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## **PREDICTABILITY OF BUSINESS ENVIRONMENT WITHIN BUDGETING PROCESS – IS IT CONNECTED WITH FLUCTUATIONS OF ECONOMY?**

**ABSTRACT.** This paper presents the results of the research focused on the analysis of firm's ability to forecast the behavior of external environment and its influence on firm's budgeting processes and its dependence on GDP fluctuations. The objective of the research was to verify whether the ability of firms to predict changes in business environment are influenced by the fluctuations of GDP. The authors have expected, that in case of higher fluctuations of GDP, the ability to predict changes in business environment will be lower. The authors have used the data obtained by means of questionnaire survey conducted in Czech Republic on the sample of 177 enterprises and other data obtained by the study performed in the USA and Canada. The study also presents empirical evidence on the capability of Czech enterprises to predict the behavior of primary budgetary elements, such as profits or sales volumes. The study shows the relatively high level of predictability of business environment changes indicated by Czech firms in comparison with the U.S. and Canadian companies, on the other hand, the study has not shown any significant dependence between GDP fluctuations and predictability level of the budgeting process.

**JEL Classification:** M1, M41

**Keywords:** Budgeting, Beyond Budgeting, Planning, Business Environment, Cost Management.

### **Introduction**

Traditional annual budgets belong to the common managerial tools, which are used by majority of organizations for different purposes. These traditional budgets are mostly based on annual accounting periods and are connected with forecasting elementary financial indicators as far as evaluation of performance of decentralized business units and managers. (Drury, 2001; Garrison *et al.*, 2012; Kemp and Dunbar, 2003). Budgeting is often connected with planning activities, which is defined as the design of a desired future and effective ways of bringing it about (Ostergren & Stensaker, 2011; Ackoff, 1981). Alternatively, budgets are considered as detailed plans (Drury, 2001), or as plans transformed into currency units (Král,

2010). In budgets the strategic ideas are transformed into understandable operative actions (Hanninen, 2013).

In literature we can find evidence that traditional budgeting is mostly based on mechanical transformation of a non-financial forecast into financial statements, without focus on real needs of an organization (Doyle, 2003). Doyle (2003) explains the problems with inflexibility of traditional budgets as the important limitation and an inability to take on board changes in a business environment that occur throughout a year. Strong criticism of problems related to the traditional budgeting mechanisms was presented by Hope and Fraser (2003). Their critique primarily focused on the inability of traditional budgeting to reflect the real performance of the organization and utilize the performance as the significant factor of employee evaluation. Other authors complement (Hanninen, 2013; Libby & Murray, 2007) that traditional budgeting is a relic of the past ages and cannot be useful in conditions of changes and requirements of today's business world.

Traditional budgeting have been broadly criticised for various reasons and limitations. Stewart (1990) claimed that budgeting is "inefficient, ineffective and incomprehensive". Drury (2001) explains how the budgets could get into conflict, if the organization uses general budget for several purposes, such as motivation and planning. Bourne (2005) refers to budgeting and planning as an annual ritual for numerous companies that do not consider adding significant value to the process. The solution proposed by Bourne (2005) is to understand the strengths and weaknesses of budgeting and use additional mechanisms, thereby eradicating such weaknesses. Managers in research generally agree that budgeting is inefficient and ineffective, even though the majority of respondents only estimate the volume of resources defined when budgeting. According to Lidia (2014), budgets represent one of the most controversial managerial tool. Budgets are also very often criticized for being time-consuming (Libby and Lindsay, 2010; Schmidt, 1992). Prendergast (2000) states that the budgeting process requires a lot of guesswork which takes up a lot of managerial time. Indeed, Neely *et al.* (2003) state that the budgeting process actually consumes up to 20% of all managerial time. Nazli Nik Ahmad *et al.* (2003) argue that budgets do not take into account the aspects of customers and quality, and prove ineffective in a changing environment. Neely *et al.* (2003) report on several limitations of traditional budgets, as identified in the analyzed studies. Similar limitations of the traditional budgets and it's linkage to the strategy in East European context had been voiced by Boiko (2013). Intensive discussion about the budget limitations involved, the different types of solutions. Bunce *et al.* (1995) noted that the alternative to traditional budgets is not budgetary improvement but an advanced management procedure.

