Africa's Slave Trades: Implementing Machine Learning for IV Analysis

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Abstract

- Utilizes machine learning and IV analysis to examine economic impacts of Africa's slave trades.
- Results show worse economic performance in regions deeply linked to the slave trade.

Introduction

- Focuses on the economic impacts of Africa's slave trades using Double Lasso and IV analysis.
- Aims to uncover persistent disparities resulting from historical injustices.

Literature Review

- Introduction of lasso by Robert Tibshiran.
- Enhance lasso: Zou's adaptive lasso.
- Not effective for all economics research.

Methodology

Replicating Original Study:

- Estimate slave exports using shipping records.
- Examine relationship between slave exports and current economic performance of African countries.
- Use distance from trade routes as an IV and perform 2SLS.

Enhancing with Machine Learning:

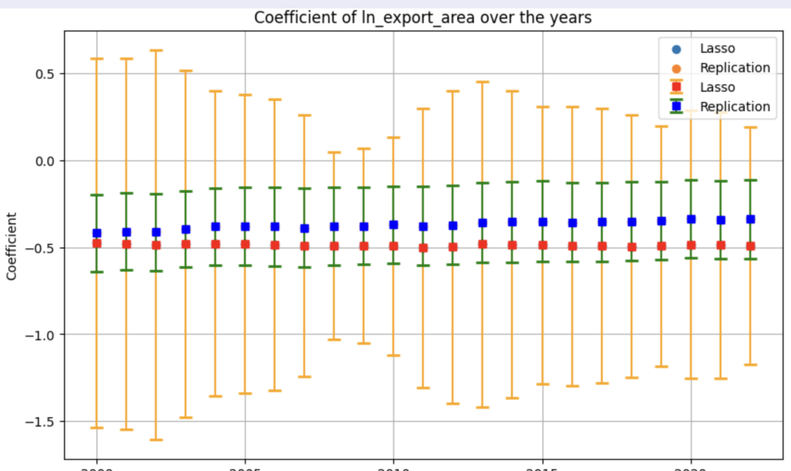
- Select relevant variables using Lasso method.
- Regress IV with features selected using Lasso.
- Regress GDP on predicted values.

Results Comparison

- The year 2000 used in the original study was the most significant year by a narrow margin
- The negative correlation between export area of slaves and economic outcomes was still significant in the expanded replication.
- The double lasso regressions found a stronger correlation than both the original study and the expansion of the original.
- However, the larger CI ranges for lasso suggest less precise results.

Table: Regression Results Summary (using GDP with Base Year of 2010)

Independent Variable	Coefficient
Slave Exp.(Replication; 2000)	-.418
Slave Exp.(Replication; Avg 01 - 22)	-.365
Slave Exp.(Double Lasso; 2000)	-.474
Slave Exp.(Double Lasso; Avg 01 - 22)	-.488



Discussion

- Expanding years studied in the original replication produces more robust and dependable correlations.
- Specifying more relevant variables in Double Lasso strengthens correlation findings but could introduce biases that weaken precision.

Contributions

- Integrates machine learning with econometric methods for methodological innovation.
- Demonstrates importance of considering the context of a study and complexity of the traditional model it is being implemented with.

Conclusions

- Provides insights into the lasting economic legacies of Africa's slave trades.
- Demonstrates the potential value of advanced statistical methods in historical economic analysis.

Supplemental Content