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FACULTY OF ECONOMICS

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THE THEORETICAL AND PRACTICAL PROBLEMS OF THE DEBTOR AND CLAIM QUALIFICATION OF LOCAL GOVERNMENTS

THESES OF PH.D DISSERTATION

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1. RESEARCH BACKGROUND, MOTIVATIONS, REASONS FOR SELECTING THE TOPIC

Undoubtedly, our work, subsistence and living conditions are more and more determined by central governmental measures, Hungary's economic situation and international image. However, besides the central governmental level, subnational-level economic management and the relevant problems have come in the centre of interest in recent years. The successful, economical and effective functioning of local governments is a key question for all Hungarian citizens because local governments mean the narrower living space for the population of Hungary. The quality of our everyday living conditions, the local services offered and the public goods can be influenced by the financial status of the local governmental system.

The operation of the public financial system, the management with public funds and the transparency thereof is a national economic interest. This statement is supported by the fact that the public financial system, besides the public sector, is closely related to both the monetary system and the financial markets. The studies examining Hungary's competitiveness more and more highlight that the economic closing up and sustainable growth can be impeded by the insufficient management of the subnational level. In other words, the local governmental system has become one of the "weakest chain loop" of consolidating the Hungarian economy.[1]

I started my Ph.D studies at the University of Miskolc in September 2005, but my research works preceded my Ph.D studies. Majoring in finance and accountancy at my Alma Mater, the University of Miskolc, I first had the opportunity to thoroughly get acquainted with CAMELS analysis method and the operation of commercial banks when acquiring the course requirements and then writing national and local scientific student studies. At work upon graduation, following a short detour in auditing, I had the opportunity to deal with the issues and problems of bank crediting and credit risk management in practice.

Nevertheless, doing research into the public sector has become a new challenge for me when starting the doctoral school. My work has been facilitated by the condition that this topic fits into the educational profile of the department at the Financial Institute at the University of Miskolc. I could join the department's work first as a visiting lecturer in academic year 2007/2008 and then as an assistant lecturer in academic year 2008/2009. When teaching the subjects State Finance Studies, The Management of Budgetary Institutes and Bank Affairs, I could also get involved in the editing and development of two areas relevant for my research topic. During my present work as an instructor, at the Financial and Accountancy College Faculty of Budapest Economical College teaching the subjects Bank Studies and Bank Affairs in Public Services opened up direct opportunities for me to continue my researches. All this is supplemented by the expected launch of Public Sector Master's Program accredited by BGF (Economic College of Budapest).

When selecting my topic in 2005, although the indebtedness of the local governmental sector has showed an increasing tendency, no outstanding growth could be observed. However, during the years studied in the dissertation, the indebtedness of the local governmental sector showed such a dynamic growth that itself supports the timeliness of my topic selection. Close to finishing my dissertation, I experience that the above dynamics is going to end, but the quantity of the financial instruments accumulated in the financial system in recent years gives grounds for researchers to keep an eye on the local governmental system.

Besides the dynamic growth of indebtedness, the fiscal risks affecting the national economy can more and more be observed in the local governmental sector. The growing deficit, the

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[1] The usage of the above expression is related to András Vigvári: (Vigvári [2006]).

hidden and open indebtedness are connected with various other problems. The dysfunctional solutions and disorders in the information system of state accountancy today, the information asymmetries between the crediting banks and local governments in need of external source involvement obstruct the crediting banks in the full-scope revelation of risks today, too.

During my research I have observed that more and more studies discuss the problems of the local governmental system from a financial point of view. The indebtedness of the local governmental sector has become a particularly fashionable topic in recent years. The various empirical researches have tried to approximate this problem from several directions. However, the economics of information puts this matter in new light, making the various research results connectable in the various fields of accountancy, finance and analysis-control. All this draw our attention to the interdisciplinarity of the research, too. Also, it supports the timeliness of the topic research and analysis, as well as the in-depth analysis of the operation, behavioural features and interactions of local governments and commercial banks.

Closing the dissertation does not at the same time mean closing the research. It is supported by the fact that local governments are surrounded by a regulatory environment that requires researches to acquire up-to-date and continuous knowledge. The changes to be expected in the local governmental system also underlie the above statements. All this fits into the Life Long Learning educational system in the discipline dealing with the public sector.

2. RESEARCH OBJECTIVE

This research primarily aims to select and practically apply a risk-analysing model that may be able to examine and evaluate the characteristics of the local governmental sector with due sensitivity and also as impartially as possible. I have been thinking in a model whose utility has already been proven in other financial fields and, upon acquisition of sufficient knowledge, it can be adapted to local governments, too.

The starting point of my dissertation is defining the role of local governments at the financial markets, too. This is followed by the analysis of the money and capital market relations system of local governments, primarily with commercial banks as monetary financial mediating institutions. Of this relations system, this dissertation studies the questions of indebtedness in detail. It focuses on the issues contributing to the evolvement of asymmetries between the two above agents. After this, I search for a practical answer to moderate the information asymmetries revealed.

During my earlier researches, I dealt with CAMELS method to evaluate the functioning of commercial banks and the testing of its practical applicability. And when studying the operation of local governments, I have thought of transforming CAMELS method to local governments. *(Vigvári [2002a])* I have relied on these two models for my research. Considering the changes of the risks in the local governmental system since the publication of the model, I have polished, clarified and tested the operation thereof.

In relation to the original aims of the above model and method, the "Local Governmental Risk Mapping" is primarily based upon the development and analysis of indices. This is in accordance with the demand requiring transparency with respect to the local governmental management. *(Nyikos [2009])* This aspect may be important for the potential users of this model. The term of the risk and its interpretation in the public sector also supports this index number type of analysis. *(Győrffi – Vigvári – Zsugyel [2009])*

I have developed the frames of the "Local Governmental Risk Mapping" in several stages, which is reflected by the structure of the dissertation, too. During my research work, I have carried out several studies searching for the answer to the following questions:

1. Starting from the fact that the information asymmetries revealed by theoretical and empirical studies and located at the enterprising and population crediting markets can also be found at the local governmental crediting market, too, the question arises whether the quality of data supplied by the state accountancy information and control system is appropriate for crediting banks to analyse the property and financial situation of local governments?

> **H₁: The state accountancy information and control system provide data of similar hardness to the reporting system of the corporate sector for commercial banks to underlie the prudent credit risk decisions. The reporting system is able to provide a realistic and authentic picture of the local governmental business administration.**

2. In legislation, the calculation of the capital requirement of banks has considerably changed, as a result of the development and Hungarian adaptation of the international prudential regulation in banking, transformation to Bázel II. Banks operating in the local governmental business sector have positive expectations to the above change. The question arises whether the bargaining position and bank decisions of commercial banks active in financing of local governments have actually been improved by the introduction of the new capital regulation in Hungary? Has the change in capital requirement enhanced the possibility of applying credit dosing at the local governmental crediting market? Can credit dosing be observed at the present crediting market of local governments?

