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Modelling and empirically testing moral hazard issues of government subsidies

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## 1. Introduction

It results from the operation of the European Union state aid subsidy system, that the effectiveness can be evaluated only on the long run, since empirical data will be available for research years after the completion of the planning period. It is a very difficult goal to measure the impact of the economy development programs, of the companies receiving state aid grants and in general of the economic development policy. I aim to consider the moral hazard issues of the European Union's co-financed state aid subsidies and understand the impact of these on social surplus.

SME's might receive European Union's co-financed state-aid grants, development bank loans or financial guarantees. Economic growth is generated by firms with and without subsidies. We should consider the effect of firms benefiting from the discretionary policy, in relation to firms, which are not. There is no clear theoretical methodology of measuring social surplus. We define social surplus based on (Varian 2014) as the sum of consumer and producer surplus. It is not possible to measure it for the tens of thousands of companies; therefore, we concentrate on the future effect of investment decisions on social surplus. Economic growth might be expected from increase in profit level of the SME's; therefore, we examine the potential positive effects of receiving grants.

The central government is interested in supporting projects in order to increase social surplus. Although it is not an easy task, as it is not easy for commercial banks to select the viable, profitable projects. Contemporary theoretical research considers indicators to value project's profitability, however there are less effort invested into finding robust indicators signalling increase in social surplus. The central government is facing the growth problem of SME's; therefore, government authorities would like to make more financing opportunities available for firms. One type of this is government subsidy, which is intended to have accountable effect on economic development. The European Union defines government subsidy as state funds are given by state authorities to selected firms,

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which is used for achieving pre-defined economic development goals and finally increase social surplus. Domestically the emphasis of economic development policies is on improving the competitiveness of Hungarian SME's, which might be achieved if the problems caused by the credit constraint is mitigated and excess funds of financing is granted for firms.

The well-known and established adverse selection and moral hazard phenomenon in SME financing will be extended and reformulated for state-aid related issues. First of all, the direct government subsidy is regarded as state intervention, which is a fund transfer without any repayment<sup>1</sup>. The subsidy is granted for economic development purposes, which can be captured in social surplus, however it is highly complex to be measured properly. Further investigation should deliver a proper definition in order to start the empirical testing, this paper focuses only on generalization of moral hazard.

SME's represent 99,8 percent of number the companies, 70 percent of the workforce is employed, and 60 percent of the total turnover can be assigned. The bank financing of SME's is characterized by asymmetric information and adverse selection, which might be captured as a pro-cyclical market failure (Repullo & Suarez, 2013), indicating that banks lower credit lines to SME's making them more vulnerable in case of economic downturn. Contra-cyclical behaviour comes from state-owned development banks is regarded by (Beck, Thorsten, Demirgüç-Kunt, & Maksimovic, 2004) and (Griffith-Jones, Tyson, & Calice, 2011), whereas (Petersen & Rajan, 1995) summarize the potential of increase in management and financial knowledge of SME's.

In this dissertation I consider if the operative programmes of 2007-2013 effected positively the economic performance of the companies receiving state aid subsidies. I will compare this to the entire development of the SME sector after the empirical data became

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<sup>1</sup> In case of failure if the project does not meet the set of predefined criterias the firm is obliged to return the funds, otherwise if the project succeed no repayment is needed

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available for research and will use the preliminary publications of (Vas 2017), (Vas 2019), (Vas 2019) and (Vas 2019).

State aid programs for micro, small- and medium sized companies contribute making unit cost of production lower in order to stimulate economic growth. However, firms are not transferring back funds in exchange as they do for loan-repayment but generate social surplus by executing projects<sup>2</sup> in line with the development policy. Following (Varian 2014) consumer and producer surplus combined equals social surplus theoretically. For further consideration practically profit of companies alone can be used as right indicator, for two reasons. Once, SME's increase local supply, meaning that firms can launch products and services due to the positive effect of state aid grants in certain areas where availability was maleficent, if it is profitable. Second, any price decrease for increase in consumer surplus can have positive impact on social surplus only if firms don't suffer from losing profitability.

Several elements of the documentary details have the similar effect as the collateral requirements of bank financing. If a firm is defaulting, the bank is entitled to use the collateral for repayment. In case of commercial bank financing it is expected that the firm is generating enough cash to pay the instalments, however in case of state-aid grants the authorities demand positive change in social surplus instead of loan repayment. In case of state aid grants there is no repayment, but firms have to contribute to economic development policies by increasing social surplus.

Direct state aid subsidies for SME's are considered as a source of financing therefore in the beginning I turn to investigating elements of company financing. This kind of financing source lowers the unit costs of production as the real expense of the acquired investments are lowered by the state aid subsidy itself, which should contribute to the increase in competitiveness.

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<sup>2</sup> We refer to project or development project in a broad since meaning that any investment, restructuring or change in production, marketing, sales or general management is considered

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In the recent years Hungary has received significantly higher amounts per capita as the regional counterparts (Kállay L. , 2014). It has contributed to higher employments, however without effecting the profit generation capabilities of the SME sector itself. The theoretical background of the research is Holmstrom-Tirole model, which considers in a unique environment the moral hazard issues of the firms' financing (Holmstrom & Tirole, 1997).

We conclude that the subsidy increases the wealth of firms giving room for owners to redistribute funds for other activities, therefore subsidized SME's might invest less from own sources but rather might want to reinvest the subsidy.

It is a consequence of that SME's have higher expected rate on return for own sources than for the cheap government money. If subsidized SME's do not reinvest, they increase their savings, in that way government subsidies turn into excess funds.

On the other hand, if firms have commercial bank credits with less attractive conditions the first reasonable choice will be the repayment. Therefore, SME's without commercial bank financing represent lower moral hazard than those with high amount of loans.

If the state wants to decrease moral hazard, it decreases the portfolio of eligible companies.

Summarizing, we found two different forms of moral hazard: the first type is when applying for subsidy while knowing that the social welfare will not be increased, while the second type is applying for subsidy with the intent to refinance more expensive sources.

The original purpose of subsidizing SME's was to increase competitiveness of the sector while making firms economically stronger. But we see that firms' owners have different incentives than the authorities, they are more interested in increasing private benefits

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rather than contributing to achieve economic development goals. Finding the proper incentives is the key issue of all state-aid policies.

Theoretically moral hazard can be mitigated by introducing proper monitoring procedures. The main problem is finding what to monitor if we want to ensure the optimal increase in social surplus. This is the reason why further investigation is needed to detect how can firms' economic activities boost social surplus.

Government authorities make excess funds available for firms with constraint access to commercial bank credit lines in a form of non-refundable subsidies to achieve economic development goals. Without finding the right incentives to mitigate moral hazard issues the original purpose of state-aid will not be met. Detecting forms of moral hazard issues might be the first contribution to understand the real effects government subsidies. Further theoretical research is needed to analyse the real effect of state-aid on social surplus.

In order to define and calculate social surplus produced by a company receiving state aid subsidy aid I turn to establish the accounting, management control and economic development effects of the grants. This is the major contribution of this dissertation how the Hungarian state aid subsidy ecosystem impacted the economic development of the SME sector. I conclude that after receiving the non-refundable grants companies will accumulate higher share equity as the subsidies are accounted as other revenue items. This means that the profit and therefore the accumulated profit of those companies will be higher resulting in higher share equity at the end of the day.

The central government's goal is to subsidize companies with projects leading to higher social surplus since this is the kind of repayment of the financing. The state receives social surplus in exchange for the subsidies, however it is highly difficult to prove that the development project in question contributed in the originally desired way to economic

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development. It is more difficult to measure those effects in case of the subsidized dozens of thousands of companies. I will look for indicators which are able to define these effects.

This dissertation does not consider in any ways the possible fraudulent activities of the state aid contributory system, which have been widely became public. There is no room for political statements, the sole goal is to understand the moral hazard issues of state aid subsidies. Major theoretical outcome of the dissertation is the establishment of the second-degree moral hazard, stating that companies rather accept subsidies for crowding out commercial bank financing by knowing that this will have no positive impact on social surplus.

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## 2. Introducing the theoretical model

Theoretical modelling of moral hazard issues have been targeted by only a few number of economist (Stiglitz & Weiss, 1981), (Holmstrom & Tirole, 1997).

The first essay defines the notion of moral hazard in case of SME financing, the second one establishes a unified method of investigation. The following studies rely on their assumptions and intend to deliver empirical testing. The existence of adverse selection and moral hazard can be proven empirically, if it can be proven that certain phenomenon may indicate their presence. The most common goal of investigation is testing the credit constraint in case of SME financing.

Questions raised by empirical studies are basically twofold: can we prove that SME's face credit constraints and is there any structural difference explaining the casual relationship of company value versus access of credit. However, there could not be found any empirical study testing moral hazard in case of non-refundable EU subsidies, therefore based on the literature survey I intend to define the methodology.

In case of SME financing credit constraint is regarded as consequence of adverse selection, stating that companies can access only less credit lines they would be able to utilize. If it would be granted more credit facilities it would positively affect the cash generation. Increase in turnover and profit can be regarded as a positive affect which can also increase social surplus. The basic question, however, remains, what would prevent the company to invest into a project, which would have been never realized from own pocket, but might be reasonable decision using non-refundable funds. Companies might want to complete investments using government subsidies even if they would have the sufficient funds by themselves. It might increase company' saving in form of bank

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deposits or funds might be used for repay bank debts taken for other development projects. In both cases we face moral hazard of government subsidies.

Government subsidy can be considered as one form of financing therefore I start with SME bank financing issues. Moral hazard of bank financing is often regarded as the most relevant topic in international studies. I will concentrate on summarizing the methods used to analyse moral hazard and I derive based on these findings the methodology used in this dissertation.

Micro, small and medium size enterprises, commonly referred to as SME's are considered as the most relevant in market economies throughout in the European Union. SME's employ 70 percent of the workforce and generate 60 percent of the net turnover is, while giving 99,8% of the total number of companies. It is assumed that cash generation of SME'S is bounded by credit constraint. The market failure is captured by pro-cyclical behaviour of corporate banks (Repullo & Suarez, 2013) as credit facilities are decreased following macroeconomic fallback resulting in increasing vulnerability. Several national development policies aim stimulating SME's financing, but it is still unclear what would be the structural precondition of the economy what would contribute to higher success rate. International studies analyse thoroughly corporate bank's attitudes and potentials regarding bank financing (Beck, Thorsten, Demirgüç-Kunt, & Maksimovic, 2004), while the potential role of development banks in counter-cyclical financing is considered (Griffith-Jones, Tyson, & Calice, 2011), and increasing the managerial experience of the SME's sector (Petersen & Rajan, 1995) is also regarded as counter-measure for decreasing moral hazard.

## 2.1. The Holmstrom-Tirole model

Using a unified model (Holmstrom & Tirole, 1997) analysed the common situation where firms and banks are also equipped with a constrained amount of capital, therefore both require outside sources to fund development projects. A firm's savings are insufficient to fully back the planned investment, while banks struggle to ensure enough credit facilities required by companies. This is described as credit constraint, a non-equilibrium situation, where changing incentives will also not help reaching equilibrium. Increasing interest rates will not improve lending, because the market does not believe in that enterprises would start profitable projects or even if they are in position to launch such developments the funds requested for it would be used for cross financing purposes. In order to deal with the efficiency of non-refundable subsidies we should enhance the original model with central government, which is responsible for it. Recently (Berlinger E. J., 2015) (Berlinger, Lovas, & Juhász, 2016) considered moral hazard issues of subsidies.

The basic Holmstrom-Tirole model consists of the firm, the financial intermediaries and the uninformed investor. In the first period the financing decision is made, while in the second all settlement will be done. Parties are risk neutral with bounded liability, i.e. the loss cannot exceed the investment. There are infinite number of companies with identical access to different technologies. The single difference between the companies is the initial endowment  $A$ , indicated by  $A$ . Firms intend to invest  $I$ , therefore  $I-A$  financing is needed. Cumulated turnover is denoted by  $R(I)$  for investment  $I$  with income  $0$  or  $R$ , for failure or success. The private benefit of the firms' owners might increase in lack of proper incentives or monitoring. This is what we identify as moral hazard of the financing:

$$p = Ph - Pl > 0$$

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Successful projects do not generate private benefit,  $P_h$  denotes higher probability, then failed projects with lower probability  $P_l$ . In case of failure there are two different types of possible outcomes: firms' owner realizes low or high private benefit depending on the personal efforts executed by them. Risk neutral behaviour will be important, i.e. it is equivalent if to have payment times expected probability or to have same amount certainly. If we would reject the unrealistic assumption of risk neutral behaviour, we could conclude that risk averse entrepreneurs would prefer private benefit if they discount the risk of being controlled in future.

Expected rate of return on investment is denoted by  $\gamma$ , therefore

$$P_h * R > I * \gamma$$

applies for economically viable project, if the firm owner aims successful projects rather than private benefits. If private benefit might be  $b$  or  $B$ , depending on low or high personal effort, we conclude that:

$$P_l * R < I * \gamma - B$$

meaning that the project is not bankable. Expected net income plus private benefits are less than expected rate of return on initial investment. This outcome is the nightmare of any banker because of asymmetric information project owners have better knowledge of their return and individual preferences. It can be stated that low personal effort and high private benefit combo is rational if the development project has only considerable low success rate as we know that maximizing possible gain rather than the expected value is common behaviour<sup>3</sup>.

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<sup>3</sup> The lottery business model is based also on this, with negative expected value of outpayment

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Hungarian scientists often work with the original model and develop it (Berlinger E. J., 2015) (Berlinger, Lovas, & Juhász, 2016) but conclude opposite, based on the different basic assumptions, which might be regarded as advantage of the model which allows different conclusions when assumptions change.

(Berlinger, Lovas, & Juhász, 2016) states that, subsidized bank loans<sup>4</sup> would crowd out commercial banking facilities, and therefore it is not suitable for tightening SME's credit constraint. However, as they argue, in case of non-refundable government subsidies there is no such a crowding-out effect, but it has a multiplication effect. The budget constraint of the government subsidies is regarded the positive externalities, which is called social surplus. There are two important implications: first is the dynamic equilibrium, meaning that direct government subsidies would disappear if the non-refundable funds generate less social surplus, than the direct and infrastructural expenses.

They conclude that social surplus always exceeds the overall expenses of subsidies, which comes from multiplicative effect of the grants on private sector companies. (Berlinger, Lovas, & Juhász, 2016) considers the role of private and public venture funds, which is a different type of subsidy<sup>5</sup> for start-up financing. (Collewaert, 2012) analyses the Business Angels on the European market by differentiating their private and public funding. He concludes that higher risk appetite of public fund in the early stage have a positive effect on the private funds as well.

If the government faces a durable non-equilibrium position, then after intervention the market failure will be solved. Might be that the intervention only generates other type of inequilibrium? Moral hazard could be better addressed if we could develop a quantitative framework for measuring it. In the economic theory there no such a methodology available, therefore some basic assumptions have to be supposed. The absolute value may

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<sup>4</sup> In this dissertation I refer to this as development bank financing

<sup>5</sup> I agree with aspect: the state backed start up financing both in the early and the mature stage the social surplus contribution exceeds the expenses, however it might not hold for all EU countries

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not be captured; however, the first derivative can be estimated. In the following I will consider the economic theory's contribution of testing moral hazard, which can be found to the larger extent in the insurance industry. Long term big data sources give basis for econometrical studies to test moral hazard issues.

The Holmstrom-Tirole model is a framework for investigation throughout the dissertation, however, the most important thesis is not relevant for the current hypothesis checking, since it originally considered the commercial bank financing. (Lovas, 2012) analyses are like mine, by combining asymmetric information and moral hazard, therefore in the next chapter I summarize the theoretical background.

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## 2.2. Adverse selection and moral hazard in empirical research

First this issue was raised by (Akerlof G. A., 1970), as adverse selection concerns on non-equilibrium markets such as the used car market. Asymmetric information of buyers and sellers is a consequence of irregular distribution of the quality of products to be sold leads to the conclusion that there will not be an equilibrium price by which the market clears. This is a market incompetence making the players accommodate to the non-equilibrium status by incorporating it into their expectations. Another example was the insurance market, in which case following subjective probability<sup>6</sup> only those will be willing to close insurance contract who consider personally themselves as higher risk group. On contrary the insurance company would be looking for candidates belonging to the lower risk group.

Being not honest in market transaction will result in imperfect performance was first discussed as the market of lemons: if a seller of used cars is trustworthy and this fact is widely accepted than he will be able to sell for fare prices, hence he is the only one at the beginning of the transaction having any knowledge of the product quality. There is an incentive however, that he should position the product as higher quality which would make him to sell it for a higher price, resulting that he would qualify as non-trustworthy seller. In case of commercial bank financing the potential borrower has all the information of the project to be financed. Banks are looking for companies which one will be able to repay the loans, but they are also mistrustful towards them by supposing that the quality of the projects will be positioned higher in order to allow certain cross-financing in the company's operation. Following (Stiglitz & Weiss, 1981) we conclude that banks are reluctant to finance certain project leading to credit constraint.

The theoretical research is based only on few articles, (Stiglitz & Weiss, 1981), (Holmstrom & Tirole, 1997). The first one is about defining the moral hazard

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<sup>6</sup> In this article (Akerlof G. A., 1970) considers several other examples such as the minorities role on the employment markets, but those are outside of the scope of this research

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phenomenon; the second creates a simple equilibrium model of credit explaining the role of different kind of credit constraints. These articles are the basis for further empirical investigation of adverse selection in case of SME bank financing proving the credit constraint or the credit rationing.

Empirical testing aims to show if credit constraint is present or is there any structural difference in the particular market which could explain the correlation between easy access to credit and economic development. However, no empirical testing could be found for state aid related moral hazard issues.

In case of SME bank financing the credit-constraint is the consequence of adverse selection. Firms cannot access the required amount of commercial bank financing, because banks are reluctant to give financing for those projects. Banks are considering SME's not to be able to define profitable projects or they are suspicious that firms will use the available fund to cross-finance other projects. We might assume that firms would perform better if they would get the required amount of commercial bank financing, turnover would increase which would contribute to increase in profitability as well. This is the reason behind the government subsidy, to make available excess funds to SME's to boost economic development. As we know that government subsidy distorts competition, it also changes firms' behaviour, what we call moral hazard.

The basic question arises as what would prevent firms to aim for subsidized project which would not be profitable to establish from own sources. This means that firms define project because of the cheap government money which is available from state (or equally European Union) sources. Or on the other hand subsidies might refinance more expensive corporate banking or other forms of own sources. Both cases are the materialization of moral hazard issues. State subsidy can be characterized as certain form of financing, in which case the repayment is expected to be the increase in social surplus. The moral hazard can be reformulated in that sense that firm owners aim for private benefit instead of increasing social surplus.

