During the COVID-19 pandemic, the housing markets in Europe and the United States showed signs of being overpriced, which raised concerns about a possible economic downturn and its impact on financial stability. **Detecting housing bubbles has become increasingly important because the housing market, economy, and financial sector are closely interconnected, as seen in the aftermath of the 2000-2007 housing bubble and the subsequent financial crisis of 2008-2010.** Key factors contributing to this connection include banks lending money for mortgages, the risk of investing too much into resource-heavy construction sector, and the impact of housing on social welfare and income inequality. Moreover, homes make up a significant portion of most people's wealth and strongly influence their economic activities.

Although efforts have been made to address risks associated with lenient lending standards, **there is still much we don't know about how housing bubbles are created. Interestingly, countries with similar income levels, financial systems, and economic conditions have experienced housing bubbles to varying degrees in the past. For example, the UK, the US, and Spain have been more prone to housing bubbles, while Germany and France have been less affected.** This shows that it's not just the overall economic situation that determines the occurrence of housing bubbles.

My project aims to investigate how the structure of housing markets and policies, such as tax considerations, contribute to the creation of housing bubbles in different countries. **I will analyze various price indicators to understand how different factors in each country may influence this phenomenon. I will study five countries with different market structures: the UK, the US, France, Germany, and Spain. The data analysis will cover the period from 1975 to 2022.**

Recent studies have also shown that human behavior plays a significant role in creating bubbles. **In my research, I will use advanced machine learning techniques to analyze data relationships in more detail than traditional methods allow. I will also consider behavioral aspects in my models.** These advancements have the potential to improve bubble detection by combining behavioral and fundamental factors into a single model.

Therefore, the project has three objectives:

(1) Investigate how different aspects of the housing market affect the accuracy of current methods used to detect housing bubbles. Also, examine the impact of using different indicators on the accuracy of bubble detection methods.
(2) Compare and analyze the key factors driving housing bubbles in European and US markets, specifically exploring the interaction between behavioral and fundamental factors in each market.
(3) Evaluate the performance of explainable machine learning methods in detecting housing bubbles and determine if they are better than current methods.

The project aims to identify the key factors contributing to housing bubble formation, evaluate modern bubble detection methods, and provide insights into market-specific characteristics and fundamental factors. **The expected results will benefit policymakers, investors, and researchers while advancing the academic landscape through technological advancements, and tailored approaches to housing bubble detection.**