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Use of Macro Stress Testing for the Creation of Business Strategy in the Case of the Czech Republic

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Abstract

Macro stress tests has become a part of the tools for testing the ability of the financial system to withstand unexpected shocks and now it is increasingly used in developing the corporate strategy. Theoretical and methodological parts were focused on explaining the process of macro stress testing and on particular decision-making steps in the implementation of macro stress tests to the individual portfolio. The results of the financial stability testing are the significant source of information for companies. Mainly, in this project there was evaluated the importance of macro stress tests in the preliminary phase of the business (after-tax return of equity), in the case of the creation of the operating plan (non-performing loans ratios in selected branches), in the planning of customer-supplier relationships (nominal and real income growth, the unemployment rate and employment growth, household debts and over indebtedness) and in financial and operational corporate planning (capital adequacy ratios, credits drawn from bank and non-bank institutions).

Key Words: *Corporate Strategy, Financial Stability, Households, Macro Stress Tests, Non-financial Corporations.*

Introduction

The World Bank (WB) and the International Monetary Fund (IMF) introduced a program called the *Financial Stability Assessment Program* (FSAP) in 1999. It is the program that engages in a comprehensive and in-depth analysis of countries' financial stability (IMF, 2014). In the FSAP there were processed first macro stress tests. Macro stress testing has become a part of the tools for testing the ability of the financial system to withstand unexpected shocks. The recent financial crisis drew unprecedented attention to the stress testing of financial institutions. On one hand, stress tests were criticized for having missed many of the vulnerabilities that led to the crisis. On the other hand, after the onset of the crisis, they were given a new role as crisis management tools.

The aim of this article is the analysis of the possible use of macro stress tests in the formation of business strategies. The starting point is the assumption of ensuring and maintaining corporate profitability throughout the use of the results coming from macro stress tests, especially in times of internal, or possibly external, economic instability.

For the analysis are applied the following methods – collection of secondary data from Czech National Bank and their implementation for the creation of strategic business plans by graphic and statistical apparatus. The article is divided into three parts. In the introductory part of the article there is mentioned a brief analysis of macro stress tests. The following section deals with the particular use of stress tests in the creation of the business strategy. The areas of strategic planning in which the results of macro stress tests can be used are included, too. The evaluation of using possibilities is accomplished in the conclusion. The possibility of using the results of macro stress tests is described by deductive method in the conclusion.

One of the first publications dealing with the theory of macro stress tests was published by the International Monetary Fund (Blaschke et al., 2001). This paper is concerned mainly with explaining the basic steps of testing and the clarification of tested risks. In the EU, the regular conduct of EU-wide stress tests has been envisaged from the start in the legislation setting up the European Systemic Risk Board (ESRB) and the three European Supervisory Authorities (ESAs) from the 2011. The ESAs have made the most extensive use of stress tests, partly because of the greater urgency of addressing weaknesses in the European banking sector, and partly due to the fact that the practice and theory of stress testing for banks is relatively more developed than the tests for insurance companies or markets and financial market infrastructures (ECB 2013). The first mentioning of macro stress tests in the Czech Republic was by Čihák who summarized the issues of stress tests in his work entitled *Stress Testing: A Review of Key Concepts* (Čihák, 2004). The significance of macro stress tests was manifested primarily with the beginning of the debt crisis in 2008. After this year there have been many other mentions of stress tests and their specific use. For instance, the authors Marcelo, Rodríguez and Trucharte (2008) focused on the contribution of macro stress tests to researching and maintaining financial stability. For the time being, on the margin of interest there remains the use of macro stress tests for creating corporate strategies, which is the content of this article.

Macro Stress Tests

Stress testing is a technique that measures the vulnerability of a portfolio, an institution, or an entire financial system under different hypothetical events or scenarios. It is a quantitative "what if" exercise, estimating what would happen to capital, profits, cash flows, etc. of individual financial firms or the system as a whole if certain risks were to materialize (IMF, 2012). A complete stress testing exercise is more than just a numerical calculation of the impact of possible shocks. It involves choices on the coverage of institutions, risks, and scenarios; the application of a quantitative framework to link various shock scenarios to solvency and liquidity measures; a strategy for the communication of the results; and follow up measures, if warranted. (CNB, 2013a)

Macro stress tests allow the quantification of estimated losses that would result from the realization of extreme, but plausible scenarios of economic shocks to the financial system. The financial sector is examined as a whole (macro stress tests), or as an individual institution (micro stress tests). Macro model and micro data based models for the corporate, household and bank sector, can be simulated independently or as an integrated system. The structure of the system is recursive; with output from the macro model being used as input in the firm, household and bank models. The reciprocal connection of macro and micro models shows the below Figure 1.

Macro stress tests are performed in order to evaluate the stability of the financial system or particular entity. It is very important to set macro stress tests so that they cover the reality in the most reliable way. A possible detection of potentially vulnerable parts of the financial sector and their attachment to the economic development provides the possibility to reduce risks and to strengthen the resilience of the financial sector against the negative shocks impacts. (CNB, 2013a)

