The Best *of* German *Mittelstand*

THE WORLD MARKET LEADERS

Edited by
Florian Langenscheidt
and Bernd Venohr

DEUTSCHE
STANDARDS

Best of German Mittelstand – The world market leaders.

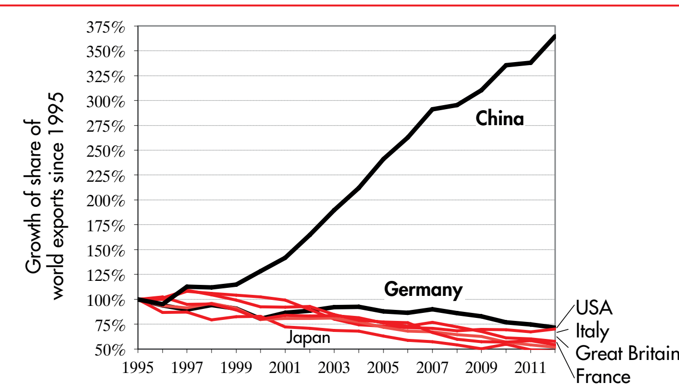
PROF. DR. BERND VENOHR,
PROF. DR. JEFFREY FEAR,
DR. ALESSA WITT (FLTR)

STRONG EXPORT PERFORMANCE

China's entry into the global market over the last 20 years has greatly altered the balance of global trade. Since 1995, the proportion of Chinese goods as a percentage of world exports grew by nearly four times, whilst the trade output of other established trade nations gradually declined. While the decline among established economies is significant, Germany's share of global trade has remained largely intact since 2000. Germany is the only established industrial nation to hold its proportion of world trade at roughly 8 per cent while the market share of the USA or Japan has shrunk considerably since 2000 (DeStatis, 2015; WTO Press Release, 2013).

Between 2003 and 2008 Germany was the world leader in terms of merchandise trade exports, and continues to compete with the USA for the number two position behind China (World Bank, 2015), despite Germany being a much smaller country when compared to China and the USA.

GROWTH OF SHARE IN WORLDWIDE EXPORTS*



* Country share in worldwide exports; 1995 = 100
Source: UN-Comtrade DB

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There are numerous explanations for Germany's strong export performance over the last decade, which range from the structure of world demand, especially the strong demand growth in numerous emerging markets; improved cost competitiveness through offshoring of production processes, relative wage moderation since 2000 and labour market reforms that permitted more flexible work time schedules, and the relative undervaluation of the Euro for German goods (Miotti & Sachwalk, 2006; Danninger & Joutz, 2008; Dustmann ets al., 2014). But a neglected core part of the explanation of Germany's success lies at the the firm level, specifically, those firms that make up the German "Mittelstand", which are considered as the "backbone" of the German economy (Schuman, 2011).

German companies dominate traditional medium- and high-tech sectors in numerous investment goods and durable consumer product market segments. This supply profile fits very well with the demand profile of the so-called BRIC countries (Brazil, Russia, India, China) as well as other fast-growing emerging markets. Germany has reaped a disproportionate "globalisation dividend" because these countries are investing heavily in new industrial capacity, infrastructure such as energy supply, urban construction, and transportation. Finally, rising living standards, increased disposable income, and rapid growth of a new middle and upper class created demand for German premium-priced consumer products in sectors such as automotive and appliances. China, for instance, has become the world's largest automobile market and German automotive manufacturers dominate the premium market there.

While Germany stands as a successful export economy, there are increasing signs that the "business model of Germany" (Wittenstein, 2012), which is based on exports, may be reaching its limits. On the one hand, the high growth rates of emerging markets are beginning to flatten, in part due to a general economic slowdown of growth (China, Brazil) and continuing uncertainty in critical regions (Russia and the Middle East) (Pritchett & Summers, 2013). On the other hand, new local competitors are emerging , particularly in China, due to the growing domestic market and export success, and are beginning to erode German firms' market share from below with lower price points and ever increasing product quality (Berthold, 2012). Numerous international institutions such as the IMF and the European Commission have all criticised Germany's consistent account surplus, reaching 7.4 per cent of GDP and amounting to 215.3 billion Euros in 2014. This vastly exceeds the 176.7 billion Euros surplus of China and contributes to global and Eurozone macroeconomic imbalances. German politicians and decision-makers are encouraged to shift their attention to boost German domestic demand instead of promoting exports (Bloomberg, 2015; Berthold, 2012).

Over the last decades many traditional German Mittelstand firms have reoriented themselves to global markets with the ambition to become world market leaders, and have quite often become "Mini-Multinationals" in this process. Here we present the management practices of such successful Mittelstand companies, explaining the sources of their sustained success, and highlighting that the Mittelstand management practices represent a distinct model, which is globally not very well understood yet. However, we will argue that there is no "secret" behind these practices, many of these practices are essentially just doing good business.

THE BEST OF THE GERMAN MITTELSTAND

This volume presents detailed profiles of about 100 firms as part of a broader database of 1,620 leading global German firms. Each firm selected is a world market leader holding one of the top three industry positions in its respective market segment measured by the size of its revenues (see Database of Deutsche Weltmarktführer, 2014). The entire group of 1,620 firms generated a total revenue of roughly 2 billion Euros and employed about 8.1 million people (estimated on the basis of most recent company data). The selected 100 Mittelstand firms presented here are representative of some of the best and most successful Mittelstand firms among a broader array of Germany's world-class firms dominating global markets. Some are well-known brands (ANDREAS STIHL AG & Co. KG – chainsaws and other handheld power equipment, Privatbrauerei Erdinger Weißbräu – wheat beer, or Miele & Cie. KG – premium white goods), others are invisible to the general public (hawo GmbH – packaging and sealing solutions specifically for hospitals and the medical industry; Pilz GmbH & Co. KG – supplier of complete automation solutions with the core competency of safety). Some are enduring firms with a century of history (G. Siempelkamp GmbH & Co. KG – a diversified industrial firm with a global leadership position as systems supplier of press lines and complete plants for the wood-based panel industry or Maurer AG – leader in structural protection systems for bridges). Others have only recently emerged into world-class firms (ifm electronic GmbH – sensors, controllers and systems for industrial automation or Plasmatreat GmbH – offering atmospheric plasma solutions for surface pretreatment on all types of materials). All offer insights into the global success of the Mittelstand model.

An important aspect of German export success is that it does not only lie with the large well-known multinationals, but also with many Mittelstand firms. The term Mittelstand is quite often used as a statistical category, to classify all small and medium-sized enterprises (SMEs), with annual revenues up to 50 million Euros and a maximum of 499 employees (IfM Bonn, 2015). However, many larger and mostly family-owned companies claim to be part of the Mittelstand, based on the Mittelstand's positive connotations such as nimbleness, flexibility, innovativeness, customer focus, social responsibility, a family -like corporate culture, and long-term policies.

Ludwig Erhard, the former Economics Minister who crafted the post-war (West) Germany "economic miracle" (Wirtschaftswunder) warned not to reduce the Mittelstand term to a mere quantitative and revenue-based classification but instead emphasised more qualitative characteristics that embody the Mittelstand, as it is "… much more of an ethos and a fundamental disposition of how one acts and behaves in society" (Erhard, 1956).

In German linguistic usage, the term Mittelstand applies mostly to mid-sized and privately held firms as opposed to very large listed companies; but more importantly all Mittelstand companies are characterised by a common set of values and management practices. These companies are predominantly run by classic "owner-entrepreneurial families" (Unternehmerfamilien) seeking to sustain the business by instituting a core ideology of longevity, conservative long-term financing, and operating practices. Most Mittelstand companies are privately held, often under 3rd–5th family generation ownership and control. Going public is the exception, not the rule. Further qualitative characteristics bind and unite such a Mittelstand mentality together. In spite of their relatively smaller size and often small town origins, many companies, especially the larger ones, act globally, whilst staying remarkably embedded in their region. They focus on company independence, quality products, longstanding anchoring in local communities, and sustainable consensus-oriented relationships with their most important stakeholders including employees, customers, suppliers, and banks (see Welter, 2013; Berghoff, 2004; Fear, 2012; Witt & Carr, 2014; Fear, 2014; Witt, 2015).

The concept of the Mittelstand company represents an alternative management model to the mainstream company model of the typical Anglo-Saxon publicly-listed corporation with its dispersed investor base. Mittelstand core values represent a sharp counterpoint to a singular focus on shareholder value in favour of long-term survival based on enduring relationships with key company stakeholders, combined with a commitment to excellent products and services.

To better analyse Germany's company "landscape," we divide companies in three distinct categories; the first category consists of the majority of German firms (more than 99 per cent), which are "classic" SME-type Mittelstand firms (revenues below 50 million Euros). The second group of German firms are "upper" sized Mittelstand firms ("gehobener Mittestand"), with annual revenues between 50 million and 1 billion Euros. Although these companies are much larger than the "classic" SME, the overriding majority are still family-owned and espouse typical Mittelstand values. The third and final category are Germany's well-known large corporations with annual revenues of more than 1 billion Euros, including the DAX 30 companies, the largest publically listed enterprises in Germany, such as Volkswagen, BASF and Siemens.

MITTELSTAND COMPANIES AS SPEARHEAD OF GERMANY'S SUCCESS IN EXPORTS

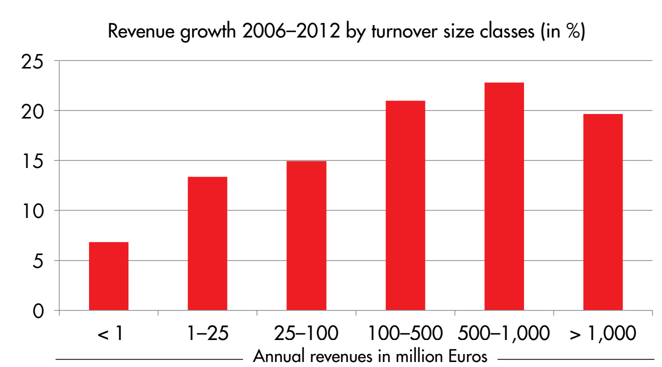
Annual revenues	Number of companies[1)]	Share in total German exports[2)]
Large companies > € 1,000 m	501 (0.02 %)	31.69 %
Mid-sized enterprises € 250 – 1,000 m € 100 – 250 m € 50 – 100 m €	 1,806 (0.06 %) 3,483 (0.11 %) 5,508 (0.17%)	36.88 %
SME segment < € 50 m	3,239,021 (99.65 %)	31.43 %

1) Source: German VAT statistics 2007
2) Verarbeitendes Gewerbe nach WZ2003: d.h. ohne Land- und Forstwirtschaft, Fischerei und Fischzucht, Bergbau und Gewinnung von Steinen und Erden, Handel, Energie- und Wasserversorgung, Finanzdienstleistungen, etc.
Source: Own calculations and Top 500 Unternehmen in Deutschland 2005 © DIE WELT.de 2006; Statistisches Jahrbuch 2008

Our analysis of Germany's export statistics illustrates that both the "classic" and "upper" Mittelstand companies account for 68 per cent of Germany's total exports when compared to 32 per cent generated by Germany's large corporates. If we use the above statistical definition of Mittelstand firms, both Mittelstand categories account for about 1,400 of Germany's 1,620 world market leading companies in our database (see Database of Deutsche Weltmarktführer, 2014). Both groups of Mittelstand companies are elite subgroups of the "average" Mittelstand. We call these Mittelstand companies with a leading global position in their market segment "Mittelstand Champions."