Wide discussion regarding the limitations of the traditional budgeting practices (Eckholm and Wallin, 2000; Hope and Fraser, 2003; Jensen, 2001; Schmidt, 1992; Luigi *et al.*, 2014) involved the introduction of alternative budgeting methods, such as Activity-Based Budgeting (ABB) (Drury, 2000) and Beyond Budgeting (Hope and Fraser, 2003). These alternative budgeting methods were mostly based on decentralizations and use of performance measures for evaluation of employees. Utilization of advanced budgeting methods remains limited, despite the fact, that academics and practitioners have presented number of different improvements of traditional budgeting procedures and alternative budgeting methods. Eckholm and Wallin (2000) report that only 15% of the Finnish companies they surveyed indicated the intention to abandon traditional forms of budgeting, whereas 61% aimed to improve the current budgeting system, and 24% reported they were not planning any changes to the system in use. Libby and Lindsay (2010) surveyed 346 Canadian and 212 U.S. companies about their budgeting practices. They indicated that a total of 79% of the surveyed companies used budgets for control purposes. Of that number, 94% reported they were not intending to abandon utilizing budgets for control in the near future, while 5% indicated they

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were considering doing so, and only 1% stated it was a definite plan to do so within the next two years. The results were similar in both the Canadian and U.S. samples. Cardoso (2014) says that budgeting stands at a crossroads. It is not a simple choice to choose between traditional or alternative budgeting methods because each budgeting model produces its own direct or indirect effects throughout the organization. It generates a set of complex interactions and non-intuitive optimal outcomes.

Henttu-Aho and Järvinen (2013) analyzed few companies which abandoned the traditional approaches to budgeting or dramatically simplified it. Despite the introduction of the new budgeting tools, the planning, control, and evaluation functions remained. Most of the investigated firms differentiate between target setting and forecasting.

One of the most frequently observed limitations of the traditional annual budgets is the inflexibility of the fixed budgets in dynamically changing business environment. Hope and Fraser (2003), for instance, assume that a new business environment is characterized by unpredictability; prices and margins are constantly under pressure, product life cycles are shorter, and customer tastes are fickle. Changes in the business environment are caused by changes in the business cycle, but there are also many asymmetries which are very difficult to predict (Kiani, 2016; Mentel & Brożyna, 2015). Hope and Fraser (2003) argue that budgeting acts to the detriment of such an environment because, once set, budgets are not typically changed, thereby resulting in plans and targets which quickly become out of date. For instance Belás *et al.* (2014, 2015) indicated, that in the Czech Republic 79.44% of surveyed businessmen reported market risk, which is connected with future sales volumes, as a key business risk at present.

Objective of the study was to analyze and compare predictability of the individual input features of the budget, such as sales volumes, material process etc. in Czech companies, USA and Canada with fluctuations in GDP. We have used the data collected via questionnaire survey performed in Czech companies in 2014 and data from the similar survey performed in USA and Canada in 2009 by Libby and Lindsay (2010). On the other hand, one crucial question that arises is whether the ability of the firm to predict the fluctuations of business environment is dependent on the fluctuations of economy. We have compared the results of the surveys with the evolution of the GDP.

## 1. Methods

Major part of study was based on questionnaire survey performed on selected sample of Czech firms. Main objective of the study was to analyze the relation between the level fluctuations in macroeconomic indicator GDP and firm's ability of predict the business environment in budgeting process. In the first part of the study, we have investigated how are the Czech enterprises able to predict the business environment while constructing the budget and compared the results with similar survey performed in USA and Canada in 2009 by Libby and Lindsay (2010). In the following part of the study we have analyzed the GDP data of researched countries (Czech Republic, USA and Canada) and indicated the level of fluctuations in the GDP volumes five years prior to date of the survey. In Czech Republic we have analyzed the GDP data in period 2010-2014, in USA and Canada in period 2005-2009. Study tested the correlation between the ability to predict the business environment within budgeting process, indicated by survey, and GDP fluctuations, where the data was collected from statistical sources. We have expected the positive correlation, which means that in the countries with higher GDP fluctuations companies will be less able to predict the individual factors of business environment which are used as inputs in budgeting process.

Data about Czech companies was collected via web-based questionnaire. Data from the ALBERTINA database was collected in order to set the investigated sample of organizations

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and to get the contact data of the selected organizations representatives. Medium and large sized companies from industrial sector had been chosen, excluding the service and trade organizations, in order to include the organizations with sufficient size and structure of activities, where the budgeting and planning activities would play important role. To be included in the sample, individuals must work on senior financial manager position such as Chief Financial Officer, Financial Director, Economic Director, Head of Controlling Department, Director of Budgeting or Division Manager. We chose these criteria to ensure managers we contacted would have considerable experience in establishing and using budgets.