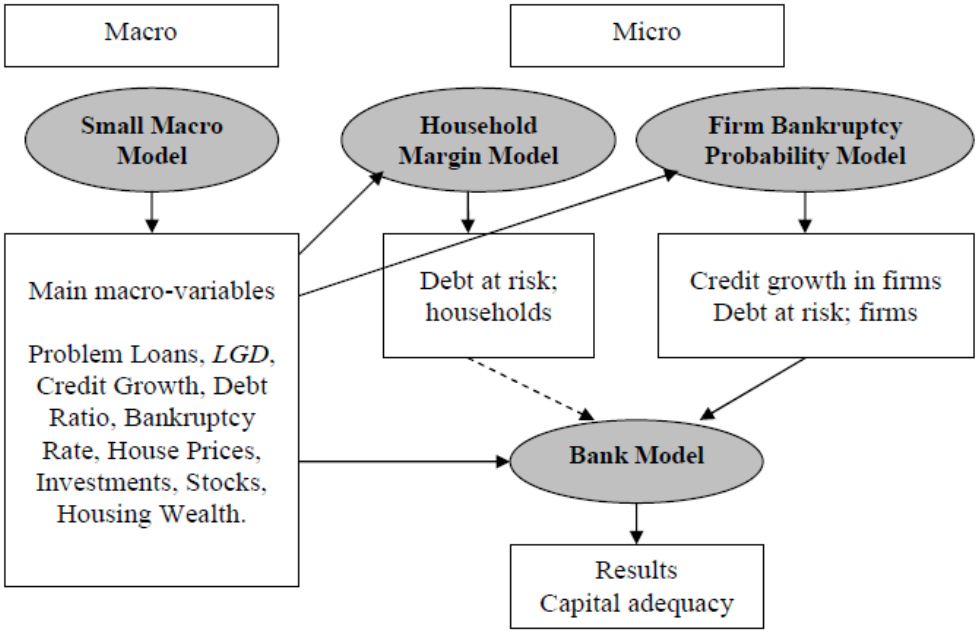

Figure 1. A system for stress-testing. From *Norges Bank*, by Norges Bank, 2008, Retrieved from: http://www.norges-bank.no/Upload/68187/Staff_Memo_0208.pdf. Reprinted with permission.

The term of macro stress tests describes lots of techniques applied for measuring and understanding the portfolio sensitivity against various risk shocks. In a simplified way, stress tests are the rough estimation of a portfolio transformation due to changes of risks factors. This is an analytical method for making the numerical estimation of the development. The tests estimate a course of development, but they do not determinate how likely the scenario will occur. It would be good to include the entire financial system and to evaluate the most important risks in the testing. However, this is very difficult due to the availability of the necessary data and information. Therefore, the model is focused on the key risks. The most often tested risk is the credit risk. It is essential to carry out the best evaluation of the correlation among the risks factors for the real prediction. (Čihák, 2007; Jones et al., 2004).

The Process of Macro Stress Tests

Before the implementation of the actual stress tests, it is necessary to choose appropriate institutions which should be tested. It is important to realize whether testing includes only local banking institutions, or also foreign banks, insurance companies, pension funds, non-financial organizations, household etc. If the testing is performed in a concrete company, it is decided whether to include only the company, or also other entities from the competing environment (Sorge, 2004). Macro stress testing is regarded as a process that consists of a few parts – the examination part, the diagnostic part, the numeral part and the interpreting part. The process of macro stress tests consists of the following steps:

1. The identification of vulnerabilities – it focuses not only on the vulnerabilities of the financial market.
2. The formation of scenarios – the scenario is formed in the context of a given economic framework. The analyst should achieve the consensus of the key financial and macro variables which are most unstable, unbalanced and with the probability of the greatest influence on the financial market. This should be made in connection with the main macroeconomic errors detected in the first step of the process.

3. The implementation of balance sheet – test outputs are transferred to the balance sheet and profit and loss account of the institution. There are two possible approaches:

a. Bottom-up – estimates are based on the data of individual portfolio which can be then aggregated.

b. Top-down – this approach uses summarized and macroeconomic data to estimate the influences.

Preferably there should be used both approaches, but it is limited in many countries because of the ability to obtain the necessary data.

4. Secondary impacts – it means the determination of the impact of key companies to other organizations and the whole financial system.
5. Interpretation – there are used methodical and intuitive approaches. (Jones et al., 2004)

Types of Macro Stress Tests

From the point of view of the used method, there are applied macro stress tests made with the help of the sensitivity analysis (analyzing shocks to individual risks factors), or the scenario analysis (testing mass risks factors), or the use of the contagion analysis (transmission of contagion from particular institution in the financial system as a whole). There are four types of stress tests based on their ultimate objective: (presented in more detail in Tab. 1)

- Stress testing as an internal risk management tool,
- Microprudential/supervisory stress testing,
- Macroprudential/surveillance stress testing,
- Crisis management stress testing.

Table 1. Typology of Stress Tests

Features	Macroprudential (Surveillance)	Microprudential (Supervisory)	Crisis management	Internal risk management
Main objective	Unveil the sources of systemic risk and vulnerability in the context of surveillance and regular system-wide monitoring.	Assess the health of an individual institution inform supervision of the institution.	Input for bank recapitalization and business restructuring plans.	Manage risks from existing portfolio, input for business planning.
Organized by	Central banks, macroprudential authorities, IMF.	Supervisor (microprudential authority).	Macro and/or microprudential authorities.	Financial institutions.
Coverage of institutions	All, or as many as possible institutions, especially systemically important institutions.	Supervised individual institutions (tests for different banks could take place at different times).	Varies, but it should include all distressed and near-distressed institutions.	Individual institutions.
Nature of shocks	Systemic and common shocks across institutions. Shocks tend to be extreme.	Often idiosyncratic common macro assumptions are sometimes made for horizontal or thematic review across institutions.	Ongoing systemic stress (baseline) or relatively mild shocks mainly focusing on solvency risks.	Idiosyncratic or systemic (those that matter for the particular institutions).
Likelihood of assumed shocks	Low.	Low.	High.	Varies.
Assessment criteria (hurdle rates)	Current or prospective regulatory requirements or alternative thresholds, if appropriate.	Current or prospective regulatory requirements or alternative thresholds, if appropriate.	Current or prospective regulatory requirements or alternative thresholds, if appropriate.	Internal risk tolerance indicators and regulatory requirements.
Follow-up measures after tests	Typically no follow up for individual institutions, but often used as the basis for discussion of potential macroprudential or system-wide measures.	Institutions with weak results are often required to explain and take management actions if deemed necessary by supervisor.	"Failing" institutions are often required to take major management action, such as recapitalization possibly with government support.	May or may not require management action.

