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**EXPERIENCES OF LENDING AIMED AT THE
DEVELOPMENT OF SMALL AND MEDIUM-SIZED
ENTERPRISES**

PhD Thesis Booklet

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Introduction and the research project

The topic of this dissertation is issues related to lending that is aimed at promoting the development of small and medium-sized enterprises (SMEs) in Hungary. The choice of this topic was mainly motivated by my work experience and current position. I have more than fifteen years of professional experience in banking. During that time I have gained work experience both in central positions related to loan product development and in positions related to branch network where interacting with customers is a daily routine. I have been working for the MKB Bank as a branch manager for six years. During my work, I come into contact with business owners on a daily basis. Previously, I had the opportunity to learn about financing problems from the corporate side, too, as I also filled financial director positions in non-financial corporations. This provides me with the advantage of being able to think from the point of view of both lenders and loan applicants.

My research goals are to explain the deterioration in the volume of SME loan portfolios that started in 2009 and to make recommendations on how to reverse this downward trend. The economic crisis of 2008 severely affected the SMEs, because they are less diversified in economic activities, they rely more on external financial resources and they often have lower credit ratings relative to large firms. It can be observed that corporate lending in Hungary expanded until the end of 2008, but started to form a declining tendency from 2009 (Figure 1). That negative trend is due to double factors: the powerful bank

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tightening credit rating requirements after the outbreak of crisis and the falling corporate credit demand.

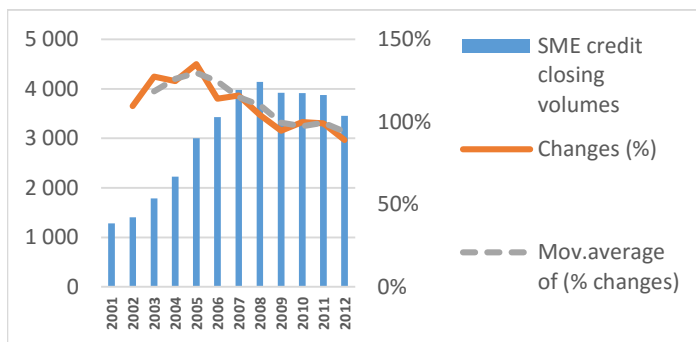


Figure 1: SME credit closing volumes (bn Ft) and its chain relatives (chain relative=the value of a magnitude in a given period divided by the value in the previous period)

Source: own edition and own calculations, based on information available on web site of Central Bank of Hungary (MNB) (MNB, 2015-F), (MNB, 2014-R), (MNB, 2014-S)

Comparing the changes in non-financial corporations credit closing volumes¹ (2006 = 100%) of Visegrad countries (Hungary, Slovakia, the Czech Republic and Poland) (Figure 2), a surprising result can be seen. While in the case of Hungary the loan portfolio only reaches 87.3% of the 2006 value at the end of 2013 with the credit volume trend almost continuously declining since 2009, during the same period, in the other Visegrad countries - after a small pause in 2009 - rising trends can be observed, with ample values above 100% in 2013.

According to estimates by using SVAR and econometric methods, partly the weakening of credit

¹ Credit closing volume = credit volume at the end of a given period

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supply and partly the the weakening of credit demand are responsible for the decrease in corporate credit volume in Hungary (Sóvágó, 2011), (Hosszú at al., 2013). *Unfortunately, neither of the studies was able to detect the latent credit demand in SME sector that may exist and the incidental causes in demand-side reduction. At the same time, the refinanced and/or state-guaranteed subsidised credit facilities come to the fore.*

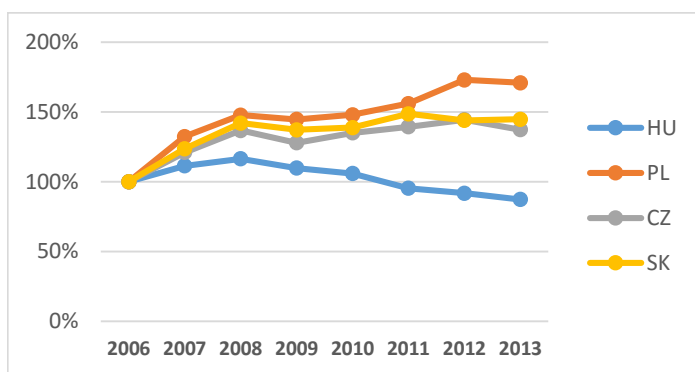


Figure 2: Non-financial corporate credit closing volume changes in the Visegrad countries (2006=100%)

Source: own edition, based on information available on web site of ECB (European Central Bank, 2015)

It gives special importance to the subsidised loans that the Central Bank of Hungary (Magyar Nemzeti Bank, or MNB) also made subsidised loan products available through commercial banks, with the launch of the ‘Funding for Growth Scheme’ (FGS) which is a part of the monetary policy instruments (MNB, 2015).

In connection with the decrease in the credit portfolio volume the question arises whether the financing preferences of SMEs have changed. In addition, where in

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this preference ranking can we find the subsidised loans and non-refundable subsidies? Businesses in their capital structure decisions will give priority to internal resources against external sources (Pecking Order Theory, POT) (Myers & Majluf, 1984). The validity of POT was tested within Hungarian SMEs by empirical analysis of their financial statements and tax returns (Szemán, 2008), (Gál, 2013).