> **H_2: The local governmental crediting market is made suitable for credit dosing by its demand and supply features.**

3. How did the money and capital market relations system of local governments and commercial banks change during the period under review? What characterises the demand and supply sides of the market? What factors base the credit decisions of local governments? Can de indebtedness of local governments be clarified based upon the state budgetary accountancy and budgetary information and control system?

> **H_3: The information asymmetry ex post and ex ante plays a significant risk role in the decision of the local governmental crediting market on both the demand and supply sides.**

4. Are the taxation qualification systems applied in enterprising and population crediting suitable for the risk-based analysis of the crediting of local governments significantly differing from the behaviour of the previous clientele and to found prudent credit decisions, taking into consideration the financial risks of the local governmental system? If the answer to this question is no, can we find a method that can be suitable to handle information asymmetries after establishment of the appropriate methodological frames in the short run and testing of the model in the middle run?

> **H_4: The rating method is a suitable means in local governmental crediting to reveal the risks, handle the information asymmetries and found the credit risk decisions.**

The dissertation aims to, by performing the above hypothesis studies, present the money and capital market relations system of local governments and commercial banks, and the motives of their behaviour. It reveals the information asymmetries within this specific system, and offers an alternative to handle them through the model established. In the present phase of elaboration, the model makes a suggestion and is not a closed system. Finalisation needs more practical testing and professional consultation on the relevant areas in the longer term!

3. DISSERTATION STRUCTURE AND RESEARCH METHODOLOGY

The structure of the dissertation and the conceptional model of the research are illustrated in *Chart 1*, also demonstrating the content of each chapter in the dissertation.

Chart 1: Conceptional model of the research

Research agents

| Characteristics, degree of regulation of local governmental business administration, the questions of external source involvement (processing of legislation, technical literature) | Characteristics, degree of regulation of commercial banks in terms of functioning and business administration, the financial mediation (processing of legislation, technical literature) |

Main questions of the research

Information asymmetries between credit institutes and local governments
(processing of technical literature)

| **Demand side motivations of the local governmental crediting market** (processing of technical literature, based upon data of PM, ÁSZ, PSZÁF, MNB) | **Supply side motivations of the local governmental crediting market** (processing the results of ÁSZ reports, ÁSZ KUT studies, MNB publications, and questionnaire surveys, based upon MÁK, Bank & Tőzsde TÁRKI analyses and surveys) |

Site of research and identification of problem

Identification of local governmental crediting risks in the correlations of the financial architecture of the Hungarian local governmental system
(processing of technical literature)

Solution of problem

Modelling

Case study
(testing of the model)

Testing the research finding
Specifying the further research directions

Source: The author's own work

The dissertation ***consists of six chapters***, which are divided into sub-chapters, according to the hypothesis studies performed. The dissertation starts with **Chapter 1,** the Introduction.

In **Chapter 2** I have summarised the relevant technical literature. This chapter aims to present the functional, regulating features of the two agents, i.e. local governments and commercial banks, which can be separated from each other but are connected with respect to the dissertation. Accordingly, the bibliographical summary starts with **a brief introduction of financial markets** (*II.1.*)**,** positioning the agents of the study, as well as their money and capital market connections.

The ***second part*** **of the chapter** (*II.2.*) highlights the key characteristics of the money and capital market relations in a comparative analysis. This subchapter presents the operation of local governments and commercial banks by way of 10 + 1 characteristics features. For this analysis, I have used the relevant literature and research findings. In the field of local governments, I have processed the works by *Barati; Dafflon; Halmosi; Herbst – Szegvári; Homolya – Szigel; Jókay – Osváth – Sóvágó – Szmetana; Kopányi; Kornai; Kovács, Á.; Lados; Lóránt; Musgrave; Potebra; Sivák, Ter – Minassian – Craig; Vigvári; Zupkó*. As for the operation of commercial banks, I have discussed the works by *Diamond; Gertler; Király; Kohn, M and MNB studies* in this subchapter.

The ***third part*** **of the chapter** can be divided into two units. The first unit (*II.3.1.*) deals with the key issue of the external source involvement of local governments. It primarily studies the possibilities of local governmental credit market modelling, defines the term 'local governmental bond', and summarises the professional arguments for and against the credit borrowing and bond issuance of local governments. During the summary, I have relied upon the research findings of *Barati, Bernáth – Jókay – Szmetana; Bodie – Kane – Marcus; Dafflon; Homolya – Szigel; Kopányi; Kovács, G; Noel; Peterson; Swianiewicz; Vigvári.*

The second unit of the third part of Chapter 2 (*II.3.2.*) studies the indebtedness of the local governmental sector and the measurement of credit borrowing, including the term "financial capacity". I was led to this topic by the works by *Peterson, Gurley - Shaw, László – Zsámboki, Vigvári.*

The **fourth part of the Chapter** (*II.4.)* presents the theoretical correlations of financial mediation, through information asymmetry, delegated monitoring, credit dosing and interpreting the bank as a corporation. At the end of the Chapter, I endeavour to outline the evolutional development of the bank models. In relation to the above, I have summarised the key findings of the technical literature on this topic, paying special attention to the research results of *Akerlof; Diamond; Erdős – Mérő; Fama; Gertler; Jaffe – Russell; Király; Leland – Pyle; Santomero; Stiglitz - Weiss*. I have also endeavoured to summarise the evolutional development of bank models.

The bibliographical survey is closed by **an outline of the information system of the public sector** *(II.5.).* The analysis of this field becomes particularly important owing to the external source involvement of local governments, which is the subject of this dissertation, the local governmental crediting. The purpose is that during the modelling we can take into account the risks in the operation and crediting of local governments as thoroughly as possible. When processing the technical literature, I rely upon the research results of *Baricz; Báger; Hegedűs; Jókay; Kassó; Kovács, Á; Nyikos; Polackova; Tönkő; Vigvári.*

Chapter 3 of this dissertation is divided into three parts: The first is the analysis of the Hungarian local governmental crediting market in demand (III.1.) and the second is supply (III.2.) terms. When analysing the **demand side,** I have applied the *ÁSZ FEMI[2] (ÁSZ KUT, ÁSZ is the State Audit Office)* studies, *the ÁSZ* investigation reports*,* the research findings of *TÁRKI* Public Opinion Poll Institute, and the databases available on the websites of *MÁK* (the Hungarian State Treasury)*, MNB* (the Hungarian National Bank) *and PM* (the Ministry of Finance), as well as the findings and conclusions of experts researching into the topic, especially the research findings of *Barati, Báger, Győrffi, Jókay, Kassó, Varga I., Vigvári* and the current Hungarian legal provisions. When studying the **supply side,** I have used the survey published by MNB in September 2008 and other databases available on the website of *MNB*, the survey published by *Bank & Tőzsde* in December 2007, the analyses and data of *PSZÁF* (State Inspectorate of Finance and Accountancy) and the *Hungarian State Treasury*, as well as the current

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[2] From 1 January 2009 ÁSZ KUT

legal provisions. In the third part of the chapter (III.3.) I try to define the model of using to the regulation of indebtedness for the Hungarian local governments based on the results of the above described market analysis.