From *Macrofinancial Stress Testing — Principles and Practices*, by International Monetary Found, 2012, own modification, Retrieved from: https://www.imf.org/external/np/pp/eng/2012/082212.pdf. Reprinted with permission.

The Variety of Risks

For testing all the types of risks it is primarily crucial to choose the correct model of macro stress tests, the group of applied shocks and the type of scenario. Moreover, it is necessary to select the parts of the company or the parts of the market, and the extent to which the risks will be applied. Also it is important to determinate the time frame whereto the tests will be related. For the aggregate testing it is also essential to specify the tested institutions, to determinate how to aggregate the data and how to present and interpret the results.

There are infinite numbers of the variety of risks:

- Credit Risk – it is the most important and the most frequently tested risk which examines the probability of default, loss due to default and exposure to default;
- Interest Rate Risk – it tests the unfavourable movement of interest rates and the consistency of interest sensitivity of assets and liabilities of the institution;
- Exchange Rate Risk – this risk solves the change of the value of assets and liabilities, which comes with change of the exchange rate;
- Liquidity Risk – this means the possibility that the institution or the market becomes illiquid. This risk also analyzes the liquidity risk of assets and financial resources;
- Market Risk and Value-at-Risk (VaR) – market risk focuses on the influence of market price changes. VaR solves data aggregation and measurement of mass risks. Value-at-Risk is a loss limit that will be exceeded only with a small probability;
- Moreover, it is possible to test Equity Price Risk, Commodity Price Risk, Operational Risk, Contagion Risk, Changes in GDP Growth and others risks. (Blaschke et al., 2001)

Types of Economic Shocks

For macro stress testing it is important to identify economic shocks that can negatively influence the stability of the financial system of the tested institution or economy. It is essential to take into consideration the reliability and durability which is necessary to check and test. There are used three types of shocks:

- Shocks to the individual variables of the market;
- Shock to bottom variables;
- Correlation – the mutual correlation of shocks.

Variables for Macro Stress Tests

Variables used for macro stress testing should meet two characteristics:

- It should be possible to interpret the variables as a degree of the good financial conditions of the company;
- Variables can be reliably associated with risk factors.

Commonly used variables are capital, capitalization, the need of capital injection, profit, profitability, net interest income and other components of profits, credit losses, liquidity ratios, the rating and probability of default and others.

Feedback

There are at least four different types of feedback that are regarded as important at macro stress testing. The types of feedback are followings:

- The interbank contagion;
- The adapting mechanism of interaction between asset prices and portfolio;

- The transfer of shocks between the financial system and real economy;
- The correlation between credit and market risks.

Framework of Stress Tests

The following Figure 2 represents particular decision-making steps in the implementation of macro stress tests to the individual portfolio. It is not possible to leave out any step and the order has to be preserved as well.