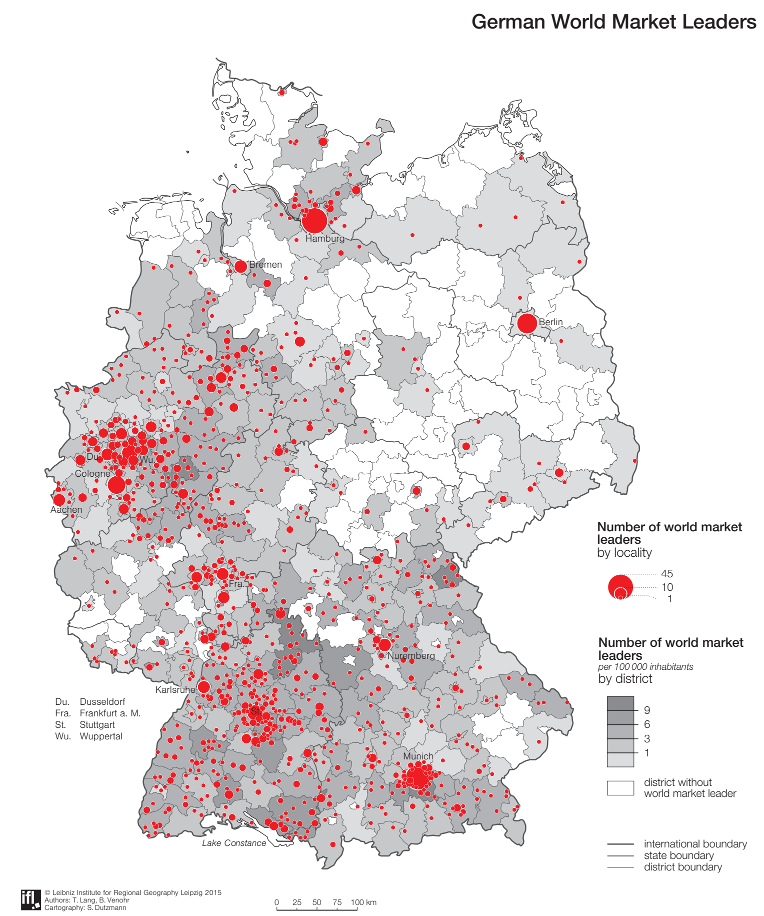
Especially the upper-sized Mittelstand firms are a unique and distinctive group. As a group they are the most important force behind the German export prowess. In addition, they grew much faster than Germany's classic Mittelstand companies and the large corporates in the last decade (Kann et al., 2014). Due to their strength in innovation, remarkable global footprint and orientation to fast-growing emerging markets, they benefitted most from globalisation trends. Most of the companies included in this volume are part of this group.

GROWTH MOMENTUM STRONGEST AMONGST THE "UPPER MITTELSTAND" COMPANIES



Source: IKB and Creditreform 2014, p. 8

The existence of so many strong export-oriented, mid-sized industrial firms is, in our opinion, unique within a global perspective, although comparable figures are unfortunately lacking. What is even more remarkable is that these firms are more or less evenly spread throughout Germany, except in the former communist eastern areas.



Successful Mittelstand firms have found access to global markets from all over Germany, even though 71 per cent of Mittelstand Champions are located in so-called peripheral areas and small towns (cities below 100,000 people) (see Venohr, 2014). For instance, the European Commission recently awarded the new Type 2 standard for charging coupler plugs for electric cars to a design of the firm MENNEKES Elektrotechnik GmbH & Co. KG, located in Kirchhundem, a small town 130 kilometres east of Cologne. Even firms in small towns can set global standards. Globalisation is often associated with the rise of inequality, but geographical spread also ensures that gains from globalisation are more evenly distributed across Germany compared to countries with large corporations concentrated in a few regions and globally non-competitive and regionally-oriented small- and mid-sized businesses dominating the rest of the country.

A particular strength of the German Mittelstand landscape is the average size of the companies. A firm-level comparison across the European Union (EU) shows that the average "classic" German Mittelstand company has annual revenues of 36 million Euros and is 1.5 to 4 times bigger than the average SME in other EU countries such as Italy, Spain, France, and Great Britain (Arrighetti et al., 2012: 9). The same study also demonstrated that size and increasing scale is generally correlated with higher productivity, innovation potential, and degree of internationalisation – all factors that are outstanding features of the German Mittelstand.

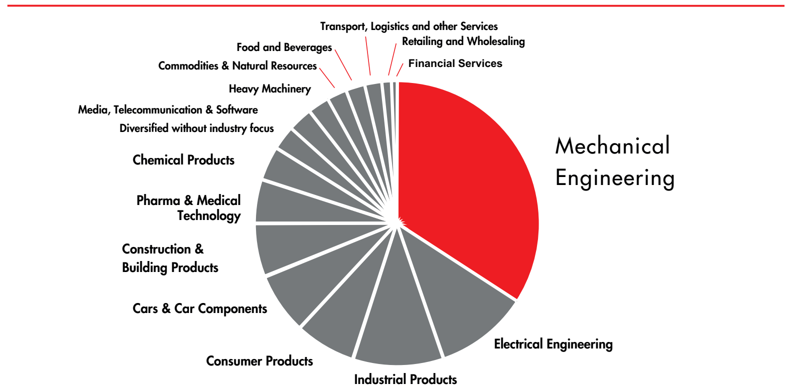
The reasons for Germany's export strength in high-value added industrial products are not sufficiently researched, but prior research has highlighted that it rests in part on its industrial history, technical innovation system, and geostrategic place in Europe (see Simon, 2012; Abelshauser, 2003, Keck, 2013; Fear, 1993). Until 1871 Germany was not a unified nation-state, but a collection of small states that form the basis of German federalism today. Every entrepreneur that wanted to grow had to "internationalise." Germany's industrial growth spurt occurred after the 1850s, in particular during the first wave of globalisation between the 1890s and the First World War, when German industrial goods first challenged British goods on world markets as well as its military power – much like rising China today with the USA. Indeed, the trademark "Made in Germany," which has become a symbol for German quality and reliability, was a result of the British passing the Merchandise Marks Act of 1887 that was designed to label allegedly inferior German goods. It backfired. "Made in Germany" technology and product engineering has become part of German national identity. Companies such as Siemens were already "global players" at the end of the 19th century because of their technological and organisational expertise. Siemens was a long-time global market leader for telegraph cables, the Internet of the time. Robert Bosch GmbH, another "iconic" German company, opened its first international sales office in London in 1898, closely followed by the USA (1906) and already developed links with Asia in 1909, including China. By 1913, Bosch generated 88 per cent of its sales outside Germany (see Bosch Website, 2015); the biggest revenues were derived from its business in the USA, due to the rapid growth of the automobile industry in the USA (Berghoff, 2004).

In geostrategic terms, Germany occupies a middle position between Asia and the Americas, which leads to shorter travel times and communication advantages relative to the other triad regions. As the largest country in Europe (measured in terms of population and GDP size) it is uniquely positioned and borders nine other countries, more than any other European country. Germany lies at the heart of the EU and has gained from the unification process and customs union. The size and strength of the German domestic market and its geographic location both encourage the development of export-oriented mid-sized Mittelstand firms.

Finally, Germany has always been renowned for its "national innovation system" with a strong basis of technical universities (Keck, 1993; Porter, 1998). This innovation system led to ground-breaking innovations in chemical, pharmaceutical, electrical, mechanical, as well as theoretical science. Its graduate school education was exported to the USA prior to 1914. This national innovation system rests on a tight and constructive relationship between educational institutions and globally active large and mid-sized firms. For instance, German dyestuffs makers such as BASF SE, Hoechst AG- and Bayer AG had a combined 90 per cent world market share prior to 1914, benefitted enormously from close university ties. Typical for this interaction was the development of the so-called Haber-Bosch process, still today the main industrial procedure for the production of ammonia for nitrogen-based products such as fertiliser and chemical feedstocks. The fundamental technology was developed by the German university professor Fritz Haber. BASF bought the technology in 1909 and assigned one of its employees, Carl Bosch, to the task of scaling up Haber's tabletop machine to industrial-level production. Industrial scale level production as started in 1913. Both Haber and Bosch received the Nobel Prize in Chemistry for their work (Murmann, 2007). The roots of German export competitiveness lie well before the First World War, and many of the strengths of the German economy still rest on these sectors. Wars and political upheaval wrecked the German economy until after the Second World War when traditional patterns reasserted themselves. Indeed a significant percentage of German world market leaders (about 32.5 per cent) were founded prior to 1914 and demonstrate how these firms successfully managed the great turmoils of the 20th century.

The mix of industrial sectors

GERMAN WORLD MARKET LEADERS BY INDUSTRY SECTOR



Source: Database Deutsche Weltmarktführer 2.4.2 (24.10.14) © 2014 Prof. Dr. Bernd Venohr

German Mittelstand companies tend to have a particularly strong presence in two types of markets: in a large number of business-to-business markets (B2B) and in the premium segment of many durable consumer goods markets. The B2B sector overall accounts for approximately 85 per cent of Mittelstand Champions. Along with distinctly high-volume markets (standard parts and components for the automotive sector for instance), there are also a multitude of small- and medium-size markets, often with annual global market volumes of double- or low triple-digit million Euros. For instance, about 400 of Germany's 1,620 world market leaders belong to the mechanical and plant engineering sector. Specialist companies supplying manufacturing equipment to a narrowly defined category of customers largely dominate this sector. The machine tool sector, for instance – in contrast to standard equipment for high-volume markets such as excavators or construction cranes – is highly heterogeneous and cannot be efficiently supplied by a few large firms. The variety of applications (such as milling, lathing, grinding, punching and bending), and the different types of materials such as metal and wood used in a host of customer industries including vehicle construction and the furniture and wood industry, create numerous market segments.

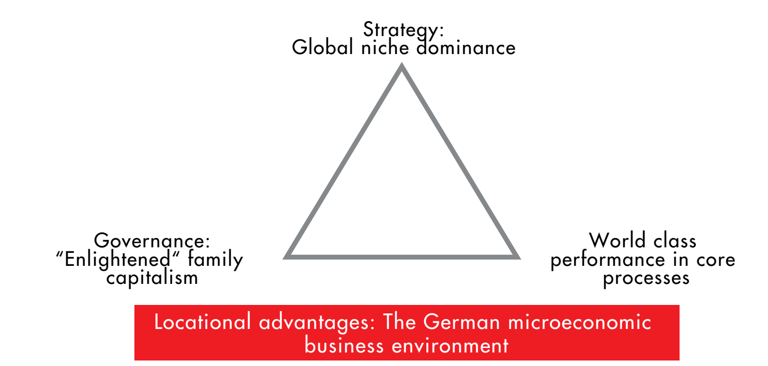
These segments have very specific needs best served by specialised providers with a significant global market share in their respective niches. Medical technology is another important export sector. Alongside a small number of large-volume markets (e.g. for coronary diseases), an array of small-volume markets of specialised products can be found here as well. In many small-volume markets, medium-sized German Mittelstand firms with annual sales ranging in the double- or low triple-digit millions enjoy top positions worldwide in areas such as prostheses and inhalation equipment for patients with respiratory diseases. German Mittelstand Champions also occupy market and technical leadership positions in "unconventional" B2B industries with firms such as Poly-clip System GmbH & Co. KG focussing on the development of sealing clips for the foodstuff industry; 3B Scientific focuses on realistic anatomical models including birthing simulators; and the engineering and architectural firm Tilke GmbH & Co. KG, which is a global leader in designing automotive racetracks.