In following step the selected persons from the database, had been contacted by the telephone. Surveyed person had been asked about their willingness to participate on survey. If they agreed to participate, they were sent email with web-connection to the survey. The filling up the survey takes around 30 minutes.

Survey performed in Czech Republic replicates the methodology and research design of the Libby and Lindsay (2010) survey performed in 2009. The surveys used the same questions structure and similar sample of the firms.

### 1.1. Sample statistics

We addressed 1375 companies and 618 of them agreed to participate in this survey. Finally 177 filled questionnaires had been received. The total return rate of the questionnaires of all surveyed companies is 12.9 percent.

The companies were divided in two groups according to number of employees. The first group includes the 142 companies with 100 to 500 employees. The second group includes 30 companies with more than 500 employees. *Table 1* shows that 45% of companies are from manufacturing industry, 9% of respondents companies were from building industry. In addition, 8.5% companies are from engineering industry and agriculture (8.5%).

Table 1. Descriptive statistics for survey respondents

	Freq	%
Number of approached firms/questionnaires sent	1375/618	
Number of respondents	177	
<i>Number of employees</i>		
100-500	142	80%
More than 500	30	17%
<i>Branch</i>		
Manufacturing industry	81	45.7%
Automotive	12	6.8%
Construction	16	9%
Engineering industry	15	8.5%
Agriculture	15	8.5%
Other	38	21.5%
<i>Annual Business Unit Revenues</i>		
Less than 2 mil EUR	12	6.8%
2-10 mil EUR	46	26%
10-50 mil EUR	93	52.5%
Greater than 50 mil EUR	26	14.7%
<i>Mean Annual Business Unit Revenues</i>	1 098 927 724 CZK	

Source: own.

## ***1.2. Research design***

First part of research was focused on collecting data from Czech Republic via questionnaire, focusing on the problem of predictability of individual factors of business environment which are used as the input for budgeting process. Hence, the main question in the poll was: “When constructing a budget (or forecast), how easy is it to predict whether the following factors shall change during the period covered by the budget?”

- Market actions by key competitors (e.g. pricing, new product/service introductions, marketing programs, etc.);
- The business unit’s revenues (i.e. customer demand and prices);
- Customer preferences and tastes;
- Technical developments or advancements in the industry impacting the design of new products;
- Availability of required input materials purchased from suppliers.

The answers given by respondents were expressed on a 6-step scale as follows:

- 1 = Easy to predict;
- 2 = Mostly predictable;
- 3 = Slightly predictable;
- 4 = Relatively difficult to predict;
- 5 = Difficult to predict;
- 6 = Impossible to predict.

Additionally to the previously given questions regarding the ability of firm to predict individual factors of business environment while creating the budget, we have also focused on additional questions (*Table 6*) which was verifying the opinions of Hope and Fraser (2003) on the budgeting inflexibility in relations with business environment changes. Herein, investigation was made as to how Czech firms undertake predicting the behavior of their given business environment and the manner of transference to the budgeting system. Main objective of this part of the survey was to find out whether the Czech firms consider budget as flexible. We have investigated the level of agreement of company managers with following statements:

- It is difficult to establish precise budgets due to the unpredictability of factors affecting business;
- The budget becomes outdated during the year;
- Outside the process of establishing the budget. it is difficult to get new resources to support unpredictable opportunities to achieve the strategic initiatives;
- There exist no quick approval processes to ensure the availability of funds for activities that were not (combine the next sentence here);
- Included in the approved budget, and require a significant amount of financial resources.

In final part of the study we have analyzed the economic environment using the GDP indicator of chosen countries (Czech Republic, USA and Canada) in order to define the level of GDP fluctuations. We have analyzed five years foregoing the year in which survey was performed (2009 in USA and Canada and 2014 in Czech Republic). We have expected negative dependence of the level of the GDP fluctuation on the observed predictability of the budget. In other words if the economy will fluctuate in higher level, companies will be less able to predict the individual factors of business environment in budgeting process.

## 2. Results

The first poll focused on the predictability of market actions by key competitors (e.g. pricing, new product/service introductions, marketing programs etc.). The results are displayed below:

Table 2. Predictability of market actions by key competitors

	Freq.	%
1 = Easy to predict	8	5.71
2 = Mostly predictable	38	27.14
3 = Slightly predictable	35	25.00
4 = Relatively difficult to predict	31	22.14
5 = Difficult to predict	18	12.86
6 = Impossible to predict	10	7.14
Total	140	100.00
Median		3
Standard deviation		1.34
Average		3.31

Source: own.

