

**THESIS COLLECTION**

**Dr. m Balog**

**Examination of the financing structure of small and medium-sized  
enterprises with regard to the entrepreneurial attitudes**

for his Ph.D. thesis

**Supervisor:**

**Tams Bnfi, DSc**  
professor emeritus

Budapest, 2023

**Department of World Economy**

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## **Research history and rationale for the topic**

I started my research in the field of taxation, but later my studies focused on the financing environment, both from a monetary policy and a financial stability perspective. I have also studied some issues of cooperation between economic agents, in particular the impact of information on decisions and the sharing economy.

The broader subject of my interest is how entrepreneurs can create value for the society and the economy, and how this is influenced by the wider social environment. I am looking for the intersection where "*entrepreneurial action stemming from entrepreneurial spirit*" (Ahmad & Seymour, 2008) leads to sustainable value creation with real productivity improvements that do not cause social and environmental damage, especially in the context of the emergence and further development of the knowledge economy.

The topic of my thesis was motivated by the fact that I see a turning point in the potential for value creation in the entrepreneurial sector. Intangible capital is gaining ground and its growth rate is now exceeding that of tangible capital.

In addition to intangible capital items such as know-how or R&D, which are typically known and accepted, intangible capital also includes the hard-to-quantify entrepreneurial skills or entrepreneurial culture. These are, I suspect, even more important components of entrepreneurial success and hence entrepreneurial value creation, but their acceptance is still mixed.

From a financing perspective the increased role of intangible capital may require radical changes. The practice, theory and regulation of credit are not well suited currently to address this, which on the other hand could lead to the risk of over-financing of tangible assets, for example by creating real estate bubbles.

This is linked to some of the issues of sustainable economic growth, which means that companies are increasingly having to internalise externalities in their financial statements. However, I have only been able to mention this briefly in my thesis.

## **Methods used**

My research complements the research on the resource composition analysis of the SME sector with the role of decision-makers' attitudes. There are many studies in the literature that explain the actual level of credit of companies by using the age, its assets, other indicators of the economy (GDP, inflation), leverage, and possibly the number of bankruptcies. (Baral, 2004), (Zhao, et al., 2006), (Ryan, et al., (Jensen & Uhl, 2008) There are also studies that investigate the impact of different forms of financing on growth (Antal-Pomázi, 2011). While these are indeed significant, it can be assumed that the attitude of the manager or owner making the financing decision, or the attitude of funder on the other side, also plays a role in the decision. Studies where the structure of financing is analysed – at least in part – with attitudes as explanatory variables are rare.

Sustainable growth at the macroeconomic level can only be achieved with a certain level of macroeconomic leverage and financing. Consequently, decisions on the resource structure at the enterprise level have an impact on the national economy. The hypotheses of the thesis, in the light of the foregoing, are as follows:

### ***Hypothesis 1***

*The resource structure of SMEs is related to country, sector and/or other cluster-specific explanatory variables, company size, return environment and entrepreneurial attitudes. This correlation is distorted by subsidies.*

### ***Hypothesis 2***

*There is a link between SMEs' investment in intangible assets and their resource structure.*

### ***Hypothesis 3***

*The resource structure of the SME sector plays a role in the overall financing of the SME sector and has an impact at the macroeconomic level.*

In the course of the research, I reviewed the relevant literature: economics research on entrepreneurs, entrepreneurship and entrepreneurial spirit, their theoretical-historical context, some psychological aspects and definitions of international practice. Theoretical issues related to resource structure and uncertainty, as well as external financing issues, were also analysed.

On the basis of the relevant literature, in addition to mathematical and statistical rationality, I also examined the attitudes and personality traits of entrepreneurs and enterprises from the

perspective of their impact on the economic structure and growth of a given sector, cluster or country. Can a correlation be found whereby an entrepreneurial personality type 'structure' or typical entrepreneurial culture choices have an impact on the economic performance and structure of a larger macroeconomy?