I compiled a questionnaire to the market analysis, too. We endeavoured to send the questionnaire mainly during the crediting survey carried out by MNB in the summer of 2008. However, MNB refused to send out the questionnaire. At the same time, they offered me an opportunity to consult the competent researchers of MNB on the practical experiences of the crediting survey carried out in the spring of 2008 and the study summarising the analysis of the local governmental market *(Homolya – Szigel [2008])*. After this, we tried to distribute the questionnaire with the assistance of Bank & Tőzsde. Prior to sending out the questionnaires, we held consultations and received a positive feedback from the commercial banks regarding the expectable completion of the questionnaire. Finally, the questionnaires were sent out in September 2008, but owing to the later credit crisis the questionnaires did not fulfil our hopes.[3]Overall, it can be established that the information is hardly accessible owing to the high concentration of the local governmental crediting market.

Chapter 4 of the dissertation overviews the characteristics of the risk analysing methods applied in the enterprising and population crediting practice of banks and their applicability in local governmental crediting. For this purpose, I have applied my expertise acquainted during my special work as well as the results of studies published by MNB. Most part of Chapter 4 cover modelling, during which I have relied upon Vigvári's publication and model. *(Vigvári [2002a]).* Furthermore, I have used the research findings of *Lengyel, Kapalan – Norton, Kotler.*

I have deviated from the model published by Vigvári in 2002 in one factor, and tried to exactly define the factor evaluation aspects for each factor. To define the risk points and determine the factors of "Local Governmental Risk Mapping," I have used the findings of the researches carried out by the BM IDEA Group, which excellently summarise the whole scope of problems and risks affecting the local governmental system. Also, I have applied the theoretical basics of the CAMELS-based evaluation system elaborated by FDIC.

Chapter 5 of the dissertation summarises the research findings, the theses and then specifies the application fields thereof and the possibilities for further development.

The **Appendix** to the dissertation includes a case study on the analysis of the Local Government of Eger Town of County Rank, based upon the model presented in Chapter 4. I have aimed to study and involve all factor evaluation aspects relevant for the given local government, and elaborate new indices that adapt to the operational features of the local government. For the analysis, I have applied budgetary reports 2005-2006-2007, budgetary plan 2008 of the Local Government of Eger Town of County Rank and the summarised data supplied to me by the local government. I have also conducted an in-depth interview to discuss my previous experience and obtain new information that has determined the further directions of the research and the order of the analysis. The indices have theoretically been elaborated based upon the work by *Vigvári [2002b].*

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[3] Two banks Takarékbank and CIB Bank returned the questionnaires.

4. NEW AND NOVEL FINDINGS OF THE RESEARCH

In my dissertation, I have presented the relations of two economic agent types whose operation and business administration help us maintain financial stability. The operational features of local governments and commercial banks show that there are several differences between the two agents in various respects. (*Table 1*)

Table 1: Main characteristics of local governments and commercial banks

Characteristics	Local governments	Banks
0. Delegation of sector	Fulfilment of public duties, satisfaction of public need	Financial mediation, connecting of savers and investors
1. Operational objective function of sectoral agents	„3E": Efficacity, efficiency, effectiveness	Magic triangle: Liquidity, solvency, ability to pay
2. System of operating rules and conditions for the sectoral agents	*Financial architecture*	*Financial architecture*
3. Macroeconomic embeddedness of the sector and its agents	State budget, public sector	At the financial markets and through the payment system
4. Scope of the operational problems of the sector	Fiscal system , monetary system (bureaucratic co-ordination)	Monetary system (bureaucratic and market co-ordination)
5. Budgetary limit of sector agents	*Soft* *(But may not be wound up without legal successor)*	*Soft* *(But bankruptcy, fusion, withdrawing from the market is possible)*
6. Legislation determining the operation of sectoral agents	*Special* *(Dependent on the central and public law regulating system. Based upon local, national rules)*	*Special* *(Based upon international standards that are implemented at national level)*
7. Possibility of entering the actor's market	*Restricted* (Public law act*) With relatively liberal rules in Hungary.*	*Restricted* *Monetary, individual rules*
8. Scope of economic agents in relation with the sector	*Public sector, corporate sector, population sector, banks*	*Public sector, corporate sector, population sector, banks*
9. Money and capital market relations of the sectoral agents	Credit-taking, source-placement	Credit-providing, source-collecting
10. Function of credit in the operation of the sector and its agents	Investment financing, provision of liquidity, balancing of budget	Gaining profit

Source: The author's own work

Studying the operation of the two agents, differences can be observed as compared to the characteristics of enterprises pursuing traditional producing / servicing activities. It can be stated that both the local governments and commercial banks get in connection with the other agents of the economy. This relationship, owing to the differing business administration and the differing accountancy rules, results in the arising of risks with respect to local governments. Besides the fundamental risks arising from the business administration of local governments, the above-mentioned risks shall be measured and evaluated by commercial banks when passing their the credit risk decisions.

Risk measuring requires information, which is supplied by the information system to the banks. This information is applied as controlling proof during the external controlling activity of

commercial banks. However, this activity, named by Diamond as delegated monitoring *(Diamond [1984])* implies the danger of the evolvement of information asymmetries.

Studying the presence of information and information asymmetries leads us to the information system of the public sector and the analysis thereof. During my researches I have concluded that the information system of the public sector results in severe ex ante information asymmetries. These information asymmetries appear among others
- in the specific reporting problems of state accountancy, (including the conditional commitments and the settlement problems of extra-budget items);
- in lack of the consolidation possibilities of the relationship between the enterprising and the public sector;
- in the specific interpretation problems of the balance sheet providing the information base,
- and in problems of measuring the internal debts.

The above picture is further deteriorated by the restricted applicability of the principles of demarcation-oriented accountancy *(Győrffi – Vigvári – Zsugyel [2009])* and the relevant risks.