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There are three main types of government subsidies: first, the non-refundable cash transfers, with the purpose of increasing employment, investments and innovation. Firms make efforts to achieve pre-defined goals, if succeeded the subsidy increases firms' wealth. Second, several forms of tax benefits, which are direct forms of subsidies in a sense that firms do not have to consider paying public charges. Third, the refundable cash transfers, such as subsidized credit programs, guarantees or capital transfers. All forms of subsidies are similar making production expenses shrink, which might be the economic development effect.

There are several ways how government subsidies can have no real positive effect on social surplus within the legal framework, i.e. it is not our goal to analyse how malevolent firm owners intend to cheat. The real consequence of moral hazard is that even if firms follow the law and execute projects as contracted with the authority's social surplus will not be increased.

In case of commercial bank financing moral hazard can be defined as a hidden action, where the bank is not aware of the expected effort level of the firm, effecting the probability of success of the project. Using a unified model (Holmstrom & Tirole, 1997) analysed the common situation where firms and banks are also equipped with a constrained amount of capital, therefore both require outside sources to fund development projects. Firms' savings are insufficient to fully back the planned investment, while banks struggle to ensure enough credit facilities required by companies. This is described as credit constraint, a non-equilibrium situation, where changing incentives will also not help reaching equilibrium. Increasing interest rates will not improve lending, because the market does not believe in, that enterprises would start profitable projects or even if they are in position to launch such developments the funds requested for it would be used for cross financing purposes. In order to deal with the efficiency of non-refundable subsidies we should enhance the original model with central government, which is responsible for

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it. Recently (Berlinger E. J., 2015) (Berlinger, Lovas, & Juhász, 2016) considered moral hazard issues of subsidies.

State intervention is regarded in different ways in the economic literature. The role of the state in corporate lending (J. Tirole 2009) sees in bail-out, based on the original (Holmstrom-Tirole 1996) model, which is a framework for examining the commercial bank lending and following (Berlinger, et.al 2016) it is considered also for state aid grants.

Empirical research was linked to car-insurance industry, by statistically measuring the effect of introducing incentives, like the bonus reward systems, in which case (Dionne 2005) (Richaudeau 1999) proved a significant drop of moral hazard. The price reduction given for accident free driving has a positive effect, i.e. there is no need to control the behaviour if it can be found an incentive forcing the players to co-operate. (Cardon és Hendel 2001) (Abbring, Chiappori és Pinquet 2003) analysed on large data sets the positive effect of any change in submitted claims of newly introduced incentives. The empirical analysis of moral hazard in insurance policies might be relevant to state-aid grants, if there can be found relevant incentives which might handle the unwanted outcomes of subsidies, rather than controlling behaviour of firms. The same outcome might be achieved in fighting against subsidized development project without real social surplus by introducing powerful incentives rather than intending to pose administrative control on firms' spending. There is obviously further research needed in this matter.

By examining policy details of the business development details after the 2008 crisis (Vives 2010) considers the utilization of state aid grants. It is highlighted that the financial intermediary system has dramatically changed as commercial banks have sold part of their portfolio and reorganized its internal policies in order to decrease moral hazard. State intervention was regarded as regulatory policy, as trade-off between stability and competition.

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(A. N. Berger 2006) proposed a general framework for studying the SME's access to credits, as relevant question both in economic theory and highly important for development policy maker. (L. Kállay 2014) examines the spill over effect of state aid subsidies, in case of increase in employment vs. investment, and better profit generation vs. competitiveness by proposing to monitor certain elements of the development policy even if the grants availability is in excess. We conclude that there are several similarities in commercial bank financing and state-aid subsidies, and therefore a similar comprehensive framework would be helpful for understanding real effects, however there is no such available, due to two basic reasons: once, the form and structure of state intervention varies even across member states of the European Union, second, the vast variety of the available products and its combinations. (Berger-Udell 2006) contributes with a coherence in SME financing, by linking the role of the bank ecosystem with state intervention policies to demonstrate how firms can access to credit.

In the framework of commercial bank lending (A. N. Berger 2006) summarizes the elements of items to be considered: methodology of credit policy, the source of information for submission, structure of the credit contract and the relationship management. There is a mixture of information derived from financial statements and quality information received from other sources. The same breakdown would be helpful for investigating state aid policies; therefore, we examine the documentary requirements in order to utilize the similarity of commercial bank lending experience.

Unlike funds obtained from financial institutions, state grants, which are intended to boost competitiveness and employment while stimulating investment and innovation, do not have to be repaid provided that the purpose of the aid has been achieved. Banerjee & Duflo (2004) and Miller & Rojas (2004) refer to funds obtained from financial institutions as one of the most significant factors in the growth of an enterprise, and in this regard Beck & Thorsten (2007) draw attention to the limited nature of funds accessible to SMEs. It is precisely with a view to softening credit constraints that assisted lending programmes (Griffith-Jones et al, 2011) and non-repayable grants

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(EuropeanCommissionStateAidScoreboard, 2015) are used. These methods of state aid are similar in that they both make procuring factors of production cheaper, and in this way exert their economic-stimulus effect. The companies, therefore, do not repay the money in cash, but instead generate social value added by achieving economic development objectives. It is important to examine this process in more depth, because owing to the moral hazard we can observe that, in the absence of appropriate incentives, companies may give preference to maximising their own profitability rather than increasing the social value added.

(Carbo-Valverde, Santiago, Rodriguez-Fernandez, & Udell, 2009) concluded in the empirical study of nearly 30 thousand Spanish SME that following the credit constraint banks are establish less credit lines that firms would need. (Berger, Allen N. & Udell, 2002) comes to the same conclusion by examining the structure of the bank market and the indicators by which banks are extending their credit lines.

In case of state aid subsidies there is a variety of different structures in the European Union, therefore there is no comparable analysis is available for the different countries. European Commission has the authority to control state aid subsidies in the European Union, and the emphasis is more on formality rather than examining the real effect on social surplus. Since there are several segments receiving grants: innovation driven sectors, economically underdeveloped regions, start-ups, and more generally small and medium sized companies, the proper utilization of state funds is highly important from economic development policy's point of view. The most relevant international empirical study concerning this was (Banerjee 2004), by investigating the anonymized data of different commercial banks. He concluded that return on investment measures the effects of commercial bank financing in both developed and underdeveloped markets.

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### 3. State aid subsidies in Hungary

The European Commission has the authority to control state aid subsidies in the European Union, and the emphasis is more on formality rather than examining the real effect on social surplus. Since there are several segments receiving grants: innovation driven sectors, economically underdeveloped regions, start-ups, and more generally small and medium sized companies, the proper utilization of state funds is highly important from economic development policy's point of view. The most relevant international empirical study concerning this was (Banerjee 2004), by investigating the anonymized data of different commercial banks. He concluded that return on investment measures the effects of commercial bank financing in both developed and underdeveloped markets.

The European Union regulates the forms of state interventions and the types of subsidies. For achieving the positive effect, i.e. increase social surplus approx. one percent of GDP was used for state aid grants totalling to EUR 100 billion (EuropeanComission 2018). The types of state aid grants show high variety, therefore cannot be defined such as typical subsidy-product, however it is expected that they will be used for assisting non-equilibrium market segments, e.g. the micro, small- and medium size enterprises, since SME's face credit constraint and are not able to raise as much credit as they could utilize.

The 7-year planning period of 2007-2013 made some new products available, such as subsidized loan, grants, guarantee programs and venture capital financing as well, however before the 2014-2020 period new financing methods became available. Independently from the EU the National Bank of Hungary targeted the SME's by making widely available discounted credits in the framework of the Increase Development by Loans<sup>7</sup> (NHP) program.

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<sup>7</sup> We refer here to the Növekedési Hitelprogram (NHP) of National Bank of Hungary

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### 3.1. SME financing

The European Union regulates the state aid subsidies granted in the member states, as only the regional inequalities or the non-equilibrium market segments might be subsidized. In the recent years the member states devoted approx. 1 percent of the GDP to subsidies in order to increase social surplus, totalling to EUR 100 billion, in Hungary 12 thousand billion HUF (European Commission, dátum nélkül.). State aid grants can have a negative impact on competition by prioritizing certain groups of companies towards others. This is one of the most important issues why the non-refundable subsidies have to be closely monitored by state authorities for reporting that tax-payers' money will not be wasted. Therefore, there is a huge theoretical need for measuring the effectiveness of the subsidization infrastructure, so we turn to make research on the real effect of moral hazard issues on state aid subsidies.

The real expenses associated with state-aid grants are awarded in different ways by beneficiaries. First, the methodology to determine net present value of the different types of grants is not unique, and secondly the perception of temporarily distributed cash-in and outflows might also vary. Consider now the several possibilities that companies can choose from if financing needs are present:

1. Credit line with a commercial bank
2. Discounted loan program by a development bank
3. Venture Capital financing
4. Capital market financing
5. State aid subsidy

The firm has exact knowledge about the profitability of its projects, by at least knowing the possible highest income and profit from the project. There is however a chance that there will be no social surplus after completion, i.e. no increase in profitability or in revenues. This is the moral hazard of the state aid financing. It widens the question even

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more, if we consider that only the free money received from the state makes the project feasible, and without this financing it from commercial banking sources would have not been possible.

It is therefore highly important to set the precise goal of the investigation, whether we examine the successful operation of the development policy, or the intermediary system, or the development projects themselves. Furthermore, we aim to analyse the intermediary system responsible for absorbing the state aid grants to SME's, if we consider that administrative measurers might have negligible effect on the success of the development projects. There is unfortunately no internationally accepted methodology to detect the effects on economic development policy details derived from the state aid subsidized companies.

The EU supports delivering direct, non-refundable state aid grants to the micro, small- and medium sized companies, throughout a transparent and competition neutral intermediary system. (L. Kállay 2014) concludes that the aim of the Hungarian Development policy is to increase the competitiveness of the SME sector, by addressing credit constraint issues. There are several types of state aid grants available for Hungarian companies: the non-refundable grants, aiming to increase employment, investments and innovation, the tax and social contribution type of benefits, guarantee programs, venture capital financing and discounted loan programs. The similarity of the different programs lies in the decrease of unit costs of production. Therefore, we conclude that the successive operation of the intermediary system can be derived from the increase in profitability of the companies, which we interpret as social surplus.

In case of non-refundable subsidies there is no widely accepted and unified theoretical background to identify to positive effects of the subsidy policies. Since commercial bank financing is more or less the same in all the member states, however, the state aid policy intermediation is different. The most common issues are subsidization of the micro, small

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and medium sized enterprises through a highly transparent and neutral contribution system.

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### 3.2. Non-refundable state aid subsidies

The EU supports delivering direct, non-refundable state aid grants to the micro, small- and medium sized companies, throughout a transparent and competition neutral intermediary system. (L. Kállay 2014) concludes that the aim of the Hungarian Development policy is to increase the competitiveness of the SME sector, by addressing credit constraint issues. There are several types of state aid grants available for Hungarian companies: the non-refundable grants, aiming to increase employment, investments and innovation, the tax and social contribution type of benefits, guarantee programs, venture capital financing and discounted loan programs. The similarity of the different programs lies in the decrease of unit costs of production. Therefore, we conclude that the successive operation of the intermediary system can be derived from the increase in profitability of the companies, which we interpret as social surplus.

The grants are transferred to the SME's after a formal decision, completion of the contracting phase and finally after execution of the development project. Monitoring of the project boils down to, checking the fulfilment of the administrative requirements, while intending to secure that the non-refundable grants will not be used for any case related to fraudulent behaviour, rather to contribute to boost social surplus.

The different types of state aid subsidies are similar to each other in that sense that they make the unit cost of production lower through the lower investment expenses. Without the subsidy the investment expenses would be higher. However, state aid or more general state intervention is regarded in much brighter context throughout the world and especially in Europe. In this dissertation only a very small subset will be considered, i.e. solely the non-refundable state aid subsidies directly extended to the micro, small and medium sized companies by an intermediary system.

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To subsidize SME's is one of the current goals of the European Union, which is targeted through five actions. The first two relates to companies: to increase employment to 75 per cent and to invest 3 per cent of GDP into research and development, while the later three considers the renewable energies, the energy efficiencies.

The impact of the SME sector is measured by the number of companies, the workforce employed, and the real contribution to GDP. In the EU the average 99 per cent of the companies fall into the category, while the employment ratio still falls below 70 per cent and the contribution to the GDP production is well below expectation. These should satisfy the need for extraordinary care for the SME sector. The Small Business Act (SBA) ratified in 2011 by the EU was predeceased by the Act with the same name sixty years ago in the United States in 1953. There was also a federal agency created to monitor the progress of development with the name: Small Business Administration.

In the research framework I consider<sup>8</sup> two players: the state deciding whether to subsidize certain companies, and the company itself looking for funding as a consequence of the credit constraint. The state is ready to subsidize a segment which is in need of external financing and the commercial banking system is not able to fully back their needs. By extending non-refundable state aid grants it has to be secured that there will be no larger distortion in competition.

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<sup>8</sup> Referring to the original Holmstrom-Tirole model

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### 3.3. The construction of the contributory institution system

Besides the development bank system, the contributory institution system is inspired to improve the financial support of the imperfectly market funded SMEs. In 2008 The European Union framed a new enactment into its juridical system, peculiar to small and medium enterprises, under the name Small Business Act for Europe. The statute not only by name, but also by subject-matter bears strong resemblance to the substantially earlier accepted USA variant, which defines the concept of a micro- small- and medium-sized enterprise. From the intellectuality of these laws we can draw several important inferences. On one hand SMEs are by no means small-sized large enterprises and vice versa; on the other hand, big companies are not grown up SMEs, thus financing and developing SMEs have to be handled with a different approach than large enterprises. The EU takes it a step even further by accepting the statement, that any direct state subsidy creates bias in the competition. In the meantime, does quote that in given special circumstances (such as events of a slump) intervention is still a minor source of danger than sustenance of an imbalanced funding by the imperfect market. Besides the development purposed bank system's supported financial credit, the EU creates an institutional system of direct state support, thus providing great opportunities for co-enterprises, as well as helping underprivileged regions and (for a variety of reasons) less competitive enterprises with non-repayable sources.

The primary most important aims and priorities of the SBA (the EU regulation regarding the close up of SMEs) are namely the incitement of entrepreneurial spirit and through smaller administrative charges and easier access to finance; entering new markets, thus enhancing internationalisation. The European Union has created five different monetary funds in order to provide a significant share of its budget towards the aforementioned goals, with strong partnership of the member states and regional authorities, under their shared direction and supervision.

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These are comprehensively called European structural and investment funds:

- European Regional Development Fund (regional and town development)
- European Social Fund (societal reception and fair governing),
- Cohesion Fund (economic convergence of the less developed regions),
- European Agricultural Fund for Rural Development
- European Maritime and Fisheries Fund.

The member states of the European Union derive their own developmental political strategies from the EU but implement them with necessary autonomy. This also regards the acquittance of the institution system, which has significant impact on the distribution of the different subsidies. This institution system is under continuous transformation in Hungary; thus we'll be looking over the most important concepts, regarding the handling of subsidies.

The New Hungary Development Strategy (ÚMFT) is a document dissecting analysis, strategy, priorities of planning of the developed areas, their concrete goals and the marking of their regarded monetary funds. In this document an economical programme has been phrased according to the governing principles and set goals of the European Union, in order to sub serve the restructuring and developing of the underprivileged regions, with further emphasis phased on strategical development of SMEs.

Economic Development Operative Programme (GOP) is another programming document attached to the (ÚMFT), ratified by the European Commission regarding the 6-year term of 2007-2013. The goal of this programme (GOP) is economic development, in particular; fortification of the knowledge-based economy, pertinence of enterprises in the

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international competition, fortification of societal economical and regional cohesion, improvement of the necessary adaptivity caused by the ever changing economical and societal status and conducting stable economic growth.

In order to realise these intentions, specific goals, so called priorities have been formulated, which are

- I. expansion of research and development, innovative capacity and cooperation
- II. complex development of corporation capacities
- III. development of the business environment, and
- IV. potentiation of accessibility of financing sources for SMEs.

The Economic Development Operative Programme (GOP) commenced in January 2007, and ever since, the published invitations to tender offered and still provide a wide array of opportunities for Hungarian enterprises. One of the primary targeted areas of the GOP is the development of enterprises, with particular emphasis on providing support for the fortification of SMEs. Corresponding to this, the first to appear in January 2007 were tenders with the aim of technological modernisation of SMEs.

Next, let's consider those significant technical details, which might have an effect on the realization of the aid policy. The Operative Programme is a document regarding the implementation of the ÚMFT, containing a unified system of several years' priorities, proposed by the Government and ratified by the European Commission. The Managing Authority (IH) is an assigned institutional unit of the National Development Agency (NFÜ) with the tasks of strategical direction of the operative programmes within their responsibilities, supervision of the implementation of the programme and ensuring their regularity.

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By beneficiary we mean a candidate signing the grant contract, in other words the applicant who is the recipient of the aid, with whom the sponsor signs the grant contract. We consider small- and medium enterprises according to the third paragraph of the Law XXXIV/2004: of micro-, small- and medium enterprises and the subservience of their development.

The Paying Authority (KH) is an organisation created by a member state, with the tasks of composing and submitting the requests for payment, as well as receiving the payments from the European Commission. In the case of Operative Programmes, in Hungary the Paying Authority (KH) is the Ministry of Finances. However, in Hungary there is an intermediate body, an Organization (KSz) fulfilling the administrative and financial tasks of the implementation of operative programmes. Their tasks are registered in a cooperation agreement between the Managing Authority (IH) and the intermediate body, (in our case) the "KSZ".

We regard the totality of the operational tasks and regulations of GOP's Managing Authority (IH) and the "KSZ" under the name; The Schedule. These duties are namely: processing the submitted tenders, decision-making, contracting, financing, verification and data monitoring. The Supervisory Authority is an organisation independent of the Managing Authority (IH), held responsible for organising the efficient operation of the monitoring and inspectional system.

The most important criteria of the European Union aid are regarded: (1) what kind of an organisation or enterprise, (2) the economic policy goals they seek to achieve, (3) their source of fund and (4) the type of supply of their aid. In the first point we regard solely the aids available to SMEs, which is overlapping in case of several priorities. Thus when we only take into consideration enterprises possessing legal personality, (according to the definition of micro- small- and medium enterprises) we must rule out of the investigation

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individual entrepreneurs, licensed small-scale producers, law firms, foundations and cooperatives, as well as all the other numerous exceptions.