Although these types of studies can be considered to be nearly comprehensive within the SME segment submitting financial statements and thus their findings are hard to dispute, *it is still important to highlight the fact that the empirical databases of such analyses provide information only about the actual capital structure, which is not necessarily the same as what SMEs actually want.*

In other words, the real preference order may differ from the actual values, and furthermore the databases of the surveys – at least in part – are from before the recent crisis and even from before 2004, when Hungary joined the EU. In addition, these tests are not suitable to determine the rank in hierarchy for many of the currently dominant types of financial resources (ie. non-refundable grants, shareholders's loans, subsidised loans, factoring, etc.). The main financing problems of the Hungarian SME sector are concentrated in the following areas (Apatini, 1999):

- lack of capital,
- for bank loans: the high fixed costs related to the credit and insufficient collateral,
- for equity financing: the expectations of high returns and the resistance to active involvement in the management.

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Another problem is that SMEs do not have adequate connectivity to the capital markets, and thus they have only limited funding opportunities (Szerb, 2000), (Fülöp, 2004). Especially for smaller sized businesses the regular credit facilities do not pose a realistic alternative for financing in certain of the enterprise's risky life stages (initial growth and expansionary cycle) (Szerb, 2000).

Looking at the credit supply side, research has shown that changes in the loan portfolio volume are defined by the change in real GDP (Roxenburg et al., 2010). This phenomenon is rooted in the pro-cyclical behavior of banks and in credit rationing (Horváth et al., 2002), (Stiglitz & Weiss, 1981). When GDP increases, banks tend towards over-optimistic behavior, and they loosen their credit rating conditions. However, when the financial and economic 'bubble' bursts, the banks' optimism disappears and they massively cut back on credit supply, the lending standards and rating mechanism.

The hypotheses of the dissertation

I formulated the hypotheses of the dissertation connecting to the above-described issues (see Table 1) after reviewing the relevant theoretical background.

The proof of the hypothesis H1 is based on secondary quantitative research methods, while primary quantitative research methods have been chosen to provide empirical evidence of the hypothesis H2-H7. While other researchers have performed secondary analysis (for the hierarchy of funding), primary methods are needed for the

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analysis of the remaining issues. The hypotheses-methodology matrix is summarized in Table 2.

Table 1: Hypotheses

H1: There is empirical evidence for a positive correlation between Hungarian real GDP change and the change in the SME loan portfolio. Corporate sector loan changes, however, are less correlated with the changes in domestic real GDP than in the case of SMEs.
H2: For the SMEs – even given the banks' decreased lending activity after 2008 – more severe problems than the issue of financing are factors such as market competition, finding new customers, production costs and regulatory background.
H3: The capital structure of SMEs is selected and ranked primarily based on transaction cost minimization according to the Pecking Order Theory. Thus, subsidised loans are preferred to market condition loans, but should be less preferred to SMEs' own sources in the source preference rankings. In my expectation, the non-refundable subsidies are the most highly preferred.
H4: Currently, for the majority of SMEs the banks' tightening is not the main inhibiting factor to submitting credit applications, but rather the fact that – due to other factors – no credit is needed. SMEs that plan new investments would rather finance the planned investment – on the basis of the Pecking Order Theory – with other, more preferred, alternative financing sources than with bank loans.
H5: Based on the subjective perception of SMEs, the three main dimensions of the most hindering factors to borrow are bank lending practices, credit features and credit-related costs. From all the factors, the main obstacle to borrowing is providing the required collateral.
H6: Loans with favourable conditions can help ensure the survival of SMEs, allowing them to start new projects as well as to increase their revenue and the number of employees.
H7: SMEs are not sufficiently familiar with the subsidised loan products available to them. It can be shown that the enterprises that are aware of the favourable financing sources and subsidised loans will fall into the same group as the new investment planners.

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Table 2: Hypotheses-methodology matrix

Hypothesis	Methodology	Applied empirical calculations, econometrical tests and used diagrams
H1:	<i>secondary analysis</i>	<i>XY diagram, Pearson correlations calculations, Augmented Dickey-Fuller (ADF) unit root test, correlogram, Ljung-Box Q-test</i>
H2:	<i>primary quantitative research</i>	<i>weighted average, t-test, Kolmogorov-Smirnov test, Friedman test</i>
H3:	<i>primary quantitative research</i>	<i>weighted average, Kolmogorov-Smirnov test, Wilcoxon test, Friedman test</i>
H4:	<i>primary quantitative research</i>	<i>frequencies, descriptive statistics, calculation of failure rate</i>
H5:	<i>primary quantitative research</i>	<i>factor analysis, KMO test, Bartlett test, Friedman test</i>
H6:	<i>primary quantitative research</i>	<i>Box plot diagram, Friedman test</i>
H7:	<i>primary quantitative research</i>	<i>relative frequencies, liquidity reserve indicator, Friedman test, cluster analysis, ANOVA, Levene-test, Mann-Whitney test, χ^2 test, cross-table, Cramer's V</i>

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The research method

To examine the relationships between the variables, cross-tables, analysis of variance, correlation analysis, factor analysis and cluster analysis methods were used in the dissertation. When the survey of primary research was evaluated, the most commonly used methods were parametric and non-parametric homogeneity tests. The strength of parametric methods are higher, but in return they impose more pre-conditions on the analyzed variables (eg. normality condition). Often there are non-quantitative variables whose value scale merely complies with the ordinality criteria. Comparing the levels by using the averages in the case of such variables is questionable (Vargha, 2002), therefore stochastic comparisons or ranking methods were used to compare them, depending on the selected samples. The hypotheses of empirical studies were compared to the usual 0.05 expected significance level.

