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Article

EU and the World: Out-Innovating the Competition

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Panel 2

Introduction

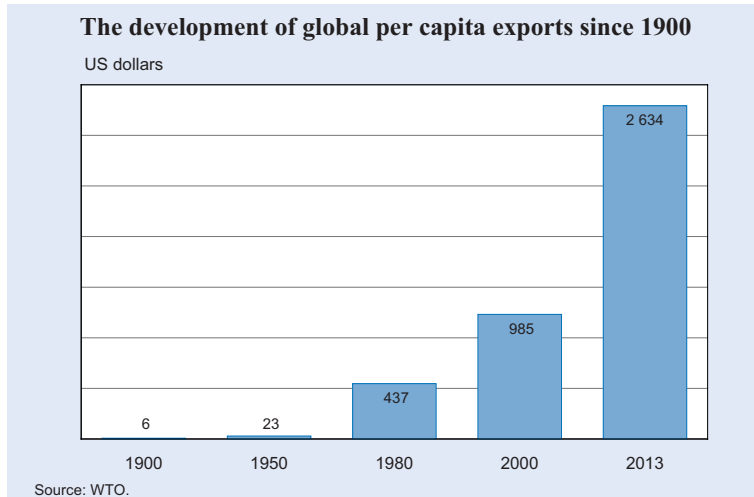
EU AND THE WORLD: OUT-INNOVATING THE COMPETITION

HERMANN SIMON*

Innovation takes place within the global context, the world I call ‘Globalia’. On a global scale there are few saturated markets. Globalia holds practically unlimited growth potential for innovative companies. This is especially true with regard to the international exchange of goods. Figure 1 shows the development of global per capita exports since 1900 when they were close to zero. It took 80 years to bring global per capita exports to 437 dollars. In the following 20 years they more than doubled and since 2000 they almost tripled again to 2,634 dollars in 2013.

This ‘explosion’ has taken place in spite of a rapidly growing global population. In 1900 the world’s population was 1.6 billion, today we are 7.3 billion. In absolute terms global exports today are about 2,000 times

Figure 1



larger than in 1900. We can assume that global trade will continue to grow faster than national gross domestic products. Each company and each country that is innovative and participates in this accelerating globalization can profit enormously.

How do individual countries fare in Globalia? Figure 2 shows the per capita exports for a selected group of larger countries for the decade of 2004-2013. The differences in export performance are striking.

Germany is an extreme outlier with almost twice the per capita exports of the other large countries. There are some obvious questions. What makes certain countries strong in exports and others weak? What role do innovativeness and manufacturing play? And how does company size relate to export performance?

Export performance and company size

It should be noted that countries do not export; only companies export. An excellent export performance by a country proves that country has strong, internationally competitive enterprises. Most people assume that export performance depends on the prevalence of large corporations. Figure 3 reveals the relation between the number of large corporations and exports for selected countries. The horizontal axis shows the number of Fortune Global 500 corporations,¹ while the vertical axis shows exports.

For most countries there is indeed a strong correlation between the number of large firms and exports. But there are two exceptions to this rule, China and Germany. And it is precisely these two outliers that are the leading export nations in absolute terms. What do they have in common and what distinguishes them from the other countries? It is the share of exports contributed by mid-

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¹ Global 500, *Fortune*, 21 July 2014.



