Visualizing Africa

Rabaoui Yassine

Ecole Supérieure de la Statistique et de l'Analyse de l'Information, Université de Carthage, Tunisie

rabaoui@essai-u.carthage — +216 22 22 22 22

Introduction

The particularly adventurous business analyst will, at a fairly early point in his career, hazard an attempt at predicting outcomes based on patterns found in a particular set of data. That adventure is usually undertaken in the form of linear regression, a simple yet powerful forecasting method that can be quickly implemented using common business tools (like Excel) Regression analysis predicts trends and future values. The regression analysis can be used to get point estimates. A typical question is, "what will the price of gold be in 6 months ?" What will be the exchange rate of usd in 3 Years ?

Data Set

This dataset is a derivative of Reinhart al's Global Financial Stability dataset which can be found online at :

— https ://www.hbs.edu/behavioral-finance-and-financial-stability/data/Pages/global.aspx

It specifically focuses on the Banking, Debt, Financial, Inflation and Systemic Crises that occurred, from 1860 to 2014, in 13 African countries, including : Algeria, Angola, Central African Republic, Ivory Coast, Egypt, Kenya, Mauritius, Morocco, Nigeria, South Africa, Tunisia, Zambia and Zimbabwe.

case	cc3	country	year	systemic_crisis	exch_usd	domestic_debt_in_default	sovereign_external_debt_default	gdp_weighted_default	inflation_annual_cpi
1	DZA	Algeria	1870	1	0.052264	0	0	0.0	3.441456
1	DZA	Algeria	1871	0	0.052798	0	0	0.0	14.149140
1	DZA	Algeria	1872	0	0.052274	0	0	0.0	-3.718593
1	DZA	Algeria	1873	0	0.051680	0	0	0.0	11.203897
1	DZA	Algeria	1874	0	0.051308	0	0	0.0	-3.848561

FIGURE 1 – Data

Statistical analysis data

In this project we will be trying to predict usd exchange rate in Tunisia for 50 years (1965 -> 2015) using some features in our data set