Entrepreneurship is not only to be found in the SME sector. There can be entrepreneurship in a large company, for example, or in the social and ecclesiastical sectors. Entrepreneurs and entrepreneurship are not concepts that apply exclusively to SMEs or the self-employed, as many studies often assume for the sake of expediency. *"entrepreneurship as a definable phenomenon reflects certain characteristics that relate to the processes through which it is manifested and this is not uniquely the preserve of small companies or entrepreneurs, important though these are to the entrepreneurial process. Clearly, large companies can be entrepreneurial and it is important that these companies are not ignored when formulating entrepreneurship policies."* (Ahmad & Seymour, 2008, p. 5) Indeed, large companies often make a serious effort to strengthen their internal entrepreneurial spirit. The concept of "agile" for example has been in vogue recently, and "tribe" groups have also been formed in many multinationals after the 2008 crisis.

Nevertheless, in this thesis I will limit the more specific points of my analysis to the SME sector, as they play a sufficiently important role in the economies under study and it is easier to measure the entrepreneurial spirit in their official accounts than in a large enterprise or at the societal level, where it is easy to lose an internal entrepreneurial result in the big numbers. They are more likely to restructure their resources internally, and it is therefore more difficult to see how and when money from a given source is used.

In addition, in order to ensure a good interpretation of the data, the concept of entrepreneur is narrowed down to small and medium-sized enterprises operating in the European Union and a few related states, but some distorting factors are also removed, in particular enterprises in the financial services sector and the agricultural enterprises. Some data are also only available for certain countries within the EU, which obviously limits the scope for analysis in these cases.

The data analysed are mainly taken from the European Central Bank's 27th and 28th SAFE survey databases. (European Central Bank, 2023), (European Commission, 2022)<sup>1</sup> These were

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<sup>1</sup> All joint surveys can be found here: [https://single-market-economy.ec.europa.eu/access-finance/data-and-surveys-safe\\_en](https://single-market-economy.ec.europa.eu/access-finance/data-and-surveys-safe_en) and those for ECB only here: [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/all-releases.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/all-releases.en.html)

processed using cluster analysis, with the two databases being processed three times in total, using two different methods.

The survey aims to assess the attitudes of SMEs in the European Union towards the financial instruments they use. A working group commissioned by the European Investment Fund (EIF) and the University of Trier analysed the question on the financing structure of the 9th SAFE survey, also using cluster analysis. This was carried out for 28 EU Member States and 9 other countries in 2013. (European Commission, 2013), (Moritz, et al., 2015) The empirical part of the thesis is partly a replication and partly a complement to this analysis. Given the methodological changes in the survey over time, the rationality for a comparative analysis of the two studies was limited.

The studies were conducted using cluster analysis and, to a lesser extent, statistical and econometric tests (e.g. t-test, correlation between data, linear regression).

Cluster analysis organizes the observed data into hierarchical classes, allowing comparisons between different groups according to passive variables. The analysis was performed in R programming language, using the well-known "ward.D2" method, as in the original study. It uses however both squared Euclidean ("SE") and Jaccard distances to determine the distance between each log vector. This is a generic method that defines 1 and 0 as quantitative variables, but since we can also approach the issue of institutional system and infrastructure as a qualitative issue, our data can be given a value of TRUE / FALSE (relevant / not relevant).

A t-test is used to check whether the means of the probability variables in two samples are equal. This allows us to test whether we find a statistically significant difference between the capital structure of different company sizes and sectors. We can examine the co-movement of the data using the correlation coefficient. Using linear regression, we can determine which independent variables best explain a dependent variable (in this case, the change in the credit characteristics of a company). In the case of regression, multivariate linear regression is relevant, where the dependent variable is determined by several independent variables.

## Scientific results of the thesis

In my thesis, I examined the role that capital and financial market instruments can play in increasing the intangible capital of the entrepreneurs and the companies. I hypothesise that, at the macroeconomic level, this issue has a significant impact on growth opportunities. To do this, I had to assess the most important variables that determine the resource structure of a firm, which could be country, sector and/or other cluster-specific explanatory variables, as well as the size of the company, the returns environment and entrepreneurial attitudes.

