

Impact of Deadweight Effect on the Performance of Supported Firms

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ABSTRACT: Public support can flow to different areas of the economy and can have several dimensions. Frequent recipients of subsidies are firms, whose support can have specific effects. Such an undesirable effect occurs if these projects are supported that would be carried out without this subsidy. In this case, we are talking about the so-called deadweight effect, which has been discussed and investigated in several studies in the scientific literature. The present article tries to shift knowledge about this effect through a study of supported companies in Slovakia. The aim of the research is to find out whether deadweight effect had an impact on the short-term or long-term results of investigated companies by analysing economic results of the supported firms. Changes in several firm indicators were monitored as profit, sales and value added for individual years (2010, 2013, 2018). Results present changes in size categories of firms according to the number of employees. Firm groups were distinguished based on the extent of deadweight effect. The results showed that in cases when deadweight effect occurred, the profitability of supported firms increased, which ultimately means inessentiality of subsidy that spilled over into the profits of surveyed companies.

KEYWORDS: Entrepreneurship, structural funds, deadweight effect, firm support evaluation

Introduction

Deadweight effect is one of the negative externalities in private sector support. Deadweight effect indicates that the support is directed to firm activities, which would have been implemented without this support. Funds can be drawn by all companies that meet the conditions set out in the calls, but not all companies need these funds. At first, we present the empirical evidence of deadweight from the existing literature. In the next part we will explain our methodology and introduce the database of companies and the method of their selection for further analysis. The aim of the article is to examine the economic results of investigated firms to determine whether the deadweight effect had an impact on short-term or long-term results of companies. We compared the period before the support 2010-2013 and after the support 2013-2018. The last section draws conclusions.

Literature review

Deadweight effect is considered to be one of the most discussed and measured effects of subsidy (Tokila 2008). This is one form of ineffective use of development aid. Deadweight effect represents the support provided for various activities, while these activities could be implemented without the provided support. According to Picard (2001), it is necessary to realize that deadweight cannot be completely eliminated within the framework of the usual practice. The reason for this is the asymmetric nature of information sold by the aid provider and the firm receiving the aid.

According to Baslé (2006, 225-236) it is necessary to determine its size and extent.

There is a scale of deadweight that range from 0%, where it is clearly defined that the deadweight effect did not occur, and thus without the support provided, the project could not be implemented. In order to accurately determine the deadweight effect, this area needs to be considered from several levels. Within the first level, the financial aspect is essential, where it is necessary to know how much money would have to be invested within the project, even without any support. The

second level is the output of the project, where it is a question of how much it would be possible to reduce the outputs also without applying any support.

Tokila (2008) uses a method based purely on the financial expression of the amount of invested funds. A significant advantage of this method is that it makes it possible to determine more precisely the amount of the investigated unfavourable effect. Lehinan and Hart (2006) used the direct self-assessment method in their study. By applying this measurement method, the lower limit of deadweight effect is rather obtained. The method defined by Šipikal (2014, p.71) was applied in a case study conducted in the region of Central Slovakia. This method makes it possible to eliminate the hypothetical question and examines in more detail the so-called project bank. It contains projects that have already been approved, but due to insufficient resources under the call, it was not possible to implement them. Therefore, they can be examined on a hypothetical and real level. However, the downside of this method is that there is a slight bias because the projects were not primarily selected.

Several authors have pointed to the so-called direct methods for measuring deadweight effect, but there are also cases where the indirect measurement method has been used. In this case, it is the use of control groups, in which the comparison of results obtained from supported and non-supported companies is performed. Wren (2005) used this method in his study. Bartle and Morris (2010) point out that a common problem is that good companies that are able to prepare quality applications can apply for support, and thus show better results even after the grant than the compared sample of applicants. Studies seek to prevent this by using Difference in difference techniques. Bronzini and De Blasio (2006) pointed out that the support has so-called crowding out effect compared to the control sample. This means that the method does not take into account the direct threat to competition in the market and also the fact that it is difficult to count in the co-financing rate of projects remains a problem.

Methodology

The analysis is based on previous research of deadweight in business support (Šipikal et al. 2013), where in a questionnaire survey of selected calls for business support (KaHR-111DM-0901, KaHR-111DM-0801, SIA 2009 121 01), it was found deadweight of support. The questionnaire survey contains 123 responses. The aim of the analysis was to find out whether deadweight effect could also be reflected in short-term and long-term economic results of investigated companies.

