The onset of the global financial crisis brought about an increased concern about systemic risk. Systemic risk is the risk of widespread disruption of the financial system implying a potential material damage to the economy. Such disruptions can have significant implications for employment, wages, prices and economic activity. That is, systemic risk can impose large negative externalities on the rest of the economy.

The event of systemic risk could emerge from within the financial system when the original shock is endogenously amplified by the fragilities and frictions within the system such as excessive leverage, maturity mismatches or interconnectedness. In this sense, the global financial crisis in 2008 was a typical endogenous event as the crisis preyed on the weaknesses of the financial system and misbehavior of market agents and failure of regulatory institutions. Alternatively, the trigger of the systemic event could be an exogenous shock, which means from outside the financial sector. Unlike the 2008 crisis, the current COVID-19 crisis, for example, did not originate in the banking sector but it was rather caused by an unprecedent administrative lockdown of the economies, which significantly affected demand and supply, public and private sectors as well as financial markets. Therefore, the coronavirus shock is purely exogenous to the global financial system and banks' risk management practices cannot be blamed.

However, these two dimensions of risk are not mutually exclusive and may materialize independently or in conjunction with each other. In light of the most recent developments, the spread of the coronavirus across the globe triggered abrupt and disorderly asset price developments which led, in turn, to an acute increase in financial system stress. The further systemic risk implications of the pandemic will depend on how the vulnerabilities built up in recent years amplify the shock. The paramount distinctions between exogenous or endogenous triggers and sequential or simultaneous impacts reveal the complexity of this phenomenon.

Against this background, the project explores different determinants of systemic risk by distinguishing between an endogenous perspective of systemic risk, where attention is confined to the financial system, and an exogenous perspective of systemic risk in which the two-sided interdependence between the financial system and the economy at large is considered. We reduce the dimensionality problem resulting from the interaction of these elements by limiting attention to two main forms of systemic risk: the risk resulting from the interlinkages between intermediaries, and the risk of widespread shock causing simultaneous problems across countries, sectors and/or financial institutions.

Accordingly, we first focus on an endogenously self-reinforcing feedback loop between liquidity, solvency and interconnectedness that can have serious consequences for the stability of the financial sector. Our main objective is to identify the direction and evaluate the magnitude of the feedback effects between solvency and liquidity risks, and their mutually reinforcing impact on systemic risk in a banking sector. We test the hypothesis that this channel is material as solvency and liquidity are determined simultaneously and amplify each other, which results in an increase of systemic risk. We also conjecture that financial vulnerabilities such as excessive leverage, maturity mismatches or interconnectedness that may play an important role in the amplification of the initial shock effect.

Next, we take a system-wide perspective in which systemic risk is triggered by the exogenous shock that hits the world economy. In this part of the project, we aim at exploring the role of capital and liquidity buffers in mitigating the risk of negative feedback loop and resulting contagion effect that affect the real economy and the financial system as whole. In this respect, we are going to compare and contrast the coronavirus crisis with 2008 crisis, and in the process, gain some intelligence on the role of certain banks' specific characteristics which determine whether banks can serve us shocks absorbers or amplifiers of stress.

We will analyse determinants of systemic risk from two perspectives – the micro (bank) level and the macro (aggregate) level. While the analysis at the micro-level, carried out with the use of the quantile dynamic panel models, will allow us to explore the heterogeneity among banks and non-linear relationships among variables of interest, the macro-level analysis, based on the interactive panel VAR (IP-VAR) models, will provide information on macro-financial linkages at the aggregated macro level.

In view of this, we are going to present a new empirical evidence on the exogenous and endogenous determinants of systemic risk and enrich fast growing literature on systemic consequences of COVID-19 crisis and risk interactions. Within the scope of the project, we will prepare three papers for submission to recognized scientific journals. The first paper will be dedicated to analyzing the non-linear relationship between solvency and liquidity risk, while taking into account financial imbalances that can magnify exogenous shocks. The second paper will examine amplification effects between solvency and liquidity and their impact on systemic risk. The third paper will touch on macro-financial feedback-effects and the role played by the level of liquidity and capital in the banking sector in the situation when systemic risk materializes.