Assumptions for competitiveness on the global markets – example of Czech SME operating in High-tech Manufacturing Industry

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Abstract

The Macroeconomic competitiveness can be based on quantitative factors (low material and labor costs) or qualitative factors. Innovation activity of firms and effective support of spending on research and development at the macro level are a prerequisite for obtaining and maintaining the competitiveness of firms and national economies. Innovation performance of Czech firms is a key prerequisite for redirection of competitive advantages from cost-based to qualitative competitive advantage. The first objective of this article is to define key assumptions for competitiveness of the Czech's SME from the high-tech manufacturing industry in the niche, but global markets. In this context, the concept of hidden champions will be applied. The second aim is to find out if the average small and medium enterprise in the individual branches of high-tech manufacturing industry meets at least some characteristics of hidden champions. The positive changes in labour productivity determinate not only the present state of countries' economic performance, but the effectivity of innovation processes and the level of upgrading local technological capability as well. We also analyse the status and development of these sectors in Manufacturing Industry in years 2008 – 2017 and compare changes in the abovementioned indicators. The other objective of the article is a comparison of changes in the innovative behaviour of firms. The analysis of changes in innovation performance is based on the interpretation of results.

Key words: hidden champions, high-tech manufacturing industry, innovation performance, labour productivity

JEL Code: D22, L63, O32

Introduction

Hidden Champions (HCs) are defined by Simon (2009) as relatively small but highly successful companies that are "invisible". Simon recommends for indentify HCs applying the following criteria - the Hidden Champion is ranked among the top three leaders in the world share of the relevant product market or has the highest market share on the continent of the home country; revenues do not exceed $ 4 -5 bilion and there is a low brand awareness of the

company and its products. Yoon (2013) used the results of survey collected in 2010 and found the following characteristics which enabled him to identify hidden champions among Korean SME's: more than approximately 40 billion dollars in scale of revenue, 30% in the ratio of export and revenue, 5 billion dollars in scale of profit, it means return on sales approximately 12,5%. To identify the hidden champions from the data published by German Innovation Survey, Rammer and Spielkamp (2015) used these selection criteria: size < 10 000 employees, export share > 50%, sales growth above average (depending on market size).

Empirical analysis of Venohr and Meyer (2007) was focused on economic performance of leading medium size companies identified by Hermann Simon during 10 years. These authors identified those three elements shared by many of German hidden Champions: family ownership and cooperative corporate cultures combined with outside professional management (long-term relationships within the firm and with key external partners), global market dominance through positioning in niche markets, and thus exploiting and enhancing resources and capabilities on a global scale, continuous endeavour to raise operational effectiveness of all major processes and functions (Venohr and Meyer, 2007, p. 27).

Audretsch et al. (2018) analyze strategy of internationalization of HCs in Germany and point out that the international success and strong, sustained performance emanates from their product type, enabling to successfully pursue a niche strategy for differentiated premium products. According to these authors, the success of Germany's HCs is connected with deploying their high level of human capital. Assumptions for a guarding of the internalization of highly specific quasi-rents are following: fully owned subsidiaries, retaining control and residual property rights.(Audretch et al., 2018). Fryges's analysis (Fryges, 2006) is based on the performance of Germany's and British small technology-oriented firms and proved that firm-specific assets are able to overcome barriers to entry into the foreign market. These firm-specific assets may be acquired via conducting R&D activities, buying novel technology from other companies, or by employing internationally experienced managers.

Drawing on the empirical finding that hidden champions do not place great value on the use of public promotional funds, governments are advised to apply other support measures in order to foster the development of hidden champions (Schlepphorst et al. 2016). the hidden champions are usually highly specialised in their products and services (often in B2Bmarkets). Rammer and Spielkamp (2015, p. 22) point to the importance of radical innovations as they offer hidden champions the opportunity to gain first mover advantages. The authors further point out that the majority of hidden champions develop innovations themselves, hidden champions can use the full innovative potential of their employees.