If we are to collect data about the current state of the Economic Development Operative Programmes (GOP), the progress of payments or the absorption, we can get notified about the official statistics by the Managing Authority's (IH) reports. The structural patterns of these documents mostly serve result-based communication, thus not promoting a research-oriented approach, however I'm going to present this system of provision of information as well. As follows, I'm to summarize economic incidences based on a primary published official at the time report of the State Audit Office (ÁSz). The GOP, by the end of May 2015. with support for research and development and innovation named their priorities; first priority: complex development of enterprises (with emphasis on SMEs), second priority: additional fortification and establishment of a modern business environment, and within the framework of the third priority already 24 697 projects possessed a positive supportive evaluation, with a total sum of 837,13bn Forint (2747,4m Euro) commitment. There was a living grant contract in the case of 24 683 of all the supported applicants, with a total sum of 821bn Forint (2694,5m Euro). By the end of May 2015. 655,58bn Forint (2151,6m Euro) has been paid out for the recipients. In the case of the fourth priority of the GOP, commonly referred as JEREMIE initiative (Joint European Resources for Micro- to Medium Enterprises) further 206,6bn Forint (677,9m Euro) have been transferred to the invoices of the programme's recipients. At the final beneficiary level, the total sum of the 15 099 contracted transactions (with the own contribution of intermediaries) is 258,98bn Forint (849,94m Euro). The closed projects of the GOP by priorities: 23 099 projects receiving non-reimbursable aid with a total amounting of 501,5bn Forint (1646m Euro) and 3875 projects within the JEREMIE Initiative, with a total sum of 39.6bn Forint (130m Euro).

However, within the European Union data service is not a priority, paid state aids are rather aggregated by country, based on their purpose of use as well as the form of aid. The paid European Union aids (that does not include contributions for railway

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development) based on their goals are divided into three categories by the statistical statement: agricultural, non-agricultural and logistical development projects. In the case of non-agricultural aids, we talk about cultural, employment- and export stimulant, regional developmental, support available for SMEs, research- and development oriented, environment- and monument protection subventions, as well as numerous other goals that aren't related to SMEs.

In the spreadsheet below can be seen the annually payed aids, unambiguously related to the support of the SME sector and the gross sum of the domestic aid in Euro respectively.

**1. Table: State aid subsidies for the SME sector (in million Euro)**

Years / Goal of Subsidies	2009	2010	2011	2012	2013	2014	2015	2016
<i>Regional development</i>	342,0	284,7	241,6	273,1	319,7	839,5	426,7	760,4
<i>SME's directly</i>	29,2	13,8	16,0	6,7	10,5	139,6	120,6	29,7
<b>Total domestic subsidies</b>	<b>1339,7</b>	<b>2067,4</b>	<b>1204,1</b>	<b>1193,8</b>	<b>1495,2</b>	<b>1685,6</b>	<b>1443,7</b>	<b>2391,6</b>

*Source: EUROSTAT, own contribution*

Small enterprises can receive financial support from the EU not only in the form of aid, but credit with beneficial interest rate as well as financial guarantee. Aids mean non-reimbursable financial support, whereas other forms of financing derive from the development purposed bank system's well-known product ideas.

In recent years tens of thousands of enterprises have resorted to the non-repayable aids, available to micro- small- and medium enterprises. Differentiates however the number of enterprises whose tender received only positive decision, and whose acquired factual payment in any given year. Out of the 44 000 supported projects, only 37 000 were presented with payments in the 7 years of the planning cycle and the following 2 years.

In the following we turn to the different elements of the state-aid tendering and final contracting documentation requirements. The grants can be defined in four different ways regarding backwards the effective date: (1) the year of the grant was transferred, or (2) all contracts have been mutually signed, or (3) the positive decision was communicated by the authorities, or (4) the tender documentation has been submitted. There might be several differences in the effective calendar year of the grants, which makes more difficult

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statistically to capture the business development effect<sup>9</sup>. The grants are defined mainly by the calendar year of submitting tender documentation and the amount of subsidy, size of the development project, own contribution to the project and the other partner's contributions to the project. The form of subsidy and the final goal to be achieved using state aid funds shall be

Considering the sets of data to be submitted in the tendering process until the contracting phase we can understand all details the information basis, on which the development project is accepted, subsidized and monitored. All quantitative project details are presented, including a long-term business plan and an impact analysis. All financing needs and sources such as commercial bank loans, other subsidy grants and different business partners' contributions.

Documents required for submission must be in original format and must be signed by the company. The tendering process starts with introducing the company and the planned development project. Concentrating on the impact of the planned project the firm has to prove its capability of proper execution and financial support. Beside that a long-term business modelling has to be submitted as well, consisting all relevant information in a pre-defined format. Project undergo legitimacy checks later.

In the next table we consider the distribution of payments across the active years of the planning period of 2007-2013.

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<sup>9</sup> Take the example: submitted in late 2014, decision made in 2015, contracted in early 2016, and financially settled only in 2017. This comprises 4 calendar years, making it highly difficult to assign the positive effect of business development to a specific year.

**2. Table: Distribution of the payments received by the SME sector**

Years	Payments in percentage
2007	0,001%
2008	1,5%
2009	11,5%
2010	15,4%
2011	12,3%
2012	15,0%
2013	21,4%
2014	15,0%
2015	7,9%
<b>TOTAL</b>	<b>100%</b>

*Source: Finance Ministry, NBH, own contribution*

In the first years only a limited number of companies have been selected to receive state aid grants. On the other hand, the last year of the planning period had the highest proportion on outpayments with more than 21 percent of the total amount. In the next two following years an equivalent of one quarter of the total approved amount was paid out to SME's.

In the following table we consider relation between the proportion of approved and out-paid projects in the period of 2007-2015.

### 3. Table: The proportion of approved and out-paid projects

	Number of approved projects	Number of project paid out
2007	3293	8
2008	3168	1180
2009	5687	3766
2010	5647	4730
2011	7323	4675
2012	11196	6040
2013	6885	8345
2014	574	5489
2015	183	2726
TOTAL	43956	36959

*Source: Ministry of Finance, NBH, own contribution*

In the planning period of 2007-2013 there were 43956 investments projects approved out of which 36959 have been actually paid out to applicants. We conclude that the first 4 years were less intense than the following years, therefore the positive social impact of the project should be considered only after the year 2010.

Nearly one fourth of the approximately 40-billion-euro frame (allocated by the EU) was disbursed for SMEs, the effect of which didn't come to fruition immediately in the fluidization year. Therefore, every study regarding the contributory system can be categorized into two different groups: On the one hand, intermediary studies, which were created in the early to mid-stages of the contributory period, involving analytic assumption of the initial and temporary experiences and on the other hand, posterior study

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cases, regarding the entire contributory period, in the case of which, the long-term effects can be grasped more accurately..

According to the quotes of the study case (KPMG 2015), the different tool acquisitions and investments were often driven by attempts to seize the possibilities provided by the contributory system, instead of the actual market necessities. Looking back multiple years, this note however, is not of relevance. Instead, according to my opinion, the subjects of the analysis are supposed to be the extent of the investment success rate, how efficiently it served the interests of the enterprise and how much it had contributed to the betterment of the totalized economic results of a certain sector- or field of industry.

On a domestic economic level, following the totalization of economic results of the enterprises, observance of a certain framework/picture is of the highest importance, as that is the data which reflects the most accurately on the enhancement of societal utility. The extent of contribution in economic success (or in other words the distribution of betterment of economic achievements) for each individual enterprise is not a question of efficiency, as in this analysed research environment, an enterprise provides societal utility enhancement in exchange for non-reimbursable aid. Therefore, the inspection of the question; what different kind of elements this social surplus growth consists of, is not an attempted aim of this research.

Similarly, neither capital- and asset proportional or even per capita income, export income or profitability are capable of accurately grasping the social surplus enhancement. Instead, these indicators are rather supposed to present occurring variations in economic operation of the aided enterprises.

Amongst the general quotes of the referred studies we can find those appointments and conclusions that the per capita revenues and results of the unsupported enterprises outclassed the achievements of the aided ones, therefore the efficiency enhancement of the latter simply could not be observed. In my opinion, in the case of SMEs, the per capita

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(in other words, applied for a single employee) defined economic indicators are misleading. On the one hand, during the 7-year period, the enterprises provided unreliable data about the number of employed individuals, on the other hand, there's a typical routine, namely often times the employees of these enterprises are paid as subcontractors. This method provides sizable flexibility for the enterprise, however, in the meantime it's easily capable of producing unreal indicator values. The above mentioned led me to the conclusion, not to regard employment data in the latter parts of my analysis.

Summarizing the prior stated observations about aid disbursement, analysis regarding territorial distribution appoints that vague disproportions can be experienced. The most significant disproportion can be found in the basis of the comparison. Currently there is no unambiguously accepted approach in existence in regard as to which economic indicators of either fall of or development should be considered when deciding about providing a certain region with more or less contributions. Furthermore, another important question is; how much varied efficiency enhancement can be expected from differently developed fields. As a conclusion of the above mentioned, in my analysis, I'm going to conclude not to take territorial distribution into account.

Often times, the inspectional approach of advisory studies is the so-called industrial point of view, namely the main field of operation of the aided enterprises. According to my opinion, this is also a variable with questionable reliability. It's characteristic to the domestic SME sector, that they tend to involve multiple unnecessary activities in their corporation contracts and often times the main function is dissimilar to the otherwise operating main commercial activity. Therefore, I'm coming to the conclusion, not to regard industrial distribution as a group forming criteria either in the following parts of the analysis.

As follows, let's regard the economic development aspect defined efficiency measurement criteria, construed by the advisory inspections:

- Popularity rate = Claimed contribution/ Resource frame
- Winning rate = Adjudged contribution/ Claimed contribution
- contract binding rate = Contracted contribution/ Adjudged contribution
- Disbursement rate = Paid/ Contracted contribution
- Utilisation rate = Adjudged contribution/ Resource frame
- Absorption rate = Paid contribution/ Resource frame

These indicators don't grasp the economic development efficiency of the contributions, they are rather helpful for those authorities, which are responsible for disbursement, reception and judgement of these different aids. Furthermore, the economic policy communication often times involved providing information on time proportion basis utilisation.

The observations of the advisory studies direct the attention and shed a light on the economic policy motivations as well:

1. The available EU resources are supposed to be utilized exquisitely

This statement phrases a necessary but insufficient condition. Naturally, if possible, the available frames should be utilized to maximum efficiency, however these frameworks were set up prior to the seven yearlong contributory period. Thus, we can conclude that the frame utilization indexes provide insight about the accuracy of the planning phase, rather than the actual economic policy effects of economic development programmes.

2. The disbursement of aid has to be provided with accordance to each and every legislation and regulation

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This ascertainment is a prerequisite bottom line, however, in this thesis we don't regard law- and regulation aspects of the topic.

3. In the case of aided enterprises, supporting the enhancement of their competitive capabilities

The utility criteria regarded in the thesis is the following: The primary aim of those economic development projects which received non-reimbursable aid, should be to provide societal utility enhancement. As measuring societal utility doesn't have a unified and internationally accepted methodology, growth of competitive capability of these enterprises could be regarded as such enhancement. However, on the other hand, if the development purpose aids were utilized for tool- and asset purchase (thus employee requirement diminution) and betterment of per capita economic indexes of the enterprise, the entire picture isn't that unambiguously positive anymore.

The quandary of the topic is whether we expect the enhancement of competitiveness- or employment rate. If the seized goals are employment enhancement and retaining of the currently employed worker base, naturally employment rates are to grow accordingly, albeit the competitiveness of the enterprise might show diminution.

4. Aided projects are capable of seizing economic profitability

Economic profitability and enhancement are generated by both aided- and unsupported enterprises. According to my opinion, the inspection is supposed to focus on economic improvement and the achieved surplus caused by aid disbursement, in comparison to the unsupported competitors.

The summarizing study (KPMG 2017) outshines the rest of the advisory studies in two different aspects. On the one hand, it retrospectively elaborates the results of the entire seven-year long EU planning cycle, on the other hand, the applied methodical analysis

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approach is sufficiently robust, therefore it's of high importance to get to know its summarizing ascertainment and critically survey them.

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The applied macroeconomic model of the study analyses the non-reimbursable EU resources, especially their respective effects on GDP, production, employment, investment, and external trade balance. During the inspection, with the help of a field econometric model, the territorial (particularly in regional, country and micro-regional dissociation) effects of these resources is being analysed. There is another important part of the inspectional methodology, namely quantitative analysis, which emphasized the impact on the economic and monetary system, the estimation effects, and the efficiency in certain fields of interference, with the help of mathematical statistical data research. With the help of qualitative methodology, as in interviews, case studies and focus group discussion, a complementation of the original framework has been fulfilled, providing an entire, differentiated and objective picture.

The most important ascertainment of the study as follows:

1. Non-reimbursable aids don't possess significant positive effects on the economic indexes.

This ascertainment derives from study inspection methodology. The essay defines a control group as it excludes enterprises which did not receive any form of aid. Therefore, prior to the hypothesis inspection I'm going to inspect detailed definition of the control group and the comparable groups, with the help of which, a more accurate description of the economic development effects can be provided.

2. In the case of non-reimbursable aids, the industries which absorbed major contributory resources, achieved slightly better results than the rest of the industry.
3. Even by excluding size-based comparison of these enterprises, no unambiguous statement can be defined about the efficiency of these contributions in any economic size class.

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4. In the case of non-reimbursable aids, the inspection of the territorial dimension of these affects didn't show significant differences.

Based on the utility criteria regarded in the study, these three ascertainment are neutral, as in the case of aids, a social surplus enhancement is the single expectancy, while no further criteria are being formed regarding the size-, field of industry- and territorial distribution of these enterprises.

5. Reimbursable aids not only have more but also more significant effects on multiple economic indexes of the inspected companies. In regard of profitability index, the beneficiary enterprises performed significantly better.

In the hypothesis inspection I'm going to provide a detailed insight into the circle of enterprises, which received any form of aid during the different years of the contributory period, meanwhile also circumstantially analysing their effects on economic indexes.

The most important conclusions of the inspected studies, as follows:

1. The enhancement of employment is mostly rather induced by large volume projects, whereas the gross added value growth can be typically achieved by supporting investment projects of medium-sized economies.
2. Tool- and asset aid provides greater extent of gross added value creation, furthermore labour involvement also becomes cheaper as an effect of these investment aids. In comparison, productivity betterment is expected for those economic players, who requisite aid towards constructions and estates.
3. The demands on investment aids were mostly utilized for modernization, capacity expansion and to match communal prescriptions.
4. Tool- and asset investments were often times driven by the provided available contributory possibilities instead of the actual market demands. For example, with the lack of aid, many agricultural/farming machines wouldn't have been

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purchased and the enterprises would have to opt to obtain less up-to-date, used or minor capacity assets.

5. The lack of trained and skilful labour often times causes problems for the farmers, to which, aids and contributions are short of a solution. In many cases, the demand for automation and modernization arises exactly to ensure the operation of farming.
6. Without the help of these aids and contributions, the beneficiaries would have purchased on longer term (smaller scale), less up-to-date, or occasionally even used producing tools. Even without requisition of the aids these farmers would still be attempting to enhance their operational results, however the level of productivity and technological advancement they managed to achieve up until today, simply could not have been seized without contributory help. With the help of the acquired producing tools, the beneficiaries managed to establish a more precise farming and as a result of these achievements, the unit costs (fuel cost, used amount of seeds, sprayer cost) all respectively diminished, however, they didn't contribute to the intense form of (vertical integration strengthening) economic enhancement.
7. Direct contributions cannot be separated from all different other sources of income, their utilization is not bound to any form of economic activity, as it serves as some sort of income in the operation of farming, thus the farmers are incapable of accurately defining the exact apportionment and utilization of these received aids.
8. Even though income coverage contributions tend to have a positive short-term effect on economic performance and productivity, albeit their effects seem to disappear on the long run. We have to take into consideration, that a significant share of these contributions appears as consumption within the GDP, therefore they don't mean long-term sustainable, economic recovery effects.

As a consequence of the market insecurity, the number of simple producing tool purchases far outweighed the long-lasting economic enhancement assuring, complex, much more effective construction investments.

### 3.4. The research methodology

The first challenge is to define the control group. In the following I will consider the possibilities.

1. Companies not receiving state aid subsidies cannot be considered in general as control group.
  - a. We should differentiate by the size of companies, since micro, small and medium sized companies can be compared only by themselves
  - b. We should consider the year of payment received
  - c. Differentiating the industry segments is necessary
  - d. The goal of the subsidy has to be considered in more detail, since an IT development project's impact can only be compared to a similar project

We conclude that it is the best available comparison if we consider the entire economy, i.e. the whole amount of companies as control group.

In the next table we show the initial endowment of the companies which received subsidy out-payments later on.

#### 4. Table: The initial endowment of the companies receiving subsidy out-payments

0-10%	10-20%	20-30%	30-40%	40-50%	50-100%	100-150%	150% +	TOTAL
28%	14%	9%	7%	6%	15%	6%	15%	100%

*Source: Ministry of Finance, NBH, own contribution*

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One fifth of the companies had initially more savings that needed for executing the project, while approximately the same proportion of companies practically did not have any own contribution to execute the projects.

The question is as follows: shall the companies without any own contribution be eligible for subsidies or vica-versa shall companies be subsidized when they would be able to execute the whole project without any external financing.

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## 4. Empirical research of moral hazard issues

Empirical examinations are attempting to grasp the actual impact of state intervention on both micro and macro level. (Beck, 2007) (Berger, Allen N. & Udell, 2002) (Campello, Murillo, Graham, & Harvey, 2010). The theoretical model was based on (Holmstrom & Tirole, 1997) and (Kállay, 2017). It's the very first document to put the examined mechanisms of state support to framework. The state support by itself is unable to tackle the problems caused by moral hazard, therefore it is beneficial to reconsider the assumption, that through positive externalities, rendering resources to state support is effective. However, in this contributory environment the state itself also induces moral hazard, which affects the actions and decision-making of the participants. State support is of a thousand faces, it cannot be standardized.

This is a remarkably complex system, with various goals, institutional- and intermediary system and other diversified and conditional systems. A certain statement might be true for one element of this system, whereas not so much for another component. Therefore, what I'm going to investigate, is how the individual elements of this (mostly EU financed) domestic SME operational support system may vary. How these non-reimbursable supports, state-supported credits and guarantee programmes affect and inspire the participants, and how can we grasp the social surplus?! The reason I'm diving into such depths regarding moral hazard, is to gain a better understanding of how much advancement and growth does state support truly provide towards social welfare. The report however, does not attempt to approach the topic of state support with a critical edge, instead, it strives to provide a detailed analysis of the subject. The results of the report can greatly benefit to process an objective methodological evaluation.

