

# Analysais on external debt and currency crisis in Emerging markets

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knitr::opts_chunk$set(echo=FALSE)
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## Problem statement and Background

- ▶ EMEs (emerging markets) are vulnerable: inflationary depression
- 1. Countries with a high level of external debt are especially vulnerable to capital outflows and thus exchange rate fluctuations
- ▶ the link between external debt and currency crisis in Emerging Market Economies (EME)
  - 1. EMEs are more likely to hold a significant portion of external debt compared to developed economies.
  - 2. What factors strengthen or weaken the link between external debt and currency crisis in EMEs?
  - 3. How to predict the possibility of a currency crisis happening in future years?
  - 4. Policy guidance for external debt management for central bank policymakers in emerging markets

## Approach (page 1)

- ▶ Data description
  1. the World Bank Open Data
  2. the International Monetary Fund (IMF) Open Data
  3. the Polity IV Project conducted by the Center for Systemic Peace
- ▶ Dependent variables (DV): Currency crisis happened in a country by years
- ▶ Control variables: External debt/GNI, U.S. interest rate, foreign exchange reserves, polity score, GDP per capita
- ▶ Data access: Public data
- ▶ Data limitation
  1. More difficult to obtain macroeconomic data on less developed countries because of bureaucratic mismanagement and officials' incentive to inflate their economic data
  2. Polity score is not a perfect proxy for political stability

# Methods

- ▶ Data visualizations - ggplot2
  1. explore the connection between DV and control variables
  2. explore the connections among control variables
- ▶ Logit model
- ▶ Machine learning

## Result: data visualizations (page 1)

- ▶ connection between external debt and currency crisis (graph 1)
- ▶ connection between polity score and gdp per capita (graph 2)
- ▶ How U.S. interest rate influence EMEs' currency crisis? (graph 3)

## Result: data visualization (page 2)

- ▶ polity score and currency crisis by country: not significant (graph 4)
- ▶ The lower the foreign reserves, the more currency crisis happened (graph 5)

Result: Logit model (page 3)



Result: Machine learning (page 4)