The second focus area for German companies is the premium segment in large-volume consumer mass markets, particularly for durable goods. With a combined global market share of about 90 per cent, the four major German premium car producers – BMW AG, Daimler AG (Mercedes-Benz), Audi AG and Porsche AG – dominate this sector globally. Strong market positions can also be found in premium segments of many other durable consumer goods markets, from household appliances (Miele & Cie. KG, BSH Hausgeräte GmbH) to writing instruments (Montblanc International GmbH, STAEDTLER Mars GmbH & Co. KG), to high-end glasses for luxury restaurants (Zwiesel Kristallglas AG).

MANAGEMENT MODEL "MADE IN GERMANY"

These German Mittelstand Champions have a distinct management model that dovetails strategy, leadership and governance principles, with core processes in a unique blend, creating a finely tuned whole. We argue: the worldwide success of German Mittelstand companies is not only a result of outstanding products and services, but it also rests on a very specific management model. In many aspects, this model is a counter-example to the US-dominated mainstream model of management taught in business schools worldwide. It differs in two core elements:

MANAGEMENT MODEL "MADE IN GERMANY"



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a focus on long-term customer relationships rather than competing transactionally at arms length in anonymous markets; the overriding company objective driven by family ownership is long-term survival, instead of short-term maximisation of company value (see Kormann, 2005).

Strategy: Global niche dominance

Mittelstand Champions dominate niche market segments worldwide. They develop products and services of high quality, from machine tools to kitchen appliances and computer software. Many companies, primarily the smaller family controlled SMEs, pursue distinct niche strategies (Simon, 2007: 85–105). They focus on narrowly defined submarkets and cater to specific groups of customers supplying high-quality products and services tailored to their needs. Typical "German strengths" – performance, reliability, safety, durability and design – bolster acceptance of these products in the global market. This, in turn, is reflected in premium pricing. For instance, one global study compared branded consumer durables products and discovered that simply by using the trademark "Made in Germany" German products could command a price markup of up to 20 per cent over functionally comparable products from other countries (Feige et al., 2014).

Family-owned companies lack access to capital markets and typically avoid markets that require high levels of capital and/or competition against large publicly held corporations rich in capital. They often cater to small market segments but they do so worldwide. The global market approach makes small markets big (the "two-pillar strategy," Simon, 2007: 118–130). The maxim is: "We concentrate on the things we do best – worldwide!" These companies enjoy an average market share of around 50 per cent (with a median deviation of 20 per cent around the average). In some cases, particularly in tiny niche markets, the companies are essentially "quasi-monopolists."

This "two-pillar strategy" is rooted in the fact that in many narrowly defined market segments, especially in B2B sectors, customer needs tend to be fairly homogeneous across national boundaries. The most successful Mittelstand companies view themselves as specialists providing a high-quality solution to a very specific group. Indeed, their companies' entire business model is geared to the needs of their target group. What they deliver is not just a product, but very often a total solution to a customer need. These companies act as "full-solution providers."

A typical case in point is Rational AG, the world's leading provider of products and services for thermal food preparation in commercial kitchens. They consciously omit the much larger market for home cooking appliances. The needs of their target group – professional chefs in canteen and commercial kitchens – are the same worldwide: to prepare a large number of oftentimes very different meals in a very short period of time while ensuring quality of the meals. Rational AG offers innovative appliances for this target group, such as a computer-controlled cooker (Self-Cooking Center) that can cook to precise specifications. The chef no longer needs to tend to the cooking process and can instead devote more time to selecting ingredients and creating meals. The appliances also offer other features that bring marked improvements to the work processes in canteen kitchens (space-saving design and easy cleaning, for example). The company defines itself as the "Chefs' Company" and has 200 chefs of its own staff as sales representatives, making it a "system provider" of solutions for the "cookological" problems professional chefs face. An interdisciplinary research and development (R&D) department with about 80 employees consisting of physicists, engineers, nutritionists plus 30 in-house chefs develops new products and solutions for this target group on an ongoing basis (see Rational Website, 2015).

Focus on customer loyalty, not competitive dominance

Focusing on niches means catering to the specialised needs of a target group of customers and entails a different view toward competition. In many ways, what guides the US school of corporate strategy is an orientation toward competitive domination (see Kormann, 2005: 20-25). The goal is to outperform the competition – through aggressive actions, if need be – to achieve market dominance and in typical scale-driven markets above-average profitability. The model pursued tends to be one oriented to large-volume mass markets, with a large pool of ultimately anonymous customers, in which a company can become either a cost- or a quality leader (through product differentiation). Yet, as already indicated, most German Mittelstand Champions operate in niche B2B markets, whose distinctive features call for a different strategic focus (Kormann, 2005: 70–95):

- B2B products and services are quite often "mission-critical" for customers. This is particularly evident in the high indirect costs incurred if a component or piece of equipment should fail. Bargain

prices achieved at the cost of product performance are not a winning sales argument. For instance, the packaging machines used for pharmaceutical or food products often provide a very high throughput of finished products. Interruptions in production are very costly. Packaging errors, such as those leading to impurities, can trigger large-scale damage claims and jeopardise the producer's reputation.
- Products are developed in close cooperation with customers, often to the clients' own customised specifications. Both organisations work together closely at multiple hierarchical levels. Once established, the relationships tend to be long-lasting and generate new business solutions.
- Unlike consumer goods or durables, machinery and equipment are "experience goods" that a customer cannot simply try out and replace easily with the next best alternative if they fall short of expectations.
- B2B markets are relatively small on both the supply and demand sides. Essentially, every customer knows every potential supplier, and vice versa. The situation is often one of mutual dependency.
- The competitive structure of these markets do not tend to exhibit the kind of fast growth as seen in many high-tech markets. Competitive conditions are often stable over many years. Focusing on short-term market share gains through aggressive pricing for instance is of little importance and can in fact prove highly risky.

Sustainable growth in B2B markets is thus deeply rooted in stable customer relationships cultivated by trust. Apart from securing the company's economic independence, establishing and maintaining sustainable long-term relationships with customers is a key business objective. Robert Bosch, the founder of the Bosch group, once characterised this guiding principle as follows: "... I have always acted according to the principle that I would rather lose money than trust. The integrity of my promises, the belief in the value of my products and of my word of honour, have always had a higher priority to me than a transitory profit" (Fastnacht, 2010: 30).

Customer orientation does not mean an absence of healthy competitive spirit and profit focus. Many global market leaders are known as formidable competitors that have surpassed many competitors on the path to global market leadership. The path to market dominance is an indirect one and involves providing outstanding products and services to customers while avoiding highly risky short-term strategies such as aggressive price wars.

Strategic risks of niche leadership

Niche strategies are risky, though, particularly if the products are supplied to only one very narrowly defined customer group. Technological changes, shifts in customer demand as well as economic downturns can quickly threaten a company's livelihood. Accordingly, many of the older and larger family-held global market leaders – such as Voith GmbH or Heraeus Holding GmbH – have learned to diversify their operations across a variety of business fields to buffer the decline in one business area with growth in another segment.

The potential risk of a niche strategy was observed in the financial crisis of 2008/2009 when a sharp but temporary slump in demand occurred. Especially companies in highly cyclical industries like automotive components or in many sectors of the machine equipment industry suffered revenue declines of up to 30 per cent.

However, the German Mittelstand model has proven relatively recession-proof as almost all companies regained their customers quickly. For instance, two of the Mittelstand Champions contained in this book, Vinnolit GmbH & Co. KG, global market and technical leader in specialty PVC, and BLANCO GmbH & Co KG, a global leader in food logistics systems for professional commercial kitchens, suffered a revenue decrease in 2009 of 15 and 24 per cent respectively. Both kept their personnel, even though orders declined sharply, whilst they simultaneously kept investing in R&D, sales and marketing (BLANCO Press Release, 2010; Vinnolit Press Release, 2010). As a result of these policies, both companies managed to increase their market share during and after the crisis. Their strategy to keep employees on board and continue investing was also supported by the government through "part-time working" schemes (Kurzarbeit), which subsidised companies, allowing many Mittelstand companies to keep skilled employees when business contracted. The firms kept their number of employees whilst cutting back on working hours and pay until the situation improved.

An additional challenge for Mittelstand Champions, especially for those mainly exporting from high-cost Germany, is the rise of new competitors from emerging markets, in particular China. Many German Mittelstand firms, for instance in the machine engineering and investment goods sectors, utilised their traditional classic competitive advantages in technical performance, applications know-how, and service quality to acquire a dominant position in the premium segments of their markets. Based on this positioning, they were able to charge significant price markups.

But the competitive landscape seems to have changed fundamentally. China's markets historically had two tiers (Gadiesh et al., 2007). At the top, a small premium segment served by global market leaders. At the bottom, a vast, low-end segment served by local companies offering low-quality, undifferentiated products (typically 40–90 per cent cheaper than premium ones). A new middle-market segment is rapidly developing. Local competitors have developed well-designed, lower-cost products that are "good enough" to appeal to a growing number of customers in China's growing middle market. Those products with fewer features are cheaper to make, more affordable and are easier to use and maintain. Well-known examples are Huawei Technologies, a Chinese manufacturer of telecommunications networks and Haier in appliances. These local rivals are gaining market

share and enticing even high-end customers to trade down for what they see as better value. Many potential customers in the Chinese market, or in emerging markets such as in Africa, cannot (yet) afford the rich product features or integrated service offerings of German firms. This "good enough" market segment is growing much faster than the market as a whole and encompasses in many markets already roughly 50 per cent of the market if not more. This pattern repeats itself in almost every market sector. Local companies are not only posing a significant challenge to foreign market leaders in China today but they are also positioning themselves to compete on a global scale tomorrow.

Future market growth in many consumer or consumer durable goods markets will take place primarily in the lower to middle price point segments. High-value, high-quality machines are not needed to manufacture such products. Local competitors already dominate the lower price segments and try to move up into a leading position in the middle price segments, ultimately to even advance into the high-margin premium segments. If German firms disregard the midpoint segments, this vacuum could enable local competitors to improve their quality and service over time and etablish dominant global market positions. It can be expected that China's mid-market space, where foreign companies and Chinese firms are going to compete head-on, will be the market segment from which the world's leading companies will emerge.

The strategic question for many successful German Mittelstand Champions focusing on premium niche segments is whether or not their global market position is sustainable given these long-term trends in world markets. In order to defend their market position, they need to consider moving into the high-volume middle-market space.

To successfully compete in the mid-market space, product development and production needs to be fully localised to become cost competitive, since prices are 30 to 50 per cent lower compared to the premium segment. The experience of some multinational companies such as Grundfos, General Electric, Siemens and Otis illustrates how firms can localise the full value chain in China to lower manufacturing costs, introduce simplified products and services, and broaden distribution networks to target customers located quite often in China's second- and third-tier cities while still maintaining reasonable quality (Tsang & Chong, 2014). This has been done mostly through the development of new greenfield middle-market operations separate from the core premium product businesses and/or by acquiring local competitors ("dual market strategy").