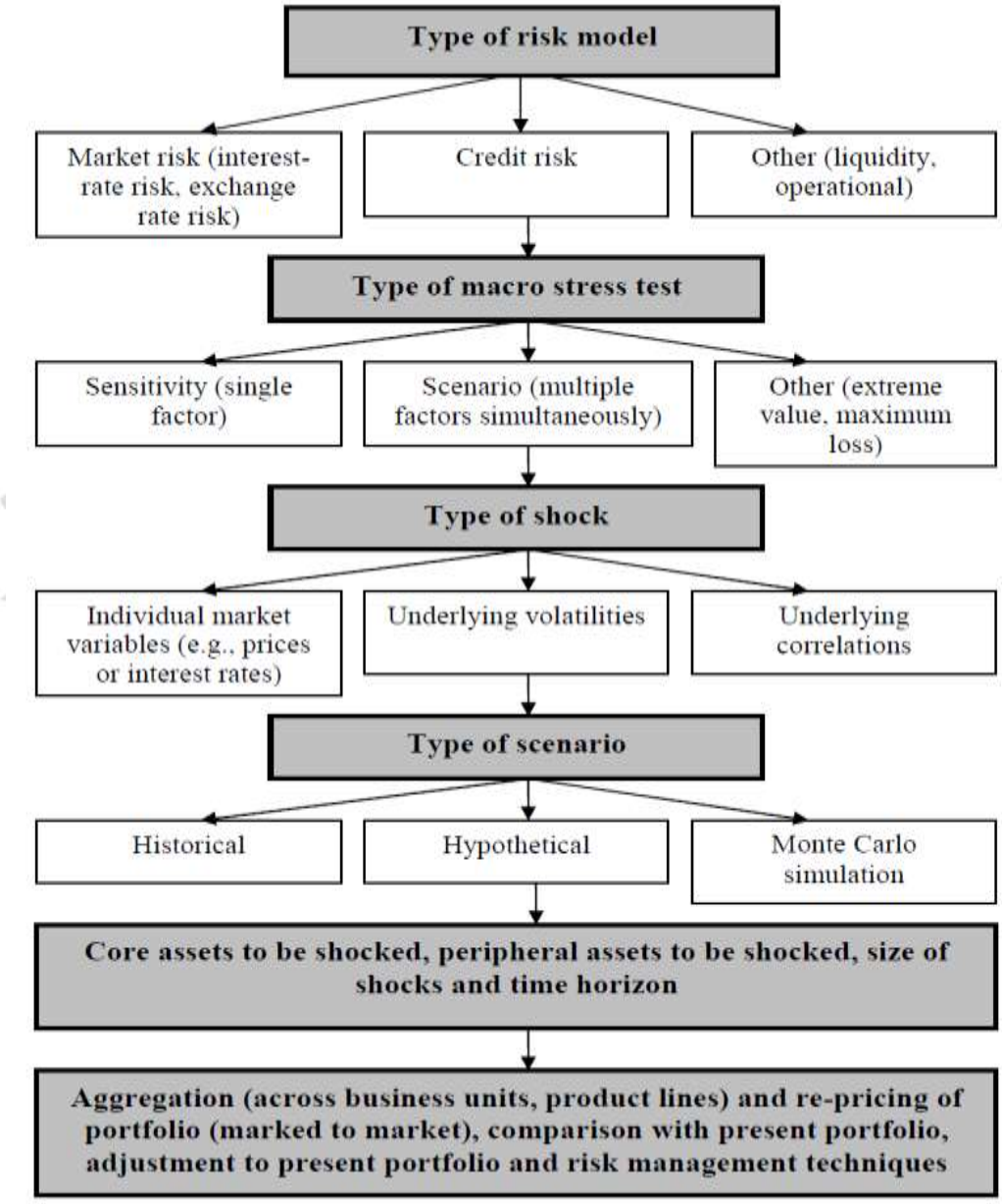

Figure 2. Decision Sequence for the Conduct of a Stress Test of Individual Portfolios. From *Stress Testing of Financial Systems: An Overview of Issues, Methodologies, and FSAP Experiences*, by W. Blaschke, M. T. Jones, G. Majnoni and S. M. Peria, 2001, Retrieved from: http://ideas.repec.org/p/imf/imfwpa/01-88.html. Reprinted with permission.

The Importance of Macro Stress Tests for the Strategies of Non-Financial Institutions

The term company's strategy means a united and integrated plan which combines strengths and weaknesses with threats and opportunities. The strategy defines the ways to achieve the given strategic goals. All parts of macro stress tests can be beneficial for businesses. For evaluating non-financial institutions' strengths and weaknesses there can be used micro stress tests. Opportunities and threats of macroeconomic character can be uncovered by macro stress tests compiled for the whole financial market. The results of the testing of non-financial corporations are especially greatly beneficial because the companies at the market may find out the position of their suppliers, customers and competitors. They also learn how well individual market branches work. The testing of the banking sector may provide the non-financial corporations with important information about their cooperating banks. The general assessment of macro stress tests gives a comprehensive view of the economic situation in the Czech Republic. Thus, enterprises gain the knowledge of the financial stability, and the prediction of its development may be included in their planning.

The analysis of the financial stability is significant for companies in their financial and operational planning because thanks to this analysis it is possible to reduce risks which are emerging at the financial market. This planning naturally starts with data and information about the company. However, stress tests can provide other important information about the development of the financial market and economic stability. It is certain that it is not possible to do the business without risks, and so it is crucial to choose the acceptable level of risks for the owners and management of corporations. In this case the macro stress tests can help. (Staňková, 2013)

Reports on macro stress tests can be useful for companies in predicting the future development. The baseline scenario shows the most probable economic development which companies can use to form their strategic plans. The stress scenario may help with planning in the event of the occurrence of negative effects. Financial Stability Report, published annually by the Czech National Bank (CNB, 2012), contains the basic indicators of the economic development in the world and in developed countries (see Fig. 3). The developed market economies are characterized by a high degree of engagement in international relations. (Bednářová et al., 2011)

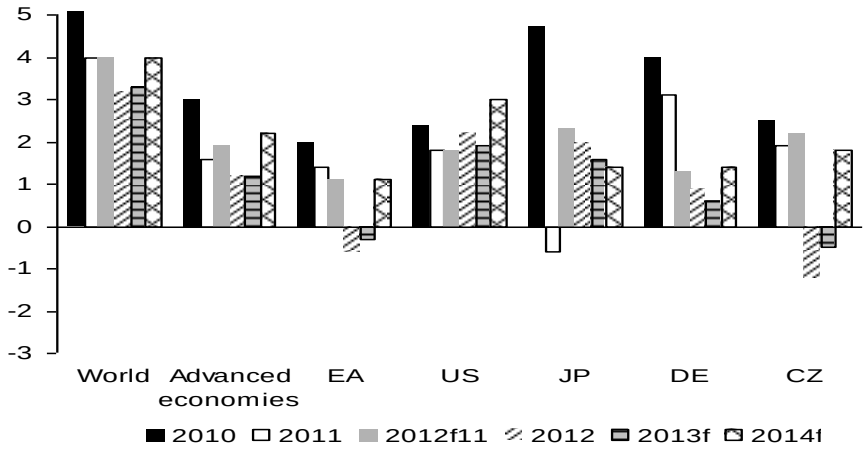

Figure 3. Economic growth worldwide and in the advanced economies (year-on-year growth in %; outturns and October 2011 and April 2013 forecasts). From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.
Note: 2012f11 is the October 2011/November 2011 forecast for 2012.

Economic growth in emerging and developing countries is shown at Figure 4. These indicators can be beneficial especially for the exporting corporations.

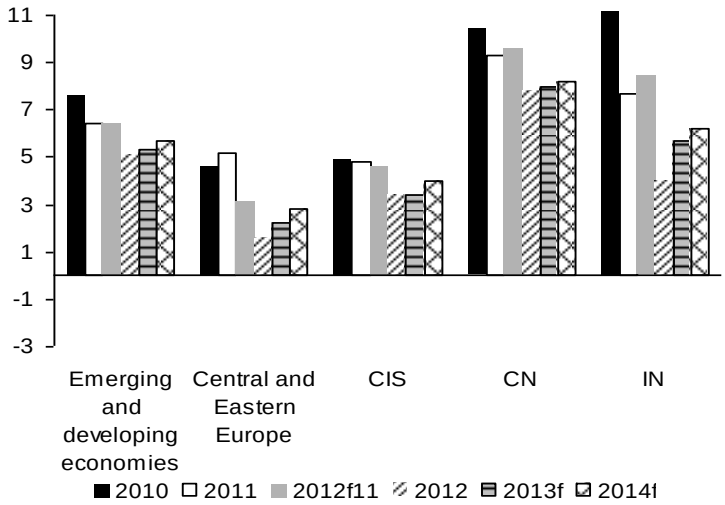

Figure 4. Economic growth in emerging and developing countries (year-on-year growth in %; outturns and October 2011 and April 2013 forecasts). From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.
Note: 2012f11 is the October 2011/November 2011 forecast for 2012.