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- **The goal of the research**

My primary aim throughout the research is to examine and verify the existence of moral hazard of each and every direct state support through quantitative methodical analysis. Based on (Babbie, 2015) the research can be seen as exploratory, investigating a previously less discovered field of research, which requires examination of the impact of moral hazard in case of direct state support. The topic has not previously been analysed thoroughly, therefore defining descriptive and explanatory sub-objectives becomes a necessity.

The midst of the research consists of small- and medium enterprises. Therefore, the goal of the research is to gain understanding and explore questions about short- and long-term effects of direct state support, from the SMEs' point of view. This will lead us to a better understanding of the social surplus. The planned examined questions concern a brand-new field, which involves a numerous amount of enterprises related to state support. The EU has only recently started the methodological supervision and disbursement of contributions; thus, the relevance of the subject has only been present in the last 8-10 years. The Hungarian support-mediatory system differs from other countries' in many aspects, due to the fact, that it's been (correctly) based on domestic needs and requirements. However, this also means that according to certain theoretical and practical economic aspects, exact recognition, understanding and positive consideration of this particular system might lead to (from a global social perspective) a better functioning system. Throughout the research, analysing formal theoretical models and other questions of economic theory, such as adverse selection, asymmetrical information, and specified moral hazard, can only be done with consideration of the properly recognised and presented domestic peculiarities.

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The research (Maxwell J. , 2005) divides its aims to intellectual, practical and personal goals. As follows, I would like to unfold the obtainable sub-objectives and their motivations.

The **intellectual goal**, I'm looking to achieve by writing this report, is to contribute to the development of methodological theory of one of the engines of Hungarian economic prosperity, namely the effective spending and supervision of the EU contributions. Laudably, the domestic economic policy attempts everything within its power to spend EU sources effectively and regards the primary governing goal to be social surplus maximalization. Despite all the positive efforts, this occasionally fails, either by unreal perception of social surplus, due to inaccurate definition of the real incentives of the support-mediatory system or because of other applied ineffective solutions. Therefore, this report fills a gap, as instead of attempting to hold anyone responsible, it aims to set up an objective framework that can lead to the justification of proper measurements. Researching moral hazard first started in the insurance sector and through simple incentive changes, such as in case of the introduction of the bonus-malus system (Richaudeau, 1999) (Dionne, 2005) provided empirical evidence, that the moral hazard diminished significantly. (Abbring, Chiappori, & Pinquet, 2003) and (Cardon & Hendel, 2001) have all proven the positive effects of the altering of incentives throughout detailed research of big databases about health insurance. E.g. analysing the converse relation between previous insurance claims and ones from the future. The conclusions of the dissertation can effectively complement the current supervisory and decision-making mechanisms in a similar manner; by providing simple and tangible recommendations.

- The **practical goal** of making this document is to contribute to the establishment of a serviceable supervisory system, that is capable of providing effective support to domestic enterprises, which aim to seize their economic goals through/with the help of state support. In case of state support, countries with a well-working and long-standing fund- and policy-market, tend to see the solution in the regulation

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of the mediatory system, arrangement of capital requirements and other incentives. The domestic system offers way more discretionary right in centralized decision and implementation. Therefore, the moral hazard shall vary throughout the construction and the operation of the support-mediatory system, thus each and every participant adapted in a different manner to tackle the domestic particularities. Considering these peculiarities, phrasing specific incentives and regulations will be the primary goal. Fine-tuning the construction and operation of the development bank system is a well-defined development goal in every region of the world. (Griffith-Jones, Tyson, & Calice, 2011) examined the Latin-American adaptability of the development bank system of the developed world. (Shen, 2009) researched the correspondence between the size of the bank and the size of the financed enterprises. (Diaz-Serrano & Sackey, 2015) investigated the efficiency of the different supportive forms of micro-financing in Ghana. The empirical research shed light on significant local peculiarities, that have little to no impact on the cultivation of the formal modelling. However, they withdraw conclusions, which can have a positive effect on local economic development. From this practical perspective, my dissertation is inspired to fill a gap by gaining better understanding of the domestic economic environment.

- The **personal goal** of the dissertation, sub-serving the other goals, is (in case of a successful thesis defence) to take part of the improvement of the support-mediatory system in developing countries, as academic tutor and researcher. Based on the research regarding the efficiency of the domestic mediatory system, my primary aim would be to develop and support the economic policy incentive system of the SMEs in the region of Sub-Saharan Africa. I look at this intention as a noble goal, one I would like to undertake as an academic career.

Throughout the research of SMEs most literary sources provide empiric analysis of a certain subdivision. From that perspective, I am looking to join the main-stream researches and choose my field of groundwork to be specifically the development of

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domestic SMEs. However not all concepts of the topic have been thoroughly examined, thus I'm looking to fill that gap.

- **The method of the research**

For empirical analysis of the hypotheses and further investigations, I am planning to examine this simple model:

An enterprise for which:

- R is the produced amount of income
- E is the amount of expenditure it operates with, (which consists of all arising and paid costs, as well as the paid taxes and interests)
- G is the amount of direct state support it receives,
- n is the years of lifespan of the tools provided for procurement,
- $G/n$  is every other source of income measured during the amortization period of the enterprise, (which we call ER)
- DA is the accounted amount of diminish in value, (which is calculated by taking all sort of tools into consideration, not only the investment implement by means of contribution)
- AC is the value of net delimitation it possesses

The expected returns of the entrepreneur regarding their own capita and the state support may differ. Rephrasing the assumption, the enterprises which receive direct state support, do not pay interest after the contributed amount, therefore even in case of a lower return expectancy, it is often reasonable to implement the investment. This suggests the possibility, that from the enterprise's point of view it might be profitable to implement a project, which normally couldn't come to fruition, either from own resource, or with

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standard commercial bank contribution. If we consider economical profitability to be the primary social surplus in case of projects that normally wouldn't be able to materialize within normal market circumstances, we have to put emphasis on competition-neutral behaviour. In case of projects brought to fruition from non-reimbursable source there is an important aspect: during a hypothesis inspection, we have to consider the conformation of the enterprise's value which can temporarily differ based on the varying profitability.

In such case, we have to investigate, the ways there are to reduce risk, or in other words, the guarantee that the contribution will be provided to a profitable project, what will preclude the enterprise from requesting the support, despite being fully aware of the fact, that their project is destined to be loss-making.

Examining the state support of SMEs, there is a vast pool of contracts, slathers of enterprise-specific data, and large amounts of macro-data available. In order to provide answer to the stated questions of the research and the hypothesis inspection, we have to dig deeper, thus I'm intending to test my thesis through quantitative examination methods. For which, I have inquired directors working in the contributory institutional system, hence the impoundment of the examined environment led to result.

Out of the paradigms to acquaint reality, (Burrell, 1979) the chosen research method is called functionalist methodical approach, in which we simultaneously apply a positive interpretation of reality and quantitative research method. Qualitative methods are more suitable to formulate micro-level conclusions, to grasp aspects of human behaviour. Therefore, I've decided to include and utilize the assessments of my in-depth interview with the chosen expert from the state representative of the development policy.

During the empirical investigation, in-depth recognition of the economic problem (with further emphasis on the ethical questions of the research methods) is crucial. Therefore,

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questionnaire survey, as a qualitative research method, I had to rule out. I assumed that, this way, a detailed understanding of the subject cannot be fulfilled. Within the frames and strategies of the research and its specific conditions it can be seen, that the chosen qualitative research is a measuring, rehearsing and corresponding examination. Observing the entirety of the problem regarding the financial issues of SMEs, I could take appropriate measurements. However, to gain complete understanding of the moral hazard involved with direct state support, within the framework of the dissertation, I had no choice but to take impounding assumptions and introduce a detailed conceptional framework. The definitions regarding state support had to be separated and delimited to only this certain field of research. After proceeding, the corresponding, yet often distinctively appearing moral hazard and adverse selection had to be separated and defined individually. The multitude of questionnaire survey, the formulation and interpretation of the questions would only allow us to seek answers to basic problems, such as empirical examination of adverse selection, during the financing of SMEs. However, it would not provide solution and advice to the specified questions and aims of the research, namely the presence of the state in SME finance. The hidden individual actions and the peculiarities of the project, in other words the manifestation of moral hazard would remain unexamined.

During the defence of the dissertation draft, one of the judges suggested requisition of quantitative methodology. To carry out the hypothetical investigations (despite the hardship of finding a person with relatable experience and accurate insight, regarding the problems and deficiencies of the topic) I arranged an in-depth interview with a project leader, who has been present even before the 7 year-long tender cycle. However, I opted not to include the conclusions of the interview.

I am not going to consider specific occurrences, for example, where the contributed enterprise converted the state support into non-producing goods, hence in such case we can presume, that a violation of terms, fraud has been committed. In the report I am only

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going to take those inner incentive-based hidden actions into account, where in exchange for the support, the enterprise promises social surplus, however, fails to carry it out.

- **Hypotheses and questions of the research**

Because of the strong limitation involved in applying for loan, SMEs fall short of receiving the amount of credit they could utilize. Had they been able to receive credit, they could increase their income generation, perhaps through accomplished innovations. The thriving revenue and profit of an enterprise is beneficial, as it increases societal welfare. In case of non-reimbursable state support some questions arise: Compared to the actual social cost of the support, how positive of an effect can be identified and how expansive of a private benefit can be perceived? In what ways will the attitude of enterprises change towards developments? Is it a realistic alternative, that in case of non-reimbursable support, an enterprise would still opt to finance a project despite the lack of sufficient own resource? Had they possessed enough own resource, the project would not come to realization, because of the diminishing increment. Yet it would still be clearly worth it for the enterprise to carry out the investment, because the total amount of the contribution would increase the value -whereby the wealth of the owner- of the company.

A significant element of the economic development policy of the EU, is the contributory system, which provides enterprises non-reimbursable support, covered from the federal budget of the member states, or in other words, from direct state support. In the dissertation I am examining the different possible effects of direct state support on the behaviour of enterprises. I identify direct state support as a source of finance; therefore, I started my investigation with analysis of the finance of SMEs. One of the most significant monitoring questions of the topic is the dissection of moral hazard involved in the process. According to my opinion, the moral hazard of direct state support can be explored by a similar toolbar that can be applicable to that of the assaying of finance. First and foremost,

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it is necessary to define, what we exactly mean by the phrase direct state support, and what kind of moral hazard are involved during the process.

By clarifying and defining moral hazard, we can grasp a more accurate approach in measuring the effects of state support on the social surplus. With qualitative analysis, I attempted to make a more accurate and deeper understanding of moral hazard, especially the perception of moral hazard for the different economic operators. As the theme of state supports is a very sensitive and hardly researchable matter, qualitative deeper analysis of the subject with involvement of the concerned operators is indispensable.

I define direct state support as a source of contribution provided to seize preformulated set goals, without expectation of fund and yield in return. Current main-stream literature defines state support to be responsible for bail-out, as the saviour and rescuer of those monetary mediators, which got into problematic situations. Even in this case we talk about a provided source of contribution (in order to seize fiscal and monetary goals). However, here, the expectancy of fund and yield can be a lot more heterogeneous (Tirole J. , 2009). There are several other ways how the state can interfere with the finance of SMEs, which are not the classical EU-sense state supports. For example, regulation of the finance mediatory system or definition of the operational model of banks (Berger, Allen N. & Udell, 2002).

In case of direct state support, the primary moral hazard can be defined as: An enterprise demands direct state support, despite not contributing to the growth of social surplus. Formal modelling of moral hazard involved in direct state support does not form part of the international research streamline. The monitoring model set by (Holmstrom & Tirole, 1997) is a fundamental work in both the field of state supports and SME finance. This document also appoints the role of the state as a potential financial saviour, responsible for bail-out. Their (Berlinger, Lovas, & Juhász, 2016) work broadens the examined cases to involve direct state support and supported loans, but lives with fundamental assumptions, which render the moral hazard involved with direct state support un-

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assessable. Their ascertainment cannot be applied to the investigated problem, due to assumptions of risk-neutral elements, constant increment and positive externalities.

In case of commercial bank credit financed SMEs, the monetary intermediary system supplies financial source, which later will be repaid, according to the previously stipulated terms and conditions. The bank provides credit for enterprises and in exchange claims assurance in form of coverage. The enterprise repays the funds and the interests of the received credit. In case of direct state support, the enterprises also receive resources in order to seize a goal. In case of achieving the appointed goals, however they don't have to pay any form of interest, nor do they have to reimburse the received credit. In this case the state receives social surplus in exchange for the financial support. The moral hazard involved in case of bank financed projects is that an enterprise might apply for credit, despite being aware of its inability to repay the loan. In case of state support, the received resource won't have to be paid back, hence the definition of moral hazard alters accordingly. The baseline case of moral hazard is the entrepreneur resorting to state support, despite being fully aware of their inability to generate social surplus.

In international literature, the empirical testing of the moral hazard involved in bank financed projects is fulfilled throughout the examination of non-compliant credits. In case of state support, a similar investigation can be run by analysing the generated social surplus of the enterprises, which received and didn't receive non-reimbursable support. In order to define the generated social surplus, I've examined the accounting, monetary and economic effects of these supports, in perspective of the enterprise. As a result of this I defined Developmental Purposed Own Resource, the basic source of project development for an enterprise.

Throughout the materialized development of SMEs, social surplus might or might not come to fruition. The latter is the consequence of moral hazard, namely the enterprise implements a socially disadvantageous development. When a project doesn't create social surplus, despite the contribution being utilized according to the primary goals, it produces

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individual benefit. We have to identify possibilities when individual benefit arises from social surplus, originating from moral hazard of systemic imbalance, obviously not from fraud or embezzlement. The dissertation doesn't intend to phrase criticism about the operation of the contributory system, nor does it want to label its effectiveness, instead it's attempting to contribute towards the identification of flaws and inefficiencies which might even occur during the operation of a law-abiding enterprise.

The first hypothesis is about the verification of the social surplus achieved through direct state support, hence first I'm going to review the specific questions arising during the accounting of contributions. To lay down social surplus we're going to use the definition of (Varian, 2005) and (Berlinger, Lovas, & Juhász, 2016), namely: Social surplus is the sum of individual and communal profit. If the revenue-producing capability of an enterprise grows and remains profitable, thus ensuring its operational capability and the realization of its economic development then we talk about increasing social surplus. We can define social surplus in relation to the enterprise's EBITDA and in such case, we can safely assume a growing EBITDA value. The improvement of revenue-producing capability of an SME can be grasped through the growth of its EBITDA indicator.

The contribution of the dissertation towards the examination of state supports, is exactly that it considers the different contributions from multiple perspectives, such as accounting, controlling and economical point of view. This sets up an inspectional framework, which allows effective examination of these supports from an economic perspective.

Social surplus cannot be measured accurately, however the trajectory of the fluctuation can be defined. If the revenue-production of the chosen reviewed enterprises during the hypothesis inspection rose, we can safely assume growth in social surplus as well, whilst not possessing further information about the rate of the accretion.

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Before inspecting hypotheses, it's crucial to gain understanding of the prior operation of the enterprise. The possible development projects attained from the amount of aggregated capita and the taken effects of the granted support, due to the accounting peculiarities of state aid.

In the dissertation I'm going to study four hypotheses, that cover the entirety of moral hazard involved in case of state support.

First, I am going to confirm, that state support improves the results of the enterprise, for the fact that during the standstill period it appears as other source of income. Hereby I am going to present how the income of the enterprises alter because of the accounting-technical items and liquidation, and due to these occurrences, the change in the profit of the enterprise after requesting for state support. The consequences of this hypothesis are going to play an important role during the examination of the following too. The increased profit further enhances cumulative reserves and own capita. Ultimately, this results in growth of own capital power.

The second hypothesis attempts to look for correspondence between investment and requisition of contributions. During the analysis, I appointed the fact, that there is no unambiguous concept of increment which could be applied in the comparison. Throughout my research I came to the conclusion, that regarding investments based on the results cannot bring interpretable conclusions, for which I provided a detailed deduction during the testing of the hypothesis.

The third hypothesis introduces a new concept: Type-two moral hazard. Throughout this inspection I'm going to prove how much these support pay-outs contributed towards the accession of deposits in holding and financial investments, namely the achieved growth contributed by the aid payment. If enterprises finance their development projects from non-reimbursable state support, they undertake to enhance social surplus. This special case analyses enterprises, which did not expend the entirety of the toll-free state aid to

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realize economic developmental goals, instead they also partially enhanced their own conduciveness. By identifying type-two moral hazard, I'm going to attempt to present, a possible materialization of moral hazard.

During the inspection of the fourth hypothesis I'm attempting a detailed consideration of the documentary expectations in force. I'm also differentiating those technical and substantive elements, which (from the moral hazard's point of view) either play an important role or are completely neutral. After the implementation of the development project, the documentational requirements strongly limit the supervisory possibilities. Therefore, it's important to phrase a detailed consideration of the theoretical consequences, namely the aggravation of the contractual conditions, the effect it has on the range of enterprises looking for contribution, as well as the enhancement of demonstrability of all moral hazard.

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## 5. The results of the research

The disbursement of the supports is ex-post funded, in case of successful completion of the development project. As the expected economic development goal has to be granted posterior, (from toll-free source), additional moral hazard may occur. However, we're lacking well-structured and up to standard quality data about the posterior operational period of these enterprises, which received support between the 2007-2013 projected, 7 year-long cycle. As a consequence of the above mentioned, the goal of the dissertation is to establish a framework, (based on the available empirical data, as present of today), which focuses on the procession of the tender and the operation of the mediatory institution system.

Before applying for non-reimbursable support, enterprises prepare a business plan, with regard to their potential investment decisions. Thereby, they assign -besides other goals-, the amplitude of the investment, the financial costs involved, the pursued income and the forms of finance. In theory, we distinguish outer- and inner source, as well as institutional- and other forms of finance.

The economic consequences of the implementable investment include an increase in income and (in relation to that) in expenditure as well. Due to the lack of detailed accounting- and corporate governing data, it's hard to identify the direct and indirect income-enhancing effects of a development project. Albeit the rationally thinking enterprises prepare these plans, the documents are only available and applicable in their own evaluation system, and naturally are not public. The chosen database of the examined peculiarities of supports is based on publicly available economic data. It consists of data from NTCA and the inner data service of the institutional tender system (which also

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contains public data). Therefore, our examination can only operate with insufficiently detailed, corporal level reviews and reports. By that, we mean the enterprises' data related to the contributory system and their publicly available business reports.

We can attempt to prepare a general plan, consisting of development of the original business activity and the business plan of the development project. However, that would only authorize us to identify short- and mid-term variable costs. The apportionment of the fixed costs between the original operation and the new development is an important executive decision, which might greatly affect the successfulness or even cause the futility of the project. In this case, success is unambiguously identified with the produced profit. By the end of the next train of thought, we are going to return to the statement: When talking about estimation of developmental resources, we should consider the most appropriate value to be cumulative reserves, namely the balance sheet item (BSI) of the accumulated profit.

