Machine Learning in the Service of Policy Targeting: The Case of Public Credit Guarantees

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ML for policy targeting

- The effectiveness of a public policy depends (also) on who benefits from it (**targeting**). ML algorithms can be used to predict those for whom the policy is most likely to be effective (providing the policy maker with a rule to assign a treatment)
- Application: Italian public credit guarantee scheme (***FG***). In principle, credit guarantee programs should target firms that are both credit-worthy (for financial stability of the scheme) and credit-rationed (to increase additionality)
- We use ML (d-Tree, Lasso, RF) to predict firms that are **both credit-worthy** (y=no NPL) **and credit-rationed** (y=no credit after a PI request) and we contrast the ML targeting rule with the actual allocation rule
- Results: 20% of the firms that are FG eligible are discarded by ML; 75% of the FG non eligible are retrieved by ML → the actual allocation places **too much weight on firm creditworthiness**, neglecting credit rationing

Ex-post evidence and issues

- We exploit data on FG beneficiary and run **3 exercises**: 1) compare observed outcomes for treated (beneficiary) ML targeted firms vs treated-non ML targeted firms; 2) compare counterfactual outcomes for non-treated ML-targeted firms vs observed outcomes of treated non-ML-targeted firms; 3) elaborate on the actual allocation rule and estimate a F-RDD by target status
- **Huge gains in terms of effectiveness** (the resources granted to firms that are not targeted by ML reach 46.5%) but many issues (information requirements, contamination, etc):

✓ RF is kind of a **black box**. A d-Tree provides more transparency, but we lose quite a lot in accuracy

✓ **Formal vs substantive transparency**: targeting via ML forces us to clearly indicate the policy objective and assess whether the rule is fit for it

✓ **Additional policy objectives:** the distribution across regions and across different banks