The development of basic economic variables is given for the baseline and stress scenario. Enterprises can take account of the significant differences of the economic development as it is predicted in the baseline scenario or in case of the risk situation. The main indicators are the development of the real GDP growth, the development of inflation, the development of credit rate 3M PRIBOR (*Prague InterBank Offered Rate*) and the development of the crown-euro exchange rate. All of these indicators can be included into the planning by non-financial corporations. The development of GDP is interesting for companies in terms of the economic productivity prediction. When corporations are planning costs, revenues and cash flows, it is appropriate to know the development of the price level because prices of products may change, and so it is also necessary to include this development into the strategic plans. Loan rates offered by banks in the Czech interbank market can show the development of credit rates that will be provided to the non-financial corporations. The development of exchange rate will interest primarily the companies dealing in the currency of the Eurozone. In case of significant exchange rates modifications there may occur important changes in revenues from trade and the cost of the trade. So, it is good to know the development of this indicator in the stress scenario because there can appear weighty losses. Currently, this indicator is not very helpful, at least to the beginning of the year 2015. It is because of the intervention by Czech National Bank, which has closed the crown-euro exchange rate to CZK 27/EUR for the year 2014.

The results of stress tests for non-financial corporations may be used by companies in several different areas of planning.

Preliminary Phase of the Business

Companies decide in which area they will operate. The results of macro stress tests show the development of the selected sectors by various indicators. The development of after-tax return of equity (RoE) indicates significant differences in the return of capital in different branches (see Fig. 5). In the years 2010-2012 the

automotive industry and manufacturing achieved the best results, despite the ongoing global economic recession. The lowest return of equity showed the transport excluding Czech Railways and the real estate.

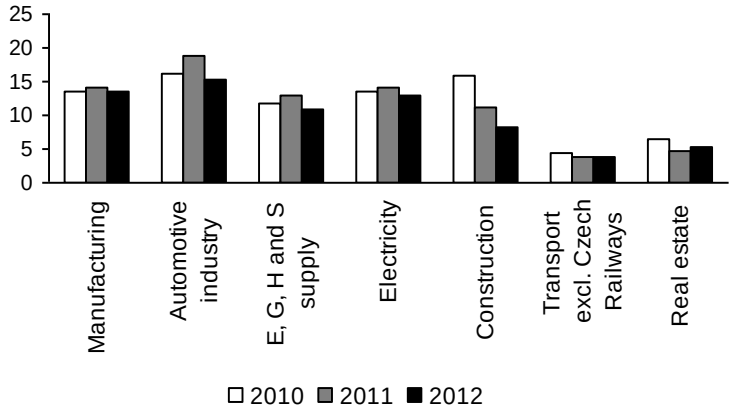

Figure 5. After-tax RoE in selected branches of activity (%).From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

Note: E, G, H and S are electricity, gas, heat and sewerage. The results are based on a selected set of corporations. Property development projects are included under construction. The automotive industry contains companies in NACE 29.

Creation of an Operating Plan

In the case of the creation of an operating plan companies are interested in the position of their suppliers. When the suppliers are from different industries, the indicator of the share of non-performing loans (NPL) ratios in selected branches has explanatory power for companies. This information indicates which segment has to face the deterioration of the situation and, vice versa, where the conditions are improving. Figure 6 shows that the situation in Czech Republic for the year 2012 is better than in 2011. However the improvement is not cardinal, so companies should take this situation into consideration. If the suppliers are from the same branch, but not only in this case, it may be beneficial to know the development of NPL in the sector of non-financial corporations as a whole. That is because this development is made for the stress scenario, and so companies can take into account the risk development.

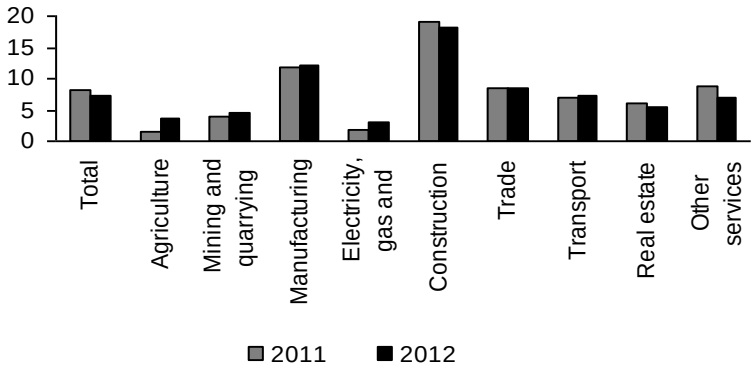

Figure 6. NPL ratios in selected branches of activity (%).From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

Planning the Sales of Goods, Products and Services

When corporations plan the sales of goods, products and services, they need to know the payment behaviour of their customers. The Czech National Bank also provides secondary insolvency from the perspective of suppliers. In this way enterprises find out the most problematic sectors of business. If companies operate in a sector with these troubles, they can involve the risk of secondary insolvency in their planning.

The macro stress testing of *household* has useful data for companies for planning sales to the end customers and for personal planning too.

Stress tests provide information about the year-on-year nominal and the real income growth, the unemployment rate and the year-on-year employment growth. The results also indicate expected development in the year ahead. Companies may derive the possibilities of employing and the related costs from these indicators (see Fig. 7).