All this obstructs clear sight for both the commercial banks during credit decisions and all stakeholders when controlling, monitoring the operation of the public sector. At the same time, it raises the question whether reports can be equipped with a clear clause during an audit. The detailed study of the information system of the public sector and the correlations revealed this way lead us to specify Thesis 1 and I rejected my first question:

<div style="border:3px solid black; background-color:#ffff99; padding:10px;">

<u>Thesis 1</u>

Owing to the characteristics of the information system of the state accountancy, the actual property and financial status of local governments can be revealed neither individually nor at sectoral level. Consequently, auditor's reports and ÁSZ reports can only give a clear opinion concerning the conformance of business administration. Based upon all these data, and as the report serves as a controlling proof, the reports on local governmental business administration imply an ex ante information asymmetry. This fact entails contraselection in the credit decisions of local governments.

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Having determined the above correlations – to analysing of the second and third question - I have focused on the money and capital market relations between the two agent types. When analysing the demand and supply sides of the local governmental crediting market, I have continued to study the factors influencing the credit taking of the local governmental sector, the financial risks of the local governmental sector, and the motives of commercial banks in passing decisions in the local governmental crediting. When studying local governmental crediting, I have meant the liabilities due based upon the credit and bond.

Both sides of the market are concentrated, which is supported by the change in the number of banks active in local governmental crediting, and the restricted number of local governments, including the local governments deemed as good debtors. At this market, functioning with restricted agents on both sides, both parties become interested in pursuing active crediting, source-obtaining activity. Nevertheless, the two agent types are not equal parties.

Commercial banks expect sources from this sector to ensure liquidity. The probability of return of lay-outs into the sector with interests is high, and thus both parties may become interested in the elaboration of informal game rules that result in a moral hazard. In this relationship, however, commercial banks are at a serious information disadvantage owing to the presence of ex ante information asymmetries arising from the information system.

The data published in the crediting survey of MNB have revealed that commercial banks apply these restrictions in this sector primarily in the case of non-interest type factors. At the same time, we can rely upon a fairly narrow database to determine the correlations and draw the conclusions.

As for the interest and price type factors, commercial banks expected the expansion of the elbow room from the introduction of the new international prudential regulation, Bázel II in Hungary. They expected that the capital requirement to be created for the risks against local governments would decrease. Still, this expectation was not justified by the capital requirement calculated according the standard method owing to the volatility of the qualification of the sovereign debtor. *(Chart 1)*

Chart 1: Changes in the classification of sovereign debtor in case of each credit qualifier[4]
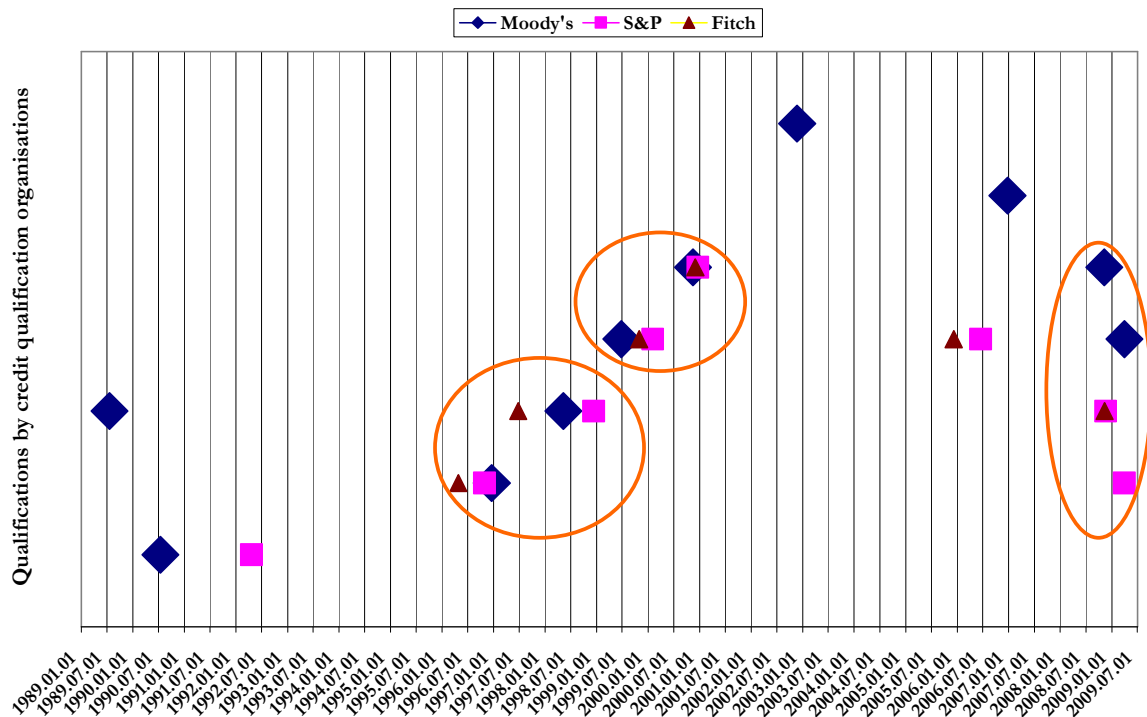
Source: Based upon MNB data, edited by me

The act on local governments specifies the upper limit of credit-taking, while the act on the debt settlement procedure of local governments regulates the role of the state with respect to the responsibility assumed for local governmental business administration. However, empirical researches *(Bank & Tőzsde [2007], Homolya – Szigel [2008], Jókay [2007], Jókay – Osváth – Sóvágó - Szmetana [2004])* support that banks still pass decisions based upon the fact that local governments may not be wound up without legal successors, contrary to the enterprising activity. Following from the soft budget limit *(Kornai et al. [2004a] and [2004b]),* banks expect to save the local governments having troubles.

Based on the above described relationships I rejected my second question and specified Thesis 2:

> **Thesis 2**
> *The local governmental crediting market is highly concentrated on both the demand and the supply sides. Overall, the strong demand side pressure and the supply side competition incite the crediting banks to apply restrictions with respect to factors not related to the price. Both the above factors and the capital requirement growing compulsion caused by the new capital regulation underlies the assumption that banks can not apply the credit dosing at the market.*

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[4] Axis "y" of the coordinate system is interpreted in the Appendix to the dissertation, in accordance with the changes in the qualification categories of each credit qualifier.

During their operation, banks must face various risk types, including crediting risk. To measure the crediting risk, it is essential that the crediting financial institute be clearly aware of the indebtedness of the given local government and be able to express the rate thereof with an appropriate index. In the local governmental sector, the extent of indebtedness may not be determined for several reasons. One of these factors is the structure of the balance sheet and the related interpretation problems.[5] Besides the data of the balance sheet, clear-sight is hindered by the conditional commitments and extra-budget items that may not be stated or may be stated with difficulty from the present information and control system.