Many of the larger Mittelstand Champions are already well under way to address these opportunities in the mid-market segment. Trumpf GmbH & Co. KG, the world market leader in machine tools and laser technology/electronics, for instance, acquired in 2013 a majority stake (72 per cent) in a Chinese company, Jiangsu Jinfangyuan (JFY), which is a market leader in the production of punching and bending machine tools for sheet metal fabrication (Trumpf Press Release, 2013). According to company statements, the best punching machine of the Chinese manufacturer currently costs 100,000 Euros, while the cheapest Trumpf-build machine costs 250,000 Euros. The acquisition will enable Trumpf to penetrate the middle-price segment, which makes up less than 10 per cent of the German market, but represents around two-thirds of the Chinese market. Both product divisions, the Trumpf core business and the JFY mid-price brand, will be managed separately. According to Trumpf management, this acquisition serves two purposes: On the one hand, to access further growth potential in China and other emerging markets. On the other hand, it should also prevent the global expansion of local Chinese competitors (VDW, 2014).

Technological leadership and strength in innovation

The foundation for these firms' market success is innovative products of high quality with unique selling features that often define the state of the art in their respective markets. Those technical product features are combined with systems integration expertise and ease of use. The main selling proposition rests on value, not price. Excellence in innovation is therefore a key factor for success. Nearly all Mittelstand Champions are technology leaders in their respective sectors.

Still, many companies do not fit the traditional "high-tech" mould. By and large, German companies are not pioneering leaders in basic innovations in areas such as pharmaceuticals, information technology and semiconductor technology. Rather, they demonstrate technological excellence by applying basic innovations to solve customer-specific needs, and in the meticulous and customer-driven perfection of traditional products such as manufacturing machines and components – e.g. in terms of miniaturisation, precision and environmental compatibility. These companies constantly refine their products, adapting them to ever evolving customer expectations and new applications ("incremental innovation"). As a result, they are always creating new market niches. Because they have often been active in their market segment for decades, many companies have profound experience with both the underlying technology of their products and their customers' needs. With their accumulated product and process expertise, these companies constantly upgrade and integrate new technologies, and expand the range of producs and services offered as well.

Product innovations are often generated not through basic scientific research but in response to solving practical problems for customers. Top performing companies combine a strong customer orientation with top-notch technological performance and excel in balancing the two dimensions: "market" and "technology" (Simon, 2007: 207). Companies with a one-sided market orientation tend not to invest enough in technology – increasing the risk of missing out on technological innovations. If the focus is excessively on technology, a company might not do enough to factor real customer needs into product development and find itself working too far "ahead of the market."

A strong customer orientation does not mean to simply fulfil current customers' demands but above all to innovate on their behalf. Technology leadership means leading customers on the strength of superior applications expertise. For many companies, the guiding principles are these: "Our products and solutions are not based on what the customer wants but are driven by what the customer really needs", and "our sales engineers maintain close contact with their customers so that in the end, the customer knows that he needs our solution."

Typical Mittelstand characteristics such as flat hierarchies, leaders with deep domain knowledge in key technologies and a superior understanding of customer needs and well-educated employees with a long tenure in the company and the industry, are essential ingredients for technology leadership. A key foundation for their innovative strength is a high degree of cross-functional cooperation in interdisciplinary project teams from development, production and marketing and sales. These companies also benefit from the longstanding, close collaboration with high-performing suppliers and demanding customers in the German economy (Porter, 1998).

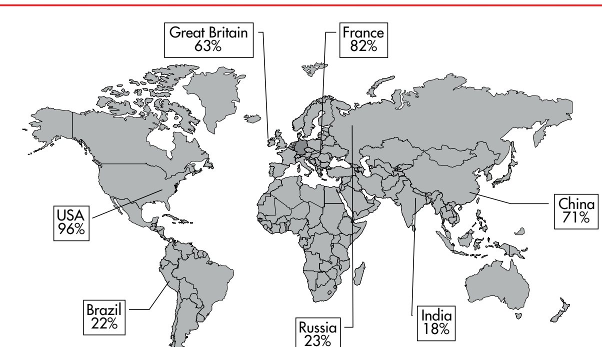
Technology leadership requires substantial investments. For example, the average R&D expenditures of Mittelstand Champions are estimated at 7.2 per cent of total revenues, well above the average R&D expenditures for all German industrial firms of 3.5 per cent of revenues (Wissenschaftsstatistik, 2012: 10). German Mittelstand Champions spend about twice as much on R&D (as a per centage of revenues) as their international rivals in the same industry sector (see "industrials" in Strategy&, 2013). Another indicator of their technology leadership is the number of patents they hold compared to their industry peers from other countries (Simon, 2007: 193–203). By this indicator, many Mittelstand firms are at the top of their respective industry sector.

Close customer ties through worldwide presence

Along with innovative strength, worldwide sales and service networks represent another key factor of success. Leadership in world markets naturally entails worldwide presence. Many medium-sized global market leaders have strongly internationalised their operations in recent years and are represented in all of the key markets with subsidiaries of their own. The average share of revenues earned abroad among the Mittelstand Champions stands at 66 per cent and their products are sold in about 72 countries (see Database of Deutsche Weltmarktführer 2014).

Many of these Mittelstand Champions are represented abroad through their own sales and service subsidiaries and production operations and have in fact become "Mittelstand-Multinationals" (Fear, 2013). Whenever possible, management of the customer relationship is not left to third parties such as distributors and sales agents. This ensures top service across a product's lifecycle and is an essential source for innovations. Companies with activities "on location" have a far better sense for market-specific customer requirements and can tailor products and services to the needs and specificities of target markets abroad. In many industries, worldwide service networks also permit the offering of complementary services to enhance customer loyalty. In addition, new sources of revenue can be developed and dependency on a more cyclical equipment business can be reduced. Product-related services are especially important in the capital goods sector. Oftentimes, the running costs of a machine or plant exceed the original investment cost by far ("Total Cost of Ownership"). This creates a wealth of opportunities for product-related services – e.g. advice on the ongoing optimisation of operating parameters, anticipatory maintenance, and prompt supply of replacement parts. This strength in providing services creates a good entry point for firms to deliver so-called "Smart Services" based on "smart" machines and components (embedded with processors, sensors, and software and connected to the Internet). Data collected from these products can be analysed to create new services that move well beyond the classic technology-oriented product services to facilitate real-time optimisation of production and supply chain networks.

PERCENTAGE OF GERMAN WORLD MARKET LEADERS
WITH BRANCHES IN THE RESPECTIVE COUNTRIES



Source: Own estimates, Deutsche Bundesbank, FDI 2012

World-class performance in operational core processes

Despite a robust market position, most Mittelstand Champions naturally face competitive pressures and must continually improve their operating performance to stay cost-competitive. Globalisation creates an opportunity to transfer labour-intensive production steps to countries with low labour costs, whether in the company's own production facilities or outsourced to third parties. Many German global market leaders, particularly the larger ones, have internationalised their production operations. Sales motives also play a key role, with numerous foreign markets growing more quickly than the

German market. Companies are asked by their major customers to follow them abroad, or are even forced to do so by policy measures of foreign governments, which require "local content."

Manufacturing in Germany as a "strategic asset"

Most of the Mittelstand Champions studied here still view their in-house manufacturing operations in Germany as a "strategic asset." Contrary to trends such as outsourcing and offshoring (the transfer of production to low-wage countries), these leaders consider their German "manufacturing home base" as the hub of their operations. This philosophy upholds a belief that innovative products can only be developed in close cooperation with manufacturing operations.

In many cases companies still prefer to concentrate activities critical for their sustained competitive advantage at their German headquarters. Usually these activities include a fully integrated manufacturing operation with close ties to corporate R&D. Increasing internationalisation of production facilities is thus often not done at the expense of a strong home base mainly to reduce costs, but driven by the desire to capture growth opportunities in foreign markets. As discussed above, the strategic challenge for many Mittelstand Champions to successfully compete in the middle-market space will lead to a growing need to establish fully localised value chains in growth regions, primarily in Asia. In the medium- to long-term future, firms may need to establish a second "home base" in this region (PWC, 2014). For smaller Mittelstand firms, in particular, the establishment of their own development and production subsidiaries will constitute a huge challenge. Alternatives such as joint ventures or licensing arrangements need careful consideration to ensure quality of products or services as well as intellectual property, process and know-how protection.

Overall Mittelstand Champions have a higher degree of vertical integration in manufacturing amounting to 50 per cent of the manufacturing value chain, than the average German industrial company. The individual company level of outsourcing depends greatly upon the industry sector and individual firm strategy. Outsourcing components is common in all firms; however, companies retain in-house the manufacturing of components that are critical to product quality as well as final assembly. A recent comparison with British global niche champions confirmed that German Mittelstand Champions keep more manufacturing activities in-house considered as part of their core competencies, whereas British companies favoured outsourcing especially in manufacturing (Witt, 2015).

When parts are outsourced, companies benefit greatly from well-established supplier networks in Germany. Global sourcing is practiced; however, in the interest of component quality and sourcing flexibility, German companies still rely heavily on key German suppliers, or assist them in establishing capacity in low-cost locations close to their foreign operations. In China, there are several regions with hundreds of German Mittelstand firms, which are tightly linked to the global production networks of their large customers. For example, around 200 Mittelstand firms from Baden-Württemberg located operations in a town called Taicang near Shanghai (Mattheis & Eisert, 2014), and reshaped the city so much so that it has become known as "Little Swabia" (Ewing, 2014: 87). While core competencies remain firmly "Made in Germany," expansion of production and product development and marketing capacity around the world will mean more products, especially in the middle range, are "Made by Germans" or "Designed in Germany."

Cost competitive production operations at a high-cost location require world-class production processes and the use of state-of-the-art production technologies, coupled with a highly educated, skilled and motivated workforce. Naturally, companies manufacturing in Germany profit from dense clusters of leading German-based suppliers of manufacturing equipment. In addition, companies rely on internal developments to further improve and optimise production processes.

A key reason for staying cost competitive is German industry's top position of introducing advanced production methods and resolutely implementing the principles of "Lean Production" and "Total Quality Management." This top position is well documented by international comparisons (see Bloom & Van Reenen, 2006). A German pilot study examining the implementation of "Lean Management Principles" found that all the surveyed larger industrial firms utilised Lean Management Principles and methods, although there were significant differences in the degrees of implementation (Siebold & Widmaier, 2013).

These trendsetting methods were first developed and successfully implemented by Japanese companies such as Toyota. All of the leading German companies have adopted these systems, fine-tuning them to their own needs, and adapting them to the German culture. A continuous improvement mindset of the workforce is essential for the implementation and sustained success of lean manufacturing. German Mittelstand companies benefit from the quality of their German workforce. As a result of the German system of dual vocational training, workers are not only better trained in specialised fields than workers from other countries, but have a better theoretical base from which to develop and enhance their skills, enabling them to produce goods of rising quality and sophistication, and continuously improve the underlying manufacturing processes as well (Porter, 1998). In addition, companies invest significantly into employee training to keep their skills up to date.

A third factor in keeping manufacturing in Germany cost competitive are highly flexible just-in-time production networks run by many companies, based on state-of-the art manufacturing equipment as well as innovative organisational models. Under this approach, a company produces only what is immediately required by customers. Customised products of high quality that can be quickly delivered to customers are a key competitive advantage of many German companies. In addition, overproduction and warehousing of stock can be avoided, significantly reducing working capital needs.