### **1. The role of intangible capital in the economy has grown significantly, but its conceptualisation is still evolving. Most of the uncertainty surrounds intangible assets of an attitudinal or cultural nature**

The rate of investment in intangible capital exceeded the rate of investment in tangible capital towards the end of the 1990s and has been consistently higher since then. (Corrado, et al., 2022), (Crouzet, et al., 2022), (Bronnenberg, et al., 2022)

The related research and practice still have many subjective elements and many perspectives. What is clear is that the diverse intangible capital elements are most unified in the following:

- Non-rivalry / Scalability,
- Potential synergies,
- Risk of sunk cost.

It can also be seen that the entrepreneur's attitude or the culture of the enterprise has specific characteristics, different in terms of characteristics and categories, compared to other intangible capital items. This may be mainly the case because it is difficult to characterise it in quantitative variables, rather it has a kind of binary character, i.e. it is either there or it is not.

From a financial perspective, investing in intangible assets can lead to extreme business outcomes. During the boom in intangible assets in the last century, venture capital and private equity funds were sufficient for financing. However, given the increasing volume of investment in intangibles, lending systems must be able to finance them as well, otherwise we cannot hope for more robust growth figures. Of course, even smarter assessment systems, based e.g. on artificial intelligence can be built for this purpose, but the entrepreneur's attitude or the culture of the business also have to be understood. Whatever 'clever' innovation or go-to-market marketing strategy a business may develop, it is worthless if its internal culture, its regulatory



system<sup>2</sup> - the intellectual composition as Say calls it - is not sustainable and does not hold the business together (Say, 1971).

- 2. There are many theoretical and practical definitions of the entrepreneur, the business and its role in society. These include a significant proportion of characteristics that are difficult or impossible to quantify. They are qualitative variables that have a significant impact on the success of a given entrepreneur or enterprise.**

The emergence of the entrepreneur is a controversial issue in the economic literature. One school of thought argues that entrepreneurs emerged as a joint result of social and cultural changes, others, e.g. McClelland, argue that the entrepreneurs themselves caused social and cultural changes (McClelland, 2016). The main reason for this debate, in my view, is the lack of a uniformly agreed definition.<sup>3</sup>

The theoretical analysis of the motivation, activity and impact of entrepreneurs began centuries ago and has evolved as the role of entrepreneurs in society has grown. It is safe to say that Richard Cantillon, Adam Smith and Jean-Baptiste Say had already dealt with entrepreneurs in their economic theories (Braunerhjelm, et al., 2022). Cantillon and Say saw two quite different perspectives, a difference that is also evident in the thinking of the economists who came later. In Cantillon's definition, an entrepreneur is someone who does not work for anyone but himself, takes risks and seeks arbitrage opportunities. Cantillon did not attribute any element of value for society to the activity of the entrepreneur. On the contrary, Say argues that the entrepreneur is necessary to combine the knowledge acquired by the "smart" with the resources needed for production and thus to bring it to the market. The entrepreneur thus creates value. (Boutillier & Uzunidis, 2014), (Say, 1971)

Marx's definition of the entrepreneur, for example, is more along the lines of Cantillon's, but I the extreme, identifying the entrepreneur with capitalist and capitalist with capital, which automatically, by its very nature, *"abuse of the direct producers or workers, in the social production process which corresponds to it, a certain amount of surplus labour, surplus labour which it receives without equivalent"* (Marx, 1957).

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<sup>2</sup> For more information see (Balog, et al., 2023)

<sup>3</sup> This is also why there is still a sharp debate among economists in developing and less developed countries about whether these economies have capital (external) or entrepreneurial (internal) deficiencies, i.e. whether development can come from the outside or from the inside, or both.

The entrepreneurial confidence that arises from Weber's "sanctification in action", and the entrepreneurial action that results from it, in turn, again reinforces the value-creating capacity of entrepreneurs, in a thought process that is still very exciting today (Weber, 2020).