In the moment of the investment decision, the enterprise has to be aware of the currently available amount of own resources for development goals. By that, we regard those extant and short-term provisional cash funds the enterprise possesses. De facto, this means all the cash, bank deposits and money stock invested in interests, as well as all other investment-based business assets, that can be converted into money in that given financial year. As follows, I am going to attempt to deduce what actual items does this investment consists of, from the cash-flow's point of view. It's important to note here, that in case of a vast difference between own resources for development goals and the available hoarded cash, we have to look for the reasoning in the operation of the enterprise. This is however not a goal of the dissertation, as I'm specifically observing the moral hazard involved in non-reimbursable support.

I'm invoking the theoretical and practical approaches involved during the inspection of bank funding of enterprises. Here we differentiate the so-called working capital, that is necessary to practise regular entrepreneurial activity and the cash-flow, produced by the

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enterprise, which already contains the supplement of the deterioration of invested tools. The bank related doctrines call this tool of measurement EBITDA, which acronym adds all the paid interests, all accounted amortization and deterioration to the pre-tax outcome of the enterprise. The money stock of an enterprise might obviously differ from the cumulated EBITDA, which can be caused by multiple reasons:

- The change of capital elements necessary for the operation of the enterprise, or
- investment that differs from value deterioration of the given years, as well as,
- the value of the paid dividend.

The cumulated EBITDA can provide the value of the own resource for development goals but calculating it might become problematic. This problem can be simplified by taking the value of the profit reserve as the focal point of our approach. Especially, if we consider the fact, that through profit reserve, the paid dividend also diminishes the value of own funds.

In the past decade, the domestic SME sector received significant non-reimbursable support, a fair share of which came from EU sources. The reason behind state interference is the effort to provide a solution to the nonequilibrium status of the market, which is caused by the moral hazard involved in commercial bank finance, namely, to soften up the credit limitations of the market. Direct state support remains an auxiliary source of finance for the SME sector. Besides examining the economic development effects of the GOP (GINOP) and ROP programmes, there is another important field of research, when we talk about modification of moral hazard involved in case of state support: The supported enterprise undertakes the obligation of producing social surplus in exchange for the toll-free tools. Therefore, the moral hazard in this case is when an enterprise accepts these aids, despite being in advance aware of its inability to produce social surplus.

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The extent of moral hazard can be materialized by analysing economic data of the supported enterprises. In my research project, I'm looking for these performance indicators. In case of implementation of the investment, the enterprise carries out an 'appointment 0' payment, which is not affected by the commercial bank finance, nor the enterprise's prior aggregation. During the amortization period, this payment enhances the value of EBITDA with its value diminishment. If the investment comes to fruition with the help of non-reimbursable state aid, the means of its source beside the support might be prior aggregated goods of the enterprise, commercial bank finance, different tender contributions and other sources of finance by the cooperating partners.

On a national economic level, we can observe, that through non-reimbursable EU aids the entirety of the SME sector received additional funding. By that we mean GOP later (GINOP) and ROP programmes. During my hypothetical analysis, with the help of available databases, I am looking to test how to identify the appearance of moral hazard in management of different enterprises.

During the inspection of accounting- and economic development effects of these aids, we can regard those publicly available economic databases, that every enterprise has to annually provide to the tax office, as a part of the obligatory data service. Moral hazard is not an abstract measurable concept, we are able to prognosticate its direction. Therefore, the task is to find a provisional solution, that is able to lessen the level of moral hazard. Only in case of success of the abovementioned goal are we going to be able to ascertain how to grasp the modification of moral hazard. By realization of the prior, we can succeed through panel research, on a time field model, which also contains cross-section data. I attempted to establish a methodology that can provide theoretical opportunity to measure moral hazard, however, I am still short of being able to suggest developing such provision.

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- **Examination of the result-production of enterprises**

As follows I'm performing the testing of the first hypothesis.

*H1: State support cuts back the results of the enterprise during the standstill period.*

In reality this is a technical thesis, which can be deducted from the accounting of these aids. The enterprises receive the amount of support ex-post financed, after the complete implementation of the development project. In the following sustentation period, the part of the support in regard to each given year, can be accounted as 'other source of income'. By default, the income is going to rise compared to the case, had the enterprise not received any non-reimbursable support.

In the evaluation of the management of enterprises, besides the income, the most important factor is profitability. As a direct consequence of the accountant of aids, the operational results of the enterprises will differ from the non-supported ones. Therefore, it is advised to seek out a more precise and less deformed indicator to measure effectiveness. This measuring tool could be the EBITDA; however, theoretical deduction reveals, that this cannot be applied for the entirety of the enterprise, solely to the development project. Currently, this is unavailable throughout public data service.

During the amortization period, the result improving effects of state support can be calculated from the value diminution of the investment and support intensity, which appears as another form of income, exempted from the prior demarcations. For example, if the conditions remain unchanged, a 50% intensity, HUF 140 million worth, non-reimbursable state aid enhances results with an annual HUF 10 million, during the seven year-long amortization period. Here, it's important to emphasize the basis of the analysed, result amending effects. If we consider the baseline case to be the investment not coming to fruition, or the implemented investment not producing income, we can even notice

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diminution of the results. This is crystal clear, as in the case of a non 100% intensity aid, during the amortization period, the value of other incomes cannot match the accounted rate of diminish in value, therefore it inevitably produces loss.

In this case, the implementation of the investment would've come to fruition, regardless of the reception of the non-reimbursable tender funds, serves as the basis of the comparison. The scale of intensity of the aid defines the other sources of income, therefore they have to be result enhancing. However, during the calculation of EBITDA, we do not consider other sources of income, therefore the effect it has on EBITDA is going to be identical, regardless of the investment being financed from state support or any other source of finance.

In case of an investment, we assume that it's going to have an effect on both the return and the costs, thus it also modifies operating profit. If the return grows due to the investment and the accession of costs doesn't chalk up, the results and the EBITDA of the enterprise are going to rise.

SMEs are capable of growth, if appropriate internal sources are available for their development. The single factor capable of enhancing the market value of enterprises, can only be long-term and plannable high profitability. However, every ad hoc and one-time intervention might affect the operation and the market value of an enterprise positively. During the payment of these aids, this effect is a one-time intervention, which results in a reduced-price entry of producing tools. The enhancement of the enterprise's value is not a goal, but a tool of the developments, the primary aim is profitable operation, which can be identified as the accumulated results of multiple years, the growth of own funds.

In the introductory segment of the report, I identified state support as a form of finance, in order to be able to deduce the institutional aid system, through the aspect of commercial bank finance. This working hypothesis greatly benefited the execution of analysis and presentation of the whole contributory system, as a part of which, the application,

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scrutinization, disbursement and supervision of the tenders are being carried out. However, in this section of the analysis, it's about time to examine the question once again, whether we regard non-reimbursable support as a finance solution or a cost-cutting opportunity.

Enterprises receive the non-reimbursable state aid through a tender process, which ensures appropriate and professional administrative process. After the conformational judgement of a contributory request, there is an opportunity to conclude a contract. This document contains an assurance that in case the enterprise fails to carry out the undertaken activities, the entire amount of the aid has to be paid back. If the enterprise doesn't fulfil these obligations, the demands of the proponent can be sufficed from the assured funds. If the sustenance period expires, the enterprise no longer has any sort of liability towards the contributory organizations. This could bring us to the conclusion that commercial bank finance and direct state support are similar fundraising methods, with the latter being significantly cheaper.

If we define non-reimbursable state support as the achieved cost reduction of the procurement of producing tools, that would not mean ex-post financed contributory methodology. In that case, the enterprise would receive the direct state aid, with having to pay a reduced price for the support, equal to the cost elements of the development project. For the accounting of the enterprise, that would mean a reduced entry cost inclusion of the purchased tools. This could lead to the immediate integration of the contributed funds, instead of the desired past project implementation period. The establishment of the monitoring, supervisory and safety systems could be carried out in a manner that is similar to ex-post financed projects, however, in that case, the enterprise would possess more accurate accounting tools to measure the economic advantages of the reduced inclusion entry cost. We cannot assume the implementation of the exact same project with or without state aid, instead the enterprise adjusts the implementation of the project according to the included tender conditions.

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For the enterprise, during the planning phase of the project, the costs and risks involved in the implementation of the development project are clearly known, as well as the assumed revenues, the costs of the operation, and as a summation of the priors, the remuneration plan and the cash-flow statement. With the help of the above mentioned, we can define the return expectancy of the development project. As the enterprise, which applies for the aid is already operating, not only the project itself has to be remunerative, but the entire enterprise has to seize profit, because the logic of the contributory system is not based on the project, but the supported enterprise.

The enterprise not only has to define the cost-reducing increment of the development project, but in the meantime, also has to make accurate assumptions about the auxiliary costs involved with the expectations of the tender system, as well as the costs of the quantifiable risk growth. The diminishing of growth rate involved (due to the tender system's regulations) also has to be defined, which we can assume to be exactly 0. In case of a successful identification of every modifying factor, the differences between the costs and the income of the support financed project and the original development project become comparable, which comparison also includes the bridging finance costs involved in ex-post finance. This analysis makes remuneration of two projects comparable, hence their differences can also be calculated. This methodology allows us to apprehend and conclude the costs involved with toll-free provided tools.

(Banai, 2017) with the help of a well-parameterized econometric model succeeded in elaborating the most important conclusions, regarding the enterprises of the shared NTCA-EMIR database and the contributory system itself. The document ascertained, that the different forms of aids are equally effective, and the enterprises used these contributions primarily for capacity expansion, with the lack of improvement in productivity. With the usage of the NTCA database, (that is based on tax declaration of domestic SMEs) by applying the combination of propensity score-based coupling and panel regression, an accurate analysis of the different corporation performance indicators can be fulfilled. They come to the conclusion that resources with economic development

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purposes had significant positive impact on (I.) the headcount of the employed people, (II.) on the turnover, (III.) on the gross added value and occasionally (IV.) on the operational results as well. By comparing non-reimbursable contributions of the Structural Fund and the Cohesion Fund, we can determine that there isn't any significant discrepancy between the different forms of support. For my dissertation, the magnitude of the essay is exceptional, for the fact that it highlights the results of an examination based on strong, mathematical and statistical methodology, relevant to the entirety of enterprises. I'm going to use the conclusions of the essay and refer to them as base assumptions.

Throughout the dissertation, I'm attempting to analyse details of importance, and in order to do so, I'm going to formulate anonymous databases into cohorts. The main criterion of aggregation is going to be the disbursement year of the tender funds. I'm going to include those enterprises under a single year, which received the disbursement in that given year, either as an advancement, a subtotal, or ex-post finance of the development project's entire cost. Therefore, one enterprise might appear during the analysis of multiple years. I'm going to use aided enterprises of each given year as the most important criteria of differentiation, since we can surely confirm that the implementation of a development project has either started or it's already finished. The annual economic data used for the analysis is rather insensitive towards seasonality. However, the preparation of the state budget and the governmental aspects regarding only each calendar year's disbursements, it is still the most appropriate approach.

The following table shows the cohorts. In the columns with the corresponding years we find the change in the sum of the net returns of those companies received payment in the particular year.

- **6. Table: The conformation of income of development projects during the sustenance period**

	2008	2009	2010	2011	2012	2013	2014
2009 - 2008	-11%						
2010 - 2009	6%	1%					
2011 - 2010	7%	7%	9%				
2012 - 2011	-4%	-2%	0%	0%			
2013 - 2012	4%	4%	4%	6%	8%		
2014 - 2013	10%	11%	11%	9%	11%	11%	
2015 - 2014	10%	8%	6%	6%	5%	7%	8%
2016 - 2015	-5%	-4%	-2%	-3%	-2%	1%	-1%

*Source: Ministry of Finance, NBH, own contribution*

Here we can observe that the supported enterprises of 2011, 2013, 2014 and 2015 showed similar enhancement results, regardless of the date of the disbursement. In the years of 2012 and 2016, the economic growth of enterprises which received aid priorly, are smaller than the ones which received them later in time. In the different years of the establishment of the contributory system, we cannot conclude direct correspondence between the elapsed time and the revenue growth of the supported enterprises. We can much rather conclude the direction of the revenue shift with the help of analysis of each year's economic events.

The most appropriate identification we can provide to moral hazard, is by observing the implementation of the phrased goals of economic policies involved with non-reimbursable support. If the original goal is entirely fulfilled, we cannot talk about moral hazard.

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We can encounter diverse yield expectancy in the case of own or outer resources. In reality, these two values do not differ, only the sensed yield is dissimilar, because these projects do not involve any source cost (free money). This not only creates less prosperity but also less produced social surplus, as the subvention solely benefits the revenue-producing capability of the project. However, it's important to note that auxiliary income of the enterprise might benefit towards societal welfare, therefore this is rather just a reallocation of funds, compared to an income- or property reallocation.

If we assume that in the case of a market with a wide array of market players, the market price is an exterior circumstance, or in other words, the marginal cost of a single market player doesn't define it, then we can conclude that the diminishing of marginal cost of enterprises won't affect market price reduction, instead it will result in beneficial market advantage, or enhancement in profitability. This increase in profitability can be utilized to:

- Auxiliary revenue of the proprietor,
- Value enhancement of the enterprise,
- Finance of prior losses made,
- Cross finance of other project of the enterprise, as well as
- Aggregation, deposit formation

Based on these, we can define both the intensity and the distribution of the supports. However, from the aspect of our investigation, actual values play little to no role compared to the temporal distribution, therefore as follows, we are going to regard relative values. The following table shows these values.

Every piece of data and information involved with the EU financed non-reimbursable support is of commonweal, hence publicly available. In the following link

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<https://www.palyazat.gov.hu/>, we can find accumulated data, regarding the winners of the different tenders, and the evaluation of the projects.

The economic and finance indicators of the applying and partaking enterprises are also unavailable. It would be important to analyse the economic operation of these enterprises without the deposit enhancing effects of state support. The accounting effect of direct state support could be exactly zero, if the value of every other income would be equal to the accounted diminish in value involved with that given year's accountable state support. In that case, the resulting effect would be neutral, albeit if we talk about any less than 100% support intensity, the pre-tax results of the SME would diminish. The value diminution of the partially own resource financed investment would increase the costs of the enterprise, exactly by that part of the aid which is accounted as income.

The analysis of the question provides conclusions about the revenue-producing capability of the enterprise, if every other condition remains unchanged. This examination can be applied to several similarly-sized enterprises of the same industry and region. By direct state support, the enterprise's owner partakes in income transfer, the effect of which, can be grasped through one of these theoretical possibilities, in the first year of fluidization:

- The enterprise would be profitable, and with the help of direct state support, it becomes even more profitable.
- The enterprise would be loss-making, but due to result improving effects of direct state support, it becomes profitable.
- The enterprise is already loss-making, and despite the direct state support it remains to be loss-making.

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The result improving effects of direct state support applies as follows: If the defined goal of the contribution is a purchase of tools or income enhancement, the non-reimbursable support has to be accounted as other source of income, applied to the sustenance period of the support.

In the case of SMEs, the state aid (as a subject of accountancy) can be grasped three different ways:

- It can be capital subsidy and in that case the enterprise accounts it directly as cumulative reserve, (for example agricultural or utility development contribution). That means, the aid can be accounted as income, thus becoming cumulative reserve, which immediately extends equity.
- It can be labour market aid, in the case of which, the enterprise undertakes of retaining the current- and hiring of new employees. This means that no periodic accounting shall be applied, the enterprise accounts the aggregated contributory sum in the first year, meanwhile creating a provisionary fund to provide assurance if they can only partially fulfil the undertaken obligations. In this case, the prior demarcation serves as the basis of the partial or total reimbursement demand, had the enterprise fail to accomplish its obligations.
- It can be a contribution towards investment, when the aid is connected to acquisition or creation of producing tools. The question is the length of the time period, in which the enterprise can account the state aid as a form of income. This will be defined by the lifespan of the given tool. In the case of the subject of investment being a producing tool, the coincidence of the lifespan and the sustentation period is considered to be the default state. The amount of annual aid can be defined based on the amortisation rate. During the disbursement of the aid and at the end of the first year, the contributory period will be defined, based on

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which results, the other revenues will be accounted, directly affecting the results of that year.

We can define amortization rate based on the lifespan of the given tool, the reciprocal value of which would implicitly mean the sustentation period. Besides the value diminish of the investment, the other forms of income oppositely to the passive delimitation are both accountable sources of aid, which can lead to result improvement. In reality, what happens is that during the sustentation period, the result improving effects of state aids (throughout the cumulative reserves) enhance the own capital of the enterprise. These occurrences directly contribute to the betterment of the capital state of the enterprise. Hereby, I have verified the first hypothesis.

- **The long-term economic effects of support**

In this chapter, I'm going to execute thorough analysis of the second hypothesis and attempt to make conclusions regarding restrictions of explorability.

*H2: The enterprises which received state aid, tend to invest a minor share of their results, compared to the ones which haven't received any form of state aid.*

The following hypothesis investigates the modified motivations of the enterprises which received direct state aid. Similarly, to the case of insurance market, to gain an understanding of adverse selection and moral hazard, we have to analyse the interior modification and intentions of the market players. To bring these assumptions to fruition, the most appropriate methodology would be to come to know the original concept and define the occurring changes based on those data. However, the original intents are hardly ever definable by applying quantitative methods. In this current case the hypothesis inspection is fulfilled throughout quantification of the available tools to the development of the enterprises. We can rephrase the question to the following: How can we most accurately grasp the own resources available for enterprise development. More

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accurately: We would like to come to know about the availability of own contribution, in a certain time period. For these purposes there are annual time series available, which reflect on the annual conditions on the 31st of December of each year. Due to the holdings in deposits of an enterprise (which contains the current account and the amount of possessed cash) are changing mid-year, an average annual data would be far more accurate, however, this data isn't publicly available.

As follows, I'm going to analyse the potential distorting effects of each modifying factor, in a closed structure. This inspection will prove helpful in order to be able to choose the ones capable of grasping development purpose resources.

- Holdings in deposits in the year of tender application

This index will provide the value of accumulated cash-flow, in the case of the enterprise holding all of its amassed profit in cash or cash-equivalents. As the capitalization of domestic SMEs are low, if the accumulations appear as a form of fund replacement, the value of holdings in deposits might fall short of the accumulated profit of prior years.

- Holdings in deposits in the preceding year of tender application

This can prove helpful to estimate the available amount of own resources, if we assume that the payments happened in the implementation year of the development project. In this case, we can grasp the liquidity of the enterprise more accurately by inspecting the value of holdings in deposits of the preceding year, for a fact, that at the moment of decision, it was the only available value.