A serious problem of the sector is that while the value of the real estate property stated in the balance sheet is showing a continuously increasing tendency *(Chart 2)*, the sources required for supplement of physical assets worn away are not ensured. The real estate property increased to the highest rate between 2001 and 2003, when the real estate property of the local governmental system increased by 2.5-fold. On the one hand, this growth affected the assets registered earlier without value, which caused a considerable property increase even in itself, but primarily with respect to the unmarketable stock. On the other hand, the local governments took advantage of the possibility of market evaluation and reassessed a part of their assets.

Chart 2: Changes in local governmental property in cash-flow attitude and based upon the financial accounts of local governments (S.1313)

| | of this: real estates | Net property of local government (Assets – Liabilities) | Corrected net financial assets |
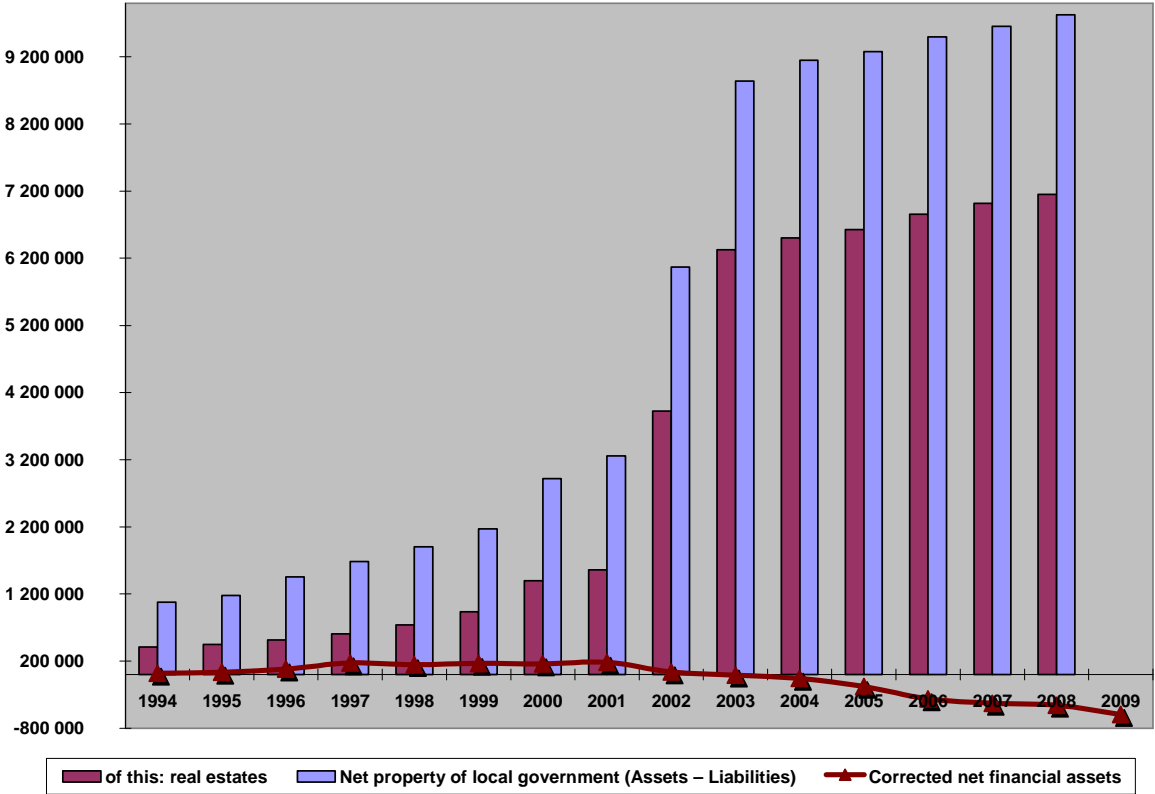
Source: Based upon MNB data, edited by me

Behind the above increase in the value of real estate property according to the cash-flow attitude, no supplement of revaluation of the real estate property is ensured. The reason for this is that the compulsory tasks of local governments include tasks delegated to the competence of local governments by way of state decentralisation. For the performance of these tasks, the government offers subsidy on a normative base, proportionately; however, these budgetary supports are to be supplemented with own revenues and received money instruments by the local governments. The sources arising this way are less and less able to finance the compulsory tasks

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[5] The dissertation deals with these problems in detail.

in real value, *(Vigvári [2009])* and are unable to grant the replacement costs of physical assets worn away (i.e. depreciation). *(Győrffi – Vigvári – Zsugyel [2009], Lóránt [2010], Varga I. [2007])*

Budgetary organs are subject to a quarterly depreciation accounting liability in accordance with the applicable legal provisions, which however only solves the question of specifying depreciation. The largest problem, i.e. the source of replacing depreciation stated in accountancy is not generated. The lacking source should be supplied by local governments from their own sources and tenders, which in general is unable to "cover the actual depreciation according to the extent of wear and tear, and do not affect all assets within this scope." *(Győrffi – Vigvári – Zsugyel [2009] (256. old))*

The continuous increase in the value of real estate property and the lack of sources required for substitution of the assets worn away imply a significant risk for the crediting financial institutes, to. On the one hand, the deterioration of the condition of real properties offered as security continuously reduces the covering value. On the other hand, the above tendency, owing to the lack of depreciation source, results in an "internal indebtedness" and increases it year by year. To my estimation, the rate of indebtedness may exceed 1 billion forints.[6] The above findings are distorted by the fact that owing to the reassessment of the real estate property depreciation can be calculated for real estates with no actual fair market value.

Because of the above described results I accepted my third question and I specified my third – and after additional analysis – my fourth thesis:

> ### Thesis 3
> *Owing to the presence of information asymmetries, the extent of financial liabilities of the local governments and the whole sector cannot be demonstrated from the information and control system of the public sector. This liability stock is increased by the "internal indebtedness" of the sector, whose real value however cannot be specified in lack of the actual fair market value of real properties. The above factors resulted in the evolvement of a "real estate capital over-valuation bubble" in the local governmental sector, which increases the crediting risk.*

Chart 2 highlights the considerable difference between the cash-flow approach and the demarcation approach accountancy. This chart shows the property increase determined in the consolidated balance sheet of the local governments (total assets – total liabilities) and the net financial property determined on the financial invoices of local governments (S.1313). The decrease of the net property can be explained by the fact that, contrary to SNA methodology, the values of other stocks and shares were deduced from the balance of financial assets. The reason for this is that these are mainly embodied in economic partnerships owned by local governments and fulfilling compulsorily tasks, may not be liquidated and are not marketable. The data specified on the basis of the above methodology show a more realistic picture of the property situation and solvency of the sector, which is far from being reassuring.

The most frequently applied means to decrease the crediting risk is the tangible security, primarily the involvement of real estate security. During the local governmental crediting, as it has already be proven above, it is a severe risk that owing to the information asymmetries within the information system, the property and financial risks can be revealed only with difficulty or imperfectly. In this case, a reasonable need arises that these exposures are granted on the security side, decreasing the crediting risk of banks in this way.