Those highly flexible production systems are very much supported by company-specific working-time models that provide a high degree of flexibility. The past few decades have seen broad implementation of so-called "company level pacts for employment and competitiveness" (betriebliche Bündnisse zur Beschäftigungs- und Wettbewerbssicherung). German companies are allowed, in consultation with local works councils, to tailor the provisions of collective industry-wide agreements to their specific company situation. In terms of working hours, for example, works councils are usually open to agree to company-specific deviations from industry-level contracts like prolonged or more flexible working time, in exchange for long-term employment guarantees or investment programmes to improve the company's competitiveness.

All of these measures combined have helped to keep Germany competitive as a manufacturing base. Still, German companies face ongoing significant pressures to stay cost competitive globally. German industry, led by industrial associations (BITKOM, VDMA, ZVEI) and supported by the high-tech strategy of the German government and numerous firms and research institutions, started a whole host of initiatives and projects to create fully digital value chains (Kagermann et al., 2013). Those initiatives are summarised under the heading "Industry 4.0." Industry 4.0 refers to the coming "fourth industrial revolution" and will allow for a new way of organising industry production. By using integrated computing power to connect machines, warehousing systems and goods, smart production systems can be created that dialogue and control each other without requiring any manual intervention. The goal is to further improve the flexibility and quality level of production as well as lower costs, increase efficiency and shorten time-to-market. The hope is that through aggressively implementing Industry 4.0, Germany can maintain its competitive position as a major manufacturing location. Additionally, leadership in implementing Industry 4.0 should also secure the favourable world market position of many German firms in the area of production technology and processes.

Continuous improvements of all core processes

More and more companies are applying Lean Management Principles not only to their manufacturing processes, but also to all other business processes ("Lean Enterprise"). This further improves their product and service offering as well as competitive market position (Siebold & Widmaier, 2013).

Overall there are a number of parallels between the corporate culture of many successful German companies and the culture of top industrial companies worldwide, such as Toyota. Continuous improvement (kaizen) is an integral part of this corporate culture and forms the basis of a distinct learning and innovation orientation.

Enlightened family capitalism

Besides the two factors of "strategy" and "processes," a third key to success consists of the leadership and governance model and the associated ownership structure. About 70 per cent of all German Mittelstand Champions are family-owned, with the controlling interest and at times management responsibility in the hands of one or more family members.

Long-term survival versus short-term maximisation of shareholder value

The US governance model gives priority to the interests of company shareholders and its overriding objective is to increase shareholder value. In theory, the concept of shareholder value is not necessarily inimical to a long-term oriented approach to management, since the shareholder value of a company should equal the net present value of all future cash flows the company is expected to generate over its lifetime. In practice, however, increasingly short-term-oriented stock markets (in the US the average holding period of shares has gone from several years to less than a year) combined with incentive schemes for managers based on short-term share price appreciation, leads to a short-term focus in many decisions, which is potentially damaging for the long-term health of a company. This problem has increased significantly in recent years with the strong tendency to shorten the holding period of shares even further with the increasing dominance of high-frequency trading with holding periods of milli- and even microseconds accounting for 70 per cent of all US equity trading volume. An important consequence of this focus on short-term share price appreciation trend among shareholders and management is the neglect of long-term investments.

In recent years, stock buybacks have become a massive and systemic way in which corporate executives have sought to boost their companies' stock prices, and their own incomes, given the enormous importance of stock price-based compensation in the USA. (Lazonick, 2014). Profits generated by businesses are devoted mostly to share buybacks which in turn lead to increases in share prices and dividend payments. Between 2003 and 2013, large American firms represented on the S&P 500 index devoted 54 per cent of their profits to buybacks of their own stocks; 37 per cent went into dividend payments for shareholders, 9 per cent remained for investments to strengthen the core business. Since the late 1970s, US businesses have shifted from a "retain-and-reinvest" strategy to a "downsize-and-distribute" model that tends to extract value from a company rather than create value. Not surprisingly, this focus on cost-cutting especially through outsourcing and offshoring has led to a widespread disenfranchisement of US workforces – including those with advanced education and substantial work experience (Lazonick, 2014).

Most German Mittelstand companies follow a very different approach that maintains a "retain-and-reinvest" strategy of long-term value creation. For most of these family-owned companies, the overriding goal is to secure long-term survival while maintaining company independence (known as the "stewardship perspective"). The principle-agent conflict typical for listed stock corporations (pitting the interests of a company's owners against those of its managers) is eliminated if owners and managers are one and the same. Even if external managers oversee a company's day-to-day business operations, the dominance of family members on the supervisory board usually ensures that long-term owner interests prevail. To secure long-term survival, an effort is made to balance the interests of all parties vital to the success of the company. Corporate policy revolves around creating sustainable and trust-based relationships with all key company stakeholders (owners, employees, customers, suppliers, local community). In place of short-term profit maximisation, top priority is given to achieving reasonable profits alongside sustainable growth in company value.

Despite significant structural differences between family-run companies and listed corporations, the situation should not be viewed in black-and-white terms. Both company forms share many features and constraints as a result of market forces, technological changes, regulations and company size. Where family-run companies and listed stock corporations are of the same scale and operate in the same market with the same degree of globalisation, we see a certain convergence in return targets between the two types. The "difference which makes a difference", however, is the independence of the non-listed family business from short-term capital-market expectations, coupled with the company's orientation toward long-term owner interests and a balances stakeholder orientation.

Family ownership: the strong and weak point of mid-sized global market leaders

About 70 per cent of the German Mittelstand Champions are privately owned. This ownership structure shapes their business policies and organisational culture. It is stressed by family business researchers that family businesses are a unique form of business organisation, which involves the overlap of two distinct systems: the business, mostly structured on rational economic principles; and the family, mostly based on emotional ties (Schlippe et al., 2009). Many issues emerge from this fundamental design. Both the family and the business are seen to be equal and overlapping systems that are bound together. The success in one system often leads to success in another, whereas problems in one lead to problems in another.

Family ownership sets the tone for these companies' policies, culture and values. Company owners can project their own personal values and convictions upon company policy. One positive aspect is the long-term orientation of most family businesses. Unlike listed corporations with widely distributed and short-term focused investors, family businesses can act with a long-term view. The history of many of these companies often dates back generations and the objective is to secure the survival of the company for generations to come.

Research has shown that owners of family companies tend to be driven not only by financial motivations, but also non-financial aspects such as: the family's affective needs, the ability to exercise family influence, and the perpetuation of the family dynasty. These motives are summarised under the heading of "socioemotional wealth" (Zellweger & Dehlen, 2012). Owners are often emotionally attached to their firm, which is typically an integral part of their self-fulfilment and the family tradition, rather than "just" a financial investment. Their main objective is not only to maximise profits but to secure the company's existence for the next generation. Firms are designed to stay independent and their corporate policy is geared to the long-term preservation of the firm, aiming to achieve multigenerational continuity (Venohr & Meyer, 2007).

This long-term orientation permeates all parts of a family business. It becomes visible in markedly higher equity ratios (versus companies of comparable size). According to our calculations, large German family enterprises have an equity ratio of 43.5 per cent on average versus 37.6 per cent for listed German firms. Higher equity ratios provide financial stability to a business, especially when the company operates in volatile and unpredictable market environments. A long-term horizon can also be discerned by an anti-cyclical pattern of investments. Despite a pronounced sales slump during the crisis years of 2008/2009, mid-sized champions kept investments into R&D stable or even increased expenditures (Roland Berger & ergo Kommunikation, 2010). Our analysis shows as well that the reinvestment ratio (i.e. the level of investment in equipment relative to revenues) for family-owned companies is much higher at 7.3 per cent than that for listed public firms at 4.3 per cent.

The continuity of ownership and the absence of stock-market driven, short-term financial pressures creates a supportive environment for the continuity of strategy. It allows the development of unique skills and assets, and it establishes a clear identity with customers, channels, and other outside entities, while strengthening the value chain fit (Venohr & Meyer, 2007).

The effects of this different orientation of family-run businesses can also be observed in other aspects. A family business usually reflects the family behind the business. Many companies pursue a substantive mission, quite often rooted in the values of the founder. Part of this special value system is quite often a high degree of loyalty to the town or region in which the company was founded. As mentioned above, more than 70 per cent of Mittelstand Champions are located in rural areas, rooted deeply in the local economy and operating with an overall sense of obligation to the workforce and the region. Owners, managers, and employees often live nearby one another. This embeddedness in the local communities creates a high degree of mutual trust and loyalty among the family, management, and employees leading to an implicit "life-long" contract.

However, family ownership also has well-documented drawbacks. Many family-owned companies have failed due to family conflicts. The strong emotional ties a family often feels toward the company often prevents decisions that are economically necessary yet socially difficult. Another well-known problem area is the selection of the company management. If only family members are considered for executive positions, the company has a very small pool of expertise at its disposal and a correspondingly narrow likelihood of finding the best candidate for a particular position.

Extensive research on family firms could therefore not confirm that family-run companies generally outperform non-family businesses, in particular publically-listed corporations (see Schlippe et al., 2009 and Klein, 2010). It has been observed that the performance differences among family businesses are much bigger than among publicly-listed companies. Among other things, this is due to the fact that owners can often decide quickly, free of lengthy decision-making processes typical for large corporations that often fail to improve the quality of the decision and instead serve as a career hedge for decision-makers. Unconventional decisions are more common in family firms. If the decision succeeds, the family company emerges as a global market leader; if it fails, the company often vanishes from the market altogether.

Traditional virtues combined with a high degree of professionalisation

Many Mittelstand Champions combine the traditional virtues of family capitalism with a high degree of professionalisation. Successful family businesses have developed distinctive governance systems and processes for critical decision areas such as the intergenerational transfer of ownership and leadership within the family to prevent potential threats to the company by the family (May, 2012).

An Achilles' heel of the "classic" family-run company is succession. The next generation is not necessarily imbued with the same level of entrepreneurial competences as the founder. This poses a potentially great risk to the future success of a family business. A key challenge therefore is to integrate non-family members into the management of a family business.

From the second generation on, many successful medium-sized and family-owned German enterprises are (co-)managed by executives from outside the family. Models with a family/non-family management blend are quite prevalent: external managers take over day-to-day business operations while the family concentrates on an active ownership role. Our analysis of family-owned world market leaders found that 28 per cent of the companies were led by family members only and 24 per cent were led exclusively by outside executives. About 48 per cent of the companies employed both outside professional managers and family members in leadership positions. International comparisons tend to confirm these results. A study of management practices comparing medium-sized manufacturing firms in the USA, Great Britain, France, and Germany showed that German family firms are considerably more likely to employ outside professional managers in leadership positions than companies in the other countries analysed. The same study demonstrated that "primogeniture family firms," i.e. those that pass management on to the eldest son, are significantly less well managed than those led by the founder or by outside professional managers (Bloom & Van Reenen, 2006). Companies with a mixed model of corporate leadership tended to have the best results as measured by indicators such as firm productivity. One possible explanation is that this "mixed leadership model" combines the best of both worlds: family control ensures a long-term investment horizon and a balanced stakeholder perspective, while professional managers introduce state-of-the-art management practices.

The management culture of these globally successful companies is characterised by a healthy blend of the "classic virtues" of medium-sized enterprises, such as close proximity to customers and the workforce, flat hierarchies, and informal communication channels that lead to a high degree of flexibility, combined with professional management practices in key areas such as personnel and controlling. Today, thanks to effective controlling and risk-management systems, the larger family-owned companies in particular are managed with a high degree of professionalism and transparency that is comparable to listed stock corporations.