The strength of hidden champions is purportedly further based on the competences of the labour force. Intrinsic and extrinsic motivational factors, such as incentives or autonomy in decision-making, strengthen employees' motivation and commitment (Rammer and Spielkamp, 2015, pp. 30). As a result, the workforce of hidden champions usually identifies strongly with the objectives and values of the employers.

By Grego-Planer and Glabiszewski (2016) is the most typically characteristic of HC (in 88%) entering geographically new markets. Polish hidden champions focus on the product and the customer. As many as 73% of the surveyed companies confirmed that the drivers of innovation are, in their case, both the market and technology. More than 6% of revenue spent on R&D, high number of introduced innovations to a large extent, which is not only new to the national, but also international, and the constant search for customer needs and combining them with advanced technology are indicators that allow the conclusion, that the innovative activity of the surveyed companies is very high.

1 Methods

The results of the above studies were analyzed and synthesized (see Table 1). Hidden champions are companies whose activities should be encouraged or at least facilitated by increasing the competitiveness of the domestic economy on world markets, and the assumption that firms will act as a catalyst for domestic industry in the long term, creating opportunities for other stakeholders (employees, suppliers, research and development state ...) and a catalyst that inspires other companies. It is difficult to find them because they are little visible hidden champions who are not primarily asking to be supported by public resources (Schlepphorst et al. 2016). By their very nature, it is clear that they will be companies from the high-tech manufacturing industry (HT MIT) and the aim of the article is to find out whether the sub-sectors of manufacturing industry indicate a higher probability of HCs occurrence. To this end, the basic characteristics of the studies were summarized in Tab. 1 and selected indicators are monitored in sub-sectors of HT MI (according to CZ NACE codes). These are sectors:

21 Pharmaceutical industry - Manufacture of pharmaceutical products and preparations

26 Electronic industry - Manufacture of computer, electronic and optical products

30.3 Aerospace industry - Manufacture of aircraft, spacecraft and related equipment.

In the next section, the values of the indicators will be quantified so that the sector with a higher probability of occurrence of HC may be indicated.

Tab. 1: Characteristics of Hidden Champions and possible indicators to measure in branche

	Factors	How to measure	Indicator	Criteria
	Special market	B2B, technological	Define by branch (21, 26, 30.3)	HT MI
1	Size	Revenues	Revenue/firm	$ 5 bilion
2		Employees	Medium-sized firm	< 250 person
3	Firm Power	Profit	Return on sales (ROS)	min 12.5%
4		Investments turnover	Revenue change/ Investments (n-1)	max
5	Innovativeness	Own R&D	R&D/Revenues	min 6 %
6			R&D/Value added	max
7		Intelectual property	Rate of R&D person on person	max
8	Market initiative	Growth	Index on Revenues	> 1, always
9	Globalization	Export	Export rate in other countries	max
10	Business culture	Wages depend on firm success	Value added/personal cost	stability

Source: own processing by using results of studies named in introduction

Selected industry indicators are then monitored over a period of 11 years (2007 - 2017), thus not only the state but also the development of the sector are monitored. Some data are only from 2011, but it is a sufficiently long development.

Based on tab. 1 and their comparison with the results of the manufacturing industry as a whole is then discussed whether the specific HT MI sector is a potential source of HC companies.

2 Results

Tab. 2 - 4 show the calculated indicators 1-10 for the HT MI sub-sector, tables are shortened for 2011-2017.

For the Pharmaceutical Industry, the $ 5 billion revenue requirement is violated.

ROS is less than 12.5% and average innovation activity also does not meet the requirements for HC. Market activity, as measured by export activity in non-ordinary markets (ie outside the EU28, USA, Japan, China) is gradually declining and sales growth is fluctuating and not very large.