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[6] The calculation performed for the estimation is included in the dissertation in detail. (Appendix no. 21) During the calculation I have used the data in the balance sheet of MÁK. I have calculated with the real estate property, with a 2% depreciation key uniformly for each year.

My empirical analyses have led me to the conclusion that considerable changes have taken place since 2000 with respect to the coverage of local governmental credits with tangible security, and concurrently, a dynamic growth has occurred regarding exposure, too. The exposure of the banking sector to local governments increased from 2000 to 2008 by 671.2 billion forints, while the proportion of exposure not covered with tangible security increased from 25% to 83% within the total exposures. *(Chart 3)*

Chart 3: Changes in the cover of Hungarian local governmental debts
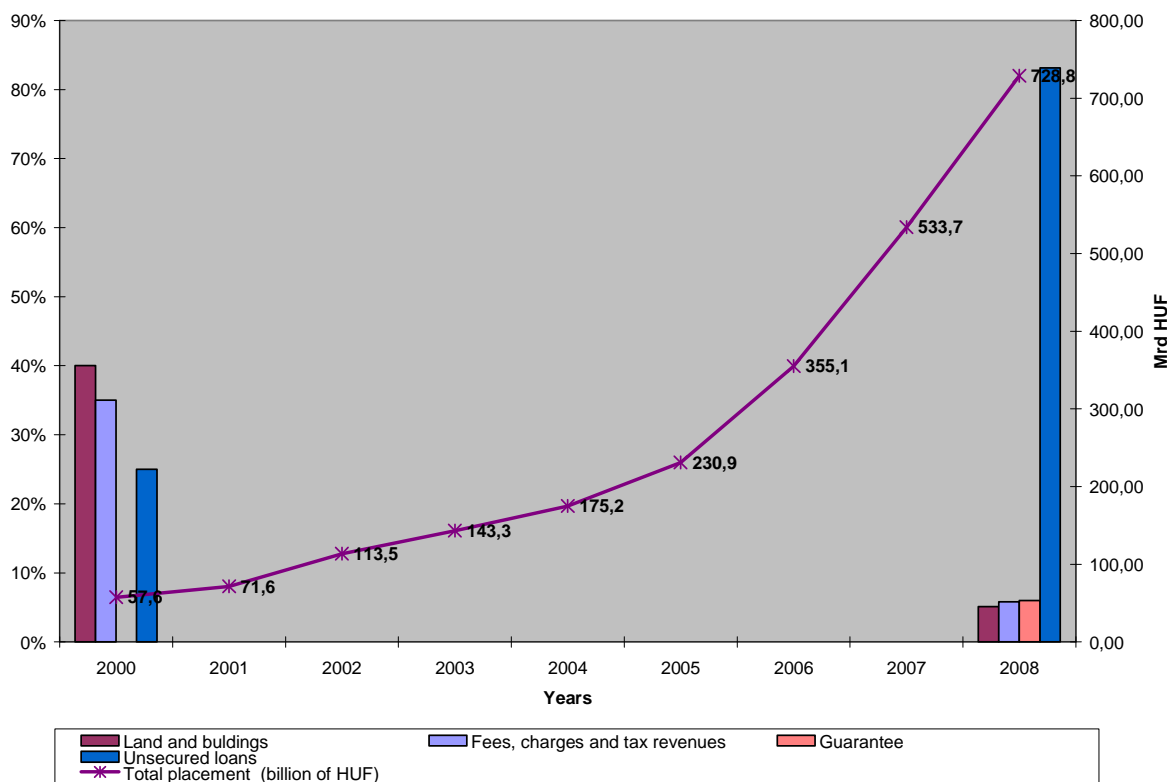
Source: Based upon Barati [2000], Homolya - Szigel [2008] and MNB data, edited by me

The international literature specifies four models to the rule of the local governmental indebtedness[7]. The „regulated by the market model" and the „rule based model" are able to be in force in the Hungarian local governmental crediting market considering the Hungarian legal environment. The Hungarian empirical researches obtained the result that the Hungarian market follows the „regulated by the market model" from the models of *Ter – Minassian – Craig. (Homolya – Szigel [2008], Vigvári [2009])*

The research of the demand and supply side of the Hungarian local governmental crediting market made me possible to analyse this problem exhaustively. Based on my researches I established that the Hungarian local governmental crediting market don't observe the „rule based" model because of the gap of obtaining the Ötv. and the Adr. by force.

The essence of the model regulated by the market is that for the agents of the subnational level the involvement of the external loan sources are determined by the money and capital market processes and mechanisms. And the fewer guarantees the central government assumes to repay the local governmental credits, the stronger this control becomes. In other words, the more obvious the lack of implicit governmental guarantees is for the market agents. *(Barati [2002])* Starting from the characteristics of the term "perfect and efficient market" *(Brealey – Mayers [1998], Fama [1970], Komáromi [2002])*, and considering the presence of information asymmetries,

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[7] The four models are: the „regulated by the market model", the "limited by the central government model", the „rule based model" and the "cooperative model". *(Ter – Minassian – Craig [1997])*

the regulation of the indebtedness of the local governmental crediting market in Hungary does not fit into the model "regulated by the market" either.

Based upon my empirical researches and supplementing the models found in technical literature [8] *(Ter – Minassian – Craig [1997])*, I have established that at the Hungarian local governmental crediting market the regulation of indebtedness can be deemed a model **"based on incurring risk".**

The characteristics of the **model "based on incurring risk"** can be summarised as follows:

1. Both market sides are highly concentrated;
2. As for the demand side agents, the number of local governments regarded as great credit takers is low;
3. The well-informedness of the supply side agents is distorted by ex ante information asymmetries, and their decisions are influenced;
4. The characteristics of the money and capital market instruments are affected by the moral risk;
5. Indebtedness is regulated by the law, but the rules are not enforceable;
6. The market agents' behaviour is unreasonable;
7. The market agents' budget limits are soft;
8. The liquidity of the instruments issued by the demand side agents to the financial markets is restricted. The bonds issued have no secondary market;
9. The decision of lending business consists of the commercial bank's intent for incurring any risk.

My empirical researches related to this topic and the third questions of the dissertation have led me to the following thesis:

Thesis 4

The coverage of the local governmental exposure of banks with physical assets has drastically decreased. At present, the coverage of liabilities due from bond issuance and credit debts is mainly cash-flow based. Considering the dynamic growth of exposures and the risk-increasing role of information asymmetries, the above tendency is the common moral hazard of the two market agents. Therefore, it can be established that at the Hungarian local governmental crediting market the regulation of indebtedness can be considered a "based on incurring risk" model.