The testing methodology of the relationship between real GDP growth and changes in SME loans outstanding

The results of this research are based on quantitative research and secondary data analysis. For the tests, the time series data for the period 2001-2014 (in case of real GDP change from 1995 to 2014) are from public databases that are available on the Internet. To measure the strength of the correlation between real GDP growth and changes in the loan portfolio volumes, bivariate linear (Pearson) correlation calculations were carried out by using variables with 0..2 delayed period. The model

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linearity and the identification of possible outliers were examined using XY graph (scatterplot) and box plot (Hunyadi et al., 1996). The time series stationarity was checked by ADF (Augmented Dickey-Fuller) unit root test (test parameters: intercept, trend and intercept, none and for the lag length automatic selection based on Schwarz Info Criterion). The autocorrelations were tested by correlograms and Ljung-Box statistics with 1..6 period lagging selection. The normality of the variables was tested by the Kolmogorov-Smirnov test.

The methodology of the survey

The basic data of the empirical research were collected by questionnaires carried out between February and April 2014. The total population was limited as follows:

- *Only active companies based in Borsod-Abaúj-Zemplén county,*
- *Private entrepreneur (p.e.), unlimited partnership., Ltd., LLC., and other company types,*
- *Main activity: industry, construction and non-financial services (hereafter, the tertiary sector).*

A combination of quota and evaluation sampling methods were used. As for the quota criterion forming, I used the economic branch classification of the main activities of the enterprises. Response-enhancing considerations made it necessary to use an assessment method in the second stage for the sample selection. The information required to form the quotas was from the

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database (for 2011) of the Hungarian Central Statistical Office (KSH, 2011), see Table 3.

Table 3: Distribution of active SMEs in B-A-Z county

Economic sector	Micro	Small	Medium	Sum	Share
Industry	2 110	299	107	2 516	10.39%
Construction	2 722	172	23	2 722	12.05%
Non-financial services	18 225	500	55	18 225	77.56%
Sum	23 057	971	185	24 213	100%
Share	95.23%	4.01%	0.76%	100%	

Source: Own edition based on the database of (KSH, 2011)

To adjust for the differences in sector and size distribution between the selected sample and the whole population of active B-A-Z County SMEs, weight adjustment indexes were used. I asked a total of 110 firms to complete the questionnaire. The questionnaire was prepared in Google Docs format and in hard copy form as well. Of these, 89 pieces of questionnaires were returned, of which 82 could be used for the analysis. The demographic breakdown (size and sector) of the 82 of correctly filled out questionnaires is presented in Table 4.

Table 4: Demographic breakdown of the responding SMEs

Economic sector	Micro	Small	Medium	Sum	Share
Industry	3	4	1	8	9.76%
Construction	3	3	2	8	9.76%
Non-financial services	49	15	2	66	80.49%
Sum	55	22	5	82	100.00%
Share	67.07%	26.83%	6.1%	100%	

Source: Own edition and calculations (SPSS)

The pre-processing of the completed questionnaires was carried out in Excel and then the database was transferred to SPSS. The running of the appropriate analytical tests became possible in SPSS after the measuring levels of the variables were set.

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The empirical results

The results of the investigation of the relationship between real GDP and domestic company's credit portfolio

According to the empirical results, as the delayed real GDP changes show correlation with the SME loan closing volumes, primarily GDP growth influences the changes in the SME loan portfolio and not vice versa. The one-period-lagged GDP growth explains 66.7% of the SME loan portfolio volume change (linear (Pearson) correlation coefficient equals 0.823), and at the same time only a weak – at 0.05 level, not significant – correlation can be found between the change in real GDP growth and the corporate loan closing volumes, so Hypothesis H1 – with minor clarification – is accepted.

T1:	In Hungary there is a strong, positive correlation between the t-1 period lagged real GDP change and the change in the SME loan outstanding amount. The corporate sector loans changes, however, correlated only weakly with the changes in domestic real GDP.
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Factors that can cause problems for SMEs

The comparison results of each variables' average representing a problem factor were put into a 7x7-matrix for easier viewing Table 5.

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Table 5: The comparative matrix of the averages of problem factor variables

	Legislative, regulatory background	Competition	Finding customers	Access to finance	Costs	Availability of skilled staff	Other
Legislative, regulatory background		*	*				
Competition	*		*	*	*		
Finding customers	*	*		*	*		
Access to finance		*	*		*	*	
Costs	*	*	*	*		*	
Availability of skilled staff				*			*
Other						*	

*non differing weighted averages, based on paired t-tests (at a 5% significance level)

Source: Own edition and calculations (SPSS)

Based on the paired t-tests it can be stated that, at a 5% significance level, the averages of the following variable pairs do not differ: *access to finance* from *finding customers*; *access to finance* from *costs of production or labour*; *access to finance* from *competition*; and *access to finance* from *availability of skilled staff*. However, the average of the variable *access to finance* is significantly different from the averages of the other variables. To determine the ranking of the problem factors, the Friedman test was used Table 6.