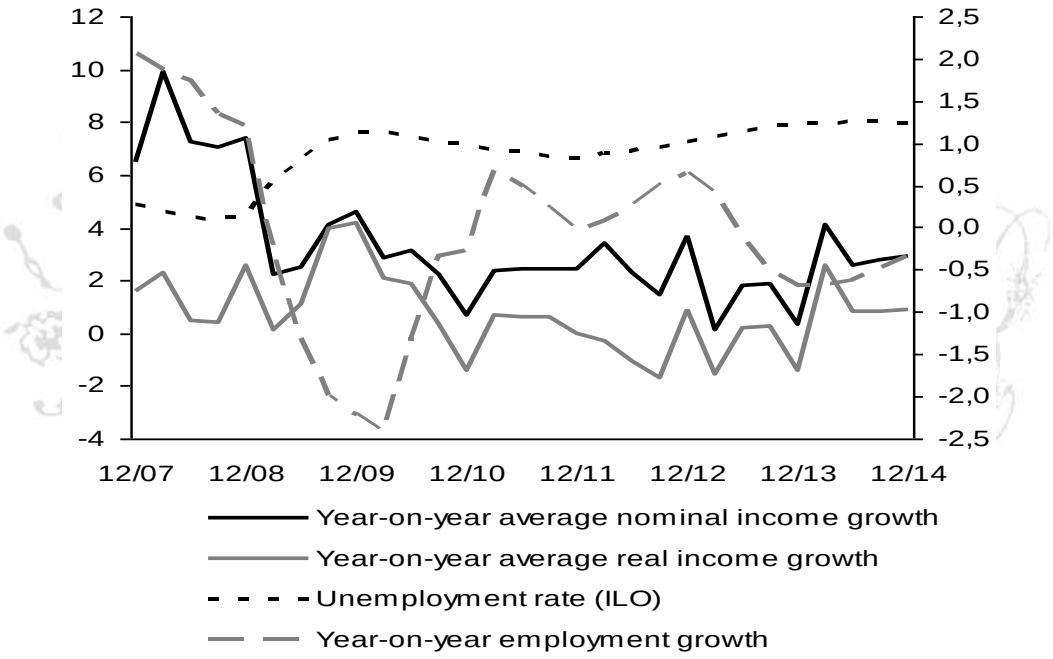

Figure 7. Nominal and real income growth, unemployment rate and the employment growth. From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission. Note: The unemployment rate is seasonally adjusted.

When companies plan sales to the end customers, they are interested in indicators of household debts and their over indebtedness (see Fig. 8 and Fig. 9). Both of these indicators give an overview to companies whether households will have free money to spend. If corporations offer essential goods, they do not have to give much weight to these data about debts, because households buy their products every time. However, companies that offer luxury goods or services, they have to expect the loss of customers in the case of over indebtedness growth. Figures 6 and 7 shows that the situation of household debts is still getting worse. For example the debt to gross disposable incomes had increased almost twice during the period 2006-2012.

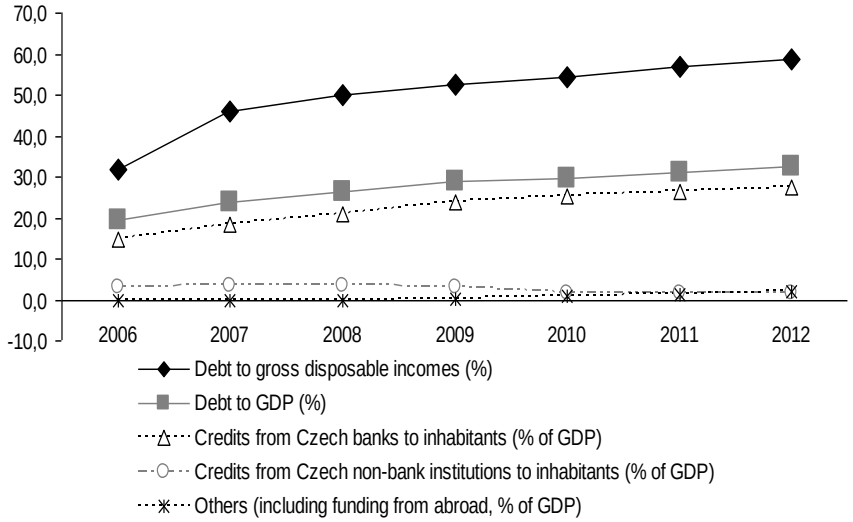

Figure 8. Debt to gross disposable incomes and to GDP for households (%).From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

The year-on-year growth of households' credit is another useful indicator for non-financial corporations. For companies in the construction industry is important the development of living loans. Thanks to this indicator, construction companies can estimate the future demand of their services. For other corporations are more important consumer loans which can be used for consumer goods. From development of this indicator is evident the overall decrease of drawn loans, which could reduce the demand of some products and services by households. That is the reason why should enterprises include this fact to their strategic plans.

The non-performing loans ratio of household may show the possible decrease of demand. In the case of the overdue loans, households spend money only on essential goods. Thus other companies may expect decrease in the demand of their goods by these households.

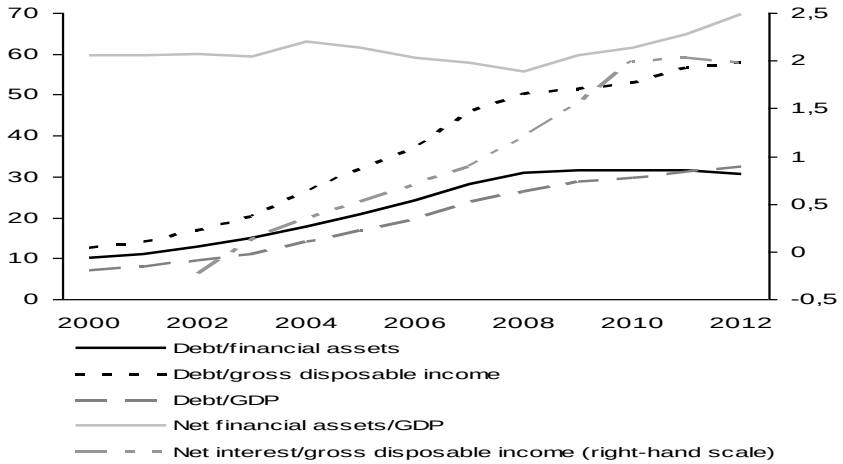

Figure 9. Household debt ratio. From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

These graphs show the continuous growth of indebtedness of Czech households. This situation can pose the threat of future problems associated with the sales of companies' production.