Among larger and older family-held global market leaders in particular, there are effective governance systems in place to ensure family cohesion and the successful interplay of family and business. The purpose of these systems is to resolve tensions between the company and the family, and within the family, by providing a clear code of values, legal agreements, and rules for decision-making by the company's owners, supervisory boards, and management committee (Simon et al., 2005; Hennerkes, 2004; May, 2012; Kormann, 2011).

These firms tend to be characterised by a strong continuity in its management. According to our data, the average tenure for managing directors is approximately 20 years, compared with an average leadership term of just under 7 years for chief executives at German publically-listed companies (Strategy&, 2014). Management continuity is cultivated by providing ample scope for internal development opportunities for mid-level managers to become senior executives.

And it is also expected that the next generation of owners professionalises themselves with either technical or managerial training, and to combine this training with years of hands-on experience outside as well as inside the family business before moving into a senior role in the family business.

A high degree of trust as the foundation for innovation leadership

Studies have shown that a high degree of trust increases the innovative capacity of companies (Covey & Merrill, 2006; Noteboom, 2013) as well as that of countries (Doh & Acs, 2009). The best companies manage to set up an organisation "built on trust." Innovations need a number of important organisational and cultural factors to flourish, including information sharing, a sense of collective responsibility with an absence of caring about who gets credit, a willingness to take risks, the safety to make mistakes, and the ability to collaborate. All these conditions are the fruits of a high trust environment, which is enhanced by a high workforce satisfaction and correspondingly low rates of attrition (Covey & Merrill, 2006).

Company loyalty to employees and employee loyalty to the company are pronounced in Mittelstand Champions. On the one hand, many medium-sized global market leaders are the largest employers in their localities, so employees have few alternatives. On the other hand, these same companies also have a smaller pool of candidates than in a major city. The result is mutual dependence that grows even more critical where profound staff expertise is required. Such firms lay off workers reluctantly not only for reasons of communal commitment, but also because the loss of skilled workers would be disastrous.

HR policies overall are characterised by stability and long-term orientation. Employees are held in high esteem. Firms provide attractive systems of incentives, training and career-development opportunities, and well-equipped workplaces that provide for a pleasant working environment. Employee profit-sharing is also more frequent among successful companies. Conversely, there is considerable employee loyalty to the company, exemplified by an average employee attrition rate of just 2.8 per cent annually, according to our data.

An important source for Mittelstand Champions located in rural areas to recruit future managers is so-called dual study programmes offered at Universities of Cooperative Education (UCE). These are mostly state-run educational institutions that offer three-year academic programmes leading to a Bachelor's degree. A key characteristic of these programmes is that theoretical studies and practical apprenticeship training at a sponsoring company are alternated with one another. Academic programmes usually focus on the specific needs of the businesses in the region.

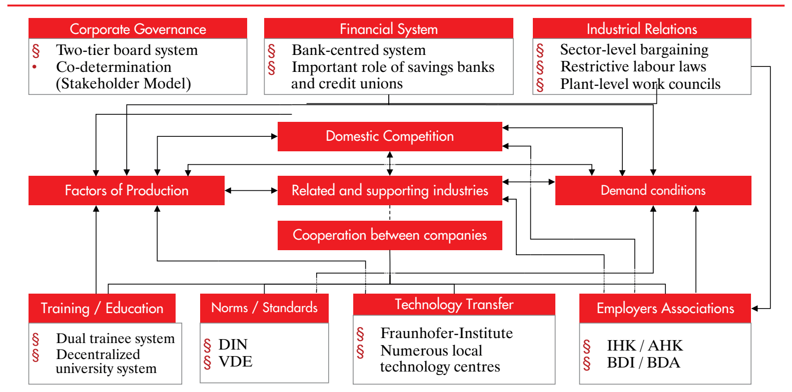
Low rates of attrition also help prevent the loss of vital company expertise. Stability in personnel policy is also fostered through flexible working-time models that permit temporary adjustments in workforce capacities to buffer fluctuations in orders received. Based on stable employment relationships, specific product and process expertise can take root within the company over the years and decades. Innovative and technologically complex products often require close teamwork among many functions and corporate divisions. The informality and longstanding teamwork at these Mittelstand firms enhances communication and sharing of knowledge. Core elements of this culture trust are (see Kalverkamp, 2009):

- Leaders who serve as role models based on their character traits, their commitment to the business and its employees, and their in-depth understanding of the business. Naturally, managerial styles vary considerably, but in most cases senior leaders have decade-long experience in the industry. Leaders have thorough domain knowledge, a profound appreciation for their industry, the company and its products, its services and core technologies and especially its people.
- Technical education is valued. Engineers and scientists populate the senior levels at many successful Mittelstand Champions. The educational background of most senior leaders of Mittelstand world market leaders is quite different from the typical profile of "professional managers" as preferred by large corporations. In Germany, very few MBA programs exist. Business Administration as an academic discipline is based on microeconomics. Management careers at Mittelstand Champions are mostly based on technical education. Young graduates join companies in their area of technological expertise, i.e. mechanical engineers join machine equipment companies. Career progress is then based on success "in the field." According to our estimates, about 45 per cent of senior management have technical backgrounds in engineering or science (in many cases even PhDs), 23 per cent have an economics or management degree, and 32 per cent have other types of education. Among the DAX 30 firms, the typical board member profile is somewhat different: about 45 per cent have an economics or management background, about 35 per cent have an engineering or scientific degree; 20 per cent have other degrees (Roland Berger, 2012: 9).
- Management behaviour is characterised by an orientation towards basic values such as honesty, reliability, respect and mutual esteem – behaviours that help employees find their permanent "home" within the company. On the other hand, ambitious goals and a determination to assume a global market leadership position also play a very important role. To attain and sustain global leadership requires, amongst other traits, a strong sense of mission and ambitious goals, as well as a restlessness in pursuing this mission (see Witt, 2015). Successful Mittelstand Champions have executives who can navigate these tensions while establishing a relationship of personal trust with the workforce.
- Distinctly decentralised organisational structures. Teams and individual employees on site have considerable decision-making freedoms. Hierarchies are much flatter than in large corporations, communi-

cations paths shorter and more direct; functional silos and hierarchical barriers are kept to a minimum with interdisciplinary teams favoured. Company politics and power struggles are largely eliminated, or else they are quickly identified, actively discussed and resolved. Structures are generally more flexible than those found in major corporations, and each employee can play a greater role in shaping his or her own working environment.

- Transparency: Business strategy and goals are broadly anchored within the company; there is open communication about successes and failures ("genuine communication"). A great effort is made to foster quick and comprehensive information sharing.

GERMANY AS A WORLD-CLASS LOCATION FOR "HIGH VALUE-ADDED MANUFACTURING"



▶ The German institutional framework promotes long-term orientation and trusting cooperation

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LOCATIONAL ADVANTAGES: THE GERMAN MICRO-ECONOMIC BUSINESS ENVIRONMENT AS A FOUNDATION FOR LONG-TERM COMPANY SUCCESS

An important basis for the global success of many German firms is Germany-specific institutions that are designed to promote long-term cooperation within and between companies. Such institutions reinforce the common Mittelstand values described above, and enable companies to pursue long-term strategies. Both business culture and the institutional environment feed into one another to create a mature and specifically German "economic culture" that is particularly well-suited to the development and manufacturing of high-value added premium products tightly customised to a client's requirements. Such "diversified quality production" exhibits still considerable comparative advantages in global competition (Abelshauser, 2003).

All German companies registered in Germany are required by law to join one of the 80 regional Chambers of Commerce that have quasi-governmental mandates in a number of areas such as organising vocational training; providing information on taxes, marketing, innovation, and business law; offering advice on topics from starting a business to energy efficiency; , and offering advice for doing business abroad. In addition, Chambers of Commerce work closely with local politicians to represent industry interests.

Almost all German companies are members of industry trade associations such as the VDMA (the mechanical engineering association) or the ZVEI (the electrical industry association). Trade associations are founded and funded by businesses that operate in a specific industry and try to influence public policy in a direction favourable to the group's members. But they also promote cooperation and information exchange between firms in market and technology issues to strengthen both individual member firms and the industry sector.

German companies, especially in the automotive, machine engineering, medical technology, electricity and chemical industry profit greatly from historically strong clusters (Porter, 1998: 373–374). In the German automotive industry, for instance, there are several regional clusters of firms located next to large German original equipment manufacturers such as Volkswagen AG (with its corporate subsidiaries Audi AG and Porsche AG), Daimler AG und BMW AG. The most important clusters can be found in the Stuttgart area, in Bavaria around the München-Ingolstadt-Dingolfing triangle, in the region around Hanover-Braunschweig-Göttingen-Wolfsburg; other key clusters are in the Bergische Land (Remscheid-Solingen-Wuppertal), South Westphalia, and in Saxony around Leipzig. Practically the entire automobile value chain is represented within each of these regional clusters. Typical cluster members include large plants and R&D operations of OEMs; suppliers, which deliver pre-finished components, systems, or modules directly to the assembly line as needed; key service providers such as engineering design, logistics and software firms; and a dense network of local universities, vocational schools, as well as technology transfer institutes specialising in various aspects of the automotive industry.

Industrial trade exhibitions create another important networking opportunity for firms with their final customers as well as suppliers. Germany is the world's number one venue for holding international trade fairs. Around two-thirds of the world's leading trade fairs for various industries take place in Germany. Four of the ten largest trade fair companies are based in Germany (Auma e.V., 2014)

Collective bargaining agreements at the industry level between unions and employers' associations determine wages and other key employment terms. Inside companies, institutions such as mandatory works councils and comprehensive labour protection regulations ensure a certain power balance between employers and employees. They create a reconcilement of interests that promotes employee loyalty. The guiding principle behind all of these regulations is the imperative to create cooperation on a trust basis by ameliorating conflict. The idea is that company management and works councils should not openly carry out their disputes in the same confrontational manner as in

many collective bargaining situations, but rather in a constant dialogue with one another to solve problems for the good of the employees and the firm. The key phrase is "social partnership." It is recognised that employers and works councils have opposing interests in principle, but these opposing interests should be reconciled if possible through consensual solutions. The principle of "trustful cooperation" also means the employer and works council should treat each other fairly and respectfully (Ifb, 2014).

The German model of co-determination at the supervisory board level is unique worldwide. At large companies (with more than 2,000 employees), about half of the supervisory board members are employee representatives. For companies with 500 up to 2,000 employees, one-third of the supervisory board must be elected by employees. One of the main achievements of this governance system seems to be that workers are more involved in the company decisions, which in turn leads to high productivity. Furthermore, industrial relations are more equal with low levels of strike actions, securing better employee conditions and fostering employee loyalty (McGaughey, 2015).

The dual apprenticeship system, which exists in a similar form only in Switzerland, Austria and Denmark, provides for highly qualified and loyal workers who are educated with practical knowledge needed in firms but also have a solid foundation for necessary skill enhancements during their employment career. Apprentices alternate between working at the firm to gain practical on-the-job training while at the same time being educated at a vocational school in their trade along with a broad array of subjects.

A further German peculiarity is the three-tiered banking system consisting of public savings banks (Sparkassen and Landesbanken), credit cooperatives (Kreditgenossenschaften with their respective central banks such as the DZ Bank), and private commercial banks (such as Deutsche Bank and Commerzbank) For instance, each of the 430 savings banks is independent and owned by local municipalities. They concentrate their business activities in the region they are situated in. Their main charter is to provide cost-effective banking services for retail customers and Mittelstand firms in their regions (DSGV Website, 2015). Savings banks represent a critical source of "patient capital" for investment financing for many Mittelstand firms. For example, local savings banks and credit cooperatives extended the amount of their long-term credits in the financial crisis (2007-2012), while Landesbanken and private commercial banks reduced theirs considerably (The Economist, 2012). Globally, German firms can rely on the global subsidiary network of commercial banks such as Commerzbank, which specialise in the needs of Mittelstand firms, and have profound expertise in foreign trade financing.

