

POL222 Introduction to Quantitative Reasoning I

Essay Assignment 3

Case Studies

This document includes case studies to be used in Essay 3.
See the Essay 3 instructions ("Essay3.pdf") for more detail.

Data Sources:

The Polity IV Project

<http://www.systemicpeace.org/polity/polity4.htm>

The Democracy and Dictatorship Revisited

<https://sites.google.com/site/joseantoniocheibub/datasets/democracy-and-dictatorship-revisited>

The Database of Political Institutions

<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>

The World Development Indicators 2012

<http://data.worldbank.org/data-catalog/world-development-indicators/wdi-2012>

Case Study A1:

Dep.Var. = Annual per capita GDP growth rate

Unit of Observations: Country around the world in 2008

Number of Observations: 117

Dependent Variable: Growth = Annual per capita GDP growth rate (%)

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Educ = Primary school enrollment rate (% of primary school age children)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Growth	2.98	3.90	-12.5	0.799	2.44	5.11	19.7
GDP	7.720	11.459	0.147	0.642	2.380	8.210	54.900
Polity	4.64	6.08	-10	0	7	9	10
Educ	90.38	12.80	40.30	88.20	95.30	98.60	100.00

Linear Regression Result:

Variable	Coefficient
Intercept	-0.31
GDP	-0.16
Polity	-0.04
Educ	0.05

Case Study A2:

Dep.Var. = Polity score

Unit of Observations: Country around the world in 2008

Number of Observations: 117

Dependent Variable: Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)

Independent Variables:
GDP = GDP per capita (US\$1000)
Mobile = Mobile cellular subscriptions (per 100 people)
Educ = Primary school enrollment rate (% of primary school age children)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Polity	4.64	6.08	-10	0	7	9	10
GDP	7.720	11.459	0.147	0.642	2.380	8.210	54.900
Mobile	77.64	40.34	2.20	43.40	83.10	109.00	184.00
Educ	90.38	12.80	40.30	88.20	95.30	98.60	100.00

Linear Regression Result:

Variable	Coefficient
Intercept	-1.85
GDP	0.07
Mobile	0.05
Educ	0.02

Case Study A3:

Dep.Var. = Women in parliament

Unit of Observations: Country around the world in 2008

Number of Observations: 142

Dependent Variable: WIP = Women in parliament: Proportion of seats held by women in national parliaments (%)

Independent Variables: GDP = GDP per capita (US\$1000)
FLFP = Female labor force participation rate (working women as % of female population ages 15-64)
PR = 1 if the country uses the proportional representation system to elect the members of parliament in which a political party receives the seat share proportional to the vote share; = 0 otherwise.

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
WIP	17.69	10.57	0.00	10.05	15.70	24.23	56.30
GDP	7.252	10.902	0.101	0.581	2.160	7.728	54.900
FLFP	58.63	16.75	15.10	49.95	60.70	69.65	90.30
PR	N.A.	N.A.	0	0	1	1	1

Linear Regression Result:

Variable	Coefficient
Intercept	0.95
GDP	0.23
FLFP	0.19
PR	6.08

Case Study A4:

Dep.Var. = Government Debt

Unit of Observations: Country around the world in 2008

Number of Observations: 45

Dependent Variable: Debt = Central government debt (% of GDP)

Independent Variables: GDP = GDP per capita (US\$1000)
OldAge = Old age population (Population ages 65 and above, % of total)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Debt	49.55	31.39	3.00	30.20	44.30	57.30	153.00
GDP	15.799	14.141	0.255	2.960	11.900	27.300	54.900
OldAge	11.92	5.32	3.37	6.68	13.10	16.50	21.50
Polity	7.31	4.54	-6	7	10	10	10

Linear Regression Result:

Variable	Coefficient
Intercept	23.30
GDP	0.15
OldAge	2.64
Polity	-1.04

Case Study A5:

Dep.Var. = Infant Mortality Rate

Unit of Observations: Country around the world in 2008

Number of Observations: 117

Dependent Variable: InfMort = Infant mortality rate (per 1,000 live births)

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Educ = Primary school enrollment rate (% of primary school age children)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
InfMort	28.96	26.98	2.50	6.60	17.80	50.20	110.00
GDP	7.720	11.459	0.147	0.642	2.380	8.210	54.900
Polity	4.64	6.08	-10	0	7	9	10
Educ	90.38	12.80	40.30	88.20	95.30	98.60	100.00

Linear Regression Result:

