This project proposal aims at developing and applying experiments and an innovative, algorithm-based methodology to assess consumers' inflation expectations features. Inflation expectations are private beliefs about inflation in forthcoming periods. They are important for central banks and monetary policy conduct – if the central bank can effectively affect our expectations, it can achieve its targets at lower costs. This is why central banks address their communication more and more directly to general public – consumers and companies. However, individuals have a low degree of economic knowledge, and their ability to process economic information is limited. The economic (il)literacy of consumers affects the methodology and validity of empirical assessments of expectations. Moreover, the pandemic makes expectations formulation and their analysis even more challenging task. Our motivation to conduct this examination is twofold: as described above, we juxtapose needs of economics and policy making with the reality.

This study covers EU member states and a sample over the 2002-2023 period. Experiments are held in 2022-2023 in six economies of the EU.

The study combines an experimental approach and methodological innovations to create new knowledge. Research questions are: (Q1) How to quantify consumer expectations expressed in qualitative surveys? (Q2) What are the methodological alternatives to standard procedures of properties testing? (Q3) To what extent does central bank communication affect consumers' expectations? (Q4) What are the determinants of the influence of central bank communication on consumers' expectations?

The path of this examination starts with **evaluation of standard methods of expectations quantification** (specific goal - SG1). Consumer expectations are examined in qualitative surveys- responders express their opinion about the direction of inflation change in the future. Their responses are quantified. Existing methods of quantification are not perfect. We are going to start the project with their critical assessment. Secondly, **we develop a novel quantification procedure** (SG2A). Our proposal applies, i.a. fuzzy logic which incorporates ambiguous human logic into computer programming. Fuzzy logic has numerous applications in engineering, mathematics, and the natural sciences, but also in social sciences, including economics. It suits problems that cannot be easily represented by standards models. We would also like to **design experiments to asses expectations and their characteristics** (SG2B). Experiments are not a standard tool for economics. However, they are perfect complementary tool: they allow for asking more specific questions especially regarding personal grounding effects for expectations. We search for the dependence between personal traits, economic (il)literacy of consumers and their ability to forecast inflation/susceptibility for message formulation. Experiments applicability has been more interesting after the pandemic arrival: it is highly probable that consumers have changed the way haw they perceive economic situation. Experimental data reveal their expectations which have adjusted to current challenges. Developing novel methodology and designing experiments is our contribution to methodology of economics. Eventually, we apply novel methods and experiments **to discover central bank communication effects on consumer expectations features in different localizations** (SG3) and **to identify determinants that boost the communication effect on expectations (among message formulation and its tone, behavioural aspects and economic literacy)** (SG4). The empirical part of the examination is conducted with the application of experiments, novel methodology (algorithm-based) and with the application of standard methods.

This study results contribute firstly to economics methodology. We provide novel applications of computational programming for expectations quantification and testing their properties. **Our methodological contribution is also related to experiments designs**. Experiments are expensive and time consuming. In the post-pandemic economic reality, experiments could be the most powerful source of understanding expectations and the influence of central bank communications. **The project delivers new knowledge about the power of central banks to affect expectations via communication tools**. It covers behavioural aspects and refer to individual's economic literacy. Thus, we find out the frontiers of central bank message understanding. We offer results for EU member states, long sample and shorter subsamples, including the most recent ones.

The broad coverage of the project is a significant contribution to the discipline. **The study concludes on central bank communications with the public,** not only with specialists. Further, our results could be more influential as we cover consumers: less educated and experienced groups, in economics terms, having the greatest power to affect aggregate effects. As we have mentioned, central bank communication has recently targeted the less informed public, with a focus on the means of communication and, to some degree, the message. By comparing communication procedures and message compositions, we identify and recommend optimal policy from the point of view of shaping expectations. We indicate the constraints of communication to the public and their sources in economic literacy, personality traits, or demographical differences.