Evaluation of the current state of the economy and proper projections for the future conditions are both significant questions, frequently asked not only by the economists, but also consumers, entrepreneurs and policy makers. Special importance is put on the so called early warning signals, which allow early recognition of the significant changes in the economic developments. Scientific literature includes a wide variety of studies trying to construct proper economic indicators, often based on complex statistical methods and sophisticated models, which try to synthesize a rich information set from available data. In this project I introduce a new innovative method to construct a variable ("surprise index"), which not only identifies current state of the economy with daily frequency in real time, but also enables ex-ante comparative analysis among different regions, tracking their mutual dependence and impact of financial markets on the economies. It should be stressed that economic indicators known from the literature do not allow such a wide analysis, mainly due to lower frequency and homogenous information sets. Surprise index is a useful tool to better understand the business cycle behavior, especially in the times when economies reveal very strong dependence and are highly influenced by financial market developments (which is taken into account in the index construction).

The proposed research tries to verify several hypothesis, all of which construct a solid cause-and-effect theory behind the properties of the forecasting errors, but also behind the economically very important process of expectations formation. I focus on the set of macroeconomic forecasts prepared by professional analysts, but it is a well-documented fact that this kind of predictions have a strong impact on other economic agents and determine economic and policy decisions. The starting point and the first stated research question is how professional analysts prepare their forecasts and what are their properties.

The standard analysis of forecasts' value, based on rationality and efficiency tests, is extended with the new consistency criterion of the whole economic scenario for many macroeconomic variables. This is an innovative approach, which not only lays the foundations for the construction of the surprise index, but mainly constitutes a useful evaluation criterion, which on one hand eliminates random correctness and on the other, enables understanding of the whole predicted economic scenario. Results from the preliminary analysis indicate that forecast errors reveal cyclicality synchronized with the business cycle frequency and that they are directionally strongly dependent. More precisely, it means that forecasters underestimate when the variable is accelerating and overestimate when it is decelerating – they stick to the previously formed scenarios and do not adjust them with the new information. Therefore aggregation of forecast errors strengthens the cyclical pattern observed in individual predictions, which is the main idea behind the surprise index methodology.

Additionally, this empirical observations are followed by the theoretical justification behind forecast errors cyclical pattern and multivariate directional dependence. This part of the project fits well in the stream of the basic research as it allows to explain fundamental aspect of the process of expectation formation throughout the whole economy and the well-known phenomena of irrational and inefficient projections formed by professionals. Generally, I prove that cyclicality of errors can be explained by behavioral characteristics of the forecasters, who are significantly influenced by heuristics such as overconfidence and anchoring in their past predictions. Many studies confirm that these characteristics are common among financial market participants, but it's a new approach in terms of analyzing professional analysts and importantly, it highlights theoretical foundations and systematic properties of the empirical results.

The natural next step is to utilize obtained information and aggregate forecast errors into an economic indicator (i.e. univariate variable which in real time indicates state of the economy). The second part of the project aims to construct and analyze the so called surprise index, especially in the context of the last financial and economic crisis. The methodology behind index construction is based on the impact macroeconomic releases have on financial market changes, which is a well develop branch of the literature that connects business cycles with the financial cycles. It is based on the fact that changes on financial markets generally strengthen changes in the economy – recessions are deeper and recoveries faster when supported by financial system. What is more, incorporation of the financial market as an information catalyst enables construction of both „local" (for a certain country or region) and „global" (which incorporate surprises also from broadly understood global economy) indicators, which allows comparative analysis. Global synchronization, dependence between business cycles and contagion phenomenon in various regions are topics under wide investigation especially after the recent global crisis which developed twofold – in United States as the financial crisis and in Eurozone as the debt crisis. Surprise indices enable very precise analysis of the impact Eurozone countries had on each other, but also on other countries e.g. in Eastern Europe: Poland, Czech Republic and Hungary. Similarly, in the context of the American financial crisis 2007/08 it would be possible to assess the quantitative impact of the US financial market crash on various European economies. In the last part of the proposed project I'm going to analyze these dependencies, which also fits the idea of the basic research in trying to understand causes and propagation mechanism of the recent crisis.