Research relevant to the topic was also carried out in the early 20th century by a number of other economists, such as Thorstein Veblen, Frank Knight<sup>4</sup>, John Bates Clark and of course Joseph Schumpeter. Schumpeter's had a major and recurrent influence, according to him the entrepreneur's task is "creative destruction", i.e. disruption<sup>5</sup>. Following Say, Schumpeter also separates the entrepreneur from the inventor, seeing his social task as bringing the novelty to market. (Heilbroner, 1999), (Landstrom & Lohrke, 2010)

Later in the 20th century, many areas of research on entrepreneurs and enterprises developed, such as management. A prominent representative was Peter Drucker, he identified the ability of entrepreneurs to innovate as the most important question, and focused more strongly than others on new or novel, disruptive uses of resources (Braunerhjelm, et al., 2022). Change, according to Drucker, is normal, even healthy. The main function of business – in the society and in the economy – is to do something different, not just to do better what others are already doing. The entrepreneur, according to him, is disruptive and disorganizing (Drucker, 1993).

Towards the end of the 20th century, the social impact of entrepreneurs became a major focus of research. Etzioni studied entrepreneurship in terms of its social function, viewing it as a driving force that promotes the constant testing of social reality. His main point of view is that the established social structure - the totality of institutions, organisations, interrelationships, modes of production and rules - tends to lag behind the constantly changing external environment. Entrepreneurs change or force change to entrenched, outdated patterns by constantly adapting to the external environment in search of different business opportunities (Etzioni, 1987). This line of thinking now encompasses the sustainable functioning of entrepreneurs, whose economic policy twin is ESG<sup>6</sup>.

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<sup>4</sup> Frank Knight first segmented future uncertainties (risk, uncertainty and real uncertainty) and linked them to different levels of profit potential and entrepreneurial ability. Somewhat simplified, he found that at the intersection of these is the uncertainty of an entrepreneur's ability, a truly unpredictable variable.

<sup>5</sup> However, it is important to distinguish Schumpeterian creative destruction from Israel Kirzner's notion of arbitrage. The latter saw the role of entrepreneurs more in market information imperfections, essentially viewing entrepreneurs as a market efficiency enhancer (Braunerhjelm, et al., 2022).

<sup>6</sup> ESG is an acronym for Environmental, Social and Governance, essentially a set of criteria by which a company can be rated. It aims to strengthen socially responsible enterprises.

Entrepreneurs and entrepreneurship have been defined by many other academic and economic policy actors in recent decades. Overall, the following structure emerges in thinking about the entrepreneur:

<b>Capabilities</b>	<ul style="list-style-type: none"> <li>Creativity</li> <li>Tolerance of uncertainty</li> <li>Ability to identify opportunities</li> <li>Capacity to deliver</li> <li>Dynamic operation</li> <li>Adaptability</li> <li>Special thinking</li> <li>The ability to start something new</li> <li>Ability to gather resources</li> <li>Ability to coordinate resources</li> <li>Ability to build an organisation</li> </ul>
<b>External (visible) characteristics</b>	<ul style="list-style-type: none"> <li>Independence</li> <li>Risking own and social capital</li> <li>Creating something new</li> <li>Acquiring resources</li> <li>Organisation of resources</li> <li>Organisation building</li> <li>Production of a product or service</li> <li>Sales</li> <li>Arbitration</li> <li>Effectiveness</li> </ul>
<b>Activities</b>	<ul style="list-style-type: none"> <li>Identifying (economic) opportunities</li> <li>Acquisition and coordinated use of resources</li> <li>Process management</li> <li>Development</li> <li>Production of a product or service</li> <li>Sales</li> <li>Arbitration</li> <li>Governance, management</li> </ul>
<b>Social impact</b>	<ul style="list-style-type: none"> <li>Value creation</li> <li>Conversion</li> <li>Disruption</li> <li>Generating economic growth</li> <li>Job creation</li> <li>In the longer term, building a more creative and confident society</li> </ul>