In addition there are a number of public institutions and programmes that support Mittelstand companies. As described before, Germany has a unique national innovation system, with a particular strength in science and technology (Porter 1998: 368-372). One particular area of strength is the technology transfer from basic research to industry through the Fraunhofer Society. With 66 institutes in many fields of science spread throughout Germany, the Fraunhofer Society is Europe's largest application-oriented research organisation. Fraunhofer Institutes are usually associated with leading university professors. Basic funding for the these institutes is provided by the state, more than 70 per cent of their budgets is earned through contract work, either from government-sponsored projects or from industry (Fraunhofer Website, 2015).

Finally, the outstanding international orientation of German firms is supported by a worldwide network of the Foreign Chambers of Commerce, which has at the moment over 130 locations in 90 different countries (see AHK Website, 2014). Globally there are over 44,000 participating fee-paying member firms. Along with embassies and consulates, they represent the interest of German firms vis-à-vis governments and the civil service of the respective host country. But most importantly, they provide consulting and other services for firms for a fee and act as a local hub for German firms abroad, supporting them through myriad activities.

CONCLUSION

We have sketched here the German way of doing business with a distinct "Mittelstand" management model that has generated a disproportionate number of world market leading Mittelstand Champions, pioneering and dominating many market segments worldwide. Such firms help explain why Germany has proven a leading export nation over the last two decades. This management model "Made in Germany" has three distinct pillars: a strategic focus on achieving high market shares in narrow niches but with a global focus; on achieving a world-class performance in operational core processes that leverage home country knowledge assets; and rests on "enlightened" family capitalism values and practices that ensure long-term investment horizons. Mittelstand Champions are renowned for their prioritisation of long-term customer relations, continuous investment in R&D, and a commitment to their workforces. Combined, these ensure that the interests of the most important "stakeholders" (meaning customers, employees, suppliers) are considered alongside the interests of the proprietors (mostly families) to ensure continuity and good performance of the business. We think that the lessons these firms offer are transferable to other national environments and represent a distinct way of remaining competitive from a high cost and high social benefit environment. Global competition need not mean a "race to the bottom"; instead we see a race to quality.

Manufacturing in Germany is relatively expensive and the Germany operations remains a "strategic asset" even if production is increasingly moving abroad to be nearer to the customers which are increasingly located in faster-growing emerging markets. Nonetheless, the German institutional framework provides a great number of virtuous feedback loops to the internal processes of the firm, in particular, by supplying sufficiently skilled employees needed by firms and by reinforcing internal R&D efforts. Germany's "coordinated market capitalism" offers a number of complementary public and commercial institutions supporting small to mid-sized Mittelstand firms so that they can avoid "doing it alone." Such supporting institutions mean that family and privately held firms with conservative financing patterns can remain independent and tend not to have to stretch their financing capacity. Mittelstand Champions are globally orientated firms, but internationally the challenge for many of these firms is to move down into middle-market price points where demand is higher without losing the premium identity of their brand. Many Mittelstand firms are growing into "Mini-Multinationals" that help secure jobs at home and profit repatriation back to Germany. Remarkably Mittelstand firms are based mostly in rural regions spread throughout Germany so that the gains from globalisation are more evenly distributed. This model is not invincible. Indeed, firms need to redouble their efforts to please customers through innovative and high-quality products, find new markets, and improve manufacturing processes (Industry 4.0). Home institutions need reforms and renewed efforts to modify their support structures and confront arising competition from emerging markets (China). But overall this often "traditional" management model has so far proven remarkably robust and sustainable to meet the markets of the 21st century.

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Bibliography

All of the data in the text, unless cited, are based on the database of German world market leaders. The data were all accessed between May and June 2015.

Abelhauser, W. 2003. Kulturkampf: Der deutsche Weg in die neue Wirtschaft und die amerikanische Herausforderung. Berlin: Kulturverlag Kadmos.

AHK Website 2015. [online at http://www.ahk.de/] (accessed 15 June 2015).

Arrighetti, A., Ninni, A., Breda, E., Cappariello, R., Clemens, M. & Schumacher, D. 2012. 'Competitiveness in manufacturing : Germany vs. Italy – a comparison.' Economics Department Working Papers (2012-EP01). Parma: Department of Economics, Parma University.

Auma e.V. 2014. 'Messemarkt Deutschland.' [online at http://www.auma.de/de/Messemarkt/MessemarktDeutschland/Seiten/Default.aspx] (accessed 1 June 2015).

Berghoff, H. 2004. Moderne Unternehmensgeschichte: Eine themen- und theorieorientierte Einführung. Paderborn: Verlag Ferdinand Schöningh.

Berthold, N. 2012. 'Steht das "Geschäftsmodell Deutschland" auf der Kippe? : Euro-Rettungsschirme sind "struktureller Merkantilismus".' Blog: 27 (March 2012). [online at http://wirtschaftlichefreiheit.de/wordpress/?p=8912BDI] (accessed 24 October 2014).

BLANCO Press Release 2009. 'BLANCO Küchentechnik-Gruppe trotzt der Krise.' [online at http://www.blanco-germany.com/de_ch/de _ch/presse_de_ch/pressemitteilungen_unternehmen_de_ch/detailansicht_717.html] (accessed 1 June 2015).

Bloom, N. & Van Reenen, J. 2006. 'Measuring and Explaining Management Practices Across Firms and Countries.' Working Paper. London School of Economics.

Bloomberg 2015. 'Germany Posting Record Surplus Gives Fodder to Critics.' Bloomberg Business, [online at http://www.bloomberg.com/news/articles/2015-02-09/germany-posting-record-surplus-gives-fodder-to-economy-s-critics s] (accessed: 9 February 2015).

BMWi 2012. 'German Mittelstand: Engine of the German Economy.' [online at https://www.bmwi.de/English/Redaktion/Pdf/factbook-german-mittelstand,property=pdf,bereich=bmwi2012,sprache=en,rwb=true.pdf] (accessed 16 June 2015).

Bosch Website 2015. 'Internationalization.' [online at http://www.bosch.com/en/com/bosch_group/history/theme_specials/internationalization/internationalization.html] (accessed 16 June 2015).

Covey, S. M. R. & Merril, R. 2006. The SPEED of Trust: The One Thing that Changes Everything. New York: Free Press.

Danninger, S. & Joutz, F. 2008. 'What Explains Germany's Rebounding Export Market Share?' George Washington University. [online at http://home.gwu.edu/~bmark/Danninger_Joutz_Germany%20exports_revision_September_2008.pdf] (accessed 15 June 2015).

Database of Deutsche Weltmarkführer 2014. All statistical data, unless stated otherwise, are based on database analyses.

DeStatis 2015. 'Foreign Trade Top 20 Countries, Exports in 2014.' [online at https://www.destatis.de/EN/FactsFigures/CountriesRegions/InternationalStatistics/Topic/ForeignTrade/Tabelle_Exports_e_2014.html%3bjsessionid=B329769D50CB6042F0BE0DC1BA7DB046.cae1%20] (accessed 5 June 2015).

Doh, S. & Zolton, J. 2009. 'Innovation and Social Capital: A Cross-Country Investigation.' Jena Economic Research Papers, 2009, [online at http://www.wiwi.uni-jena.de/Papers/jerp2009/wp_2009_082.pdf] (accessed 1 June 2015).

DSGV Website 2015. [online at http://www.dsgv.de/de/] (accessed 1 June 2015).

Dustmann, C., Fitzenberger, B., Schönberg, U. & Spitz-Oener, A. 2014. 'From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy.' Journal of Economic Perspectives, 28:1, 167–88.

Erhard, L. 1956. 'Mittelstandspolitik.' In Rüstow, A. inter alia (Eds.), Der mittelständische Unternehmer in der Sozialen Marktwirtschaft.Wortlaut der Vorträge auf der vierten Arbeitstagung der Aktionsgemeinschaft Soziale Marktwirtschaft e.V am 17 November 1955 in Bad Godesberg: 51–61. 1st Ed., Ludwigsburg.

Ewing, J. 2014. Germany's Economic Renaissance: Lessons for the United States. New York: Palgrave Macmillan.

Fastnacht, K. 2010. Robert Bosch: His life and work. Journal of Bosch History. Supplement 1. Stuttgart: Robert Bosch GmbH.

Fear, J. 1993. 'German Capitalism.' In T. K. McCraw (Ed.) Creating Modern Capitalism: How Entrepreneurs, Companies and Countries Triumphed in Three Industrial Revolutions: 135-82. MA: Cambridge: Harvard University Press.

Fear, J. 2012. 'Straight outta Oberberg: Transforming mid-sized family firms into global champions 1970-2010.' In D. Ziegler (Ed.), Economic History Yearbook (Jahrbuch für Wirtschaftsgeschichte): 125–169, Oldenburg: De Gruyter.

Fear, J. 2013. 'Globalization from a 17mm-Diameter Cylinder Perspective, Mittelstand Multinationals.' In C. Lubinski, J. Fear & P. Fernández Pérez (Eds.) Family Multinationals: Entrepreneurship, Governance, and Pathways to Internationalization: 73–95. New York: Routledge.

Fear, J. 2014. 'The Secret Behind Germany's Thriving 'Mittelstand' businesses is all in the mindset.' The Conversation (28 April 2014), [online at http://theconversation.com/the-secret-behind-germanys-thriving-mittelstand-businesses-is-all-in-the-mindset-25452] (accessed 1 June 2015).

Feige, S., Fischer, P. M., Mahrenholz, P. J. & Reinecke, S. 2014. Marke Deutschland: Image und Mehrwert im internationalen Marketing: Emprische Ergebnisse. St Gallen: Thexis.

Fraunhofer Website 2015. [online at http://www.fraunhofer.de/] (accessed 1 June 2015).

Gadiesh, O., Leung, P. & Vestering, T. 2007. 'The Battle for China's Good-Enough Market.' Harvard Business Review: September, 81–89.

Handelsblatt 2014. 'Spiele Schach mit dem Meister! Interview mit Zhang Ruimin, Vorstandschef von Haier,' [online at http://www.handelsblatt.com/unternehmen/industrie/interview-mit-zhang-ruimin-vorstandschef-von-haier-spiele-schach-mit-dem-meister-seite-2/2795742-2.html] (accessed 18 June 2015).

Hennerkes, B.-H. 2004. Die Familie und ihr Unternehmen: Strategie, Liquidität, Kontrolle. Frankfurt: Campus-Verlag.

IfB 2014. 'Lexikon für die tägliche Betriebsratsarbeit: Artikel Vertrauensvolle Zusammenarbeit.' [online at https://www.ifb.de/betriebsratsvorsitzende/lexikon/do/lexikondetail/letter/V/shortlink/vertrauensvolle-zusammenarbeit.htm] (accessed 5 November 2014).

IfM Bonn 2015. 'KMU-Definition des IfM Bonn (01.01.2002),' [online at http://www.ifm-bonn.org/mittelstandsdefinition/definition-kmu-des-ifm-bonn/] (accessed 1 June 2015).

IKB and Creditreform 2014. See Kann et al. 2014.