Tab. 2: Indicators for Pharmaceutical industry (CZ NACE 21)

	Indicator/year	2011	2012	2013	2014	2015	2016	2017
1	Revenue/firm	7 395	7 782	8 172	9 890	12 674	11 082	11 071
2	Person/firm	110	107	111	114	115	109	111
3	ROS	9%	9%	8%	9%	8%	10%	6%
4	Revenue change/ Investments (n-1)	-119%	-39%	41%	93%	93%	-23%	73%
5	R&D/Revenues	3%	3%	3%	3%	3%	3%	3%
6	R&D/Value added	10%	10%	9%	9%	10%	10%	9%
7	R&D person/person	6%	7%	7%	7%	6%	5%	5%
8	Index on Revenues	0,93	0,97	1,03	1,06	1,05	0,98	1,04
9	Export rate in other countries	9%	9%	9%	6%	5%	5%	5%
10	Value added/personal cost	2,3	2,2	2,2	2,4	2,3	2,3	2,2

Source: own processing by using results of studies listed in introduction and public data Czech Statistical Organization (2019)

Employee motivation, ie dependence between value added and personal cost, is stable. Thus, the pharmaceutical industry as a whole probably contains some companies that are HC, but the focus must be on choosing small businesses, the industry average is likely to be distorted by the inclusion of several large companies.

Electronic Industry (see Table 3) includes smaller businesses on average, but have very low return on sales (ROS). Sales growth exceeds investment. The innovation activity measured by the amount of money invested is visible but lower. Sales growth is higher but not strong.

Electronic Industry has a more significant share of exports to lesser known markets, but a lower dependency between value added and personal cost. It is likely that there will be more HC companies in this industry, but on average the results are likely to be very distorted by small start-ups (low profits).

Again, Aerospace Industry (see Table 4) does not qualify for lower revenues in most years. However, it shows better results both in innovation activities, especially in the area of expenditures, and in the market - significant growth of revenues and export share to less occupied markets. Wages and value added are quite stable for the last year.

Tab. 3: Indicators for Electronic Industry (CZ NACE 26)

	Indicator/year	2011	2012	2013	2014	2015	2016	2017
1	Revenue/firm	1 619	1 870	1 819	2 133	2 619	2631	2 708
2	Person/firm	13	13	12	12	12	13	14
3	ROS	1%	2%	2%	3%	3%	2%	2%
4	Revenue change/ Investments (n-1)	325%	120%	-133%	301%	91%	17%	262%
5	R&D/Revenues	0%	0%	0%	1%	1%	1%	1%
6	R&D/Value added	5%	4%	5%	5%	6%	6%	6%
7	R&D person/person	3%	3%	5%	5%	5%	5%	4%
8	Index on Revenues	1,06	1,03	0,96	1,09	1,03	1,00	1,08
9	Export rate in other countries	14%	17%	21%	18%	18%	20%	16%
10	Value added/personal cost	1,4	1,7	1,9	2,0	1,8	1,8	1,7

Source: own processing by using results of studies listed in introduction and public data Czech Statistical Organization (2019)

Tab. 4: Indicators for Aerospace Industry (CZ NACE 30.3)

	Indicator/year	2011	2012	2013	2014	2015	2016	2017
1	Revenue/firm	3 984	4 902	6 456	7 168	7 615	8 135	7 421
2	Person/firm	105	105	122	129	120	120	100
3	ROS	2%	3%	11%	4%	5%	4%	4%
4	Revenue change/ Investments (n-1)	-32%	382%	326%	153%	13%	157%	414%
5	R&D/Revenues	4%	4%	3%	4%	3%	3%	4%
6	R&D/Value added	13%	14%	12%	14%	9%	10%	17%
7	R&D person/person	5%	5%	5%	4%	4%	4%	4%
8	Index on Revenues	0,98	1,20	1,20	1,10	1,01	1,11	1,15
9	Export rate in other countries	10%	11%	12%	11%	11%	11%	10%
10	Value added/personal cost	1,3	1,3	1,5	1,5	1,5	1,6	1,2