- Cumulative reserves in the year of tender application

Some additional costs may already arise immediately after the filing of the tender; however, most expenditures are typically due in the following period of the contributory

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decision. This explains why taking the results of that given year into account might prove helpful during the defining of the size of a development project.

- Cumulative reserves in the preceding year of tender application

If we assume that the enterprise priority determines the implementation of the development project, it is more than reasonable to take the value of cumulative reserves of a prior point in time into account.

We have to make a decision, what kind of balance sheet item is capable to estimate the accumulation of development purpose resources more accurately: (Interpreted on the wide array of enterprises), a tool, namely the cash holding, or resources, namely the cumulative reserves. There is another vital asset for our examination that has to be taken into account. These items are solely analysed in the current- and the preceding year of the tender application.

We can also suggest usage of a composite indicator, which is capable of showing the proportion of cumulative reserves available in cash or cash-equivalents. This ratio would be the correlation between the holdings in deposits, cumulative reserves and own capital. In the aspect of our examination, this indicator has no relevance whatsoever.

In the case of non-reimbursable state supports, we talk about ex-post financed tender forms. This means that the entrepreneur has to priority possess sufficient funds for the implementation of the entire development project. These funds can consist of own capital, institutional finance resources, bridging fund of business partners and other forms of tender sources. The task of the enterprise is implementation of the project, and if it's been verifiably fulfilled according to the tender resources, the total sum of tender is to be disbursed to the assigned enterprise.

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Let's regard the approach applied to starting enterprises and during the finance of development projects. By forming these assumptions with appropriate simplifying terms, we are capable to fulfil our hypothetical analysis, despite the vast (more than 10.000) number of enterprises applying for contributory funds.

By adding the accounted value diminish to the produced after-tax results of an enterprise we can obtain its EBITDA indicator, with the only difference being here, that in this case the payable interests and taxes also have to be deducted. This assumption is greatly beneficial in the aspect of our inspection, as featuring interests in the EBITDA indicator attempts the comparability of below balance- and classical finance solutions. Involving taxes in the EBITDA indicator is exactly attempting to maintain economic performances comparable, despite the different tax policies, however this has little to no significance during the inspection of domestic enterprises. As a next step, we have to deduct the expenditures rendered to investments. We have to note here, that in the case of an investment equal to the value depreciation, we would return to the after-tax results of the enterprise.

The fluctuation in cash or cash-equivalents might also be caused by the alteration of working capital, in other words customer demands, obligations towards contractors, as well as modification of the supply balance. During the inspection of cash-producing capabilities of starting enterprises, the significance of these indicators is of high importance. This is unambiguous, as the growth of capital might cause alteration in entrepreneurial behaviour in stockpiling- and customer policies as well as contractor handling. On one hand, no logical connection can be assumed between the working capital tools and direct state support, on the other hand due to terms of size- and geographical distribution of enterprises, several effects might negate each other. In the case of enterprises which received non-reimbursable support, detailed inspection of these occurrences will be fulfilled later.

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Borrowing, and repayment of credit can also modify the cash or cash-equivalents of an enterprise during a certain time period. General finance of the enterprise might vary, new project credits may appear as well as old ones are getting reimbursed. In the meanwhile, the currency and the duration of the finance may both alter. As a joint effect of the aforementioned, the economic effects of these circumstances on the supported project cannot be interpreted as individual economic data pieces. Last, but not least, paid dividends also affect the available amount of cash or cash-equivalents. And thereby we have returned to already defined available cash-equivalent, namely the holdings in deposits.

As follows, let's regard how certain investment decisions affect the intended social surplus.

The **investment** as a consequence of state-aid grant became **bigger**, the project generated **larger** profit and contributed to increase in social surplus, with

1. larger own contribution and larger bank financing,
2. larger own contribution but smaller bank financing,
3. smaller own contribution but larger bank financing,

The investment as a consequence of state-aid grant became bigger, but the project generated smaller profit and contributed to a lesser increase in social surplus, with

4. larger own contribution and larger bank financing,
5. larger own contribution but smaller bank financing,
6. smaller own contribution but larger bank financing,

The investment as a consequence of state-aid grant became smaller, but the project generated bigger profit and contributed to a higher increase in social surplus, with

- 
7. smaller own contribution and smaller bank financing,
  8. smaller own contribution
  9. smaller bank financing

The investment as a consequence of state-aid grant became smaller, but the project generated smaller profit and contributed to a lesser increase in social surplus, with

10. smaller own contribution and smaller bank financing,
11. smaller own contribution
12. smaller bank financing

After listing all possible outcomes, we examine the effect of the individual cases on economic growth. In the first group we have selected the most desirable cases from economic development policy perspectives. Social surplus increases with larger project size, leading to higher investment. This would potentially increase employment, bank lending and generate larger profit by SME's. This is in line with the main goal of economic policy, as (BANAI 2017) pointed out.

We can talk about moral hazard in case of the 3 plus 3 elements belonging to the second and fourth group, whereby due to the state-aid a different project size was selected, with lesser profit generation, i.e. we conclude that the social surplus became also smaller. Moral hazard lies in the modified social surplus of the development project, compared to the original intent of the firm implementing it without state-aid subsidies. The firm indeed might have different projects effecting profitability; therefore, it might be misleading to derive the success of the project from the company's overall performance.

Moral hazard of state-aid can be reformulated as firms are accepting subsidies by knowing that the new development project will not have the optimum size, it might be bigger or smaller, but the increase in net revenues or profit lags behind compared to the original project without any restriction of documentary requirements. Any restriction might alter

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the development project's success, therefore, to understand the planned hidden action of the firm regulators should understand what would have been the real project size without state-aid grant, or in other words, what is the firm's understanding of optimum project size.

### 5.1. Second degree moral hazard

In the case of SMEs, we can encounter similar consequences as the moral hazard involved in the TARP programme (Sheng, (2016).). This is another form of moral hazard, under the name: Type two moral hazard. During the disbursement of these aids, the state expects the enterprises to provide social surplus. The reimbursement of the aid is carried out through the produced social surplus, which means that these toll-free- and permanent monetary tools are to remain in the accounting of the enterprise. When an enterprise applies for and accepts support, despite being aware of its inability to produce social surplus, we talk about moral hazard. However, it's crucial to examine and interpret the situation from a different perspective. Such as in the case, when an enterprise accepts state aid, but only does so in order to substitute the resource requirements of the development project, and to deposit the remaining own resource into bank. Another example of the above mentioned: The enterprise might also use these state aids to expend on investments which aren't crucial for its operation, but can be greatly used for private investment purposes, or simply for cost coverage.

The question which immediately arises: Can we talk about **type two moral hazard** or is this just a special case of moral hazard. We define the presented case of support as follows: The enterprise accepts the aid, but the enterprise and/or the owner utilizes these resources to contribute for its/their own utility, as opts to carry out the development project, from the significantly cheaper aid, instead of the available own and/or bank resources,

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**H3:** *The growth of holdings in deposits of those enterprises which received state aid might be the consequence of type two moral hazard.*

During the detailed analysis I've only regarded the growth of holdings in deposits, as private expenditures of the enterprises can hardly be grasped. Throughout the hypothesis analysis I don't emphasize the topic of dividend payment either (as a potential alternative to convert state aid into individual utility) and did not attempt to phrase separate hypothesis regarding this aspect of the topic. It's exceptionally difficult to define that segment of dividend payment which might be problematic from the enterprises' point of view. Similarly, connecting the profit of prior years to dividend payment is another aspect of the topic, that is hard to tackle.

We have to regard the case, when an enterprise finances the investment from state aid, instead of own resources or with the help of the commercial bank system and chooses to invest its available own resources into financial market goods. This matter immediately poses the problem of competition-neutrality once again. In the case of an enterprise possessing sufficient resources to carry out an investment, applying for- and receiving toll-free support would only mean a simple income transfer, enhancing private conduciveness of the entrepreneur, from taxpayer money.

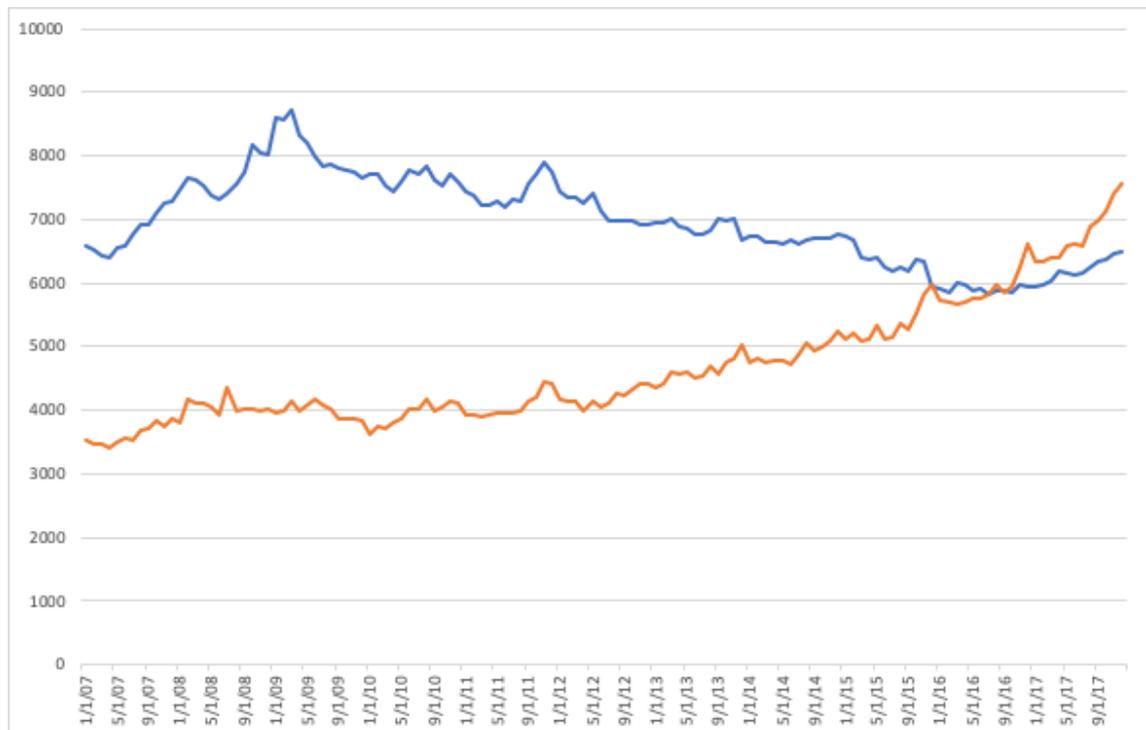
In the case of EU aids, the state is obligated to bar out any possible form of fraud and is engaged to do everything within its power in order to include strict regulation and sufficient sanctions within the contracts. However, these contracts do not attempt to filter any form of entrepreneurial behaviour, despite it is causing diminish in social surplus, due to the moral hazard involved.

The global economic crisis, which started in 2008 had a significant effect on the outstanding loans of the enterprises. However, we can gain a better understanding of the

subject by observing the more surprising and notable fluctuation of savings. Regarding the in advance described development purpose own resources, we have already defined which internal resources can be available to be invested. For these enterprises it's a reasonable assumption to keep their unattached cash or cash-equivalents in different investment forms which are not only easily releasable, but also value holding, as well as do not require profound economic and investment bank knowledge. The latter has a significant emphasis, as we can assume that from an investor's point of view, enterprises tend to behave risk-averse with their cash or cash-equivalents. Thus, bank deposits seem to be the most characteristic forms of capacity reservation.

The historical conformation of loans and holdings in deposits of domestic, non-economic sector enterprises are demonstrated in the following diagram, where the blue line represents the total credit exposure and the yellow line the total savings.

### 7. Graph: conformation of loans and holdings in deposits



Source: Ministry of Finance, NBH, own contribution

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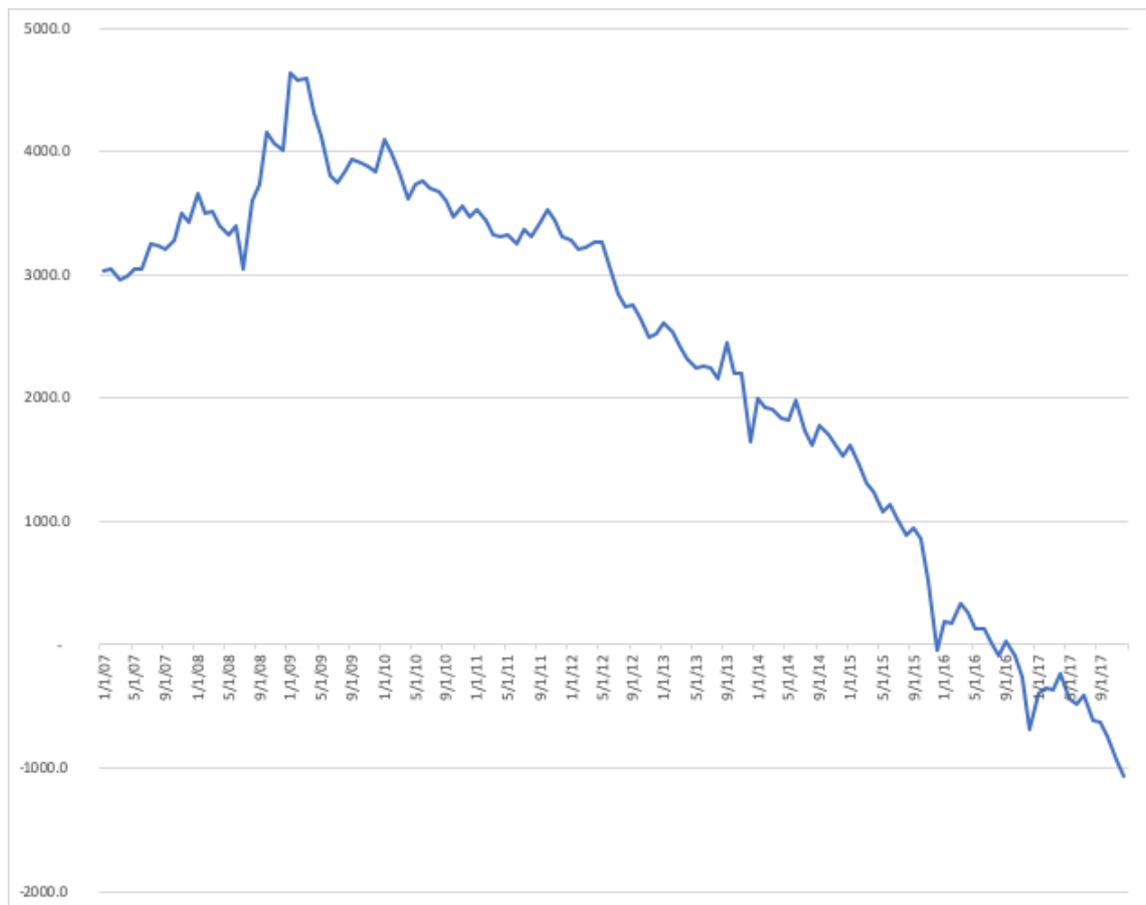
We can observe a continuous diminishing in the case of credit, and growth in holdings in deposits. As a result of this procedure, by the end of 2016 the latter exceeded the totalized value of loans.

The diminution of credit is a direct consequence of the commercial bank system's reaction, this process has been characterized under the concepts of adverse selection and moral hazard. The answer of national economic policies to rein up credit diminution differed state by state, in the national manifestation of EU contributory policies. The domestic approach emphasized rather on the non-reimbursable aid, instead of the supported loans. From the perspective of the offered reduced rate loans, the most important factor proved to be the Loans for Growth Program (NHP), announced by the Hungarian National Bank.

The apprehended interest rates of commercial loans have significantly lessened, due to the diminishing reference interest rate. At the beginning of the 7-year planning cycle, in January of 2007, the central bank base rate was 8 percent, which rose to 11.5 percent by the end of 2008, due to the economic crisis. In the next year, by August of 2009, a continuous diminution set it back to the previous 8 percent. The following three-year period hadn't brought significant (only a few basis points of) fluctuation, and the base rate remained between 6-7 percent. However, only up until the beginning of 2013, from when it showed unambiguous diminution. Only in this year, the rate of reduction rose to 3 percent, and with 1 percent setback of the following two years, which resulted in a less than 1 percent result by 2016. Compared to the beginning of the inspected contributory period, this is a 7 percent fall and compared to the achieved maximum rate of 13 percent, this means a more than 10 percent diminution. This accurately demonstrates the gradual advantage loss of the institutional contributory policy system's products. In other words, by the end of the contributory period, the relative advantage of reduced rate credit had run out.

If in the case of commercial bank loans, we count with 4-500 basis points of additional credit charge towards the SME sector, the apprehended base rate dropped back to one third of the original. However, it remains unclear, as why the outstanding loan stand of the entrepreneurial sector continuously decreases, despite the above-mentioned prevailing trends.

### 8. Graph: Net position of loan and holdings in deposits



*Source: Ministry of Finance, NBH, own contribution*

On the other hand, neither the diminishing deposit rates bolster up the growth of deposit stock. As follows, let's regard the process of loan-deposit stock conformation, between the 2007-2016 progression period. Compared to the nominal value, the net position

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showed a HUF 5.500 billion diminution. In other words, during the inspected ten-year period, the cumulated effect of loan stock abatement and the growth of deposits showed significant heights.

In theory, the growth of deposit stock of the enterprises can be caused by the following reasons

1. A significant profit rises

Talking about aggregation, the most important factor is the profitable operation of the enterprise, which becomes part of the cumulative reserves, through accounting of liabilities and assets, directly enhancing own capital. The enhancement of profitability can prevail due to the positive effect of lower fair value during the implementation of the project. However, the enhancement of profitability is a direct consequence of accounting settlement of the contribution. This occurrence can be explained as: During the sustentation period of the implemented project, as part of the amortization policy, the contributory sum is accounted as multiple years' income.

As follows, let's take into consideration the conformation of cumulative reserves in the first three years of the contributory period. The columns signal each year's different aided enterprises, whereas in the rows, we can find the enhancement of achieved cumulative reserves.

**9. Graph: The conformation of cumulative reserves in the case of enterprises which received aid during the early phases of the contributory period**

	2008	2009	2010
2009 / 2008	13,4%		
2010 / 2009	5,2%	6,7%	
2011 / 2010	8,6%	7,3%	10,2%
2012 / 2011	12,1%	7,7%	7,3%
2013 / 2012	8,6%	10,2%	6,9%
2014 / 2013	8,3%	8,9%	10,4%
2015 / 2014	10,1%	9,5%	10,6%
2016 / 2015	7,3%	8,8%	12,9%

*Source: Ministry of Finance, NBH, own contribution*

We can observe, the extent of cumulative reserve enhancement outweighs the enhancement of deposit stock. The trend remained similar in the following years. It's applicable to the entirety of enterprises, that after receiving the support disbursement, they managed to either secure, or even further enhance the growth rate of their cumulative reserves, namely, they were capable of continuously improving their results.