Kagermann, H., Wahlster, W. & Helbig, J. 2013. 'Deutschlands Zukunft als Produktionsstandort sichern Umsetzungsempfehlungen für das Zukunftsprojekt Industrie 4.0 Abschlussbericht des Arbeitskreises Industrie 4.0.' Frankfurt am Main: Promotorengruppe Kommunikation der Forschungsunion Wirtschaft – Wissenschaft, [online at http://www.bmbf.de/pubRD/Umsetzungsempfehlungen_Industrie4_0.pdf] (accessed 1 June 2015).

Kagermann, H., Riemensberger, F., Hoke, D., Helbig, J., Stocksmeier, D., Wahlster, W., Scheer, A.-W. & Schweer, D. 2014. 'SMART SERVICE WELT: Recommendations for the Strategic Initiative Web-based Services for Businesses,' [online at http://www.acatech.de/fileadmin/user_upload/Baumstruktur_nach_Website/Acatech/root/de/Projekte/Laufende_Projekte/Smart_Service_Welt/BerichtSmartService_engl.pdf] (accessed 1 June 2015).

Kalverkamp, K. 2009. Miteinander ernten: Das Erfolgsgeheimnis des German Management. Weinheim: Viley-VCH Verlag.

Kann, G., Demmer, K., Vogt, C., Mohr, B. & Munsch, M. 2014. 'Wachstum finanzieren. Eine Analyse der sich wandelnden Finanzierungsmuster im deutschen Mittelstand.' Düsseldorf/Neuss: IKB/Creditreform, [online at https://www.ikb.de/MediaLibrary/139648e7-34ab-43ad-a010-fbe04033d1b7/140818_IKB_Studie_Finanzierungsmuster%20im%20Mittelstand.pdf] (accessed 1 June 2015).

Keck, O. 1993. 'The National System for Technical Innovation in Germany.' In R. R. Nelson (Ed.) National Innovation Systems: Comparative Analysis: 115–57. Oxford: Oxford University Press.

Klein, S. 2010. 'Familienunternehmen: Die starke und schwache Seite der Weltmarktführer.' Wirtschaftsbild (5 January 2010).

Kormann, H. 2005. Nachhaltige Kundenbindung: Gegen den Mythos nur wettbewerbsorientierter Strategien. Frankfurt am Main: VDMA-Verlag.

Kormann, H. 2011. Zusammenhalt in der Unternehmerfamilie. Berlin: Springer Verlag.

Langenscheidt, F. & Venohr, B. (Eds.) 2014. Lexikon der deutschen Weltmarktführer. Cologne: Deutsche Standards Editionen.

Lazonick, W. 2014. 'Profits without Prosperity.' Harvard Business Review, September, [online at http://hbr.org/2014/09/profits-without-prosperity/ar/1] (accessed 1 October 2014).

Mattheis, P. & Eisert, R. 2014. 'Provinz Jiangsu. Willkommen im chinesischen Baden-Württemberg.' Wirtschaftswoche, [online at http://www.wiwo.de/unternehmen/mittelstand/provinz-jiangsu-willkommen-im-chinesischen-baden-wuerttemberg/v_detail_tab_print/9542218.html] (accessed 24 October 2014).

May, P. 2012. Erfolgsmodell Familienunternehmen. Hamburg: Murmann Publishers.

McGaughey, M. 2015. 'The Codetermination Bargains: The History of German Corporate and Labour Law.' LSE Legal Studies Working Paper No. 10/2015.

Miotti, L. & Sachwalk, F. 2006. The "Old Economy" in the New Globalization Phase. Paris: Institute Français des Relations International.

Murmann, J. P. 2007. 'The Complex Role of Patents in Creating Technological Competencies A Cross-National Study of Intellectual Property Right Strategies in the Synthetic Dye Industry, 1857–1914.' Paper presented at the DRUID Summer Conference 2007. Denmark, Copenhagen.

Noteboom, B. 2013. 'Trust and Innovation.' In R. Bachmann & A. Zaheer (Eds.) Handbook of Advances in Trust Research: 106–23. Cheltenham: Edwad Elgar Publishing.

Porter, M. E. 1998. The Competitive Advantage of Nations. New York: Free Press.

Pritchett, L. & Summers, L. 2013. 'Asiaphoria Meets Regression to the Mean.' Boston: Harvard Kennedy School and Center for Global Development, Harvard University, [online at http://www.frbsf.org/economic-research/events/2013/november/asia-economic-policy-conference/program/files/Asiaphoria-Meet-Regression-to-the-Mean.pdf] (accessed 1 June 2014).

PWC 2014. 'Weltmeister auch jenseits des Exports.' [online at http://www.pwc.de/de_DE/de/managementberatung/assets/pwc_weltmeister-auch-jenseits-des-exports-internationalisierung-der-wertschoepfung-im-deutschen-maschinen-und-anlagenbau.pdf] (accessed 1 June 2014).

Rational Website 2015. [online at http://www.rational-online.com/en/home/index.php] (accessed 16 June 2015).

Roland Berger & ergo Kommunikation 2010. 'Bewältigung einer Krise: Die Ertrags- und Finanzlage von Familienunternehmen im Vergleich zu börsennotierten Gesellschaften,' [online at https://www.rolandberger.com/media/pdf/Roland_Berger_Bewaeltigung_einer_Krise_20101005.pdf] (accessed 1 June 2014).

Roland Berger 2012. 'Deutschlands versteckter Standortvorteil: Akademiker im Chefsessel,' [online at http://www.rolandberger.de/media/pdf/Roland_Berger_Akademiker_im_Chefsessel_20120618.pdf] (accessed 1 June 2014).

Schlippe, A. V., Buberti, C., Groth, T. & Plate, M. 2009. 'Die zehn Wittener Thesen Familienunternehmen: Chancen und Risiken einer Besonderen Unternehmensform.' Witten: WIFU: Wittner Institut für Familenunternehmen.

Schumann, M. 2011. 'How Germany became the China of Europe.' Time (24 February 2011), [online at http://content.time.com/] (accessed: 01.03.2014).

Siebold, T. N. & Widmaier, G. 2013. 'Verbreitung der LEAN-Philosophie bei Industrieunternehmen in Deutschland.' Studienarbeit Duale Hochschule Baden Württemberg, Stuttgart in Verbindung mit IMIG AG.

Simon, F. B., Wimmer, R. & Groth, T. 2005. Mehr-Generationen-Familienunternehmen. Heidelberg: Carl-Auer-Systeme Verlag.

Simon, H. 2007. Hidden Champions des 21. Jahrhunderts: Die Erfolgsstrategien unbekannter Weltmarktführer. Frankfurt/New York: Springer Verlag.

Simon, H. 2012. 'Erfolgsgeheimnisse: Deutschlands Stärke hat 13 Gründe,' Frankfurter Allgemeine Zeitung (15 October 2012), [online at http://www.faz.net/aktuell/wirtschaft/unternehmen/erfolgsgeheimnisse-deutschlands-staerke-hat-13-gruende-11925735.html?printPagedArticle=true#lesermeinungen] (accessed 5 October 2014).

Strategy& 2013. 'The Global Innovation 1000: Comparison of R&D Spending by Regions and Industries,' [online at http://www.strategyand.pwc.com/global/home/what-we-think/global-innovation-1000/rd-intensity-vs-spend-2013-v2stage] (accessed 24 October 2014).

Strategy& 2014. '19% der CEO-Wechsel im deutschsprachigen Raum erfolgten 2013 ungeplant bzw. Unfreiwillig,' [online at http://www.strategyand.pwc.com/de/home/Presse/Pressemitteilungen/pressemitteilung-detail/chief-executive-study-2013-de] (accessed 24 October 2014).

The Economist 2012. 'Defending the three pillars: Old-fashioned but in favour.' [online at http://www.economist.com/news/finance-and-economics/21566013-defending-three-pillars-old-fashioned-favour] (accessed 26 October 2012).

Trumpf Press Release 2013. 'TRUMPF Acquires Chinese Mechanical Engineering Company,' [online at http://www.trumpf.com/nc/en/press/press-releases/press-release/rec-uid/266296.html] (accessed 1 June 2015).

Tsang, R. & Chong, K. 2014. 'How to win on China's "good enough" battlefield.' Bain & Company, [online at http://www.bain.com/Images/BAIN_BRIEF_How_to_win_on_Chinas_good-enough_battlefield.pdf] (accessed 1 June 2015).

Vinnolit Press Release 2010. 'Vinnolit setzt den Weg aus der Krise konsequent fort,' [online at https://www.vinnolit.com/vinnolit.nsf/id/DE_Vinnolit-setzt-den-Weg-aus-der-Krise-konsequent-fort] (accessed 1 June 2015).

VDW 2014. 'Werkzeugmaschinen aus und für China: Interview mit Dr.-Ing. Mathias Kammüller,' [online at https://de.industryarena.com/vdw/news/werkzeugmaschinen-aus-und-fuer-china--2786.html] (accessed 5 May 2014).

Venohr, B. 2014. 'Das Erfolgsmodell der deutschen Weltmarktführer. In: Langenscheidt, F. & Venohr, B. (Eds.) 2014. Lexikon der deutschen Weltmarktführer. Cologne: Deutsche Standards Editionen.

Venohr, B. & Meyer, K. 2007. 'The German Miracle Keeps Running: How Germany's Hidden Champions Stay Ahead in the Global Economy.' Institute of Management Berlin (IMB), Working paper No. 30. Berlin: Fachhochschule für Wirtschaft Berlin.

Welter, F. 2013. 'Der Mittelstand, Deutschlands Geheimwaffe.' Frankfurter Allgemeine Zeitung (25.10.2013), [online at http://fazarchiv.faz.net/document/saveSingleDoc/FAZ__FD1201310254066402] (accessed 24 Oct. 2014).

Wissenschaftsstatistik 2012. 'FuE-Datenreport 2012 – Analysen und Vergleiche.' Essen: Wissenschaftsstatistik GmbH, [online at http://www.stifterverband.info/statistik_und_analysen/wissenschaftsstatistik/publikationen/fue_datenreport/fue_datenreport_2013_analysen_und_vergleiche.pdf] (accessed 1 June 2015).

Witt, A. 2015. 'Global Hidden Champions: The Internationalisation Paths, Entry Modes and Underlying Competitive Advantages of Germany's and Britain's Global Top Three Niche Players.' PhD Thesis, University of Edinburgh Business School.

Witt, A. & Carr, C. 2014. 'Success Secrets Shared: Learning from the Best Mittelstand and British Global Niche Champions.' [online at http://www.scottishpolicynow.co.uk/article/success-secrets-shared-learning-from-the-best-mittelstand-and-british-global-niche-champions] (accessed 1 June 2015).

World Bank 2015. 'Data GDP'. The World Bank Group, [online at http://www.worldbank.org.] (accessed: 15.01.2015).

Wittenstein, M. 2010. Geschäftsmodell Deutschland: Warum die Globalisierung gut für uns ist. Hamburg: Murmann Verlag.

WTO Press Release 2013. 'Trade to remain subdued in 2013 after sluggish growth in 2012 as European economies continue to struggle,' Press 688, [online at https://www.wto.org/english/news_e/pres13_e/pr688_e.htm] (accessed 5 June 2015).

Zellweger, T. M. & Dehlen, T. 2012. ‚Owners Value Is in the Eye of the Owner: Affect Infusion and Socioemotional Wealth Among Family Firm,' Family Business Review, 25:4, 280–97.