### **3. Psychological patterns can be identified in successful entrepreneurs in which the scientific conclusions are consistent. These can be paralleled with external evaluations of the entrepreneur and the enterprise.**

The entrepreneur can be seen from the perspective of many disciplines. For example, according to Chell, we can start from economics, sociology and psychology (Chell, 2008), while Landstrom and Lohrke consider entrepreneurship as a topic that can be studied by the disciplines of history, philosophy and management (Landstrom & Lohrke, 2010). Some also include anthropology<sup>7</sup> (Ahmad & Seymour, 2008). In the 1970s and 1980s, research on entrepreneurship accordingly extended even further beyond economics and continued to include sociological and psychological aspects. During this period, researchers focused on the social and cultural factors that influence entrepreneurship and on the personal motivations and attitudes of entrepreneurs.

In my thesis, I also reviewed the main lines of psychological research. The research examines entrepreneurs at three levels. The analysis of entrepreneurial willingness and intention measures the potential entrepreneurs in the population, while the analysis of entrepreneurial success looks for the psychological ingredients of the recipe for success in the attitudes of the individuals or groups who have become entrepreneurs. Willingness embodies a kind of openness, showing who are the potential entrepreneurs who would be willing to seize business opportunities, while intention is a more concrete commitment, where decision depending more on external factors.

The psychology of entrepreneurial success is the most important aspect of my thesis, in which case I found that, in a common cross-section of the research I have seen, the most typical entrepreneurial attitudes of successful entrepreneurs are:

- performance motivation,
- internal control,
- a reasonable tolerance for uncertainty,
- a strong inner conviction, and
- an adaptive capacity to act.

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<sup>7</sup> Gillian Tett, chair of the editorial board of the Financial Times, for example, is an anthropologist by profession and has won several awards in anthropology (<https://www.ft.com/gillian-tett>)

It can be observed that there are very similar or even identical categories among the most important skills identified in the table at the end of point 3. The exception to this is strong inner conviction, which is presumably less identifiable in an external analysis<sup>8</sup>.

**4. Financing of SMEs is becoming more and more uncertain, and there are more and more obstacles to entrepreneurs creating value. This can also be a barrier to economic growth.**

On the relationship between money and the entrepreneur, I have shown that complex forces, often independent of entrepreneurial activity, affect the value and availability of money.

On a cash flow basis, banks typically only finance larger, proven successful companies. According to a 2015 Bank of England survey, more than 90 percent of lending to UK SMEs with a turnover of less than £500 million was against some form of collateral (Haskel & Westlake, 2023, p. 143). Understanding and risking the (intangible) development of smaller businesses is an excessive cost for a bank, so collateral can only be a tangible asset, which is becoming less and less of an attractive investment option for SMEs. According to a survey by the European Central Bank and the European Commission (ECB, 2016), the lack of adequate collateral is one of the reasons why SMEs do not have access to adequate external funding. The financing of intangible assets, which are the most efficient for economic growth and have fast and strong spill-over characteristics, is most problematic.

Information distortions due to accounting 'backlog gaps' also put smaller firms at a disadvantage (Lev & Gu, 2016). Information asymmetry is a problem that increasingly sophisticated IT systems cannot address in all aspects, especially in terms of business quality.

**5. There are financing instruments that can play a role in solving the difficulties of SME financing.**

Corporate bonds, securitisation, venture capital and private equity funds all interpret and calculate risk differently, creating opportunities for SMEs that cannot be financed by banks. In addition, public or partly public guarantee funds can and do provide significant support.

Regional banks, which have better knowledge of regional companies, can also to some extent address information asymmetries (Lang, et al., 2016).