**10. Graph: The conformation of cumulative reserves of enterprises which received aid during the later phases of the contributory period**

	2011	2012	2013	2014
2012 - 2011	9,0%			
2013 - 2012	10,4%	10,8%		
2014 - 2013	10,6%	11,2%	12,9%	
2015 - 2014	12,3%	14,2%	15,4%	17,0%
2016 - 2015	12,3%	14,2%	14,8%	15,9%

*Source: Ministry of Finance, NBH, own contribution*

However, we cannot take income growth and (through that) payoff enhancement into account, as these are only technical assets, thus do not mean factual fund transfer. Instead, we are going to consider and note them while discussing aid disbursement.

2. Value diminution enhancement

During the inspection of the operation of enterprises, we encounter another significant asset, which despite appearing as a form of expenditure, doesn't become paid: The accounted value diminution of any given year of a previously implemented investment. Non-reimbursable state aids do not directly enhance deposit stocks, because depending on the support intensity, enterprises only recover a certain part of the implemented investment.

In the case of ex-post financed aids, even if the enterprise recovers quid pro quo value of the financial execution, compared to the original monetary position, the enterprise would be in a worse position, exactly up to the uncovered contributory priority portion.

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As the enterprise has already implemented a supposedly ex-post financed investment, we can certainly state that the value diminish is going to be larger, compared to the case, had the investment not come to fruition. Naturally, if we are to compare the aid-funded development to a non-supported investment implementation, we can deduct that the deposit stocks show higher values, up to the contribution intensity ratio. Secondly let's consider the case of an enterprise successfully implementing a major investment. If the extent of the investment is equal to the degree of the contributory intensity, the outcome of the aid is going to be neutral, whereas if the intensity is outscaled and exceeded, we talk about a short-term negative and long-term positive effect.

In the case of (positively judged and thus) aided projects, the accounted value diminution is going to integrate both into the results and the cumulative reserves, until the extent of the contribution intensity. Compared to projects which didn't receive any form of aid, the most significant difference is going to be that in the case of the first example (non-aided projects), the deposit stock of the enterprise will be reckoned as the exceeding part of the accounted value diminution of cumulative reserves, whereas in the second example (aided enterprises), it's going to be the cumulative reserve itself.

### 3. Postponing investments

This opportunity is simply unavailable in the case of ex-post financed tenders, which is self-explanatory, namely if an enterprise postpones an investment, it's no longer entitled to claim any form of payment.

### 4. The owner or operator doesn't draw out any dividend

If the owners or operators decide to pay out dividend, they are able to carry out the process from cumulative reserves, or in other words from the amassed profit of prior years, therefore we would expect the diminution of these values.

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## 5. Realization of tools and assets

Here, in this case we can regard tools and assets that are easily liquidable, which are purchased and held solely for sales purposes. These assets were exclusively bought to be utilized until the implementation of the project, and their quid pro quo was accounted to finance the project. However, it's not a realistic scenario that after the completion of the implemented projects, the vendition of these tools and assets served the sole purpose of deposit stock enhancement. According to the prior statement, we cannot take this opportunity as a possible deposit stock enhancing method.

## 6. The alteration of working capital

The reduction of necessary working capital might enhance the amount of available cash and cash-equivalents, whereas its growth reduces the availability of such funds. These items might be significant; however, these are non-recurring, one-time effects, affecting only a single operational year. The liberation of these necessary operational cash-equivalents can only come to fruition, in the cases of diminishing trade receivables, growing contractor debts and diminution of supplies, namely semi-finished and finished products. We have previously regarded and separated those cases, where a slackening of the short-term financial barrier was either caused by EBITDA enhancement or by borrowing. The possible reasons (organized in listed order) might possibly be: As an effect of enhanced sales, the value of trade receivables starts to rise, whereas if the volume of the sales starts to show diminution the latter value might diminish as well. In the case of shorter payment deadlines, we can assume diminution as well, however, if the deadlines swing to further timestamps, a certain growth is to be prognosticated. The supply stock is capable of diminution, if the enterprise is capable to increase stock rotational speed. This might also be a result of a non-reimbursable aid.

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The enhancement of contractor stock, (if it doesn't originate from a delayed payment but a modified operational model), is also capable of decreasing the working capital. Vice versa, if a shorter payment deadline is being introduced, contractor stocks are diminishing, and financial requirements might show growth.

If we are to examine temporary deposit stock enhancement, we can conclude that these occurrences might be caused by alteration of customer-supplier contract elements. Unlike stock rotational speed, the above-mentioned events cannot be directly bound to the communicated goals and aims of the economic development. The stock rotational speed induced variations arise as one-time (non-recurring) effects and their extents scale to sales values, which in most cases are expected to be low. Therefore, during the examination we concluded that the alteration of necessary working capital doesn't explain deposit stock enhancement, thus this case shall not be regarded.

## 7. Borrowing

From a cash-flow point of view, borrowing does actually amend the monetary situation of the enterprise, however, it's a highly unlikely and unrealistic situation, that any enterprise would opt to apply for loan to place it as a deposit. The fulfilment of such borrowing is mostly caused by speculation aims, as a cause of which, the enterprise is obligated to seize an arbitrage investment with a yield higher than the loan interest. This can only come to fruition by taking significant risks. It's important to note, that this is not the case of moral hazard, rather it's a conscious excessive risk-taking by the enterprise, which is completely contradicting the policies of non-reimbursable aids, therefore, these actions have to be regarded as fraud attempts. Concluding the above mentioned, we come to the arrangement that exterior monetary source involvement has a neutral effect on the deposit stock rate of the enterprise and for our inspection, the diminution of overall amount of credit is a much more realistic scenario.

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#### 8. An enterprise partakes in aid disbursement

This scene can only happen after the implementation and verified rendition of the project. Every investment cost of the project has to be in advance financed by the enterprise, which might be fulfilled either from interior or exterior source. In the case of own resource financed contributory projects, the enterprise recovers a certain fraction of the costs it's entitled to, up until the extent of the contribution intensity. However, the enterprise does not operate on a better monetary position, as the implementation of the project also involved usage of its own resources.

#### 9. The enterprise received equity injection

The entirety of those enterprises which received both non-reimbursable aids and equity injection is incredibly low, no more than 1 per thousand. These enterprises could apply for tenders possibly either in advance or after the equity injection, however, the low case number does not explain the deposit stock enhancement.

In the following graph, we can observe the deposit stock enhancement (compared to the results of the prior year) of those enterprises, which received non-reimbursable state aids in 2008, 2009 and 2010, in the following years of the contribution disbursement. In the last column the data about the conformation of the entire corporal deposit stock can be found.

**11. Graph: The conformation of deposit stock, in the case of enterprises which received aids in the early stages of the contributory period**

	2008	2009	2010	Total corporate-savings
2009 / 2008	-6,4%			-4,7%
2010 / 2009	13,5%	5,1%		7,9%
2011 / 2010	1,6%	5,5%	7,5%	7,3%
2012 / 2011	2,1%	12,8%	7,9%	-0,4%
2013 / 2012	28,7%	23,8%	23,3%	14,3%
2014 / 2013	-1,8%	-8,5%	-1,7%	4,0%
2015 / 2014	19,3%	32,5%	27,3%	14,3%
2016 / 2015	0,9%	-9,3%	-4,6%	10,6%

*Source: Ministry of Finance, NBH, own contribution*

We can observe that compared to the control group, in certain years, each of these aided enterprises enhanced their deposit stocks much more efficiently, yet in other years, they seemed to fall away significantly. The most significant difference occurred in 2014, as in this year, each of these aided enterprises diminished their deposit stocks, despite the domestic trend showing mostly enhancement of these values.

As follows, let's regard the conformation of deposit stock of those enterprises, which received the disbursement of their aids respectively in the second part of the contributory period. The laggard and diminishing results of 2014 was rather characteristic for those enterprises, which received their aids in the prior stages of the contributory period. Those enterprises, which received support in 2013 performed with unambiguously more amassment than the ones which did not receive any form of aid.

**12. Graph : The conformation of cumulative reserves of the enterprises which received aid in the later stages of the contributory period**

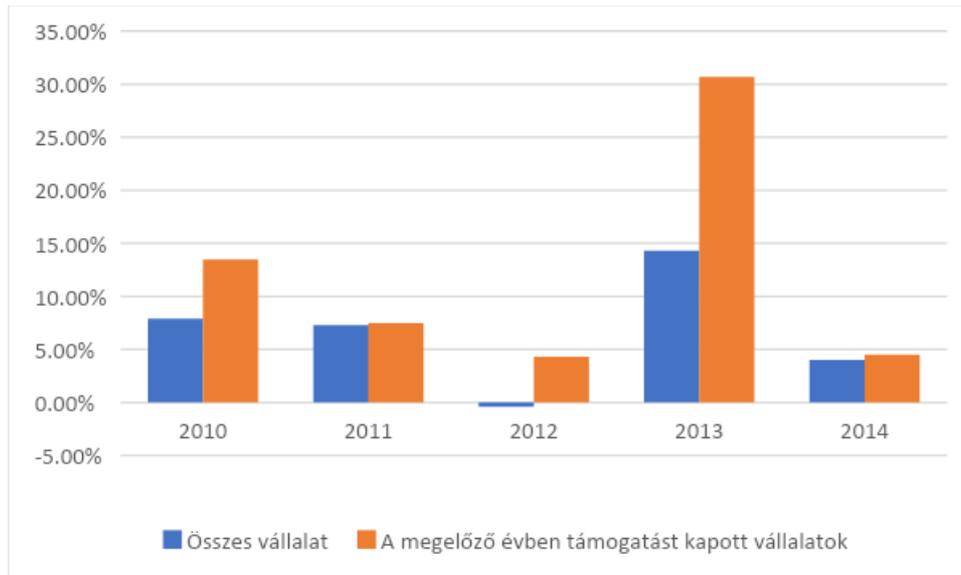
	2011	2012	2013	2014	Total corporate savings
2012 - 2011	4,3%				-0,4%
2013 - 2012	22,0%	30,7%			14,3%
2014 - 2013	-9,6%	2,5%	4,5%		4,0%
2015 - 2014	33,4%	27,4%	15,2%	26,2%	14,3%
2016 - 2015	0,6%	-2,2%	4,9%	-0,3%	10,6%

*Source: Ministry of Finance, NBH, own contribution*

During these comparisons, we contrast the total corporate deposit stock and the conformation of the aided enterprises' deposit stock. Instead of the enterprises which didn't receive any form of support, we regard the whole corporal population as the basis of our comparison. What allows us to utilize this simplification is the fact that the few tens of thousands of enterprises which receive aid annually, is only a fraction of the hundreds of thousands of corporate entreties. In the diagram, we choose our basis of comparison to be the period between 2010 and 2014, and we are going to regard the deposit stock enhancement of the aided enterprises compared to the entire corporate population. In these certain years we experience major deposit stock growth in the case of enterprises which received any form of aid, compared to what happened with the rest of the corporations. In the case of aided enterprises, there's a significant, projecting difference in the years of 2009 and 2012, namely these aided projects showed one and a half or even twice more deposit stock enhancement in 2010 and 2013 respectively. In 2011 (and as a result of that, in 2012) these supported enterprises also showed major growth, however, this time not in ratio but in absolute value, as the achieved 4,3 percent enhancement is 10 times more than what the entire corporate population could present, a measly 0,4 diminution. During the inspected five-year long period, in 2011 and 2014

(receiving their non-reimbursable aids respectively in 2010 and 2013), the aided enterprises could only perform 0,2 and 0,5 percent overachievement in deposit stock growth, compared to the rest of the corporations. Correlating to the Absolute values of 4 and 7 percent, these performances can be interpreted as identical achievements.

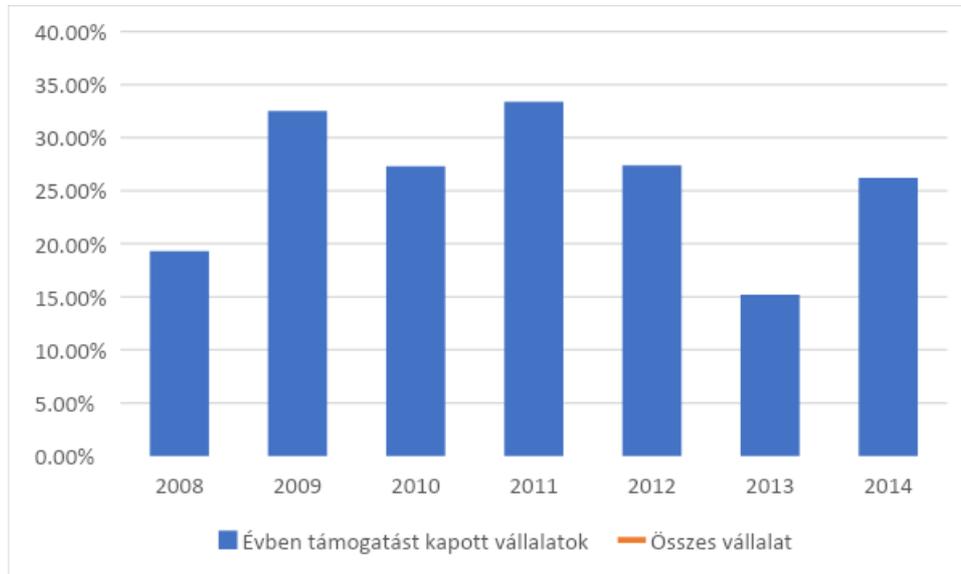
### 13. Diagram: The effect of contributions on the enhancement of deposit stock



*Source: Ministry of Finance, NBH, own contribution*

As follows, we are going to analyse the amassed deposit stock growth of both the aided enterprises and the corporate population in the year 2015 and then compare it with the prior period of 2008-2014. We can conclude that these enterprises were capable of enhancing their deposit stock even more expansively, then the entirety of the corporations.

**14. Diagram: The enhancement of deposit stock in 2015 in the case of those enterprises, which received aids in the prior years**



*Source: Ministry of Finance, NBH, own contribution*

The reason why compared to the not aided enterprises, the ones which received any form of support were capable of enhancing their deposits much more rapidly, is because the value diminution during the implementation of the development projects (which is not a monetary expenditure), had a significant effect on the available money stock. Therefore, in the case of these aided enterprises, the faster deposit stock growth is an effect of the enhanced profitability and competitiveness, instead of the attendance of moral hazard.

As a summary, we can conclude that the enterprises which received any form of aid, contributed to corporate deposit stock growth, to a degree which far outweighs their own limitations. This is not a consequence of the aid disbursement, instead the more potent economic performance of the aided enterprises. Thereby I reject the hypothesis and conclude that the deposit stock enhancement of these enterprises didn't come to fruition because the contributory funds were directly rendered to deposit stock enhancement.

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## 5.2. Documentary requirements of state aid policies

The most relevant and binding document of the state aid subsidies is the contract. Substantive parts of the documentary requirements consisting both qualitative and quantitative information might have impact on moral hazard issues. As we concluded earlier that shortage of qualitative criteria limit the useable tools of control, and leave merely a formality check of quantitative data, which might help detect fraudulent behaviour, but is insufficient to tackle moral hazard issues. Closely monitoring all the project could guarantee more success but considering the huge number of projects and consequently companies effected, it is not feasible. The next table shows number of projects in question. The 7-year planning period between 2007 and 2013, followed two more years of project admission, approval and financial settlement resulted in approx. forty thousand cases.

**H4:** *The contracts of the state aid subsidies of SME's do not contain any clause for mitigating moral hazard*

The communicated goal of the Operational Program of Economic Development<sup>10</sup> being part of the New Hungarian Development Plan as master document approved by the European Committee is economic development, strengthening the knowledge-based economy, supporting underdeveloped region, promoting to discover new export markets, and finally supporting the permanent economic growth.

For achieving economic development goals there are certain specific objectives defined, called priorities:

- (i) Research and development, innovation capacity and cooperation
- (ii) Increasing complex capacity of corporates

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<sup>10</sup> In Hungary as GOP (2007-2013) and GINOP (2014-2020)

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- (iii) Developing business infrastructure
  - (iv) Access of SME's to required financing sources

Certain technical details might influence the tendering process, such as set up and operation of the Monitoring, the Governing, and the Paying Authority. Their complex aim indeed is to find the balance of achieving development goals of Operational Programs and utilize the possible maximum funds available by uncovering fraudulent activity. This activity requires control and management on quantitative criteria, if powerful qualitative elements would be involved it could make the transparent process doubtful.

The state aid subsidy grants of the European Union differentiate across public and private companies, government institutes and other organizations. The combination of the requested goal, the source, i.e. which European development fund is affected, and the form of subsidy will define the finally available maximum of the operational programs. Considering the statistics of the European Union, however, we conclude that the share of micro, small- and medium size enterprises was less than ten percent of the regional development programs and remained below three percent considering the sum of all the domestic subsidies. The huge number of companies receiving fund would require modification in the tendering, contracting and monitoring phase, but the execution is done by the same government agency.

SME's might receive European Union's co-financed state-aid grants, development bank loans or financial guarantees. Economic growth is generated by firms with and without subsidies. We should consider the effect of firms benefiting from the discretionary policy, in relation to firms, which are not. There is no clear theoretical methodology of measuring social surplus. We define social surplus based on (Varian 2014) as the sum of consumer and producer surplus. It is not possible to measure it for the tens of thousands of companies; therefore, we concentrate on the future effect of investment decisions on social surplus. Economic growth might be expected from increase in profit level of the SME's; therefore, we examine the potential positive effects of receiving grants.

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We can talk about moral hazard in case of the 3 plus 3 elements belonging to the second and fourth group, whereby due to the state-aid a different project size was selected, with lesser profit generation, i.e. we conclude that the social surplus became also smaller. Moral hazard lies in the modified social surplus of the development project, compared to the original intent of the firm implementing it without state-aid subsidies. The firm indeed might have different projects effecting profitability; therefore, it might be misleading to derive the success of the project from the company's overall performance.

Moral hazard of state-aid can be reformulated as firms are accepting subsidies by knowing that the new development project will not have the optimum size, it might be bigger or smaller, but the increase in net revenues or profit lags behind compared to the original project without any restriction of documentary requirements. Any restriction might alter the development project's success, therefore, to understand the planned hidden action of the firm regulators should understand what would have been the real project size without state-aid grant, or in other words, what is the firms understanding of optimum project size.