As can be seen, no general trend is discernable in the distribution of answers. The tendency is towards answers on the scale relating to the higher predictability of this budgetary factor, rather than towards those stating difficulties in prediction.

The second question was on the predictability of revenues (i.e. customer demand and prices). The results are given below:

Table 3. Predictability of revenue of a business unit

	Freq.	%
1 = Easy to predict	4	2.78
2 = Mostly predictable	108	75.00
3 = Slightly predictable	19	13.19
4 = Relatively difficult to predict	7	4.86
5 = Difficult to predict	6	4.17
6 = Impossible to predict	0	0.00
Total	144	100.00
Median		2
Standard deviation		0.79
Average		2.33

Source: own.

The majority of companies responded that revenues tend to be predictable. Over 90% of considered their revenue as predictable in differing amounts.

The third question was on customer preferences and tastes. The results are displayed below:

Table 4. Predictability of customer preferences and tastes

	Freq.	%
1 = Easy to predict	6	4.20
2 = Mostly predictable	82	57.34
3 = Slightly predictable	44	30.77
4 = Relatively difficult to predict	7	4.90
5 = Difficult to predict	4	2.80
6 = Impossible to predict	0	0.00
Total	143	100.00
Median		2
Standard deviation		0.78
Average		2.45

Source: own.

Almost 58 per cent of respondents answered that customer preferences are largely predictable. Only eight per cent considered the possibility of anticipating the requirements of their customers as unpredictable. The next question dealt with technical developments or advancements in industry impacting the design of new products.

Table 5. Predictability of technical developments or advancements in industry impacting the design of new products

	Freq.	%
1 = Easy to predict	14	9.72
2 = Mostly predictable	64	44.44
3 = Slightly predictable	46	31.94
4 = Relatively difficult to predict	11	7.64
5 = Difficult to predict	7	4.86
6 = Impossible to predict	2	1.39
Total	144	100.00
Median		2
Standard deviation		1.02
Average		2.58

Source: own.

Technical development impacting the design of new products was mostly foreseeable for almost half the respondents.

The final question addressed how predictable the availability of input material was from suppliers.

Table 6. Predictability of availability of input material from suppliers

	Freq.	%
<i>1</i>	<i>2</i>	<i>3</i>
1 = Easy to predict	29	20.14
2 = Mostly predictable	98	68.06
3 = Slightly predictable	13	9.03
4 = Relatively difficult to predict	1	0.69

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<i>1</i>	<i>2</i>	<i>3</i>
5 = Difficult to predict	3	2.08
6 = Impossible to predict	0	0.00
Total	144	100.00
Median		2
Standard deviation		0.71
Average		1.97

Source: own.

From respondents, it is clear that the availability of input material from suppliers was largely predictable for most companies.

After performing analysis on the predictability of individual budgetary features, comparison was made with results of a survey performed in 2009 by Libby and Lindsay (2010), with a sample of Canadian and US companies. The following table compares the average median and standard deviation for all five questions:

Table 7. Results compared with US and Canadian survey

	Median	St. deviation	N
This survey (2014)	2.2	0.9	140
US survey (2009)	3.0	0.6	78
Canadian survey (2009)	2.8	0.7	110

Source: own.

The subsequent part of the survey analyzed opinion on budgets as frequently found in the literature. Hope and Fraser (2003), for instance, assume that a new business environment is characterized by unpredictability; prices and margins are constantly under pressure, product life cycles are shorter, and customer tastes are fickle. They argue that budgeting acts to the detriment of such an environment because, once set, budgets are not typically changed, thereby resulting in plans and targets which quickly become out of date.

Table 8. Observed flexibility of budgeting

Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)	Median	Modus	Std.dev.
It is difficult to establish precise budgets due to the unpredictability of factors affecting business								
2.82%	23.16%	25.42%	32.77%	11.30%	4.52%	3	4	1.171
The budget becomes outdated during the year.								
1.69%	20.34%	25.99%	29.38%	18.64%	3.95%	4	4	1.169
Outside the process of establishing the budget. It is difficult to get new resources to support unpredictable opportunities to achieve the strategic initiatives								
3.39%	27.12%	37.85%	20.34%	7.91%	3.39%	3	3	1.103
There exist no quick approval processes to ensure the availability of funds for activities that were not included in the approved budget, and require a significant amount of financial resources								
5.65%	32.77%	35.03%	16.95%	7.91%	1.69%	3	3	1.090

Source: own.