Figure 2

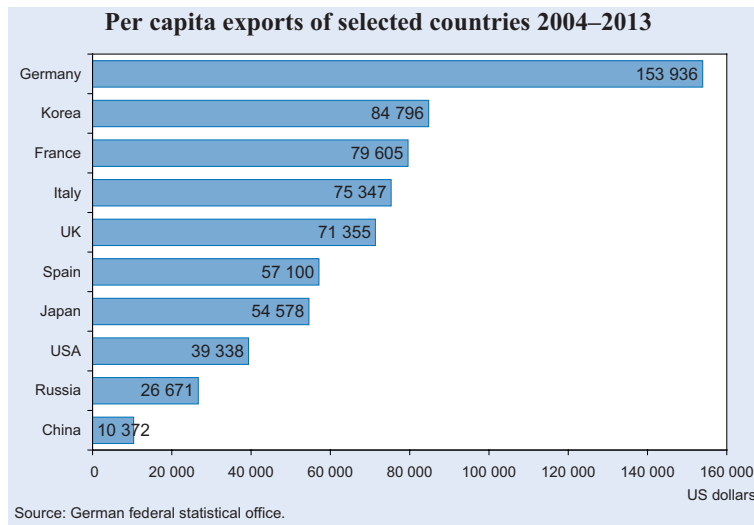


Figure 3

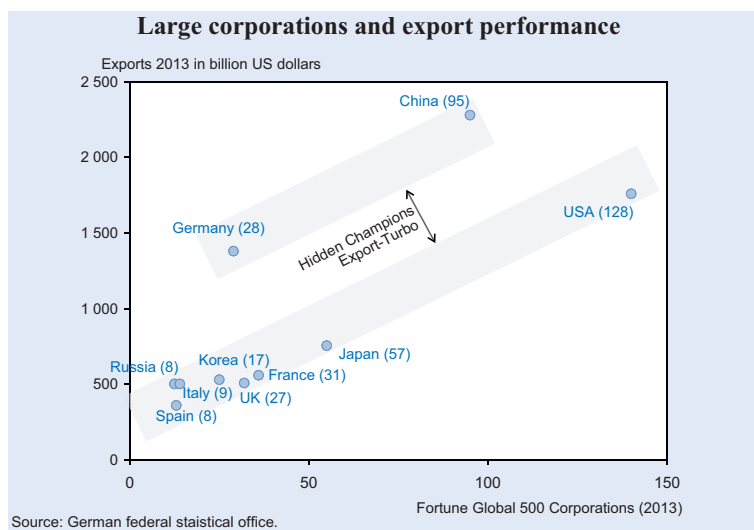
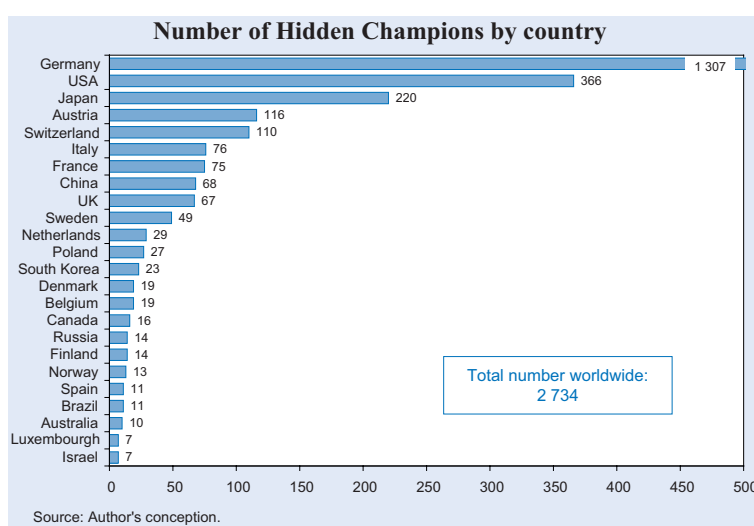


Figure 4



sized firms. 68 percent of Chinese exports come from companies with less than 2,000 employees.² In Germany the Mittelstand contributes about 70 percent to exports.

This suggests that in order to achieve truly exceptional export performance, a country needs both large corporations that are strong in exports, and a broad foundation of small and medium-sized exporters. How many separate markets are there in the world? Nobody knows the exact figure. Let us assume that the number is 10,000. Fortune Global 500 firms only operate in 100 or 200 of these markets. The remaining 98 percent are small or niche markets. Each of these markets offers the chance for a small or medium-sized firm (SME) to become an innovator and a global market leader. And there is a fundamental difference to the world of the past. With the internet, modern telecommunications, air transport and seamless global logistics it is possible for SMEs to do business on a worldwide scale.

Hidden Champions

The late Ted Levitt, at the time marketing professor at the Harvard Business School, asked me back in 1986 (and, as we can see, not much has changed since then), why Germany is so successful in exports. I started researching this phenomenon and came to the conclusion that Germany's ongoing export strength is due to the Hidden Champions. What is a Hidden Champion? It is a company that is one of the top three in its global market, has less than

² See also "Small Fish in a Big Pond", *Economist*, 5 September 2009.

5 billion US dollars in revenue, and is little known in public. Since then I have been collecting names and today my list contains 2,734 Hidden Champions from all over the world. Figure 4 shows the number of Hidden Champions by country.

The explanation of Germany's continuing export success lies in its Hidden Champions. Germany has more of these medium-sized global market leaders than any other country in the world. And these Hidden Champions are highly innovative.