In the following we turn to the different elements of the state-aid tendering and final contracting documentation requirements. The grants can be defined in four different ways regarding backwards the effective date: (1) the year of the grant was transferred, or (2) all contracts have been mutually signed, or (3) the positive decision was communicated by the authorities, or (4) the tender documentation has been submitted. There might be several differences in the effective calendar year of the grants, which makes more difficult statistically to capture the business development effect<sup>11</sup>. The grants are equipped with the following criteria:

- the calendar year of submitting tender documentation

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<sup>11</sup> Take the example: submitted in late 2014, decision made in 2015, contracted in early 2016, and financially settled only in 2017. This comprises 4 calendar years, making it highly difficult to assign the positive effect of business development to a specific year.

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- amount of subsidy / grants in tender documentation
  - amount of subsidy / grants in final contract
  - the calendar year of contract signed
  - amount of subsidy / grants financially settled
  - the calendar year of financial settlement
  - size of the development project
  - own contribution to the project
  - partner's contributions to the project
  - the form of subsidy
  - the final goal to be achieved using state aid funds

Considering the sets of data to be submitted in the tendering process until the contracting phase we can understand all details the information basis, on which the development project is accepted, subsidized and monitored.

- Admission of the project

All quantitative project details are presented, including a long-term business plan and an impact analysis. All financing needs and sources such as commercial bank loans, other subsidy grants and different business partners' contributions. All documents required for submission have to in original format and have to be signed by the company. The tendering process starts with introducing the company and the planned development project. Concentrating on the impact of the planned project the firm has to prove its capability of proper execution and financial support. Beside that a long-term business modelling has to be submitted as well, consisting all relevant information in a pre-defined format.

- Proof of legitimacy and completeness check

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Any project has to undergo a legitimacy check, which is by definition a quantitative approach. If any shortage prevails then there is one single opportunity to deliver the missing documents, unless the submission for subsidy will be rejected.

- Content assessment, evaluation and approval

Evaluation is performed by independent personnel on anonym documentation, which should ensure a neutral approach to all tenders. Formal elements are checked for validity and by considering long term business plan this time the viability and reasonability is analysed for approval.

- Signing the contract of subsidy

After the decision for subsidy has been made the contracts will be signed by both parties, or sometimes even by several parties involved. The contract contains all details regarding execution of the development projects and also all penalties associated with non-performance or partial fulfilment.

- Financial settlement after executing the project

State aid subsidy grants in Hungary for micro, small- and medium size enterprises are post financed after execution, if the projects' indicators are successfully and in detail presented and are complete and fully in line with the development policy requirements. This measure is merely a snapshot providing no further incentives for company to perform orderly in the standstill period.

- Monitoring phase

The standstill period of the projects the companies shall submit to inspections. The state aid subsidy grants shall be only repaid fully or partially if inspectors will ascertain any

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irregularity. Considering the eligible costs, the industry and regional restrictions it has to be shown the fitting of the project to certain economic development goals<sup>12</sup>, detailing start, financial settlement and end date, standstill obligation period and other limitations. All of these criteria are neutral from moral hazard point of view, except eligible expenses, but this is still a restriction and not an incentive to alter future actions. Social consultation and dialog might have more positive impact on development projects than the disqualification of certain form of expenses. Those are for example the rental expenses and the infrastructural investments of research, development and innovation, or licenses and know-how rights, or general management costs. The aim of monitoring remains simply to prevent any fraudulent activity.

If it would be more securities required in advance it would decrease the number of companies eligible, which is actually against the basic logic of the state aid subsidies. It is intended to subsidize SME's in order to loosen credit constraint by making available cheap financing sources for those companies, which one would have not been able to apply for commercial bank loan. Bank collaterals are risk management tools and are not aimed to secure profitability of the company. It is designed to incentivize the company management and owners not to lower their performance level during project execution and operation, and not to seek for private benefit.

During the approval phase a formal check of the election criteria is done to ensure that all the submitted documents are valid and suitable. The substantive parts concentrate on the economic rationality and the expected impact on social surplus, all of these are ex-ante commitments, which should be closely controlled later. During monitoring and ex-post evaluation, however, there is only possible to analyse the company's performance.

It is still a question what type of documentary requirements could be added, when the communicated goal of the operational programs for micro, small- and medium size

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<sup>12</sup> As an example, we quote the Digital Welfare program setting new standards for IT infrastructure related projects

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enterprises is strengthening the market presence of those companies. It can be achieved through increase in turnover and profit level, which will contribute to increase in accumulated profits and finally share equity. First, it should be differentiated between successful closing the development project and more profitable operation of the company itself, since the project might generate positive revenue, whereas the entire company might perform better or worse. From economic development policy point of view the company's performance should be regarded, however during monitoring solely the project. There is need for a detailed business plan of the project alone, in which all company internal physical and financial contribution should be accounted on the basis of the project. This could allow the Monitoring Authority to have better oversight on the subsidized project, which would guarantee at the end of the day the more profitable company operation and the fulfilling of economic development goals.

We identified moral hazard as a hidden action of firms, by lowering effort level causing lesser probability of success, which is materialized in private benefit instead of increasing social surplus. It is straightforward that it is not possible influencing the behaviour of companies in advance. There is a need for control the behaviour of companies after they have received non-refundable state aid grants, however the documentary requirements can not be made responsible for doing this. We conclude furthermore that monitoring can be only made based on the requirements set in the original tender documentation and in the contract. As pointed out previously qualitative measurers could be most welcome, however the logic and structure of the documentation requires rather quantitative indicators, since the fulfilment is unambiguous. This could be similar to the insurance industry incentives, where there is a proven record of success, that offering future financial benefits could have better controlling impact than closely monitoring the daily behaviour.

If the Monitoring Authority were able to monitor closely the development projects than it could encounter moral hazard issues, which could be done on the basis of the documentary requirements of the tendering and contracting process. On the long run it

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would result in decreasing number of companies accepting state aid subsidy grants, but in case of successful project execution it could be more positive impact on social surplus. If firms in the standstill period might expect an effective control process than they would concentrate on keeping the promise they made in the tendering phase and they would follow the goals of economic development policy and the operational program, respectively. This would, however, raise the operating expenses of the intermediary system, which also has to be considered.

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## 6. Economic Policy conclusions

Throughout processing scientific literature, understanding the economic theories and data search I've encountered several obstacles. International literature does not contain theoretical modelling of the direct state support, in particular, the main-stream international literature does not cover the topic of non-reimbursable, toll-free state support, that is directly provided to enterprises. The definition of state support varies from the domestic and Union practice, the role of the state is examined with regard to providing bail-out as well as regards the legislation system. The difference between financial and contributory mediators does not appear that distinctive. Accordingly, my conclusions can not be generalized in this field of research, they are typically discussing domestic support. The investigation can later be expanded to monitor the state aid policy of the member states of the European Union.

There is an important ethical question, namely: Throughout my research I've been looking for entrepreneurial attitude, that is (despite defined by the incentives as intentional), still not expressly fraudulent. Human behavioural patterns, that are capable of dooming a project to failure. I have no intention whatsoever to handle them either as critical or criminal law category.

It's important to provide detailed clarification about what exactly is going on between the state and the supported enterprise throughout the process. The question is, if these enterprises are attempting a crowd-out; namely replacing their needs of finance with the cheapest source, by reallocating their resources. In case of a reallocation of income, these state supported enterprises can achieve more profitability and they also might be capable of raising capital. These supported enterprises might become more competitive, due to their improved capital structure. In the instance of a transfer of assets, all the machines, facilities and all other rights over assets bought within the development project become properties of the enterprise free of charge, thus enhancing their net worth.

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The value of enterprises might grow within all of these three considerations. In the first two instances, due to the superior generation of income and better profitability, whereas in the third instance directly by cheaper entry of all 3 producing assets. These supports mean a one-off effect in the lifespan of an enterprise and that is the reason why it might be important to not only examine the maintenance period, but also take into consideration the next few years. The data about how the acquired competitive advantage can affect the operation of an enterprise will be available in the following years.

In the instance of bank financing, learning the difference between enterprises is vital to understand the moral risks, namely; possession, profit, growth and fund distribution, hence each and every loan transaction have to be repaid separately and individually. However, in the case of state support, the distribution does not have any significance, one has to only take into consideration the aggregated numbers of the examined community. This is self-explanatory, since in the case of a contributory contract, the practical return is not a must, solely the return of the programme, furthermore the societal redundancy can hardly be demonstrated. Based on these determinations, throughout the investigation, taking the aggregated data into consideration is the adequate approach.

Another opportunity to further develop the contributory- and tender system might represent itself in the form of ex-post evaluation: In case of projects financed either by loan or supported loan, / have they met all criteria of being socially beneficial / these contributions become non-reimbursable. This can only be beneficial for everyone: Either they repay the total capita and the interest, or they only have to pay less.

Analysing and comparing sales channels and strategies remains an important inspectional aspect. Monopolising these contributed resources can easily lead to - due to the lack of interpretability of competition - bail out and growth of certain programmes. If we're talking about competition of programmes, it might be reasonable to take into account the percentage-based utilisation of the programmes as well as the amassed value of

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relocations, thus providing a tool of measurement of comparison. In the dissertation I've provided evidence about this method being an impasse, since we are not looking to compare the different programmes, much rather the realization of the original goal: Namely the enhancement of revenue-producing capability of SMEs is what we are supposed to measure.

In case of development programmes of the EU, the original goal of the support has been defined by the enhancement of competitiveness. Domestically however, these contributory tools are also measured by the utilisation of the total envelope. In measuring the success rate of a certain programme, I would rather suggest the tool of measurement to be the individual benefit provided for the growth in income of an SME. I also recommend the production growth of SMEs to be the main measuring factor, instead of competitiveness, hence the latter is rather difficult to calculate.

In this report I did not emphasize the growth in revenue-producing capability of enterprises, instead I took simplifying terms. I assumed that neither loan, contributed credit or state support (in general, any outer source of assistance in finance) can guarantee growth in revenue-producing capability. The direction of the causal link is opposing to that, as the lack of outer source and (in other words) the strong limit to credit accessibility clearly reduces the ability of revenue-production. With regard to growth in revenue-production, we can presume that softening the limit to credit accessibility is a necessary, yet insufficient condition.

I have also assumed, that if market conditioned credits would get expelled by contributions, we would have to talk about a reallocation of income, at least on a national economic level. Another example of bail-out is when an enterprise opts for a cheaper source of fund, thus refinancing their credit. Lowering the cost of their finance, increasing their pre-tax net profit, whilst leaving their ability of revenue-production unaltered. State support enhances the income of certain enterprises of the SME sector.

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The interest of the state is to support projects that improve societal utility. However, choosing these projects is by no means an easy task, because the decision-making bodies have to be aware of the true economic intentions of each end every suppliant. These purposes are in advance unavailable information, nor can they be acquainted ex-ante. State economic development policies have to face the matter of growth problems of SMEs. A major reason behind that is the limited credit supply. The state provides significant amount of recovery sources to tackle this issue, however the sector is incapable of soaking up these resources efficiently. In the report I've examined which different conditions guarantee, that those enterprises would receive contributions, which otherwise wouldn't be able to obtain credit, as well as the reasoning behind the rationality of income-transfer, in other words the seized tax-revenue profit growth of SMEs.

Numerous inspections are still yet to be taken. These do not mean geographical, regional or territorial comparison. Realistically, from the aspect of economic policy, measuring that the enterprises of a certain region have outperformed another one's provide little to no contribution to understand the occurrences. The comparison can and has to be based enterprise-specifically, accounting the methodology and the goals of the support. The result of such comparison can lead to a better understanding of which type of contribution provided better assistance in seizing the originally set economic goals. These events can only be investigated comprehensively on a longer term, after the expiration of the maintenance period.

Another useful aspect of examination would be a detailed (even operative programme-depth) comparison and evaluation of the member states' economic development and support policies. In this detailed investigation we would have to define the circle of countries that can be taken into consideration, based on the different programmes. However, we not only have to be aware of the peculiarities of the support system of each individual member state, but also the historical economic and cultural differences. The widest comparative analysis of operative programmes can be applied in case of micro-, small- and medium enterprises.

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Overall, we can conclude that the support cycle was definitely successful. A significant share of the available source was spent, and tens of thousands of enterprises received contribution, during a continuous era of prosperity. However, the examined non-reimbursable support only means a small part of the entire support policy, whereas most of the contributed projects were SMEs.

At any point of this report we can provide numerous useful and practical information regarding the economic development programme. Observing these monetary solutions, the effects of the guarantee programmes and the different risk-adjustments on the lending process we can phrase: The most beneficial (necessary yet still insufficient) step in order to harmonize the tasks of pricing conditions, loss-splitting and risk-management would be the termination of competition between the programmes. The establishment of a supervisory monitoring system and monitoring authority could provide equal conditions to all participants of the programme.

By returning to the initial assumption; A possible treatment (for the credit crunch that is specific to the finance of SMEs) can be state involvement; we can conclude that it could be a centrally coordinated and supervised solution. Acquiring this subsidiary information and elaborating methodological monitoring could efficiently reduce adverse selection and moral hazard. In case of non-reimbursable support, the emphasis has to be on the supervision, once the development project has come to realization. This report postulated to contribute with detailed, pre-defined, transparent, and unambiguous data service. Specifically, prepared and preconceived for these goals, consisting of economic, monetary and accounting reports.

According to my opinion, a monitoring administration should be set up, that is entirely capable of supervising and evaluating tens of thousands of contributed projects. Their tasks would include filtering the early signs of moral hazard and taking according appropriate measurements. In this case, utilization of the strategic relations of the

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contributory system and the intermediary system of the commercial bank is the primary goal. Exploitation of their overlapping and long-term potentiation are to be seized.

The primary criteria remain the reduction of moral hazard, namely setting out development and contribution goals, which in case of their realization prove to be useful. In this case, the source of their finances remains indifferent.

In case of non-reimbursable state support, we are talking about subsequently funded tender forms. In this case the entrepreneur must possess sufficient funds to finance the entire implementation of the tender. This can consist of own contribution, different sources of institutional finance, bridging sources of business partners and different forms of tender sources. The execution of the project is the task of the entrepreneur. If the project verifiably suits the criteria of the tender's sources, the sum of the tender shall be paid to the entrepreneur.

We have to separate the success of the development policy from the success of enterprises, in particular I would suggest not to take the growth of profitability as the general main criteria. Let's take an ideal typical enterprise, that has received non-reimbursable support, reduced rate loan from the development bank system, or any type of loan product from the commercial bank system. In this case there are four different outcomes, depending on if they have mobilised any or both sources of loan besides receiving the non-reimbursable support. Talking about realization of development projects, if we also take into consideration the available own resources of enterprises, there are immediately two possible outcomes. On one hand, enterprises that despite having sufficient own sources still applied for contribution and/or loan. On the other hand, enterprises with insufficient own resources, having to apply for support, reduced rate-and/or commercial bank loan. These are ten different baseline options. Complemented with the involvement of a commercial partner, the number of possible outcomes immediately doubles to twenty. The easiest possible case is when an enterprise possesses sufficient development resources yet implements it with support. On the other end of the

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scale we find the most complicated example, when an enterprise is short of sufficient own resources, thus applying for reduced rate- and market loan, as well as having a commercial partner involved to execute the project.

The effect of the executed project can both be positive and negative towards the cash-generating potential of the enterprise. This can make an entire enterprise from profitable to more- or less profitable, can turn a loss-making enterprise to profitable and a previously loss-making company more- or less loss-making. These five mentioned cases multiplied with the above mentioned twenty cases, raise the previously defined base cases to hundred. All these different occurrences have limited comparison. For example, if we are to take the effects of an enterprise (on the societal majority), that had previously been profitable / and despite possessing sufficient resources to execute the project, still applied not only for contribution, but also commercial bank loan / and became less profitable, we would have to compare it to another equal-size enterprise, which despite also having sufficient own resources to implement a similar-size project, did not apply for support, only commercial bank loan. If the parameters diverge, namely we're comparing companies of different size, we inevitably couldn't avoid biased results. However, we would not only fail to predict the direction of our bias, nor is there available sufficient factual data that would come in handy.

Throughout the seven-year long development cycle between 2007-2013 by almost one third of the supported projects the deposit stock did not even reach half of the total budget. This means that providing the sufficient own contribution to apply for tenders, entrepreneurs had to opt for outer sources of finance. Naturally, this does not restrict the ratio of enterprises involving outer source of funding, hence a numerous amount of enterprises applied for a bank loan, despite the fact that they would have been able to finance their investment from own internal sources. Almost one third of the enterprises would also have been able to execute their entire development plan from their own. The

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remaining 41 percent of enterprises had power over more than half of the gross budget of the contributory project.

This raises another issue, another ethical question: Should enterprises that are entirely capable of realizing their development projects from own resources, receive non-reimbursable support? The obvious answer is that examined question itself is improper. Instead, what should much rather be discussed, is whether the project has really increased societal utility. Especially since the availability of these development sources is a consequence of the enterprise's profitability in the past. Punishing a company because they operated profitable in the past would be beyond reason. Thus, it's really illogical to revoke possibilities from them to finance their development activities from non-reimbursable sources.

A conceivable question: In the case of non-reimbursable state support contributed economic development, are we talking about developments that wouldn't come to realization by own resources of enterprises, or is this a case of fund rearrangement? In the instance of an enterprise financing a project from several different sources, they take into account the expenditure of each and every source separately. In case of outer sources, namely commercial bank finance, the interest- and fund-reimbursement is discounted, considering the date of the repayment. Any exceeding yield is projected on the own resources. If the source cost of bank finance is lower than the payback of the project, the return will increase and vice-versa, with the finance cost being higher, the return will diminish.

An enterprise possesses individual ex-ante expectations of internal return, which is planned to be realized within its own sources during the development project. Depending on the scale of situated risk, this might exceed the normal bank interest rate, but falls short of the expected investorial return of a fund finance.

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In case of permanently provided state support the source cost is zero. However, if we regard that the investment happens according to the goals of the enterprise, we can rate the source cost as -100 percent, hence the growth of fixed asset stock might also have a positive effect.

If we regard the opportunity cost (in the case of a contributed project) as the alternative cost of fund for non-reimbursable support and we would like to take it into account during the calculation of goodwill, only then would the source cost be equal to their own resources. The non-reimbursable state support can be accounted as finance for a development project that has a lower return expectancy, than what it would have realized without support. If the supported project has been created according to the goals originally set by the economic policies, the support has achieved its original goals. However, if the execution of the project is not according to the original set goals, we have to talk about a case of fraudulence. That does however not form part of this report, thus detecting, observing and evaluating it will remain for an other essay.

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