We examine the effectiveness of EU support for companies by comparing a group of supported entities with a control group of non-supported ones. As data are available before and after the support measures, we can use the Double difference technique for the analysis. The first step is to define suitable indicators for the possibility of performing an analysis, which will be profit, sales and added value of companies. The second step is to define the time dimension, which is the years before support (2010-2013) and after support (2013-2018). The quantification of the differences is based on the calculation of the cumulative values of the set indicator separately for individual time periods and separately for the supported as well as the control group and their deduction. Calculated numbers are given in % and percentage points (EVALSED, 2013).

An analysis of Slovak companies using support from the budget of the EU structural funds was performed. These are 66 companies throughout Slovakia located in all regions of Slovakia. However, it should be mentioned that the examined enterprises, their submitted projects, calls and other data are from the programming period 2007-2013. The submitted calls of the solved enterprises fall into two operational programs, which are the Operational Program Competitiveness and Economic Growth and the second program is the Operational Program Employment and social inclusion. (1.5 Calls for OP KaHR and OP ZaSI; 1.6 Calls of OP KaHR; Call KaHR-111-DM-0801; Call KaHR-111-DM-0901; Call DOP 2008-SIP 001; Call DOP-SIA-2009 / 1.2.1. / 01 and Call DOP-SIA-2009 / 1.2.1. / 02). From the

obtained data was evaluate the extent to which the deadweight effect has reached within individual companies. The value ranges across the full scale (from 0% - no deadweight effect to the final 100% - there was a total deadweight effect).

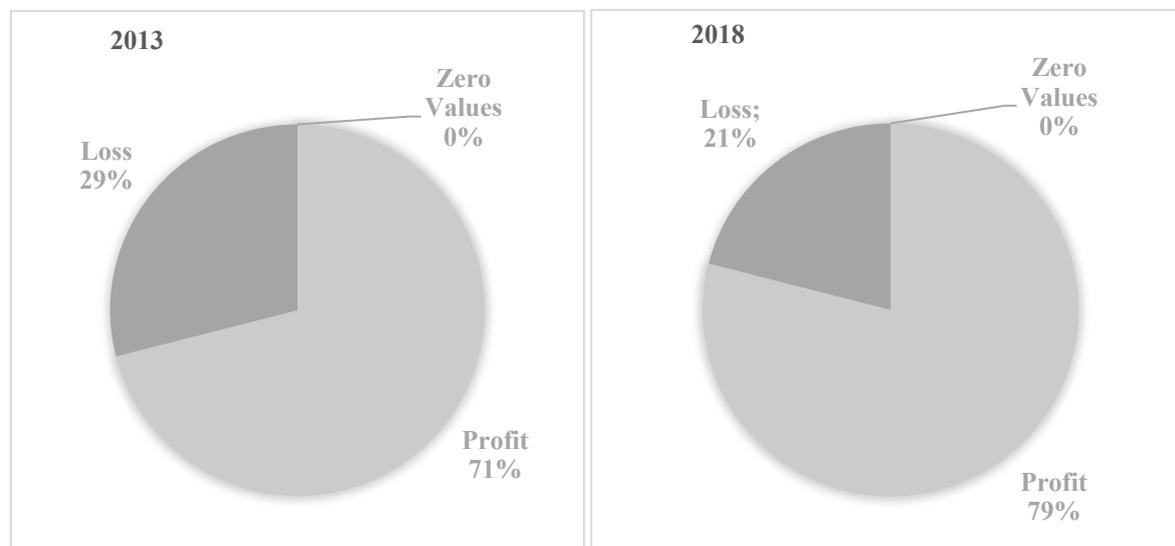
We supplemented the basic data on companies (name, location, ID number, company size, deadweight, contribution) with other data obtained from the finstat.sk database. We supplemented the data on the amount of sales, profit and value added for the years 2010, 2013 and 2018. The finstat.sk database has only data from 2011 available, and therefore for 2010 we obtained data from the extended database. Our first task was to select only those companies that are still operating after 2018. From 123 companies, we had to remove 11 companies from our database, which were cancelled during the period under review, 1 company was in bankruptcy, 9 companies were sole traders and 36 companies were removed due to lack of data. We focused on the research of a selected sample of 66 companies. In the next step, we found out the development of profit, sales and value added for individual years (2010, 2013, 2018). We monitored changes in size categories of firms according to the number of employees and made firms group based on the extent of deadweight effect. In the deadweight category, we narrowed the range of individual assigned values. We divided the answers into 5 levels. Companies with zero weight, companies with weight 25 (here we included companies with weight 10-40), companies with weight 50, with weight 75 (here we included companies with dead weight 60-90) and companies with deadweight of 100. Based on of this division, we also compiled the development of individual indicators. When comparing data on companies monitored by us, we also used data on companies in Slovakia, which we processed on the basis of data available on finstat.sk.