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Table 6: Friedman ranking of problem factors

Rank average	Problem factor
4.79	Legislative, regulatory background
4.58	Competition
4.35	Costs of production or labour
4.28	Access to finance
4.17	Finding customers / quantity of order
3.50	Availability of skilled staff
2.33	Other

Source: Own edition and calculations (SPSS)

Based on the factors' rank averages and the comparison of the responses' averages, it can be stated that the challenges of market competition, the level of production costs and the regulatory background are more stressful to the SMEs than the financing of the company. The regulatory background was a significantly (at a 0.05 level) greater issue than financing, so the Hypothesis H2 - with a minor correction - can be considered justified.

According to a European Commission's (similar) survey on SMEs in the EU's 28 Member States, conducted in 2013, *in terms of SMEs as whole, currently the access to finance is not the main issue factor, based on the the EU average of 28. The dominant concern of SMEs was identified as finding customers in the EU 28* (European Commission, 2014). In Hungary, the regulatory background was marked as the number one problem by the SMEs, probably due to the law-making practice in recent years and to tax factors.

T2:	The challenges of the competitive market, the level of production costs and the difficulties produced by the regulatory background cause more difficulties for SMEs than access to financing.
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The attitude of SMEs to financing

The response sequence that was given for Likert-type variables in this question group should not only be established based on weighted arithmetic averages, but also on using a stochastic method of comparison (Vargha, 2002). One of the possible methods can be again using the rank averages formed by Friedman test. The attitude sequence of funding based on that test is shown in Table 7.

Table 7: Friedman ranking of funding preferences

Type	Rank	Average (weighted)	Std.dev.
Grant	11.44	8.64	2.474
Own equity	10.49	7.71	2.721
Subsidised loan	8.70	6.18	3.027
Shareholders' loan	7.58	4.69	3.115
Short-term credit	7.39	4.33	2.910
Long-term credit	7.27	4.70	3.050
Mid-term credit	7.05	4.22	2.658
Customer advances	6.26	3.59	3.045
Trade credit	6.20	3.49	3.036
Leasing	6.02	3.48	2.945
Involvement of equity partners	4.34	2.04	2.075
Factoring	4.17	1.97	1.976
Loan from a friend	4.08	1.82	1.793

Source: Own edition and calculations (SPSS)

The comparison of the averages of all the variables requires comparing 78 pairs of variable with Wilcoxon tests. On the basis of the Wilcoxon tests carried out, *non-refundable grants, own equity and subsidised credits* variables' averages are significantly different from each

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other. The results of the comparison of all the variables' rank averages are summarised in Table 8.

Table 8: The matrix of the comparison results of funding preference variables rank averages

	Grant	Own equity	Subsidised credit	Long-term credit	Shareholders' loan	Short-term credit	Mid-term credit	Customer advances	Trade credit	Leasing	Involvement of equity	Factoring	Loan from a friend
Grant													
Own equity													
Subsidised credit													
Long-term credit					*	*	*						
Shareholders' loan					*	*	*						
Short-term credit					*	*	*	*		*			
Mid-term credit					*	*	*	*	*	*			
Customer advances						*	*	*	*	*			
Trade credit							*	*	*	*			
Leasing						*	*	*	*	*			
Involvement of equity partners											*	*	*
Factoring											*	*	*
Loan from a friend											*	*	*

*non differing rank averages, based on Wilcoxon tests (at a 5% sign. level)

Source: Own edition and calculations (SPSS)

Grants (that is, subsidies that do not have to be repaid) are the most preferred funding, followed by *own equity*, and then *subsidised credit*. In the sequence of averages, the next, but not significantly different preference-averaged funds are *long-term loans*, *medium-term loans*, *short-term loans* and *shareholders' loans*, i.e. *bank loans* plus *shareholders' loan*. The subsequent funding groups are: *customer advances*, *trade credit* and *leasing*. Finally, a well-separated group of the least preferred types of funding occurs: *factoring*, *loans from a friend* and the *involvement of equity partners*. The decline in *trade credit* and *leasing* is probably related to the

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situation that formed after the crisis of 2008, where the transaction costs of these types of funding are suspected to be no lower than the costs of bank loans. This hypothesis could be proved by further research.

Overall, it can be stated that the statements in the Hypothesis H3 are confirmed, that is, the negative transaction-cost non-refundable grant has an advantage over zero transaction cost own equity, and own equity has an advantage over positive external transaction cost external funding schemes. The subsidised loan is clearly the most popular fund raising option among the external funding options.

T3:	The capital structure of SMEs is selected and ranked primarily based on transaction cost minimization, according to the Pecking Order Theory. Thus, subsidised loans are preferred to market condition loans, but less preferred to own equity financing in the ranking, while grants are the most preferred financing opportunities.
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What kind of funding are SMEs planning to use to achieve their future investment?