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<sup>8</sup> Only in Max Weber's thinking does it feature prominently

**6. Access to finance is not considered by businesses in the European Union to be one of their main problems, despite the fact that they believe it is becoming increasingly difficult to access. This may be because they have "given up" on access to finance, do not want to grow and prefer to focus on maintaining their existing activities.**

Entrepreneurship and entrepreneurs are an important source of innovation, growth and jobs. The recent crisis, characterised by tighter credit constraints, has undoubtedly hindered the creation of new businesses and hampered the growth and survival of existing start-ups. The significant increase in business closures in recent years, especially for micro and small enterprises, is evidence of this, and therefore particular attention must be paid to ensuring that the right monetary policy tightening does not result in too great a sacrifice for the SME sector.

Banking products are the main solution to the financing needs of SMEs in the EU. These include short or long-term bank loans, factoring, leasing, which can cover 80-85% of the total financing needs. This latter figure is very high, especially when compared to the US where bank products account for 45% of the financing mix.

According to the SAFE research carried out by the ECB and the Commission of the European Union, the main constraints, apart from funding, are competition, lack of suitable skilled workers, labour costs, customer acquisition and regulation<sup>9</sup>. While funding was the second most cited problem for businesses in 2013, by 2017 it was the least cited problem and the trend remained unchanged until 2022.<sup>10</sup>

This is contradicted, however, by the fact that empirical research shows that fewer and fewer SMEs are able to stay in regular contact with bank financing. A near-zero interest rate environment has presumably not helped the long-term stability of entrepreneurs' financing structures.

The issue of financing is therefore a major and changing obstacle that entrepreneurs see as a barrier to their own efficiency. It is only partly up to the entrepreneur, the other variable is exogenous to him, and depends on the financial sector, the state and international (financial) institutions and their cooperation.

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<sup>9</sup> It can be observed that the orientation of the study was mostly influenced by the management orientation of the research in business economics, also the part of the research on the external environment, mostly researched by Porter (Ahmad & Seymour, 2008).

<sup>10</sup> [https://www.ecb.europa.eu/stats/ecb\\_surveys/safe/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html)

## 7. The resource structure of SMEs is related to country, sector and/or other cluster-specific explanatory variables

The cluster analysis clearly confirms that the financing and resource structure of SMEs is related to country, sector and/or other cluster-specific explanatory variables.

The figures below show the most comprehensive of the comparative analyses carried out, the distributions within and between clusters in the 27 SAFE surveys with Jaccard distance.

