

makeFigures

October 8, 2023

1 Supplementary Figures: Using Machine Learning to predict Financial Crises

Author: [Chris Reimann](#) **Date created:** 2023/07/28 **Last modified:** 2023/10/07 **Description:** This notebook constructs additional descriptive figures used in the paper.

```
[ ]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from prepareData import Data
```

1.1 Crisis Graph: MacroHistory Data

Plot all crisis events reported in the MacroHistory data from Jorda et al. 2017 per country and year.

```
[ ]: d1 = Data()
crisisYears = d1.df[d1.df.crisis == 1]
crisisYears = crisisYears[["year", "iso"]].sort_values("iso").reset_index(drop_
    ↪= True)

plt.rcParams["figure.figsize"] = (10,6)
sns.set_theme(style = "whitegrid", rc={'savefig.dpi':300})
sns.stripplot(data = crisisYears, x = "year", y = "iso", size = 8, jitter =_
    ↪False, palette=sns.color_palette("husl", 18), hue="iso", legend=None)
plt.grid(axis = "y")
plt.xlabel("Year")
plt.ylabel("Country")
plt.xticks(fontsize = 12)
plt.xticks(list(range(1870, 2021, 10)))
plt.savefig(r"C:\Users\c-rei\Pictures\crisisYears.png", bbox_inches='tight')
```

1.2 Crisis Graph: Laeven & Valencia

```
[ ]: d2 = Data(crisisData = "LaevenValencia")
crisisYears = d2.df[d2.df.crisis == 1]
crisisYears = crisisYears[["year", "iso"]].sort_values("iso").reset_index(drop_
↳ True)

plt.rcParams["figure.figsize"] = (10,6)
sns.set_theme(style = "whitegrid")
sns.stripplot(data = crisisYears, x = "year", y = "iso", size = 8, jitter =_
↳ False, palette=sns.color_palette("husl", 16), hue="iso", legend=None)
plt.grid(axis = "y")
plt.xlabel("Year")
plt.ylabel("Country")
plt.xticks(fontsize = 12, rotation = 45)
plt.xticks(list(range(1970, 2021, 4)))
plt.savefig(r"C:\Users\c-rei\Pictures\crisisYearsLV.png", bbox_inches='tight')
```

1.3 Crisis Graph: ESRB

```
[ ]: d3 = Data(crisisData = "ESRB")
crisisYears = d3.df[d3.df.crisis == 1]
crisisYears = crisisYears[["year", "iso"]].sort_values("iso").reset_index(drop_
↳ True)

plt.rcParams["figure.figsize"] = (10,6)
sns.set_theme(style = "whitegrid")
sns.stripplot(data = crisisYears, x = "year", y = "iso", size = 8, jitter =_
↳ False, palette=sns.color_palette("husl", 13), hue="iso", legend=None)
plt.grid(axis = "y")
plt.xlabel("Year")
plt.ylabel("Country")
plt.xticks(fontsize = 12, rotation = 45)
plt.xticks(list(range(1970, 2021, 4)))
plt.savefig(r"C:\Users\c-rei\Pictures\crisisYearsESRB.png", bbox_inches='tight')
```