Why Germany has so many Hidden Champions

Outstanding innovativeness

It is true that few German companies are innovation champions in sectors such as information technology, the internet or biotechnology. The leaders in those fields are often from the United States, occasionally from Japan, and sometimes from China. However, a look at the number of patents granted by the European Patent Office (EPO) casts a different light on Germany's innovativeness. Table 1 shows the number of patents granted by the EPO to applicants from selected countries in the ten years from 2003–2012.

Germany enjoys a clear lead. The differences between European countries are huge. Germany has over twice the number of patents per million inhabitants as France, four times as many as Italy, and five times as many as Britain. We also see that the Southern European countries like Spain, Portugal and Greece are underperforming in terms of innovation. Russia is the weakest country in this comparison. Although the topic of innovation covers far more than the number of patents, this statistic is nevertheless a strong indicator of the future in-

Table 1

Patents issued by the European Patent Office in 2003–2012, by country of origin

Country	Number of European patents 2003–2012	European patents per million inhabitants
Germany	130,032	1,590
Japan	108,418	847
Austria	6,366	749
France	44,363	674
USA	134,306	427
Italy	21,636	357
UK	20,893	337
Korea	9,859	197
Spain	3,649	79
Portugal	249	23
Greece	244	23
Russia	462	3

Source: European Patent Office.

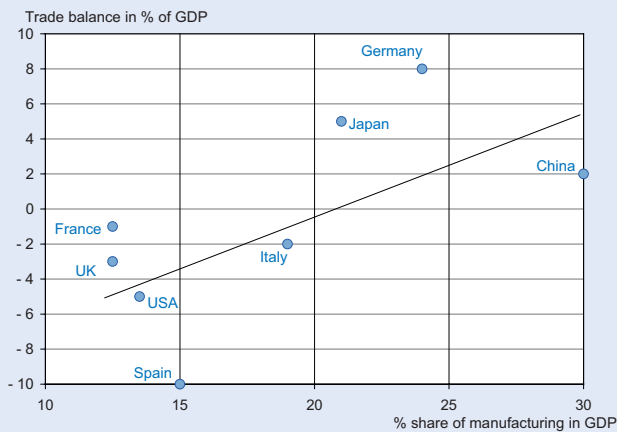
dustrial potential of a country. Innovation is indispensable to excel in Globalia.

Strong manufacturing base

Before the financial crisis took hold, Germany was often criticised for being too dependent on its manufacturing sector and for dragging its heels in becoming a service economy. Germany has indeed traditionally generated a larger share of its GDP with manufacturing than other highly developed countries. The crisis silenced the voices of criticism. Countries such as Britain, France and the United States now regret that they focused too heavily on the service sector and neglected their manufacturing industries, and Japan's problems with exports are primarily attributed to its weakened manufacturing base. A strong manufactur-

Figure 5

Share of GDP accounted for by manufacturing sector and trade balance of selected countries 2007



Source: IWD, Cologne Institute for Economic Research, 11 January 2012.

ing sector is an important pillar of export success. Figure 5 shows that the trade balance depends on how much manufacturing contributes to GDP. The trade balance is the difference between exports and imports.

The correlation coefficient between the GDP share accounted for by manufacturing and the trade balance is 0.79. Germany may be old-fashioned in this regard, but it is successful. And its manufacturing investments are far larger than those of other countries, especially investments by small companies. An international study of medium-sized companies conducted by GE Capital found that German SMEs invest almost twice as much as their counterparts in Britain and France.³

Manufacturing has a fundamentally different impact on export performance and employment than the service sector. This aspect partially explains the export differences between France and the United States on the one hand and Germany on the other. Many French and US corporations are service providers that create most of their value added – and therefore new jobs – not in their home market, but wherever in the world their customers happen to be. Typical cases are McDonald's, Burger King and Starbucks or hotel chains like Hilton, Sheraton and Marriott. What distinguishes them from manufacturing companies is where they employ their workforce, namely in their new stores or hotels in Beijing, Mumbai or Sao Paulo. Manufacturers, on the other hand, can generate jobs at home and sell their products worldwide. Building and retaining a strong manufacturing base is therefore important for both developed and emerging countries.

