

## Title

Effects of Financial Institutions' Supply Constraints on Corporate Borrowing Behavior:  
Estimating Heterogeneity by Firm Characteristics Using a Machine Learning Approach

## Abstract

This study decomposes the lending attitudes of financial institutions into supply-side and demand-side factors, utilizing corporate survey data. It then examines the extent to which the tightening of lending attitudes driven by supply factors—specifically, financial institutions' supply constraints—affects corporate borrowing behavior. Recognizing that the impact of these constraints may be heterogeneous, we construct a wide range of firm-characteristic indicators using firm-level data and apply a machine learning method known as Generalized Random Forests. The main findings are twofold. First, the effects of supply constraints on borrowing behavior vary substantially across firm characteristics. Second, multiple firm characteristics play an important role in explaining this observed heterogeneity.