Examining the credit demand side, we cannot ignore how the investment objectives of SMEs are developing in the near future and from what types of funding they are intending to finance investments. A one-hundred-percent match is not expected between the financing rankings of planned investments and the funding preference ranking, as the preference and the available options are not necessarily identical. The ranking made

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from the responses to the relevant questions are included in Table 9.

Table 9: Ranking of planned funding sources for financing major investments

Ranking	What kind of funds are planned for the investment?	N*	%*
1	Grant	19	66.24%
2	MNB FGS	9	32.03%
3	Investment loan	6	21.31%
4	Shareholders' loan	6	19.28%
5	Own equity	5	17.84%
6	Involvement of equity partners	1	4.34%
7	Leasing	1	1.93%
8	Other	0	0.00%

**One respondent could have indicated multiple choices, therefore the sum of the number of funding types intended to be used is greater than the number of investment planning firms. The percent rate indicates the proportion to the total respondents that have investment intentions.*

Source: Own edition and calculations (SPSS)

The above data reveals that the only substantial difference is that, *own equity* slipped down from second place to fifth position. Otherwise the funding ranking is basically the same as the ranking according to respondents' funding attitudes.

Failure to establish credit contracts

The *failure rate* (β) formed in roughly equal proportions in almost all loan types, 71.6% on average. The 'normal' investment loan failure ratio of 90.9%, however, may be considered as an extreme value. It is likely that collateralisation issues and/or the substitution effect of MNB's FGS loans are the reasons behind this

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extremely high ratio. The causes of credit agreement establishment failure are summarised in Table 10.

Table 10: Credit contract establishment failure causes

Causes of Failure	resp.	prop. *
I did not need a credit	20	66.7%
Because of the expected collateral	5	16.7%
Because of the strict credit rating	4	13.3%
Due to the excessive administrative burden	4	13.3%
Because of the rate of fees and commissions	4	13.3%
I would needed a credit, but I considered it too risky	3	10.0%
Due to the interest rates	3	10.0%
Due to other reasons	1	3.3%

**as a percentage of all customers offered loans but not establishing contracts.
One respondent could select multiple options as reasons.*

Source: Own edition and calculations (SPSS)

The most significant failure reason rate was given by the SMEs to the 'I did not need credit' option. This also refers indirectly to the fact that financing cannot be the main factor of difficulty for SMEs, as 66.7% of them would have been able to obtain credit, but they still did not use this option. The majority of SMEs do not apply for any credit not due to bank-side barriers, but because they simply do not need it, since 64.6% of them do not want to start new investment. Those firms planning investment (35.4%), wish to finance their investments from other, more preferred, alternative funding sources, according to the Pecking Order Theory, so Hypothesis H4 is accepted.

T4:	Currently, for the majority of SMEs the tightening of credit rating requirements by banks is not the main inhibiting factor to submit credit application, but because - due to other factors - no credit is needed. The SMEs planning new investments would rather finance the planned investment - on the basis of the Pecking Order Theory - with other, more preferred, alternative financing sources, especially grants, than with bank loans.
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The factors impeding SMEs from borrowing from banks

The exploration of the dimensions of the main factors impeding SMEs from bank loans was carried out by factor analysis. *Based on the rotated component matrix, the variables that describe the impeding factors can be divided into three main dimensions: F1: bank lending behaviour; F2: credit product characteristics and F3: credit-related costs. The largest share (30.9%) of the total variance is explained by the factor of F1, that is, the bank lending behaviour; and (21.3%) by the product characteristics factor (F2) and, finally, (18.6%) by the F3 factor, which represents costs related to credit, see Table 11.*

Table 11: Rotated Component Matrix

Factor	Variables	Component		
		Bank lending behaviour	Product characteristics	Costs
F1	Expected size of collateral	0.896	0.095	0.031
	Administrative burden	0.849	-0.097	0.227
	Expected type of collateral	0.796	0.395	-0.015
	Strictness of credit rating	0.672	0.487	0.010
	Credit application processing time	0.651	0.268	0.443
F2	Available loan duration	0.077	0.894	0.096
	Available credit size	0.053	0.690	0.460
	Lack of appropriate type of credit	0.160	0.509	-0.131
F3	Costs and commissions	0.106	-0.025	0.829
	Interest rates	0.104	0.062	0.826

Source: Own edition and calculations (SPSS)

The rank averages calculated for the factors impeding SMEs to borrow are shown in Table 12.

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Table 12: Friedman ranking of factors that impede SMEs from borrowing (the highest value means the most impending)

Impeding factors	Rank average
Expected size of collateral	8.85
Costs and commissions	8.52
Strictness of credit rating	8.31
Expected type of collateral	8.30
Interest rates	7.96
Administrative burden	7.82
Credit application processing time	6.99
Available credit size	5.59
Available loan duration	5.23
Lack of appropriate type of credit	4.47
Bank employee attitude	3.63
Other factors	2.33

Source: Own edition and calculations (SPSS)

Based on the ranking sequence, the expected size of collateral to secure credit is the strongest preventing factor and the type of the required collateral is fourth in the ranking, so it can be stated that providing appropriate collateral is the most impeding factor for SMEs and therefore Hypothesis H5 is acceptable.

At the same time it was found that charges related to credit and credit scoring strictness are also influential impeding factors.