In accordance with the aim of this dissertation, I have studied the risk analysing methods applied to enterprises and analysed their applicability at the local governmental crediting market. Empirical analyses *(Bank & Tőzsde [2007], Homoly – Szigel [2008])* support that each commercial bank applies some rating method during the analysis of credit risks, but the applicability of this method is strongly disputable right owing to the information asymmetries. However, we should highlight at this point the advantage of the bank keeping financial institutes, the weight and role of account relation in the crediting decisions.

The research into the bank sector and the local governmental sector has led me to CAMELS method, *(Jose, A. Lopez [1999])* which may be a suitable means during the credit risk analysis procedures of commercial banks against local governments, too. The idea of adapting the method to the local governmental sector comes from Vigvári, András *(Vigvári [2002a]).*

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[8] The technical literature distinguishes four models: the market-regulated model, the centrally restricted model, the rule-based model and the co-operative model. *(Ter – Minassian – Craig [1997])*

Since the above model was set up, the risk map of local governments has changed. For updating, I have applied the wide-ranging research findings of recent years. [9] *(Chart 4)* The arrows indicate the expected moving directions of arrows.

Chart 4: Risk map of local governments
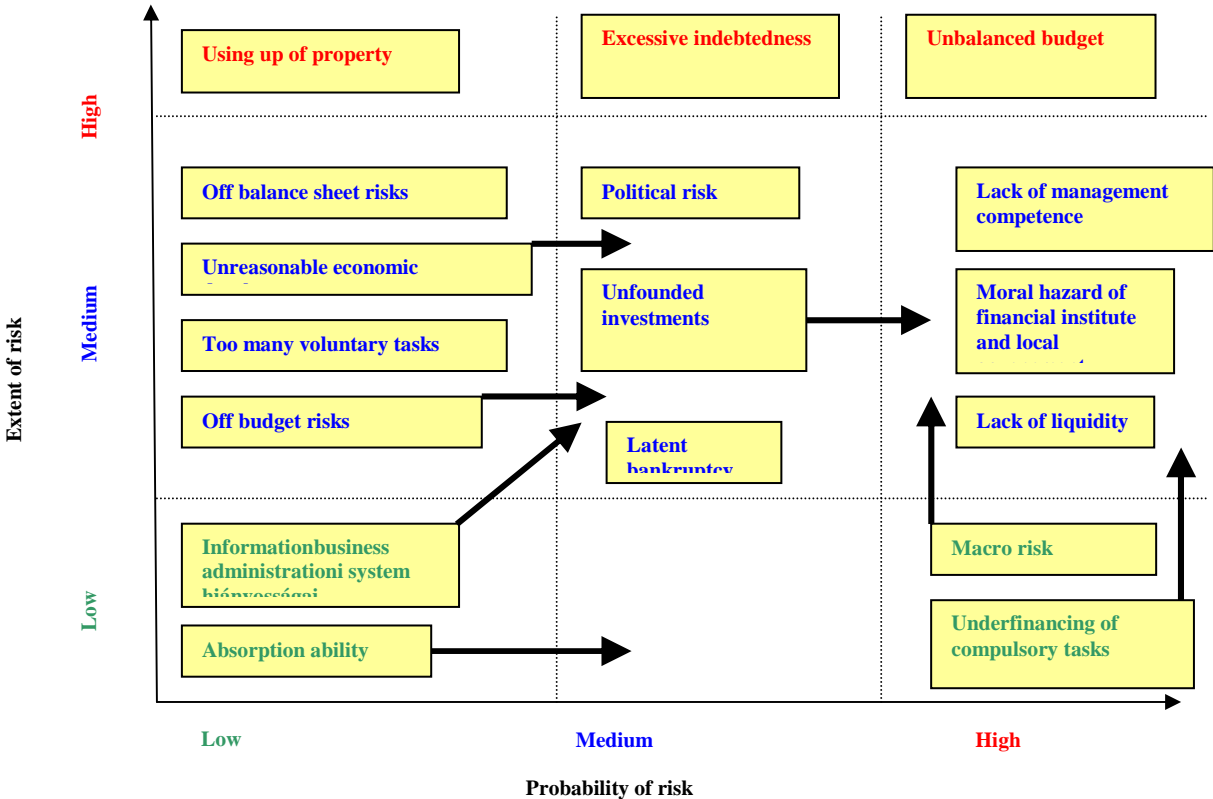
Source: My own editing

Having identified the risks of the local governmental system, I have updated the CAMELS method established in 2002 and specified the factor evaluating aspects for certain factors accepted by me. *(Chart 5)*

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[9] The interpretation of the coordinate axes and the method of measuring risks are included in the dissertation in detail.

Chart 5: The factors of "Risk Mapping" – the local governmental risk field
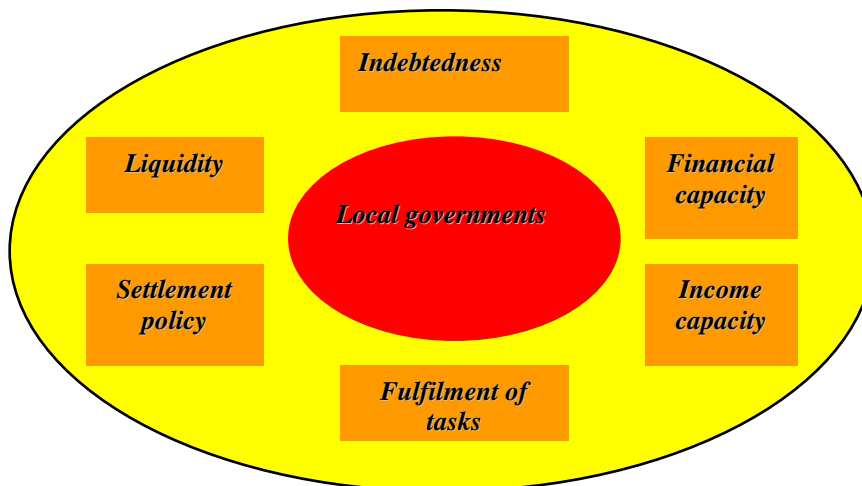
Source: The author's own editing

Through the case study submitted as the Appendix to this dissertation, I have endeavoured to test the "Local Governmental Risk Mapping". This testing enabled us to elaborate indices that can present the business administration features of local governments and provide an interpretable result. The requirement against the model was that it should be suitable to objectively survey the risk of local governments. Furthermore, it should be able to describe the different properties of local governmental segments. This testing helped to complete short-term tasks related to the elaboration of the model. In the case study I analysed the business administration data of Eger Town of County Rank between 2005 and 2007.

The summarised evaluation of Eger Town got into qualification category 1 based upon the logics of the model, which apparently contradicts the financial risks outlined in the dissertation and the problems revealed in relation to the Towns of County Rank. However, I have experienced during the analysis that the Local Government of Eger Town deviated from the risk map typical of Towns of County Rank in several factors in a positive direction, but follows the changes in the risks revealed in the segment in numerous respects. Using the available and interpretable benchmark data, I have pictured the deviations and similarities.