Results - Analysis of Firms Supported by EU Structural Funds

The first step in the analysis was to determine changes in sales, profits and value added for the years 2010, 2013 and 2018. We compared the development / changes in sales, profits and value added from period of years 2010-2013 and 2010-2018. We monitored the development of companies before and after EU support. Firms were divided into categories according to regions. First, we examined the development of profits of our selected companies. In 2013, we see that companies made a loss of -7,574,330 euros, which is a decrease of -179% compared to 2010. These companies recorded an increase in 2018, where the profit increased by 158% compared to 2013. For the total period under review, the profit decreased by -54%. When comparing the firms we monitor and the total sample of companies from Finstat database, we see that profits have increased since 2013. Generally, the profit of companies in Slovakia has increased by 74% since 2013-2018. Although the selected sample of 66 firms went into a loss in 2013, in 2018 these companies reported a profit.

Subsequently, we examined the development of sales of the companies we monitored. Sales of companies in Slovakia have increased by 38% since 2013. Unlike the sales of companies in Slovakia, we see that the sales of selected 66 companies decreased. From 2010-2013 they decreased by -3%, from 2013-2018 they decreased by -2% and in the total monitored period sales decreased by -5%. In contrast to profit where we have seen a similar growing trend, we see the complete opposite in terms of sales. In total, up to 52% of the examined sample was in profit in 2013, a total number of firm sample 218,936. There were 42% in loss and only 6% of companies with a zero value. In 2018, the number of companies in profit increased to 56.6% and the number of companies in loss decreased to 35.7%. The number of companies with zero values in 2018 increased to 7.7%. When examining the number of companies in profit and loss in the sample of companies we monitored, we see that most of the companies were also in profit (Chart 1). In 2013, it was 71% in profit and 29% in loss. The increase in the number of companies in profit (2018) can be seen in chart no. 1. In 2018, it was 79% in profit and 21% in loss. Zero values in 2013 and 2018 were at the level of 0%.

Chart 1 Number of companies at a loss or profit in 2013 and 2018 - sample of 66 companies



Source: Own elaboration according to nsrr.sk.

If we look at the development of sales in terms of size categories of firms, we see that in the years 2010-2013 sales decreased for companies in category 1 (0-9 employees) by 17%, in category 2 (10-49 employees) by 15%, in category 3 (50-249 employees) by 10% and in the last category 4 (over 250 employees) as in only we see an increase in sales by 1%. For the observed period 2013-2018, we see a larger drop in sales of companies in category 1 (0-9 employees) by 74%, in category 2 (10-49 employees) an increase of 7%, in category 3 (50-249 employees) we see an increase in sales by 35% and in category 4 (over 250 employees) a decrease of 13% (Table 1).

Table 1 Change in sales of companies by size of enterprise (2010-2013), (2013-2018) in%

SALES	2010-2013	2013-2018
1	-17%	-74%
2	-15%	7%
3	-10%	35%
4	1%	-13%
SUM	-3%	-2%

Source: Own elaboration according to nsrr.sk.

The development of profit according to the size of the company in the years 2010-2013 is shown in tab. No.2. Only companies in category 4 (over 250 employees) achieved an increase in profits. Firms in other categories' profits fell. In category 1 (0-9 employees) a decrease of 27%, in category 2 (10-49 employees) by 12% and in category 3 (50-249 employees) a decrease of 86% (Table 2). For the period 2013-2018, the profit of companies by size increased by 158%. There was obtained an increase in category 1 (0-9 employees) of 19%, in category 2 (10-49 employees) a decrease of 68%, in category 3 (50-249 employees) an increase of 294% and in the last category 4 (over 250 employees) a decrease of 57%.

Table 2 Change in profit of companies by size of enterprise (2010-2013),
(2013-2018) in%

PROFIT	2010-2013	2013-2018
1	-27%	19%
2	-12%	-68%
3	-86%	294%
4	59%	-57%
SUM	-179%	158%

Source: Own elaboration according to nsrr.sk.

In the following table no.3. we see the development of added value according to the size of the company. In the period 2010-2013, value added decreased in all categories. In category 1 (0-9 employees) decrease by 20%, in category 2 (10-49 employees) by 16%, in category 3 (50-249 employees) by 23% and in the last category 4 (over 250 employees) decrease by 12%. For the period 2013-2018, we see an increase in value added in category 2 (10-49 employees) and in category 3 (50-249 employees). We see a decrease in companies in size category 1 (0-9 employees) by 75% and in category 4 (over 250 employees) by 6%.

