Factors of Peruvian Copper Exportation

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Contents

Data and variables

- Traditional product exports (Thousands of tons). Source BCRP
- Private sector financial account (Millions of US$) - Foreign Direct Investment. Source BCRP
- Copper price (US$ per pound). Fuente BCRP
- Real Exchange Rate (base 2009=100) - Bilateral. Source BCRP
- Current Price Gross Domestic Product in China, Chinese Yuans, Quarterly, Seasonally Adjusted. Source Federal Reserve Bank of St. Louis (base 2009 = 100)

Descriptive Statistics

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: mar., feb. 22, 2022 - 04:57:23 p. m.

Table 1: Descriptive Stastistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
volCobre	79	336.814	157.042	106.335	230.050	362.329	752.012
fdi	79	1,312.380	1,079.778	−2,459.331	446.835	1,933.262	4,148.982
gdpChina	79	150.635	96.461	32.500	61.864	225.237	374.157
copPrice	79	244.424	106.937	64.784	150.917	326.012	437.309
exchRate	79	103.083	10.799	83.786	94.915	113.913	121.517

Unit root test

It is necessary to test if there is unitary roots.

```
## $volCobre
##
```

```
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -1.7599, Lag order = 4, p-value = 0.6738
## alternative hypothesis: stationary
##
##
## $fdi
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -2.6454, Lag order = 4, p-value = 0.3117
## alternative hypothesis: stationary
##
##
## $gdpChina
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -2.2722, Lag order = 4, p-value = 0.4644
## alternative hypothesis: stationary
##
##
## $copPrice
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -1.81, Lag order = 4, p-value = 0.6534
## alternative hypothesis: stationary
##
##
## $exchRate
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -0.59892, Lag order = 4, p-value = 0.9752
## alternative hypothesis: stationary
```

All the variables have unit roots, so they will be changed to percentage variation to evade this problem.

```
## $volCobre_var
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -3.5972, Lag order = 4, p-value = 0.03916
## alternative hypothesis: stationary
##
##
## $fdi_var
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -3.6605, Lag order = 4, p-value = 0.03368
## alternative hypothesis: stationary
##
##
## $gdpChina_var
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -3.5777, Lag order = 4, p-value = 0.04085
## alternative hypothesis: stationary
##
##
## $copPrice_var
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -3.9842, Lag order = 4, p-value = 0.01477
## alternative hypothesis: stationary
##
##
## $exchRate_var
##
##  Augmented Dickey-Fuller Test
##
## data:  X[[i]]
## Dickey-Fuller = -3.7349, Lag order = 4, p-value = 0.02724
## alternative hypothesis: stationary
```
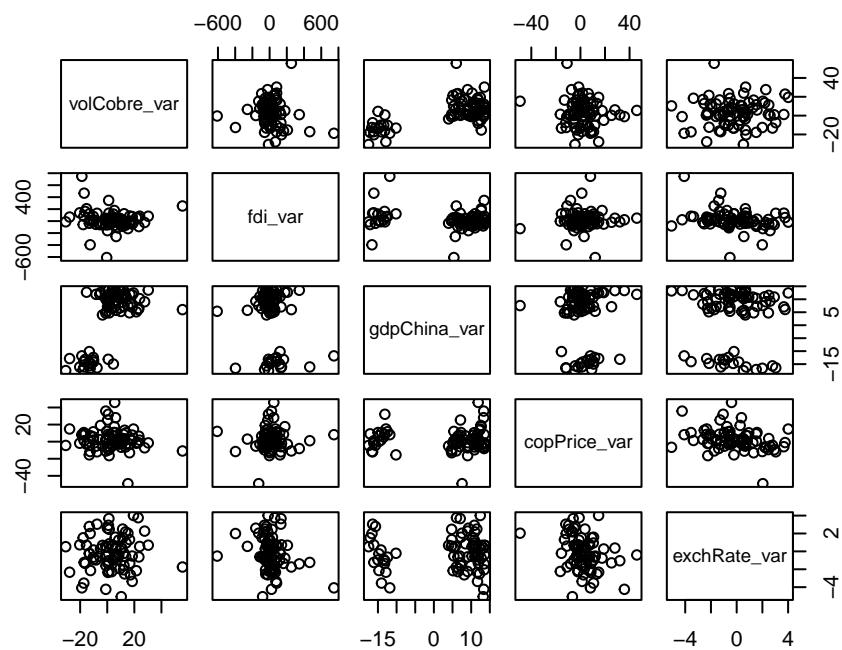
Now no variable has unit roots.