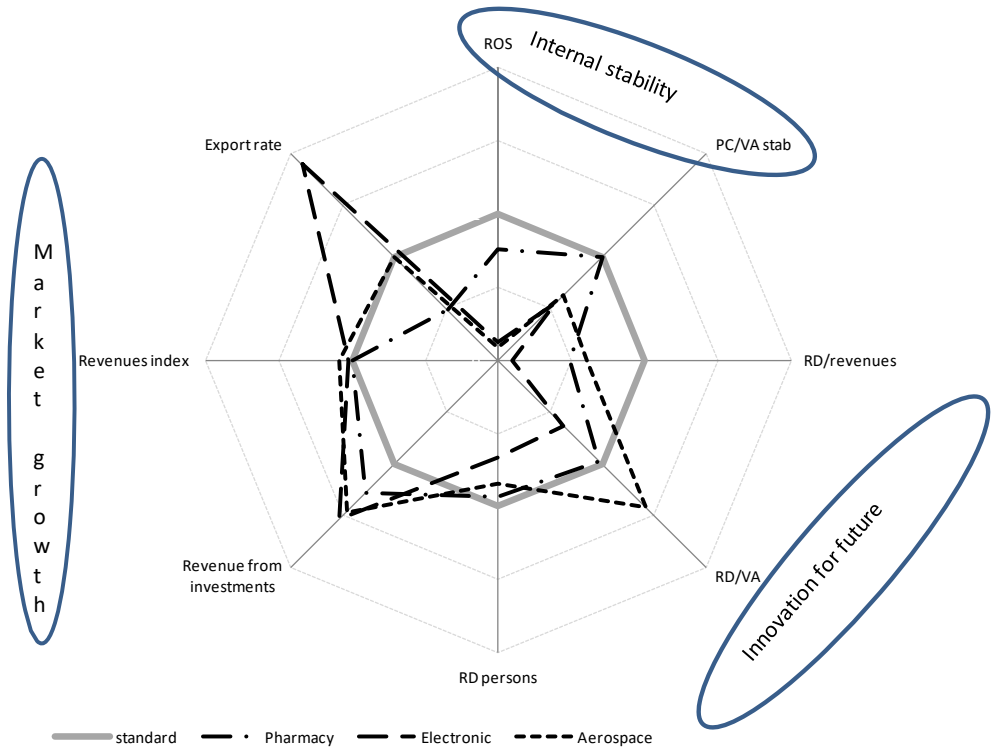
Source: own processing by using results of studies listed in introduction and public data Czech Statistical Organization (2019)

Fig. 1 shows the position of the three monitored sectors (Pharmaceutical, Electronic and Aerospace Industry) in the long term (2008 - 2017); other indicators are evaluated using average values. The exception is PC / VA stability, where the standard deviation / average and Revenues from investment are evaluated, which is evaluated by the total increase in sales to the sum of all investments before 2017.

The indicators were further divided into minimizing (PC / VA stability) and maximizing (others). For a better comparison, the minimum standard values were chosen, based on the logic of the business evaluation and the studies mentioned above.

(Standards: ROS = 12.5%, var PC / VA = 10%, RD / revenues = 6%, RD / VA = 10%, RD persons = 6%, Revenue from investments = 100%, Revenue index = 2, 5%, Export rate on other markets = 10%)