### Comparison of clusters

Variables	Categories	Self-financed	Loan-financed and subsidised	Flexibly funded	Funded by the supplier	Lease-financed	Sum (pc.)	Sum categories	
Size (employees)	1-9	57.9%	8.4%	10.2%	18.1%	5.5%	5362	40.9%	
	10-49	43.4%	11.4%	15.4%	20.0%	9.8%	4208	32.1%	
	50-249	30.1%	11.3%	22.2%	26.6%	9.8%	3533	27.0%	
Size (turnover in EUR)	< 0.5m	60.6%	8.4%	9.0%	16.7%	5.3%	3931	30.0%	
	0.5m - 1m	52.9%	9.7%	11.0%	19.0%	7.5%	1833	14.0%	
	1m-2m	45.3%	11.3%	14.8%	19.9%	8.7%	1834	14.0%	
	2m-10m	36.7%	12.1%	18.6%	22.6%	10.0%	3334	25.4%	
	10m-50m	27.1%	9.6%	24.5%	28.9%	9.9%	2171	16.6%	
Age	>= 10 ys	45.2%	10.4%	15.5%	20.8%	8.2%	11297	86.3%	
	5-10 ys	47.1%	8.5%	13.8%	22.6%	7.9%	1100	8.4%	
	2-5 ys	53.8%	9.0%	10.9%	21.5%	4.8%	578	4.4%	
	2 ys >	46.3%	7.4%	9.9%	24.8%	11.6%	121	0.9%	
Ownership	Stock exchange	42.3%	7.1%	14.1%	25.3%	11.2%	241	1.8%	
	Family	43.1%	9.9%	17.9%	21.8%	7.3%	5032	38.5%	
	Company	40.4%	9.5%	16.6%	23.3%	10.2%	1782	13.6%	
	Venture capital	31.1%	5.4%	21.6%	32.4%	9.5%	74	0.6%	
	Private individual	50.4%	10.6%	11.9%	19.3%	7.9%	5511	42.1%	
	Other	42.5%	12.3%	16.9%	19.9%	8.4%	438	3.3%	
Growth (profit)	Increased	43.6%	9.0%	17.2%	21.3%	8.9%	3009	23.7%	
	Decreased	50.3%	10.4%	12.9%	18.2%	8.1%	4036	31.8%	
	Remained	43.0%	10.7%	15.6%	23.1%	7.6%	5647	44.5%	
Growth (employees)	Increased	38.0%	11.9%	18.4%	22.8%	8.9%	2833	21.7%	
	Decreased	49.1%	9.4%	13.8%	19.8%	7.9%	8172	62.5%	
	Remained	42.9%	10.6%	15.7%	23.3%	7.5%	2077	15.9%	
Innovation	New product or service	37.5%	11.4%	18.3%	25.8%	7.0%	3220	28.4%	24.6%
	<b>86.6%</b> New production process or technology	37.3%	12.1%	18.7%	24.6%	7.3%	2555	22.5%	19.5%
	New management, governance system	37.1%	11.9%	18.2%	25.3%	7.5%	3083	27.2%	23.5%
	New sales channel	40.3%	11.8%	15.9%	25.3%	6.6%	2490	21.9%	19.0%
	Industry	36.0%	11.0%	19.5%	26.2%	7.4%	2960	22.6%	
Industry	Construction	42.0%	9.8%	14.8%	22.0%	11.4%	1762	13.4%	
	Trade	45.2%	9.3%	14.6%	25.5%	5.4%	2920	22.3%	
	Service	52.5%	10.2%	13.1%	15.4%	8.8%	5461	41.7%	
	<b>Sum (pc.)</b>	<b>5993</b>	<b>1328</b>	<b>1977</b>	<b>2751</b>	<b>1054</b>	<b>13103</b>		
	<b>%</b>	<b>45.7%</b>	<b>10.1%</b>	<b>15.1%</b>	<b>21.0%</b>	<b>8.0%</b>			

Source: 27th SAFE database, own analysis

## Comparison of distributions within clusters

Variables	Categories	Self-financed	Loan-financed and subsidised	Flexibly funded	Funded by the supplier	Lease-financed
Size (employees)	1-9	51.8%	33.9%	27.6%	35.2%	28.1%
	10-49	30.5%	36.1%	32.8%	30.6%	39.1%
	50-249	17.8%	30.0%	39.6%	34.2%	32.8%
Size (turnover in EUR)	< 0.5m	39.7%	25.0%	17.9%	23.9%	19.7%
	0.5m - 1m	16.2%	13.3%	10.2%	12.6%	13.0%
	1m-2m	13.8%	15.7%	13.7%	13.3%	15.2%
	2m-10m	20.4%	30.3%	31.4%	27.4%	31.7%
	10m-50m	9.8%	15.7%	26.9%	22.8%	20.4%
Age	> = 10 ys	85.2%	88.3%	88.5%	85.3%	87.7%
	5-10 ys	8.6%	7.1%	7.7%	9.1%	8.3%
	2-5 ys	5.2%	3.9%	3.2%	4.5%	2.7%
	2 ys >	0.9%	0.7%	0.6%	1.1%	1.3%
Ownership	Stock exchange	1.7%	1.3%	1.7%	2.2%	2.6%
	Family	36.3%	37.6%	45.7%	39.9%	34.8%
	Company	12.1%	12.8%	14.9%	15.1%	17.3%
	Venture capital	0.4%	0.3%	0.8%	0.9%	0.7%
	Private individual	46.5%	43.9%	33.1%	38.8%	41.2%
	Other	3.1%	4.1%	3.7%	3.2%	3.5%
Growth (profit)	Increased	22.8%	20.8%	27.0%	23.9%	26.1%
	Decreased	35.2%	32.5%	27.1%	27.4%	32.1%
	Remained	42.1%	46.6%	45.9%	48.7%	41.8%
Growth (employees)	Increased	18.0%	25.3%	26.4%	23.5%	24.0%
	Decreased	67.1%	58.1%	57.0%	58.9%	61.2%
	Remained	14.9%	16.6%	16.6%	17.6%	14.8%
Innovation	New product or service	28.0%	27.4%	29.2%	29.0%	27.9%
	<b>86.6%</b> New production process or technology	22.1%	23.2%	23.6%	21.9%	23.0%
	New management, governance system	26.5%	27.4%	27.7%	27.2%	28.6%
	New sales channel	23.3%	22.0%	19.5%	22.0%	20.4%
Industry	Industry	17.8%	24.5%	29.1%	28.2%	20.7%
	Construction	12.3%	13.0%	13.2%	14.1%	19.1%
	Trade	22.0%	20.6%	21.5%	27.1%	14.9%
	Service	47.9%	41.9%	36.2%	30.6%	45.4%