Table 3 Change in value added of companies by size of enterprise (2010-2013),
(2013-2018) in%

ADDED VALUE	2010-2013	2013-2018
1	-20%	-75%
2	-16%	22%
3	-23%	37%
4	-12%	-6%
SUM	-14%	31%

Source: Own elaboration according to nsrr.sk.

In Table 5 we see the development of sales according to individual values of deadweight. When examining the development of indicators of sales, profit and value added, we also add the deadweight indicators. We divided the deadweight into 5 degrees as stated in methodology.

The development of sales in the years 2010-2013 at zero deadweight (the project is not implemented) had a positive development (an increase of 3%). At a deadweight of 25 sales to companies decreased by 6%, at 50 sales decreased by 39%, at a deadweight of 75 (the project will be implemented but later) decreased by 2%. With a total, deadweight of 100 (the project is being implemented), sales increased by 19%.

Table 4 Change in revenues of companies by deadweight categories (2010-2013), (2013-2018) in%

SALES	2010-2013	2013-2018
0	3%	-16%
25 (10-40)	-6%	8%
50	-39%	9%
75 (60-90)	-2%	-10%
100	19%	35%
SUM	-3%	-5%

Source: Own elaboration according to nsrr.sk.

Compared to the period 2013-2018, we see a similar development of sales in companies with an overall deadweight effect (Table 4). For companies with a deadweight of 100, sales increased by 35%, in contrast to companies with a zero deadweight, where sales decreased by 16%. At a deadweight of 25 we also see an increase in sales by 8%, at a deadweight of 25% and at a deadweight of 75 sales decreased by 10%. When observing changes in profit (Table 5) in the category of deadweight, we see larger changes. For companies with zero deadweight, the profit decreased by 300% in the years 2010-2013, for companies with deadweight 50 the profit decreased by 81%, with dead weight 75 the profit decreased by 65% and with total dead weight (100) the profit decreased by 31%. We see an increase in profit for companies with a deadweight of 25, an increase of 130%.

Table 5 Change in profit of companies by deadweight categories (2010-2013), (2013-2018) in%

PROFIT	2010-2013	2013-2018
0	-300%	-151%
25 (10-40)	130%	-342%
50	-81%	73%
75 (60-90)	-65%	-170%
100	-31%	164%
SUM	-179%	158%

Source: Own elaboration according to nsrr.sk.

When monitoring the deadweight effect, value added (Table 6) was negative or zero for all companies, it did not achieve a positive result in the period 2010-2013. Value added for companies with zero dead weight in the period 2013-2018 increased by 23%, for companies with dead weight 25 it was equal to 0, for 50 it increased by 28%, for 75 it decreased by 15% and with total dead weight the added value of companies increased by 9%.

Based on the obtained data on companies, we can state that, overall, the economic indicators of companies have improved after obtaining support from the EU structural funds. After support, for the period 2013-2018, companies recorded an increase in profit but a decrease in sales, which could be caused by an increase in costs associated with the sale of goods and services. When comparing the development of sales in the periods 2010-2013 and 2013-2018, we see negative values, an increase by 1% between periods. According to the analyses, the EU support has helped mitigate declining sales. In total, up to 8% of the companies we monitored recovered from the loss in 2018.

Table 6 Change in value added of firms by deadweight categories (2010-2013), (2013-2018) in %

ADDED VALUE	2010-2013	2013-2018
0	-42%	23%
25 (10-40)	-9%	0%
50	-49%	28%
75 (60-90)	4%	-15%
100	-8%	9%
SUM	-14%	0.31%

Source: Own elaboration according to nsrr.sk.

Conclusions

In the present article economic results of individual companies were analysed. When examining firms' development, based on the size of the company (according to the number of employees), we found that it is the support of SMEs is more effective as the support of large companies. Support from the EU structural funds should be directed primarily to SMEs, and our analysis has also confirmed this direction of support. Once supported, the performance of small and medium-sized enterprises improves. On the basis of this simple comparison, we came to the conclusion that the support has to go to less developed regions and especially for small and medium-sized enterprises. In the last comparison, we also took into account the deadweight effect. Our results showed that in cases when deadweight effect occurred, the profitability of supported firms increased, which ultimately means disutility of subsidy that spilled over into the profits of surveyed companies.

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