Fig. 1: Comparison of sectors in all indicators - average 2008-2017



Source: own processed

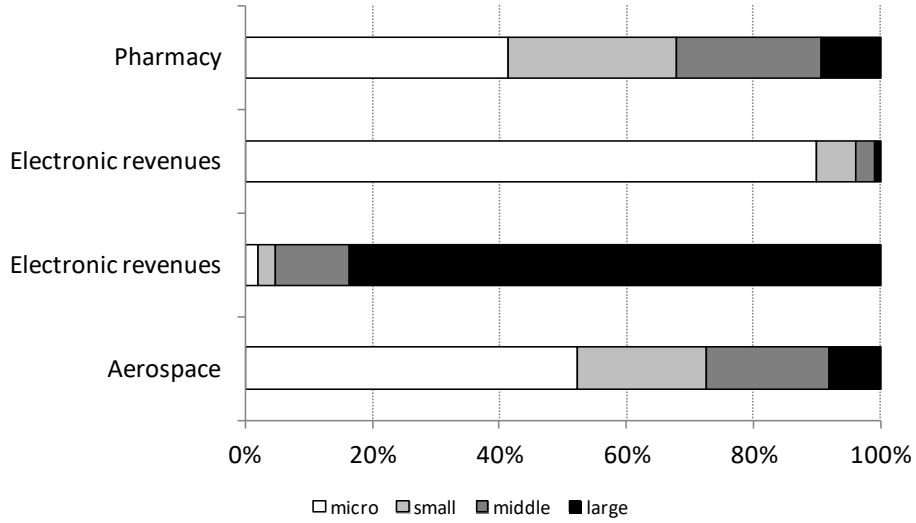
The indicators in Figure 1 are divided into three main groups. The Internal Stability Group assesses the historical profitability and prerequisites for high-quality employee motivation, whereby their rewards should be dependent on the success of the entire company - maximum profitability and minimum fluctuations in remuneration and value added are ideal. In this section, companies from all three industries have lower values than HC should have.

Innovation for future assesses the status of R&D through spending, in this section they get even higher than the required value in some sectoral indicators (in particular the Air components sector), but the question is whether the funds invested will bring the necessary effects.

The Market Growth Indicator Group focuses on revenue growth, investment success, and their focus on non-traditional markets. FIG. 1 shows that in this area, all three sectors have their strengths (the exception being low Pharmaceutical involvement in other markets).

We have noted above that industry outcomes can be distorted by different corporate structures in sectors. FIG. 2 shows how the structure of firms differs in terms of the size they are in each sector.

Fig. 2: Structure odf sectors HT MI by number of firm and revenues



Source: own processed by public data from Czech Statistical Organization (2019)

While in the Pharmacy and Aerospace industries, the structure is normal, corresponding to the corporate structure of the industry, microfirms (90%) dominate the electronic industry, but large firms (85%) dominate sales. Since none of these parts is a source of HC, we will look at selected indicators for small and medium-sized enterprises (M&S) in more detail for this sector.

Table 5 shows the selected indicators of Electronic industry for small and medium-sized companies for 2017. The reason is the unavailability of data in the necessary time series to calculate the remaining indicators.

Tab. 5: Indicators for 2017 El. Industry - small and medium firms (CZ NACE 26)

	Indicator	EI all	EI small	EI medium	EI M&S
1	Revenue/firm	2 708	1 127	10 844	4152
2	Person/firm	14	19	106	46
5	R&D/Revenues	1%	2%	2%	2%
6	R&D/Value added	6%	5%	9%	7%
7	Rate of R&D person on person	4%	6%	8%	8%
10	Value added/personal cost	1,7	1,5	1,6	1,6

Source: own processing by using results of studies listed in introduction and public data Czech Statistical Organization (2019)

For M&S companies, the difference in size between the average small and the average medium-sized firms, especially in revenues, is already visible in the size assessment. The internal structure of the electronic industry is evidently inhomogeneous, and the overall conclusions are not entirely accurate. StillNevertheless, it is still visible that companies are paying more attention to the future at M&S and are more focused on R&D than an average electronic company, regardless of size.

Conclusion

The first objective of this article was to define key assumptions for competitiveness of the Czech's SME from the high-tech manufacturing industry in the niche, but global markets. In this context, the concept of hidden champions was applied. The second aim is to find out if the average small and medium enterprise in the individual branches of high-tech manufacturing industry meets at least some characteristics of hidden champions. We have analysed the status and development of these sectors in Manufacturing Industry in years 2008 – 2017 and compare changes in the special created indicators.

The analysis demonstrated the strengths and weaknesses of High Tech Manufactory Industries, some of which have performance but lower market potential and the development potential (Pharmacy, Aerospace., while the Electronic Industry has considerable potential, but so far lacks in sufficient performance. This industry can be a source of future Hidden Champions, whose existence is very useful to the state's competitiveness and prosperity. Therefore, any public support (even non-financial) should be directed to this sector.

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