Financial and Operational Corporate Planning

For financial and operational corporate planning, *the testing of the banking sector* in the country is significant. According to these tests, companies may decide how to ensure finance for their business or how to invest their profits effectively.

- When corporations fund projects, they look for where to get money. Companies use loans and credits, and therefore they need to know the stability of particular banks. The situation of the parent companies of Czech banks is an interesting matter of interbank contagion. According to these data, companies can better decide with which bank they will cooperate.

- At the time when non-financial corporations decide where to save their funds, they are interested in the same information such as when they need money. The bank, which the company chooses, should be reliable and should not get into trouble, even in the stress scenario. Then the company can rely on the chosen bank. A useful indicator in this case is the capital adequacy. If the capital adequacy moves above the regulatory minimum, also in the stress scenario, the company does not have to be worried about cooperation with the bank. In Figure 10 are shown capital adequacy ratios for Czech banking sector. It shows that the capital adequacy of the Czech banking system for all the scenarios has a higher value than the European Central Bank recommended 8 %. From this perspective, the Czech banking system is stabilized and resistant to internal and external shocks.

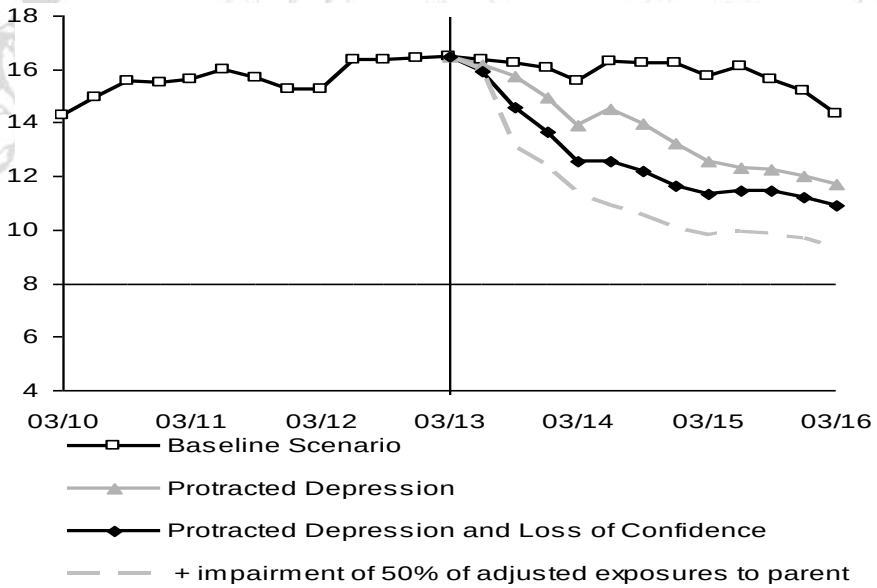

Figure 10. Capital adequacy ratios. From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

- The comparison of the growth of credits drawn from bank and non-bank institutions shows that there is still a bigger interest in the bank services. This indicates that the conditions of provided credits by non-bank institutions remain less favourable, and that is why companies should primarily prefer credits from banks (see Fig. 11 and Fig. 12).

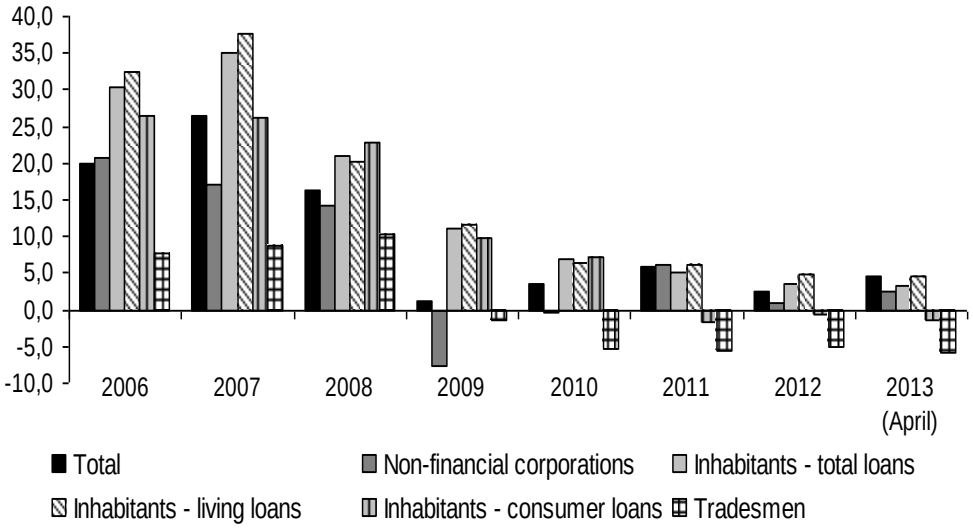

Figure 11. The growth of loans mediated by banks (%, end of period, year-on-year growth). From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

Figures 11 and 12 shows the reducing number of loans mediated by banks and non-bank financial corporations too. This situation is the correlative of rising household debts (see Fig. 8 and 9). The related development is noticeable from these figures. During the years 2006-2008 the loans rose rapidly and due to this in the following years the household debts increased as well.