Source: 27th SAFE database, own analysis

### 8. The resource structure of SMEs is correlated with the yield curve, but this correlation is weak

Analysing the data, I found that the declining ECB base rate has not been equally affected by the declining yield environment in all countries. The analysis also shows that long-term loans are negatively related to annual interest rate changes and to the change in interest rates relative to the EU average. Although the correlation value is small, I have rejected the possibility that the relationship between the two is zero. That said, the correlation is weak.

### 9. There is a link between SMEs' investment in intangible assets and their resource structure

The distribution of innovation activity across clusters in the cluster analysis shows that the hypothesis is confirmed. It can be seen that companies in the leasing cluster are not innovating,



which suggests that companies in the leasing cluster are just exploiting a financing gap. The situation is different for the supplier cluster, as these firms have a higher innovation rate in all innovation segments. This could also lead to the conclusion that these are firms that rely on each other, form a kind of network, and that this network actually innovates together. The financial manifestation of this may be that they are temporarily indebted to each other. But the conclusion can certainly be drawn that networking is beneficial from an innovation point of view and should be encouraged by financial means. This is important because the start-up model that has been the focus of attention over the last ten years has been primarily involved in one type of innovation, the introduction of a new product. They fall into the category of those with flexible financing, as seen before, but they do not build a new sales channel and are less connected to other entrepreneurs.

#### **10. Resource structure of SMEs is related to entrepreneurial attitudes**

In many respects, the clusters showed the presence of certain common entrepreneurial attitudes, which cannot be explained by other exogenous characteristics, whether industry, size or other. For example, the role of supplier debts in financing is stronger in non-euro area countries, suggesting less punctual payments and lower financial culture. It is also interesting to note that Nordic firms have a higher proportion of supplier-financed companies, indicating a high level of networking in this region, pointing to the often said success of the Nordic model. Accordingly, the link between the resource structure and entrepreneurial attitudes has also been confirmed.

#### **11. The resource structure of the SME sector plays a role in the overall financing of the SME sector and has an impact at the macroeconomic level.**

The analysis reveals interesting patterns that confirm the hypothesis. For example, it appears that, from a financing perspective, Western firms are typically embedded in a durable, long-term financing structure, the network of relationships is well developed, which significantly increases the effectiveness of the financial institutional system, and there is a relatively high number of self-financing, service-providing firms. In contrast, firms in the East tend to be more tied to flexible financing, with more firms taking advantage of short-term financial benefits, and this obviously reduces the role of banks and financial institutions as 'advisors' and

supporters. In line with this, the macro-economic scale of financing is also better where long-term, sustainable financing structures are established.

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## List of own publications on the topic

- Balog, Á., Matolcsy, G., Nagy, M. & Vonnák, B., 2014. Credit crunch in Hungary between 2009-2013: the end of an era of bad credit? *Financial and Economic Review*, pp. 11-34.
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