In the last 20 years, the 1,300 German Hidden Champions created over 1.5 million new jobs. Since 1995, they have been growing at annual rates of 10 percent and are now six times larger than 20 years ago. In terms of revenue, about 220 euro billionaires have emerged from this group. In spite of a much larger global market they increased their global market shares. At the same time, they stimulated a massive wave of innovations. And whether one likes it or not: a large share of innovation still comes from the manufacturing sector.

The strategies of the Hidden Champions

The key question is: what can entrepreneurs, companies, academics and politicians learn from the Hidden

³ See also "Deutsche Unternehmen investieren mehr als andere", *Frankfurter Allgemeine Zeitung*, 2 March 2012.

Champions? The following article presents seven important lessons that can benefit both large and small companies, as well as companies in developed and emerging countries.

Extremely ambitious targets

Hidden Champions set extremely ambitious goals for themselves related to market leadership and growth. The goal of Chemetall is "the worldwide technology and marketing leadership". Chemetall is a global leader in special metals like cesium and lithium. 3B Scientific, a small company and world leader in anatomical teaching aids, states its goal as follows: "we want to become and stay number 1 in the world". But leadership goes further, as is expressed in the following statement by Sick, a global leader in sensor technology: "we lead by anticipating our customers' expectations. Leadership means becoming the benchmark for others. We set the standards on the world market". Rosen Group, the global leader in pipeline inspection systems, states: "we want to create ultimate value for our customers as the world's undisputed leading supplier. It is our objective to be the world's most competitive provider. We go far beyond present market requirements. We envision the market's future needs". Each of these statements embodies utmost innovativeness as a condition sine qua non for delivering highest value-to-customer.

Lesson 1: Success always begins with ambitious goals. The Hidden Champions go for growth and market leadership. This is the fuel that drives them forward.

Focus and depth

"We always had one customer and will only have one customer in the future: the pharmaceutical industry. We only do one thing, but we do it right", says Uhlmann, the world leader in packaging systems for the pharmaceutical industry. Flexi states, "we will do only one thing, but we do it better than anyone else". Flexi makes retractable leashes for dogs and has 70 percent of the global market. But focus goes deeper. Winterhalter is a manufacturer of commercial dishwashing systems. About ten years ago, they analysed the market and found that there are many submarkets like hospitals, canteens etc. In each of these segments Winterhalter had a market share of 3 to 5 percent. They reformulated their strategy, focusing solely on dishwashers for hotels and restaurants. The

new focus affected everything they do. They even renamed the company Winterhalter Gastronom (for Gastronomy). Since the quality of water has a strong effect on the ultimate results, they deepened their value chain by adding water conditioners. They sell detergents under their own brand name and offer 24/7 service – absolutely essential in this kind of industry. They have special dishwashers for high luster glasses. They recruit sales people with a hotel and restaurant background, who speak the language of their customers. They are clearly number 1 today, witnessed by the fact that McDonalds, Burger King, Hilton etc. use Winterhalter. Only focus leads to outstanding innovation and to world class.

Closely connected to focus is a deep value chain. An example is Wanzl, world leader in shopping carts and airport baggage carts: “we produce all parts ourselves, based on the quality standards we define”. The fact that carts at airports all over the world are made by Wanzl shows that airport operators are willing to pay high prices for superior quality. Even the Japanese in Tokyo Narita or the Koreans in Seoul Incheon have carts from Wanzl. Since it makes everything itself, Wanzl has total quality control, which is the foundation of its outstanding quality.

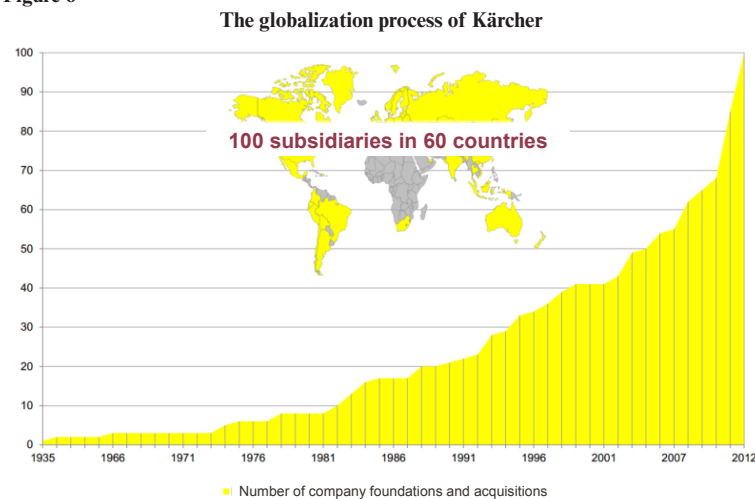
In order to achieve superiority in the end product, Hidden Champions entrench several steps deeper in the value chain to create innovative and unique processes, technologies and components. Uniqueness and superiority can only be created internally. If you buy something on the market, everybody else can buy it too. Hidden Champions are extremely hesitant about outsourcing core competencies.