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In following part of the study we have focused on the analysis of the fluctuations in business environment. Objective of this part was to identify the level of fluctuations of economy measured by GDP indicator. In *Table 9*, we review selected characteristics of GDP fluctuations in Czech Republic, USA and Canada. We take into consideration quarterly data from last 5 years before the relevant survey was collected (i.e., e.g. period 2010-2014 for Czech Republic; n=20).

Table 9. Characteristics of GDP fluctuations in selected countries

period	Median	Mean	St. deviation
Czech Rep. (2010-2014)	0.4	0.25	0.57
USA (2005-2009)	0.45	0.22	0.82
Canada (2005-2009)	0.4	0.26	0.85

*Source:* own.

Although, the median as well as the mean values are very similar for all three countries, standard deviation of GDP fluctuation is noticeably lower in the Czech Republic. This may show that there was more economically stable environment during last five years than in USA and Canada. We think that this could be the reason why we have observed significantly better result for budget predictability in the Czech Republic (see *Table 7*). Even if this relationship could not be statistically confirmed, we can observe the accordance in the standard deviation of the GDP values and the observed predictability of business environment within the budgeting and planning process. This conformity leads us to statement, that the ability of company to predict the future in the budgeting and planning process is slightly dependent on the fluctuations in economy in recent time periods. This means, that if the economy, measured by the GDP indicator, fluctuates in higher volumes, the companies are less able to predict to individual factors within construction of the budget. Unfortunately, differences in time periods of compared surveys have to be also considered according to the period of U.S. and Canadian Survey, which includes period of world financial crisis.

### 3. Discussion and conclusion

Budgeting and planning practices are facing dramatic changes in the contemporary business environment. Traditional annual budgets, which have been used for control purposes, are frequently criticized for their limitations, and in some cases have been replaced by more flexible systems focusing on increasing performance. The cause of this trend is the lack of flexibility of traditional budgets as they are incapable of representing a relevant system for gauging performance. One of the most essential limitation of the traditional budget is its inflexibility in connection with changes in business environment. While the Hope and Fraser (2003) highlighted the increasing unpredictability of the business environment, problems related with rapid changes within it were enhanced by the financial crisis in 2008. Based on these circumstances, the expectations of the study were that the predictability of individual features of budgets would be relatively low and that companies as a whole would have difficulty accurately predicting future events. We have also intent to compare the level of predictability of the budget features with the GDP indicators, which had been used for measurement of the economy fluctuation level.

The result of the survey showed relatively high level of predictability for company revenues and material input prices, as well as the availability of input material from suppliers. Both were easily predictable in more than 75% of cases. Least predictability was indicated in

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the ability to predict the behavior of competitors. The predictability of customers' demands, which was easily predictable in more than 60% of cases.

Another finding was the greater predictability of the external environment in the Czech sample, in comparison with the study performed in Canada and the USA in 2009. The answer could lie in the fact that many Czech companies act as suppliers to other EU companies, which sells the product on retail market hence they are much more able to easily negotiate future events. This signifies that Czech companies work in a far more predictable environment.

While comparing the predictability level and the economy environment fluctuations, we have found slight relation of the perceived level of predictability in budgeting process, found out in the survey, and the GDP fluctuations. Czech companies had been able to predict the individual features of the budget in higher measure, which conforms to the lower GDP fluctuations in selected period. On the other hand the North American companies were less able to predict the individual features of budget which was in concordance with the higher GDP fluctuation level. Unfortunately differences between USA and Canada are too significant to make any relevant conclusions, so we haven't been able to present the relevant statistical verification. Accuracy of such study could be also partially negatively influenced by the fact, that GDP indicators and its fluctuations could be strongly dependent on economy structure and selected time periods (Tuček and Tučková, 2013). It is also necessary to mention the possible effects of financial crisis 2008-2013, which may negative affect the accuracy of the study.

The study presented herein gives an overview of companies' abilities to predict the various features of a budget, and its relations to the economy fluctuations. Study could contribute towards discussion in the field. Despite several limitations, such as the size of the sample surveyed and the subjectivity of the poll, the results indicate the current approach of firms to the budgeting process and shows how the ability to predict the individual features of budget depends on the fluctuations of economy, measured by GDP indicator.

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