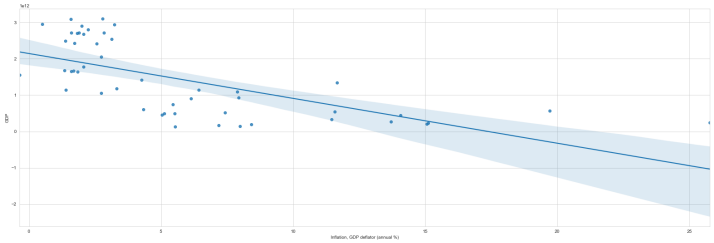
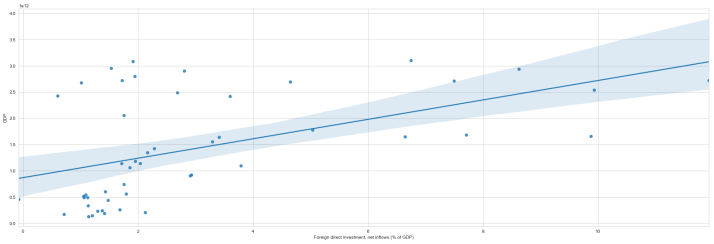
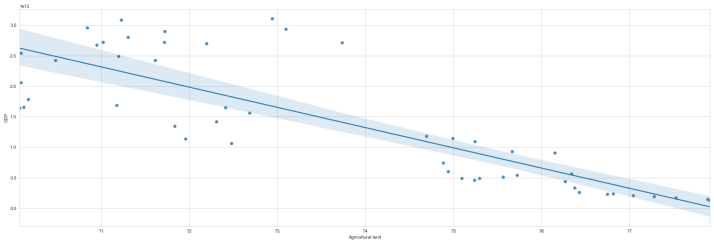
Homework 2

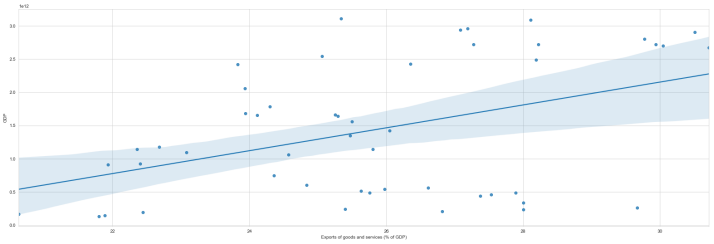
The aim for the project is to build a linear module with Numpy and pandas modules with the given formula.I will predict GDP for Great Britain with some variables from Worldbank. The variables are stated as below
-“Inflation, GDP deflator (annual %)",
-“Foreign direct investment, net inflows (% of GDP)",
-“Agricultural land",
-“Exports of goods and services (% of GDP)",
-“Imports of goods and services (% of GDP)",
-“Deposit money banks'' assets to GDP (%)”

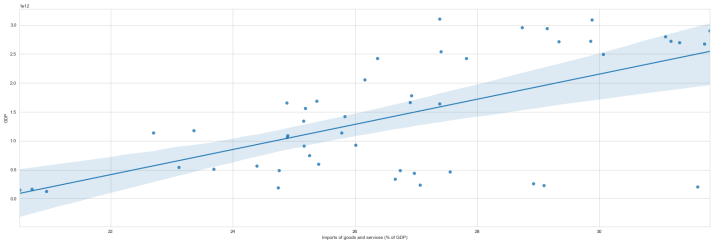
The correlation of the corresponding variable and target is plotted: (The variables are in the figure as listed above explanation.

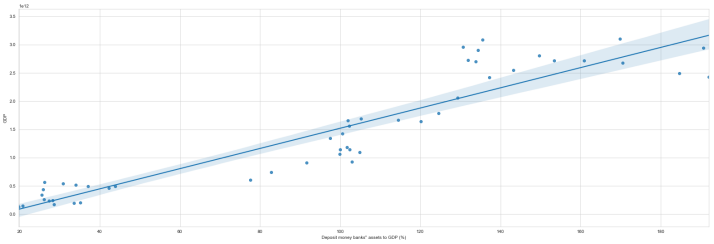












In the next page, I posted the result of the linear regression. As can be seen that, R-squared and adjusted R-square is high enough to predict the GDP. However, the standart error is very high means that sample means are widely spread around the population.

Homework 2

OLS Regression Results

Dep. Variable:	GDP	R-squared:	0.911
Model:	OLS	Adj. R-squared:	0.898
Method:	Least Squares	F-statistic:	71.37
Date:	Fri, 21 Jan 2022	Prob (F-statistic):	1.97e-20
Time:	12:49:05	Log-Likelihood:	-1364.3
No. Observations:	49	AIC:	2743.
Df Residuals:	42	BIC:	2756.
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	9.915e+11	2.87e+12	0.346	0.731	-4.79e+12	6.77e+12
Inflation, GDP deflator (annual %)	-9.125e+09	1.36e+10	-0.670	0.506	-3.66e+10	1.84e+10
Foreign direct investment, net inflows (% of GDP)	4.212e+10	1.99e+10	2.118	0.040	1.99e+09	8.22e+10
Agricultural land	-4.033e+10	3.54e+10	-1.138	0.262	-1.12e+11	3.12e+10
Exports of goods and services (% of GDP)	9.254e+10	3.9e+10	2.375	0.022	1.39e+10	1.71e+11
Imports of goods and services (% of GDP)	-1.362e+10	3.91e+10	-0.348	0.729	-9.25e+10	6.53e+10
Deposit money banks'' assets to GDP (%)	1.379e+10	1.92e+09	7.187	0.000	9.92e+09	1.77e+10

Omnibus:	6.358	Durbin-Watson:	0.718
Prob(Omnibus):	0.042	Jarque-Bera (JB):	5.285
Skew:	0.755	Prob(JB):	0.0712
Kurtosis:	3.557	Cond. No.	8.21e+03

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 8.21e+03. This might indicate that there are strong multicollinearity or other numerical problems.