Lesson 2: Only focus and depth lead to world class. Hidden Champions focus on narrow markets and are deep rather than broad. They tend to do things themselves and refrain from outsourcing core competencies.

Globalization

Focus makes a market small. But how do the Hidden Champions manage to make their markets big? They

Figure 6



Source: Kärcher.

achieve this by globalizing. Thus they combine specialization in product and know-how with global selling and marketing. As I initially mentioned, there are hardly any growth limits if you go out to Globalia. And go you must! The customers are not coming to you. Kärcher, the global leader in high pressure water cleaners, took its first serious steps towards globalization in the 1970s and never stopped, as Figure 6 illustrates.

But it is still a long journey. Kärcher has the ambition to be in all 206 countries of the world, which means that over 100 markets are still to be entered. Like Kärcher, the Hidden Champions globalize by establishing their own subsidiaries in all of the world’s key markets. They practice direct customer relationship management instead of delegating their customer relations to intermediaries, agents or importers.

Lesson 3: The Hidden Champions combine specialization in product and know-how with global selling and marketing. Globalization is *the* growth booster for them. They serve the target markets through their own subsidiaries. They heavily invest in the markets of the future. This is also a form of innovation.

Product innovation

One does not become world market leader by imitation, but only by innovation. Innovation starts with spending on research and development. R&D spending by the Hidden Champions is twice as high as in the average industrial company. Even more important is their output. Hidden Champions have five times the

number of patents per thousand employees than patent-intensive large corporations (31 patents vs. 6 patents). The annual statistics of the German Federal Office for Patents (*Bundespatentamt*) show that among the 50 leading patent applicants in Germany, one third are consistently Hidden Champions. A company like Von Ardenne with just over 500 employees regularly registers over 100 patents per year. And one Hidden Champion patent costs only one-fifth of the patent of a large corporation. What is the driving force behind innovation? The markets, technology or both? 65 percent of the Hidden Champions state that these two forces are well-integrated, whereas only 19 percent of large companies say so. And yet this is the core challenge of innovation. As far as R&D costs are concerned, large companies throw big budgets at solving a problem, whereas the Hidden Champions devote very few dedicated people to it. That is why their costs per patent are much lower.

Lesson 4: The Hidden Champions are massive innovators. The effectiveness of their R&D activities beats that of large companies by a factor of 5. Their innovation processes are fundamentally different. Their innovations are both market- and technology-driven.

Closeness-to-customer and competitive advantages

The biggest overall strength of the Hidden Champions, however, is not technology, but closeness-to-customer. This is a natural advantage of smaller and medium-sized companies. An average of 38 percent of their employees have regular customer contacts, compared to only 8 percent in large corporations. Their closeness to top customers is especially pronounced. Grohmann Engineering makes systems for the assembly of micro-electronic products. CEO Klaus Grohmann says: “my market is the top 30 customers in the world”. Asked why he so desperately wants these leading companies as customers, he responds that it is because they are never satisfied. “They are extremely demanding and, thus, are driving us to ever higher performances”. Using top customers to drive your teams to ever higher levels of innovation and higher performance is a very interesting view of a company’s customer relationship.

The strategies of the Hidden Champions are value-driven, not price-driven. They usually command a price premium of 10 to 15 percent over the average market price. Value remains the most important factor. Price comes into the game only if you do not offer

differentiated value (Simon 2015). Another outstanding competitive advantage of the Hidden Champions is product quality. Two relatively new advantages with the biggest increase in importance are advice and systems integration. From a competitive point of view, they are different from advantages integrated in the product. They cannot be easily re-engineered because these advantages reside in employees’ brains and in the organization’s capacity to manage complexity. As a result, the barriers to entry are probably higher today than ten years ago. The Hidden Champions have truly out-innovated their competition.