Correlation analysis

Table 2: Pearson Correlation

	volCobre_var	fdi_var	gdpChina_var	copPrice_var	exchRate_var
volCobre_var	1.00	-0.11	0.64	-0.12	0.07
fdi_var	-0.11	1.00	-0.18	0.06	-0.25
gdpChina_var	0.64	-0.18	1.00	0.01	0.02
copPrice_var	-0.12	0.06	0.01	1.00	-0.29
exchRate_var	0.07	-0.25	0.02	-0.29	1.00

Econometric Analysis

OLS Regression

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: mar., feb. 22, 2022 - 04:57:23 p. m.

Test of Mulitcolinearity

```
##      fdi_var gdpChina_var copPrice_var exchRate_var
##     1.102454     1.034475     1.094601     1.163692
```
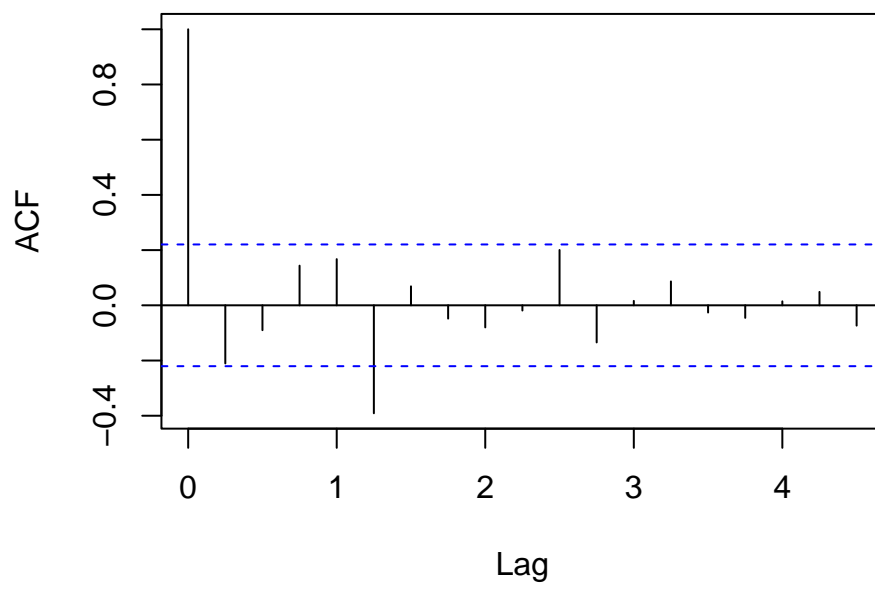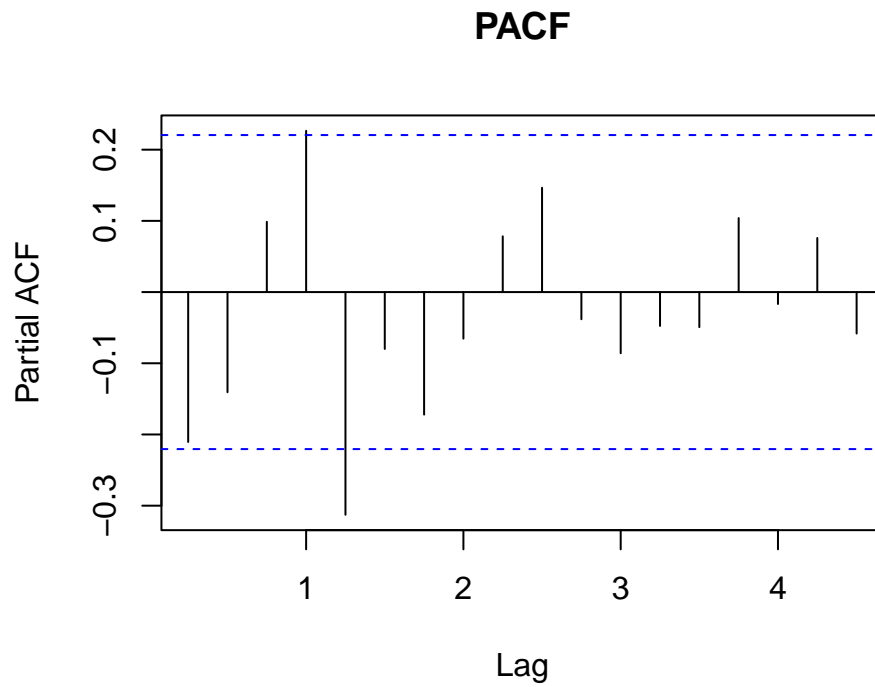
Table 3: OLS Regression

	Dependent variable:
	volCobre_var
fdi_var	0.002
	(0.008)
gdpChina_var	0.851***
	(0.118)
copPrice_var	−0.127
	(0.104)
exchRate_var	0.246
	(0.710)
Constant	0.247
	(1.360)
Observations	79
R^2	0.426
Adjusted R^2	0.395
Residual Std. Error	11.049 (df = 74)
F Statistic	13.709*** (df = 4; 74)