When conducting the case study, I carried out an in-depth interview with the economic manager of the town. I could discuss the material ready for dispute with him, and integrate this additional information in the analysis.
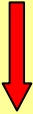
The detailed research of the credit risk analysing techniques in the Hungarian local governmental crediting market, the modelling and the empirical testing of the model have enabled me to determine the following thesis:

Thesis 5

During the local governmental crediting procedures, commercial banks apply the traditional rating method for the credit qualification. However, these methods are not suitable to identify the information asymmetries revealed in the local governmental information system. It is necessary to elaborate an alternative analysing and qualification method that is based upon the indices of local governmental business administration. Furthermore, it should reveal the sector-level differences. Upon conduction of the appropriate model testing, the "Local Governmental Risk Mapping" can offer an efficient alternative to solve the above problems.

When working on my dissertation, I have studied and thoroughly analysed four hypotheses, and then determined five hypotheses. Through the conceptional model of the research *(Table 2)* both the hypotheses and the findings can be followed through.

Table 2: Summarising the hypothesis studies conducted and the new and novel research statements through the conceptional model of the research

Subfield of research	Hypothesis	Result of the research		New and novel statement
Research agents	INPUT			
Main question of research	H$_1$: Studying of information system	Rejected	→	*T1*
Venue of research, identification of problem	H$_2$: Studying of credit dosing	Rejected	→	*T2*
	H$_3$: Risks of crediting local governments	Accepted	⇇	*T3*
				T4
	H$_4$: Studying of analysis methods	Rejected	→	*T5*
Solution of problem		OUTPUT *Modelling and testing*		

Source: The author's own work

During my research I have aimed to get acquainted with the risks hiding in the local governmental system, analyse the motivations of banking and local governmental behaviour, study the debtor qualification systems and analysis methods, and then apply a method that is able to reveal the characteristics and risks within the subsystem of the state budget. It has already been proven that CAMELS method can be applied to commercial banks. The "Local Governmental Risk Mapping" can be a suitable tool not only to found the credit decisions of commercial banks but also to carry out preliminary risk assessment during the external controls and to conduct the controls, too.

In its current status, the model is not a closed system! Further testing and then refinements are necessary to set up the model in its finalised form. A positive result of model testing can be the establishment of a benchmark database going back to a longer period. It should be mentioned that the differences between local governments can be examined not only at segment level. Model calculations and the database to be established may provide considerable progressive assistance in the measurement of regional differences, too *(Rechnitzer (1998))*. The territorial and regional differences get a significant role in terms of finance, too *(Lados (1998, Pitti (2005)))*.

5. APPLICATION FIELDS OF RESEARCH FINDINGS

Research findings can be exploited in terms of theoretical and educational, as well as practical decision-making and risk management.

In practice, model could primarily be applied in the foundation of the credit decisions of banks active in local governmental crediting. Besides, it could be applied in the work of independent external controlling organisations supervising local governmental work (ÁSZ, State Audit Office), similarly to the external (off site) control system of commercial banks. However, this requires the establishment of appropriate databases. With respect to the controlling planning, this system can fulfil an early predictive role, which would indicate the unfavourable processes based upon the significant change in certain specific indices. Publicising a part of the information gained in this way would increase the financial transparency of the local governmental sector. This would determine behaviour to be conducted by each local government that would not be necessary statutorily. At the same time, the application of the method can improve the self-knowledge of local governments.

My above statement is also supported by the fact that I needed to study the relevant areas of state accountancy, the business administration of local governments and public sector controlling to prepare my dissertation. The dissertation integrates the knowledge acquirable in the fields of finance, accountancy and analysis. At the same time, it highlights the special role that local governments fulfil within the clientele of banks. Therefore, getting acquainted with the local governmental crediting market extends our knowledge in the field of bank studies and bank affairs, too.

During my present work as an instructor, I can exploit my research findings when teaching Bank Studies, Bank Affairs in Public Servicing in the BSc program, the Higher-Educational Professional Training and the Specialised Continuing Training. Furthermore, since the launch of the MSc programme in public sector, students have been able to expand their knowledge acquired in the BSc programme with respect to the fields and findings of the dissertation. Thus, the research findings fit into the educational programme of the University of Miskolc, the Economic College of Budapest and the financial departments of other higher educational institutions.

The application of the model would facilitate more efficient risk assessment and risk management, in terms of both human resources and financial expenditures. Beyond the above, despite the "disorders" in the information system of the state accountancy the data supplied by the information system could be processed and evaluated according to their actual economic content. Last but not least, it could be a useful element of the management information system and decision-making works in local public administration.

The complete model can be applied in both theoretical and practical higher education, when developing the curriculum for subjects covering the business administration and controlling of the public sector and when drafting case studies. The adaptation of the CAMELS method, which has been developed for evaluation of the functioning of commercial banks, in the local governmental sector, and its integration in education would help students expand their global understanding and improve their problem-solving ability and skill. Furthermore, it points out the necessity of and need for the synthesising of the knowledge acquired in various educational fields, as well as to the interdisciplinarity of each scientific branch.

The research findings facilitate the continuous inner development of the public financial theory and regulation by highlighting how the "disorders" arising from the information system of the state accountancy influence the credit decisions and prudent conduct of commercial banks. It identifies the risks of local governments through a method not applied to this sector in practice so far. Also, the practical application of the model offers the development or utilisation of new solutions, analysis methods and indices that are able to adapt to the business administration features of local governments.

6. FURTHER RESEARCH DIRECTIONS AND POSSIBILITIES

The research could be continued in different ways and possible directions, which at the same time can be deemed as a challenge:

1) Taking into consideration the middle-term tasks of the model set up in the dissertation, the model testing can finalise the weight of each factor during the summarised evaluation. Another middle-term task is to establish the scoring system of objective and subjective points and to make the model programmable.

2) Based upon the available databases of the PM (Ministry of Finance) and MNB (Hungarian National Bank) and the indices developed, a central database, similar to the existing DATAX database for enterprises, could be elaborated and serve as a benchmark database for both the commercial banks and external control organisations (ÁSZ).

3) In a methodological respect, the model would be testable in each local governmental segment. Based upon the results of these tests the indices developed can be developed further, and extended or narrowed if necessary.

4) One may not ignore the continuously changing political and economic field. At the time of completion of the dissertation, considerable changes are expected in the local governmental system. These changes can offer new challenges to the model developed, which can result in the cessation of some of the risks identified and the emergence of new risks, too. In this way the factors specified in the dissertation may also change, which can motivate the elaboration of new indices.

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