining manufacturing*, Publication No. 13-03, Melbourne, Australia.
- Landeta, J. (2006) "Current validity of the Delphi method in social sciences," *Technological Forecasting and Social Change*, 73(5), 467-482.
- Gordon, T., and Pease, A. (2006) "RT Delphi: An efficient, "round-less" almost real time Delphi method," *Technological Forecasting and Social Change*, 73(4), 321-333.
- Linnemann, C. (2007) *Germany's Mittelstand - an endangered species?* , Deutsche Bank Research, Frankfurt am Main, Germany.
- Livesey, F. (2006) *Defining High Value Manufacturing*, University of Cambridge Institute for Manufacturing, Cambridge, England.
- Logue, D.M., Jarvis, W.P., Clegg, S. & Hermens, A. (2015) "Translating models of organization: Can the Mittelstand move from Bavaria to Geelong?", *Journal of Management & Organization*, 21(1), 17-36.
- Lundvall, B.-Å. (2007). "National Innovation Systems—Analytical Concept and Development Tool." *Industry & Innovation* 14(1): 95-119.
- Mason, C. & Brown, R. (2013) "Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship", Background paper prepared for the workshop organised by the OECD LEED Programme and the Dutch Ministry of Economic Affairs on Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship The Hague, Netherlands, 7th November 2013.
- Maton (2016) "About Maton Guitars", Maton Guitars, website, www.maton.com.au.

- McCausland, W.D. & Theodossiou, I. (2012) "Is manufacturing still the engine of growth?", *Journal of Post Keynesian Economics*, 35(1), 79-92.
- McDonald, F., Krause, J., Schmengler, H. & Heinz-Josef, T. (2003) "Cautious International Entrepreneurs: The Case of the Mittelstand", *Journal of International Entrepreneurship*, 1(4), 363.
- Meyer-Stamer, J. & Frank, W. (2000) *Behind the Myth of the Mittelstand Economy. The institutional environment supporting small and medium-sized enterprises in Germany*, Institute for Development and Peace at the Gerhard-Mercator University Duisburg, Duisburg, Germany.
- Miller (2016) "Welcome to Miller Camera Support Equipment: Precision without compromise", www.millertripods.com/about_us.html
- Nelson, R. (1992). *National Systems of Innovation: A Comparative Study*. London, Oxford University Press.
- Nelson, R. (1993). *National Innovation Systems: Pilot Case Study of the Knowledge Distribution Power of Finland*. Helsinki, Finland, VTT Group for Technology Studies.
- Nightingale, P. & Coad, A. (2013) "Muppets and gazelles: political and methodological biases in entrepreneurship research", *Industrial and Corporate Change*, 23(1), 113-143.
- OECD (2002) *Glossary of Statistical Terms - Manufacturing, Organisation for Economic Co-operation and Development*. Available from: <<https://stats.oecd.org/glossary/detail.asp?ID=1586>>. [2 May 2015].
- OECD (2010) *High-Growth Enterprises: What Governments Can Do to Make a Difference*, Organisation for Economic Co-operation and Development, Paris, France.
- Parnell, M.F. (1999) "Globalization, Eastern Germany and the 'Mittelstand'", *European Business Review*, 99(1), 32-41.
- Petzoldt, C. (2013) *Hidden champions down under*, Simon Kucher & Partners, Sydney, Australia.
- Porter, I. (2015) "Here's who to blame for our coming recession", *The Age*, 8 September 2015[16 September 2015].
- Porter, M. E. (1979) "How Competitive Forces Shape Strategy," *Harvard Business Review*, 57(2), 137-145.
- Porter, M.E. (2008) "The Five Competitive Forces that shape Strategy", *Harvard Business Review*, 86(1), 78-93.
- Porter, M. E., & Stern, S. (2001). "Innovation: Location Matters." *Mit Sloan Management Review* 42(4): 28-36.
- Productivity Commission (2014) *Australia's Automotive Manufacturing Industry*, 70, Productivity Commission, Melbourne, AGPS.
- Reboud, S., Mazzarol, T., Clark, D. and Mamouni Limnios, E. (2014) "One more time: why it is important to define the small enterprise", peer reviewed paper presented at the 59th International Council for Small Business (ICSB) Conference, 11-14 June, Dublin, Ireland.
- Reedy, E. J. & Litan, R.E. (2011) *Starting Smaller; Staying Smaller: America's Slow Leak in Job Creation*. www.kauffman.org, Ewing Marion Kauffman Foundation.
- Shane, S. (2009) "Why encouraging more people to become entrepreneurs is bad public policy", *Small Business Economics*, 33(2), 141-149.
- Simon, H. (1992) "Lessons from Germany's Midsize Giants", *Harvard Business Review*, 70(2), 115-123.

- Simon, H. (1996) "You Don't Have to be German to be a 'Hidden Champion'", *Business Strategy Review*, 7(2), 1-13.
- Simon, H. (2009) *Hidden Champions of the Twenty-First Century*, Springer, New York.
- Teece, D.J. (2007) "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D.J., Pisano, G. & Shuen, A. (1997) "Dynamic capabilities and strategic management", *Strategic Management Journal*, 18(7), 509-533.
- Thirlwall, A.P. (1983) "A plain man's guide to Kaldor's growth laws", *Journal of Post Keynesian Economics*, 5(3), 345-358.
- TU Chemnitz, *BEOLINGUS*, Technische Universität Chemnitz. [available online] <http://dict.tu-chemnitz.de>
- US Census Bureau 2016, *Number of Firms, Number of Establishments, Employment, and Annual Payroll by Enterprise Employment Size for the United States, All Industries: 2013*, Washington DC, [16 April 2016].
- Valadkhani, A. (2003) "How many jobs were lost with the collapse of Ansett?", *The Full Employment Imperative: 5th Path to Full Employment Conference and 10th National Conference on Unemployment*, 10-12 December 2003, pp. 263-275, Newcastle Australia, Centre for Full Employment and Equity, The University of Newcastle.
- Venohr, B & Meyer, K (2009) 'Uncommon common sense', *Business Strategy Review*, vol. 20, no. 1, pp. 38-43.
- Vargo, S. L., & Lusch, R.F. (2004). "Evolving to a New Dominant Logic for Marketing." *The Journal of Marketing* 68(1): 1-17.
- von Saldern, A. (1992) "'The Old Mittelstand 1890-1939: How 'Backward' Were the Artisans?", *Central European History*, 25(1), 27-51.
- Wang, M. (2009) "Manufacturing FDI and economic growth: Evidence from Asian economies", *Applied Economics*, 41(8), 991-1002.
- WEF (2013). *Entrepreneurial ecosystems around the globe and company growth dynamics*. Geneva, Switzerland, World Economic Forum.
- WEF-Deloitte (2012) *The Future of Manufacturing: Opportunities to drive economic growth*, Geneva, World Economic Forum in collaboration with Deloitte Touche Tohmatsu Ltd.