T5:	Based on the subjective perception of SMEs, the three main dimensions of the most hindering factors to borrowing are: bank lending practices, credit features and credit-related costs. From all the factors, the main obstacle to borrow is providing the required collateral.
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The benefits of concessional loans to SMEs

Subsidised loans can be found in a prominent position on the SME funding preference list. A comparison

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of the benefit dimensions of concessional loans was performed with the response median and with the Friedman test (Figure 3).

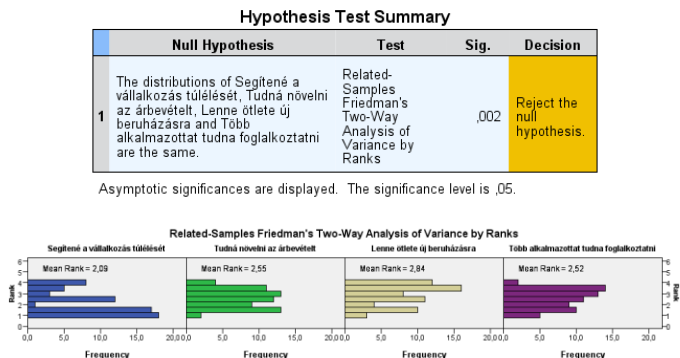


Figure 3: Friedman test results for advantage dimensions provided by concessional SME loans.

Source: Own edition and calculations (SPSS)

The ranking order by Friedman test - not surprisingly - did not yield different results from comparisons of medians (see Table 13).

Table 13: Averages, standard deviations, medians and Friedman rank averages of the benefit dimensions (larger is most typical)

Benefit dimension	Rank average	Average	Std.dev.	Median
Would have an idea for new investments	2.84	6.69	2.988	8
Could increase the income	2.55	6.02	2.910	6
Could employ more staff	2.52	5.67	3.073	6
Would help the the survival of the enterprise	2.09	4.87	3.207	4

Source: Own edition and calculations (SPSS)

In terms of Hypothesis H6, answers that have an average and median of higher than five were accepted, if the Friedman test ranking did not contradict this.

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H6 hypothesis can be partially accepted, as by providing loans with favourable conditions for SMEs firms can launch new investments, can employ more staff and they increase their revenues. However, a subsidised loan is not likely to be the most important factor in facilitating their survival.

T6:	Providing loans with favourable conditions for SMEs can help them to launch new investments, as well as to increase their revenues and the number of employees.
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How much aware are SMEs of the subsidised credit facilities available to them?

Based on the results, Széchenyi Card overdraft credit is the the best-known among the responding SMEs (two-thirds of the respondents know it well), and 37.5% of them either have or have had such a loan. Only 1.5% of them said that they had not even heard of it. However, the 37.5% take-up rate seems a bit low, suggesting that this credit type has some product deficiencies that inhibit SMEs from applying for it. My assumption is that the maximum amount of Széchenyi Card overdraft credit that can be applied for is probably one such cause (Table 14 **Hiba! A hivatkozási forrás nem található.**). A slight majority of the responding SMEs chose an amount exceeding the maximum of 25 million HUF, and the largest proportion of them (30%) preferred 50 million HUF to 25 million HUF.

Each awareness measuring variable was compared using the Friedman test. The rank averages based on Friedman test output and the order of each variable from

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the test, i.e. the awareness ranking of each credit facility, are included in Table 15.

Table 14: Does the enterprise consider the current maximum of the Széchenyi Card overdraft credit appropriate?

Answer	Size of the enterprise			SME total	
	Micro	Small	Medium	firms	%
No, it would be good without maximum	3	2	0	5	8.3%
No, max. 200 MHUF would be better	0	2	1	3	5.0%
No, max. 100 MHUF would be better	1	6	1	8	13.3%
No, max. 50 MHUF would be better	14	3	1	18	30.0%
Total (no)	18	13	3	34	
<i>% no</i>	46.2%	72.2%	100.0%	56.7%	
Yes, appropriate	21	5	0	26	
<i>% yes</i>	53.8%	27.8%	0.0%	43.3%	
Total	39	18	3	60	

Source: Own edition and calculations (SPSS)

Table 15: The ranking of the awareness of the subsidised credit facilities by Friedman test

Credit facilities	Rank average
Széchenyi Card overdraft credit	10.74
Széchenyi Card investment credit	8.63
Széchenyi Card working capital credit	8.59
MNB FGS (Funding for Growth Scheme)	6.98
New Széchenyi investment credit	6.67
New Széchenyi combined credit	6.66
New Széchenyi working capital credit	6.63
Széchenyi Card own funds complementary credit	6.19
MVA investment credit	6.17
Széchenyi Card subsidy anticipating credit	6.11
MFB investment credit	5.97
MVA working capital credit	5.89
MFB working capital credit	5.78

Source: Own edition and calculations (SPSS)

Overall, only the Széchenyi Card O/D credit is considered to be sufficiently known among the surveyed businesses, while other credit schemes are not. This is partially explained by the fact that it is the oldest available

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subsidised credit facility. Another factor is that the micro segment, which makes up the greatest proportion of SMEs, barely plans any investments and – in line with the Pecking Order Theory – they plan to implement investment from grants or from their own funds. Thus, the micro segment is less interested in other investment credit facilities in a proactive way. It would be worth reviewing the conditions of the Széchenyi Card O/D product and adjusting it for the needs of SMEs having higher revenue, especially given the current lack of access to other subsidised O/D credit facility for SMEs.