Note:	*p<0.1; **p<0.05; ***p<0.01

Autocorrelation
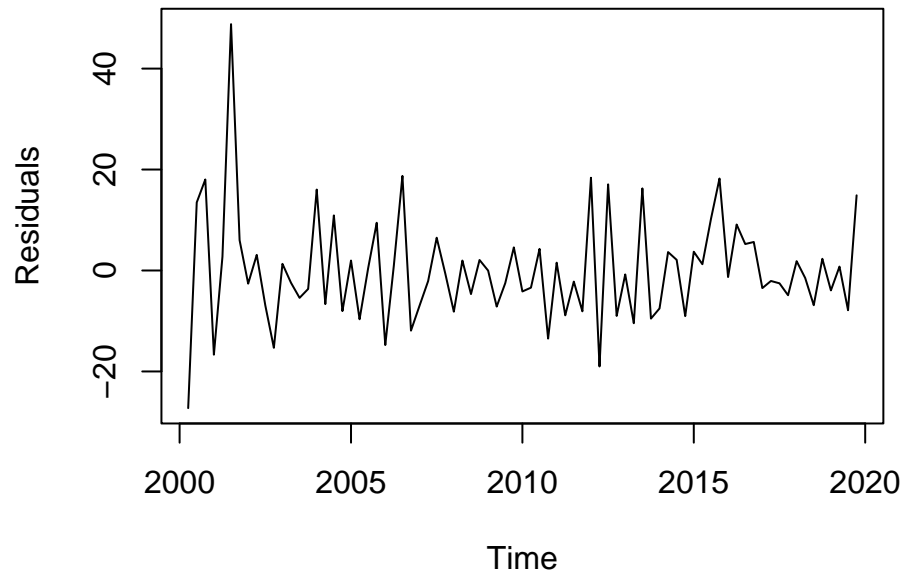
PACF


```
## 
##  Durbin-Watson test
## 
## data:  m1
## DW = 2.3143, p-value = 0.9208
## alternative hypothesis: true autocorrelation is greater than 0
```
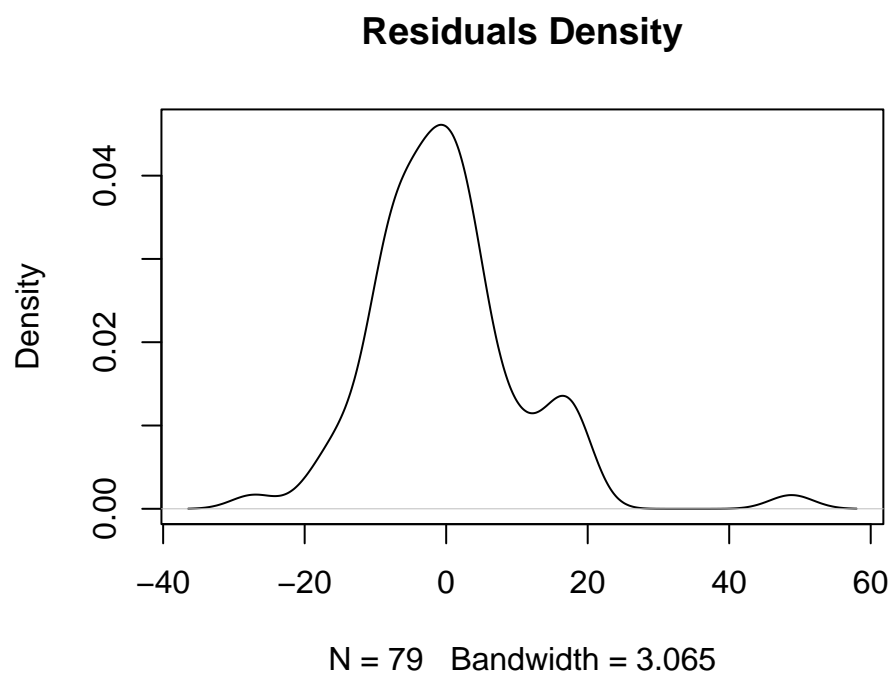
Normality

```
## 
##  Jarque Bera Test
## 
## data:  residuals(m1)
## X-squared = 77.056, df = 2, p-value < 0.00000000000000022
```

Residuals Density

N = 79   Bandwidth = 3.065

Heteroskedasticity

```
##
##   studentized Breusch-Pagan test
##
## data:  m1
## BP = 5.7969, df = 4, p-value = 0.2148
```

Inestability

```
##
##   M-fluctuation test
##
## data:  m1
## f(efp) = 1.002, p-value = 0.7896
```

Recursive CUSUM test