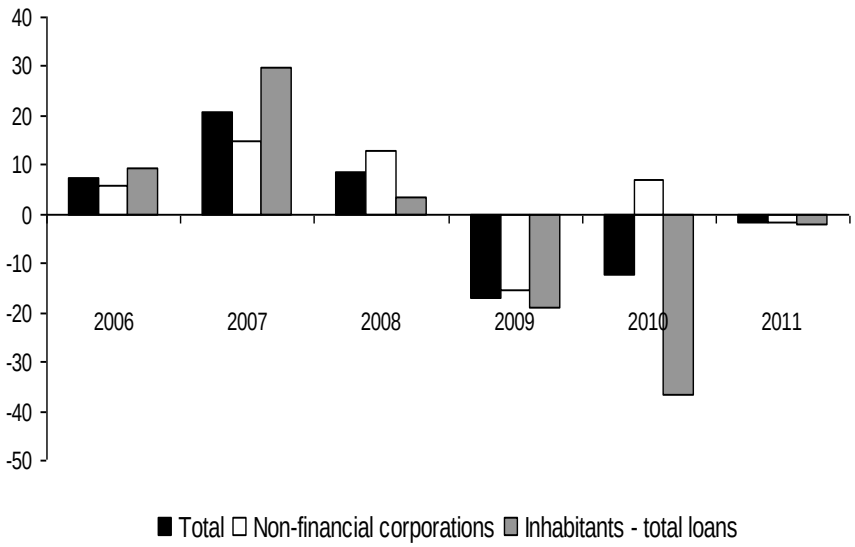

Figure 12. The growth of loans mediated by non-bank financial corporations (%).From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

The share of NPL as a proportion of total loans can be monitored by non-financial corporations, and so they can see that the share has been relatively invariable around 8 % in the last two years. Compared to the total non-performing loans, which are about 6 %, non-financial corporations are in a worse position. Therefore,

this risk should be included in the non-financial corporate strategies. However the situation is making better for non-financial corporations. It is evident that the NPL of non-financial corporations going down and getting nearer to the total NPL (see Fig. 13).

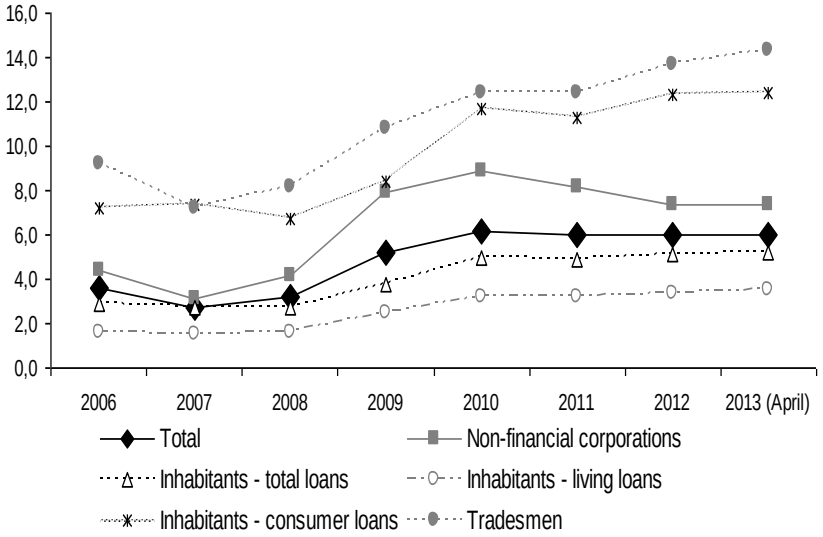

Figure 13. The share of NPL in total loans (%). From *Czech National Bank*, by Czech National Bank, 2013, Retrieved from: http://www.cnb.cz/cs/financni_stabilita/zpravy_fs/fs_2012-2013/index.html. Reprinted with permission.

Conclusion

This article was focused on finding and evaluating the possibilities of using current macro stress tests results for the creation of corporate strategies. This testing is made and used by the World Bank, International Monetary Found, European Central Bank, Czech National Bank and other monetary institutions. Macro stress tests allow the quantification of estimated losses that would result from the realization of extreme, but plausible scenarios of economic shocks to the financial system. The financial sector is examined as a whole (macro stress tests), or as an individual institution (micro stress tests).

Macro model and micro data based models for the corporate, household and bank sector, can be simulated independently or as an integrated system. These tests are an invaluable source of information for companies. They are also the complement of their internal testing. The information that is obtained by the testing can help to identify deficiencies in data collection, reporting and risks direction. Provided that enterprises apply macro stress tests in the creation of their strategy, these tests can help them to choose suitable business partners, suppliers, customers and financial institutions whose financial stability would not be threatened even in the case of the impact of negative shocks.

The results of stress tests may be used by non-financial corporations in several different areas of planning:

- in the preliminary phase of the business (e.g. the indicator of the development of after-tax return of equity),
- in the case of the creation of the operating plan (e.g. the indicator of NPL ratios in selected branches of activity, the indicator of NPL ratios for bank loans in the non-financial sector),
- in the planning of the sales of goods, products and services to the end customers (e.g. the indicator of the debt to gross disposable incomes and to GDP for households, the indicator of the share of over indebted households in the total number of indebted households),
- in the financial and operational corporate planning (e.g. the growth of loans mediated by bank and non-bank financial corporations).

From the above mentioned analyses there can be drawn the conclusion that the Czech Republic achieves stability in the financial market. Not even in the stress scenarios was found the threat to the overall stability of domestic economy. The capital adequacy of the Czech banking system for all the scenarios has a higher value than the European Central Bank recommended 8 %.

The results of the financial stability testing are the significant source of information not only for governments and banks, but also for non-financial corporations. It is certain that macro stress tests and macroprudential policy will go through further adjustments because they are relatively new methods. It can be assumed that there will be the improvement of applied basic tools, data availability and the explanatory ability of stress tests. The future research in this area will be focused on more information usable of the business strategy.

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