Classifying SMEs by cluster analysis

Cluster analysis can be used to attempt to classify the surveyed companies into clusters. After a successful clustering the data are similar to each other within the individual clusters, based on some dimension, and at the same time different from the other components of the cluster along this dimension. The Likert-scale type variables of the awareness of subsidised loans and the financial literacy level measuring variable of the person completing this questionnaire were used for clustering. According to my hypothesis, investment planners and those respondents with higher levels of subsidised loan product knowledge – at least in some part – would be of the same cluster. A two-step clustering procedure was used for the development of clusters as the most obvious solution, as this process can handle discrete and continuous variables together and the number of clusters

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is calculated automatically (Ketskeméty et al., 2011) (Table 16).

Table 16: Cluster analysis

Variables		1 st cluster		2 nd cluster		Method	asympt. sig.
Membership		32 members; 39%		50 members; 61%		cross-table	n.a.
Level of financial literacy		5.50	-	6.56	+	ANOVA	0.02*
Plan new project in near future?						cross-table. χ^2 .	0.01*
yes		7	-	25	+		
no		25	0	25	0		
Széchenyi Card O/D		40.17	-	42.35	+	Mann-Whitney	0.62
Széchenyi Card investment		28.67	-	49.71	+	Mann-Whitney	0.00*
Széchenyi Card working capital		30.56	-	48.50	+	Mann-Whitney	0.00*
Széchenyi Card subsidy anticipating		29.00	-	49.50	+	Mann-Whitney	0.00*
Széchenyi Card own funds complementary		28.17	-	50.03	+	Mann-Whitney	0.00*
New Széchenyi investment		25.09	-	52.00	+	Mann-Whitney	0.00*
New Széchenyi working capital		25.31	-	51.86	+	Mann-Whitney	0.00*
New Széchenyi combined		25.00	-	52.06	+	Mann-Whitney	0.00*
MVA working capital		20.61	-	54.87	+	Mann-Whitney	0.00*
MVA investment		22.81	-	53.46	+	Mann-Whitney	0.00*
MFB investment		26.77	-	50.93	+	Mann-Whitney	0.00*
MFB working capital		24.91	-	52.12	+	Mann-Whitney	0.00*
MNB FSG		26.63	-	51.02	+	Mann-Whitney	0.00*
Will need financing?						cross-table. χ^2 .	0.03*
yes		9	-	26	+		
no		23	0	24	0		
Could increase the revenue		5.88	0	5.92	0	ANOVA	0.95
Lead to idea for new projects		6.47	0	6.92	0	ANOVA	0.52
Could employ more employees		5.81	0	5.68	0	ANOVA	0.85
Size category of the enterprise						cross-table. χ^2 . Cramer's V	0.1
micro		25	0	30	0		
small		7	-	15	+		
medium		0	-	5	+		
Naming of the clusters		Uninformed non investing		Well informed, investment planner			

*Difference significant to <0.05

Source: Own edition and calculations (SPSS)

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Of the two clusters created, 32 respondents (39%) belong to the first cluster and they can be characterised as mostly *uninformed non-investing* firms. The self-assessed financial literacy level of this group was significantly lower than that of the other group. Furthermore, the members of this group reported a lower average awareness of each subsidised loan – with the exception of the Széchenyi Card O/D facility – than the other group. Both groups gave similar answers (i.e., there is no significant difference between the two groups' answers) to the questions of whether, in case of available credit with favourable terms, they would have an idea to launch a new investment, would be able to increase their revenues, or employ more staff; however, the members of the number one cluster, who have poor knowledge of subsidised credit products, are planning to launch new investments in a lower proportion than the other group. This context makes it clear that this first group will need significantly less financing.

Fifty respondents (61%) belong the second cluster, they can be characterised as *well informed investment planners*, as they know almost every subsidised credit opportunity much better than the other cluster's members. They plan to start new investments in the near future by them, for which they may wish to use external funding. In terms of size categories, although a larger proportion of small and medium-sized corporates belongs to the *well informed and investment planner* cluster, for the total sample the difference is not significant at a 0.05% level, that is, the clusters were assigned with no relation to the enterprise size. Presumably, however, if the corporates belonging to larger size categories were present with

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higher weight in the sample, then those companies would belong to the group of *well-informed investment planners*.

Based on the characteristics of the clusters, within the group that had better knowledge of subsidised credit products the investment intention to invest was considerably higher than within the group that was not at all or less familiar with such credit schemes. At the same time, the two groups made similar declarations as to whether they could use an advantageous credit facility. Consequently, it is likely that *making SMEs familiar with subsidised concessional loans can help businesses to start new projects, while the lack of an appropriate level of knowledge can act as an impeding factor regarding borrowing and investment*. Based on the conducted empirical studies, Hypothesis H7 – with minor

T7:	The SMEs are not sufficiently familiar with the subsidised loan products (with the exception of Széchenyi Card O/D credit line). The enterprises that know the favourable financing sources and subsidised loans will fall into the same group as the new investment planners.
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modifications – can be considered as proven.