Lesson 5: Closeness to customer is the greatest strength of the Hidden Champions – even ahead of technology. Their strategies are value-oriented, not price-oriented. The Hidden Champions hold strong competitive positions. Advice and systems integration are innovative advantages that create higher barriers to entry.

Loyalty and highly-qualified employees

Hidden Champions have more work than heads, highly-qualified employees and low turn-over. They invest 50 percent more in vocational training than the average German company. The share of university graduates has more than doubled, from 9 percent of the workforce ten years ago to roughly 20 percent today. And competitiveness in Globalia is increasingly about qualification. If you hire, educate and train qualified people and top talent it is very important to retain them. The Hidden Champions have extremely low turnover rates: only 2.7 percent annually as compared to an average of 7.3 percent for Germany and almost 20 percent for America. They take with them, of course, their know-how, their experience and their customer relationships. Low turnover rates are more important than low sickness rates.

Lesson 6: The Hidden Champions have ‘more work than heads’ and high performance cultures. Employee qualification is very high. Turnover and sickness rates are extremely low.

Strong leadership

The ultimate explanation for the unusual success of the Hidden Champions lies in their leaders. They are characterized, first and foremost, by a very strong

Figure 7
The three circles of the Hidden Champions



Source: Author's conception.

identity of person and mission, meaning they totally identify with what they do. They mostly see innovation as their personal concern and responsibility. Their leadership is ambivalent. There is no discussion regarding the company's principles and values, but the employees enjoy great latitude and flexibility in the details of carrying out a job. The Hidden Champions have more women in top positions and a very high continuity level among their CEOs. The average CEO tenure is 20 years. In large companies it is only 6.2 years.⁴

Lesson 7: The secret of the success of the Hidden Champions lies in their leaders. They are characterised by total identification with their mission and a strong orientation towards innovation. Their leadership is authoritarian in its principles, but flexible in the details. Continuity is very high. Young CEOs and women play a more important role than in large companies.

A summary in three circles

I summarize the key lessons in the three circles in Figure 7. The core is strong leadership with ambitious goals. The inner strengths are depth, high performance employees, and continuous innovation. The outer circle comprises of a focus on a narrow market, closeness-to-customer, clear competitive advantages,

⁴ See "Booz & Company", *Frankfurter Allgemeine Zeitung*, 16 April 2013.

and all that with a global orientation. The Hidden Champions go their own ways towards Globalia, more decisively and successfully than ever. They do most things differently from the teachings of management gurus, from modern management fads, from large corporations. They are true role models of innovation, strategy and leadership in Globalia.

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PANEL

For Chairman **Quentin Peel** of the *Financial Times*, this panel marks the core of the conference: "it is getting innovation to happen that is the great challenge", he stated, "but are we too comfortable to achieve this?"

The first panel speaker, **Jan Mládek**, Minister of Industry and Trade of the Czech Republic, added a new angle to the discussion: the role of mid-income countries in global competition. The challenges these countries face are technical education and the absorption of R&D. For a country with a strong manufacturing base like the Czech Republic, technical education must have top priority. The absorption of R&D is a difficult matter, and his country is relying on the best-practice methods used elsewhere, with a special look at Israel's success. The Czech Republic in particular is faced with specific challenges from Germany: Industry 4.0 and the change in energy policy. The B2B orientation of Industry 4.0 is the future and his country is doing its best to catch up. Germany's change in energy policy is a big challenge, both for itself and its neighbours. For his country, this shift in policy has repercussions on grid security, and he hopes that the transmission problems in and through Germany will soon be solved.

Ken Hu, the second speaker, is Deputy Chairman of the Board and Rotating CEO of Huawei Technologies, a company with 170,000 employees worldwide, almost half of which are active in R&D, which is 'part of our

DNA'. Since its founding in 1987, Huawei has invested at least ten percent of its turnover in R&D, and in 2014 it was fourteen percent. For Ken Hu, competitiveness is based on innovation, and "innovation is not a sprint but a marathon". The company's long-term strategy is borne out by its patent activity: with 3,442 patent applications worldwide in 2014, Huawei topped the list of global corporate patent activity. Mr Hu also stressed that successful innovations are a response to consumer demands: "the needs of users are the sole driving force and goal of our innovations". In addition to its own R&D locations in China and Europe, Huawei maintains 28 joint innovation centres with its customers. Creating this 'eco system for innovation' helps them understand their customers' needs, lower the risk of failure and greatly enhance the efficiency of the innovation process. They also work together with their industry partners in developing the network technology of the future. Sharing strengths and offsetting weaknesses helps lower the costs of innovation. With this global platform they are able to 'leverage resources throughout the world'.