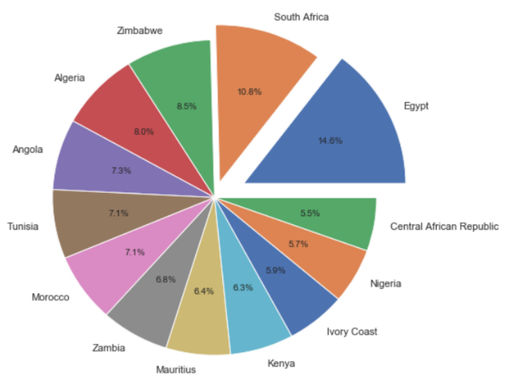


FIGURE 2 – Pie chart

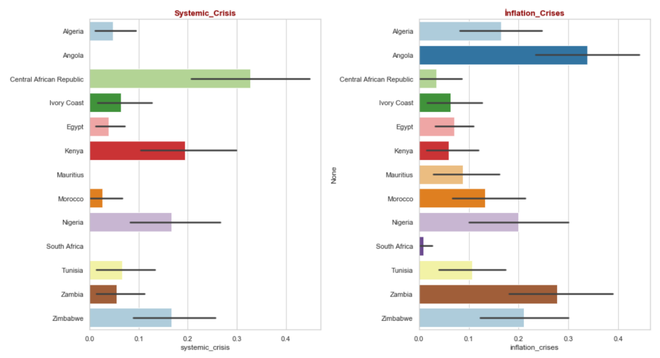


FIGURE 3 – Box plot

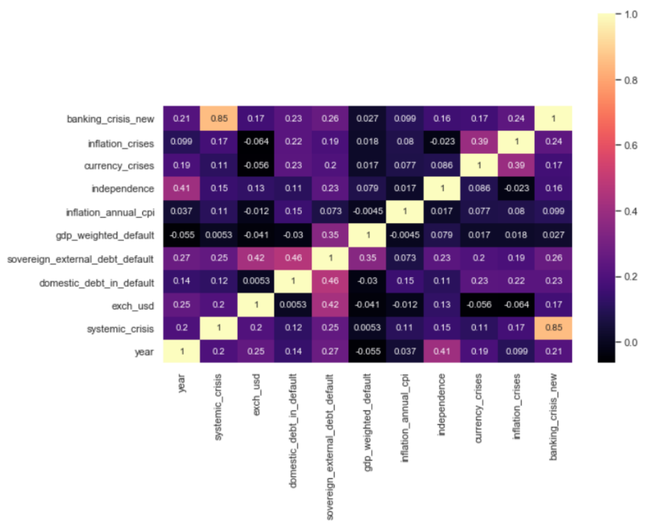
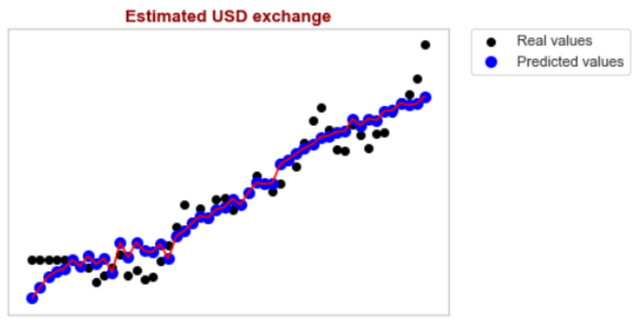


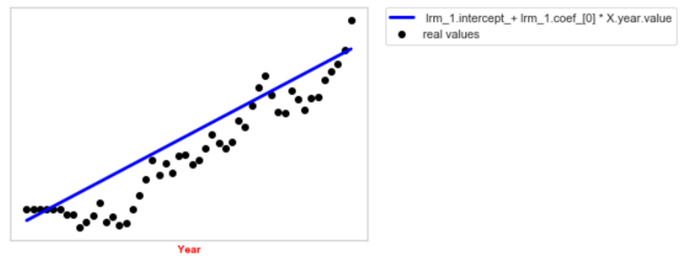
FIGURE 4 – Heat map

Linear Regression



exch-usd : The exchange rate of the country vis-a-vis the USD

FIGURE 5 – Linear regression



Dep. Variable:	exch_usd	**R-squared:**	0.923
Model:	OLS	**Adj. R-squared:**	0.916
Method:	Least Squares	**F-statistic:**	135.4
Date:	Tue, 26 May 2020	**Prob (F-statistic):**	1.76e-24
Time:	13:26:25	**Log-Likelihood:**	39.751
No. Observations:	50	**AIC:**	-69.50
Df Residuals:	45	**BIC:**	-59.94
Df Model:	4		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-48.5402	2.423	-20.029	0.000	-53.421	-43.659
year	0.0249	0.001	20.542	0.000	0.022	0.027
systemic_crisis	-0.0170	0.027	-0.620	0.538	-0.072	0.038
inflation_annual_cpi	-0.0241	0.007	-3.677	0.001	-0.037	-0.011
currency_crises	-0.0162	0.063	-0.257	0.798	-0.143	0.110
inflation_crises	0	0	nan	nan	0	0
banking_crisis_new	-0.0170	0.027	-0.620	0.538	-0.072	0.038

FIGURE 6 – OlS summary

Conclusions

When we look at the mse and the prediction graph of our model ,we can see that it is performant . The variables year , inflation annual cpi , gdp .. are effective on the dollar rate of Tunisia

REFERENCES

https ://www.kaggle.com

https ://scikit-learn.org/stable/modules/generated/sklearn.linear$_model.Li$

$IwAR3BnqdlN0dhFHPxVayTw94MyNtZvIp6_DN-aa9BGSgiAZa$

https ://en.m.wikipedia.org/wiki/Mean$_squared_error?fbclid$ =

$IwAR1ZaxSiqWDUBRudzb8Kz6sXFOsZR3Deo2ruZfVZCqC_jy$