My research results confirm the predictions made in the literature and the observations made by others. The results of the tests of my hypotheses are summarised in Table 17.

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Table 17: The results of the tests of my hypotheses

H1:	There is empirical evidence for a positive correlation between Hungarian real GDP change and the change in the SME loan portfolio. Corporate sector loan changes, however, are less correlated with the changes in domestic real GDP than in the case of SMEs.	T1:	In Hungary there is a strong, positive correlation between the t-1 period lagged real GDP change and the change in the SME loan outstanding amount. The corporate sector loans changes, however, correlated only weakly with the changes in domestic real GDP.
H2:	For the SMEs – even given the banks' decreased lending activity after 2008 – more severe problems than the issue of financing are factors such as market competition, finding new customers, production costs and regulatory background.	T2:	The challenges of the competitive market, the level of production costs and the difficulties produced by the regulatory background to meet cause more difficulties for SMEs than access to financing.
H3:	The capital structure of SMEs is selected and ranked primarily based on transaction cost minimization according to the Pecking Order Theory. Thus, subsidised loans are preferred to market condition loans, but should be less preferred to SMEs' own sources in the source preference rankings. In my expectation, the non-refundable subsidies are the most highly preferred.	T3:	The capital structure of SMEs is selected and ranked primarily based on transaction cost minimization according to the Pecking Order Theory. Thus, subsidised loans are preferred to market condition loans, but less preferred to the own equity financing in the ranking, while grants are the most preferred financing opportunities.
H4:	Currently, for the majority of SMEs the banks' tightening is not the main inhibiting factor to submitting credit applications, but rather the fact that – due to other factors – no credit is needed. SMEs that plan new investments would rather finance the planned investment – on the basis of the Pecking Order Theory – with other, more preferred, alternative financing sources than with bank loans.	T4:	Currently, for the majority of SMEs the tightening of credit rating requirements by banks is not the main inhibiting factor to submit credit application, but because - due to other factors - no credit is needed. The SMEs planning new investments would rather finance the planned investment - on the basis of the Pecking Order Theory -with other, more preferred, alternative financing sources, especially grants, than with bank loans.
H5:	Based on the subjective perception of SMEs, the three main dimensions of the most hindering factors to borrow are bank lending practices, credit features and credit-related costs. From all the factors, the main obstacle to borrowing is providing the required collateral.	T5:	Based on the subjective perception of SMEs, the three main dimensions of the most hindering factors to borrowing are: bank lending practices, credit features and credit-related costs. From all the factors, the main obstacle to borrow is providing the required collateral.
H6:	Loans with favourable conditions can help ensure the survival of SMEs, allowing them to start new projects as well as to increase their revenue and the number of employees.	T6:	Providing loans with favourable conditions for SMEs can help them to launch new investments, as well as be able to increase their revenues and the number of employees.
H7:	SMEs are not sufficiently familiar with the subsidised loan products available to them. It can be shown that the enterprises that are aware of the favourable financing sources and subsidised loans will fall into the same group as the new investment planners.	T7:	The SMEs are not sufficiently familiar with the subsidised loan products available to them (with the exception of Széchenyi Card O/D credit line). The enterprises that are aware of the favourable financing sources and subsidised loans will fall into the same group as the new investment planners.

Source: own edition

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The utility of the research and further research directions

In my opinion, my dissertation contributes to the better understanding of the relationship between economic growth and the SME loan outstanding amount. Furthermore, my findings highlight that not only factors influencing the supply side but also those affecting the demand side and demand should not be neglected. I also consider the source ranking based on my entrepreneurial attitude measurement as a novel result, in particular with regard to exploring the role of current non-refundable subsidies and subsidised loans. This is likely the direct consequence of the credit crunch in the period after the financial crisis of 2008.

This study explored the dimensions of hindering factors of borrowing. These are the factors that should be given attention to in a holistic way, if we are to realise meaningful credit expansion. We have seen from the borrowing hindering factors that the required collateral from SMEs and credit rating related factors are more important for SMEs than pricing. This reinforces my opinion that it is not possible to meet the ‘favourable conditions’ loan concept by adjusting just one factor (for example, low interest), but all relevant factors require attention. As the saying goes, ‘A chain is only as strong as its weakest link.’ Hence, replacing a single credit term with a more favourable one will be in vain, if the other relevant factors are not modified at the same time.

My primary research provides guidance as to favourable SME credit product development and the provision of such loans on a sufficient scale to create macroeconomic benefits for Hungary.

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The results of my quantitative research can contribute to the development of loan products favourable to SMEs and to the altering of existing loan parameters, which may lead to faster growing investments of companies than in the past, which in turn may contribute to an increase in the overall performance and employment levels in the SME sector.

The results also highlight the fact that the introduction of new loan products in the SME segment is an extensive marketing job, because a program cannot be successful if it does not become quite well known for a wide range of SMEs.

Furthermore, the research results can serve as the basis for further investigations. Other obvious research directions include examining the relationship between GDP and SME loans in other countries and/or with the help of longer time series becoming available in the future. The primary research could be extended to a nationwide sample, and/or could be based on a representative sample. In addition, it could be tested whether the sliding back of commercial loans in the preference ranking has really been due to the reasons I assumed.

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