Sami Mahroum, Academic and Executive Director of INSEAD's Innovation and Policy Initiative in Abu Dhabi, agreed with Quentin Peel that we view the panel topic, 'Out-Innovating the Competition', too much in European terms. The underlying question is how to capture value from innovation wherever you are. With the iPhone, for example, "the value capture goes far beyond the US", with companies in Japan, China and Europe also profiting from the device. Policy-makers must realise that the business model has changed with "companies having become more like football clubs with players from different countries". Google, Microsoft and Apple were the biggest acquirers of European high-tech companies in 2014. With its highly skilled workforce, high level of culture and most importantly its work ethic, Europe has both a competitive and a comparative advantage. With this, it is important to tack into global value chains wherever they are. "Google is a global company and we should all try to make value from it". Also in terms of German exports, everyone should think of how to capture value from this.

The last speaker, **Hans J. Langer**, CEO and founder of the EOS Group, a company in the high-end Additive Manufacturing, 3D printing world. He also started the company Scanlab, with a high market share in laser manufacturing applications. Last year they sold more than 30,000 scan heads for industrial production

throughout the world. In Additive Manufacturing their largest customer is General Electric, which uses his technology to develop and build a fuel injector for the standard GE aerospace engines, yielding a two percent savings in fuel. The work was done in fact by a start-up that GE eventually took over. EOS's customers are three American start-ups. They have also created a 3D printing cluster in Munich, which has led to several start-ups. This new technology is extremely disruptive because it allows them to build parts that could not have been built with conventional methods. The company, although global, is quite happy to have its R&D and headquarters in Bavaria, in 'Isar Valley', with its infrastructure and skilled workforce. EOS is able to find skilled engineers because it has an innovative culture that people want to be a part of. "If I can find a start-up entrepreneur who has failed, this is my first choice when I hire", Mr. Langer observed, because this is the kind of venture atmosphere his firm is creating.

In the discussion **Birgit Potrafki** of Bosch GmbH asked Mr Hu to assess the innovation potential in China itself, since Huawei has much of its R&D outside the country. Mr Hu commented first on the innovation potential in Germany. Munich is the home of their 5G R&D in Europe, with 300 engineers from many different countries. China too has a great potential for technological innovation. Two years ago the government published a White Paper on a ten-year reform programme that identifies areas of technological innovation, also for global companies. Quentin Peel mentioned that the European awareness of the surge in patent registration in China is much too low. Mr Hu added that intellectual property protection has improved a lot in China in recent years, which has also been a boost to Chinese SMEs.

John Kornblum, who works with start-ups in innovation, observed that Mr. Langer's assessment may be true for Bavaria but not for the rest of Germany, not even for Berlin. "What can Germany do to stimulate innovation throughout the rest of the country?" Mr Langer observed that not all start-ups are alike. When he invests in a start-up he always looks at the sustainability of their business model, especially if they can eventually change the business model of a large company. "We have to encourage the large companies to look into these start-ups". The big companies also need to acquire the culture of the start-ups they buy.

Mr Simon referred to 'start-up plus scale up', that is the successful start-ups need to grow. Germany has

many different clusters, and the country's strength is its decentralisation. With regard to low-income countries, innovation should be seen on a global scale, and a small company can be global with the Internet and air transportation, so a company in Tunisia should be encouraged to go to Europe or the United States. Mr Langer added that his company built a factory 'around the corner' for Additive Manufacturing in South Africa and other countries could also be considered. With mobile phones and the Internet, countries are able to jump ahead two generations in telecommunications. Mr Simon observed that an app-based company could become more labour intensive than manufacturing-based companies, which are highly automated.

Ellen Comberg of Global Female Leaders mentioned the problem of access to finance – Silicon Valley has a venture capital scene that is very mature, but Germany lacks this culture of venture capital. Mr Simon admitted that Germany has a bottleneck here, but that it has improved, especially in the second phase of development when millions are needed. Mr Mládek commented that finance is one of the biggest problems in his country, especially venture capital. On the basis of the start-ups he has studied, Mr Mahroum did not think that venture capital was a problem because it can be raised anywhere in the world. "If you have a strong business proposal, you can raise the money from global investors who are looking for good ideas".