Variable	Coefficient
Intercept	139.39
GDP	-0.67
Polity	-0.74
Educ	-1.13

Case Study A6:

Dep.Var. = Foreign Direct Investment

Unit of Observations: Country around the world in 2008

Number of Observations: 145

Dependent Variable: FDI = Foreign direct investment, net inflows (% of GDP)

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Fraud = 1 if there is serious vote fraud in major national elections; = 0 otherwise

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
FDI	6.35	9.70	-6.55	1.86	4.16	7.87	89.80
GDP	7.150	10.812	0.101	0.615	2.150	6.790	54.900
Polity	4.40	6.02	-9	-1	7	9	10
Fraud	N.A.	N.A.	0	0	0	0	1

Linear Regression Result:

Variable	Coefficient
Intercept	5.32
GDP	0.18
Polity	0.03
Fraud	-2.62

Case Study A7:

Dep.Var. = Strength of Legal Rights

Unit of Observations: Country around the world in 2008

Number of Observations: 144

Dependent Variable: Legal = Strength of legal rights index (0 = weak to 10 = strong), which measures the extent to which laws protect the rights of borrowers and lenders.

Independent Variables:
GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Trade = Exports plus imports as % of GDP

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Legal	5.39	2.46	1	3	5	7	10
GDP	7.623	11.088	0.101	0.616	2.305	8.563	54.900
Polity	4.18	6.30	-10	-2	7	9	10
Trade	95.82	51.95	27.20	63.38	84.95	121.45	460.00

Linear Regression Result:

Variable	Coefficient
Intercept	4.13
GDP	0.04
Polity	0.11
Trade	0.01

Case Study A8:

Dep.Var. = Ratio of Female to Male Labor Force Participation Rate

Unit of Observations: Country around the world in 2008

Number of Observations: 152

Dependent Variable: FMLP = Ratio of female to male labor force participation rate (%)
(Fe)Male labor force participation rate = working (wo)men as % of (fe)male population ages 15-64

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
WIP = Women in parliament: Proportion of seats held by women in national parliaments (%)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
FMLP	70.56	19.71	19.70	58.68	75.50	85.18	106.00
GDP	7.321	10.883	0.101	0.588	2.160	8.083	54.900
Polity	4.06	6.28	-10	-2	7	9	10
WIP	17.80	10.79	0.00	9.95	16.50	23.68	56.30

Linear Regression Result:

Variable	Coefficient
Intercept	60.29
GDP	-0.10
Polity	0.44
WIP	0.52

Case Study A9:

Dep.Var. = Prevalence of HIV

Unit of Observations: Country around the world in 2008

Number of Observations: 103

Dependent Variable: HIV = Prevalence of HIV (% of population ages 15-49)

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Educ = Primary school enrollment rate (% of primary school age children)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
HIV	1.90	4.31	0.10	0.10	0.40	1.30	24.60
GDP	8.097	11.898	0.147	0.616	2.600	8.405	54.900
Polity	4.98	5.80	-10	2	8	10	10
Educ	90.08	13.37	40.30	88.20	95.70	98.70	100.00

Linear Regression Result:

Variable	Coefficient
Intercept	5.73
GDP	-0.08
Polity	0.11
Educ	-0.04

Case Study A10:

Dep.Var. = Government Expenditure

Unit of Observations: Country around the world in 2008

Number of Observations: 142

Dependent Variable: GovExp = Government expenditure as % of GDP

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Trade = Exports plus imports as % of GDP

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Legal	15.32	6.01	2.05	10.925	15.3	18.875	39.9
GDP	7.817	11.095	0.101	0.663	2.505	8.588	54.900
Polity	4.04	6.47	-10	-2	7	9	10
Trade	96.66	51.92	27.20	63.95	86.30	121.95	460.00

Linear Regression Result:

Variable	Coefficient
Intercept	13.484
GDP	0.103
Polity	0.228
Trade	0.001

Case Study A11:

Dep.Var. = Electric Power Consumption

Unit of Observations: Country around the world in 2008

Number of Observations: 113

Dependent Variable: Power = Electric power consumption (1000kWh per capita)

Independent Variables: GDP = GDP per capita (US\$1000)
Polity = Polity score (10 = most democratic, -10 = least democratic or most authoritarian)
Industry = Share of industrial sector in the national economy (% of GDP; other categories are agriculture and service sectors)

Summary Statistics:

Variable	Mean	Std.Dev.	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
Power	3.75	4.21	0.04	0.96	2.24	5.65	24.90
GDP	8.416	11.609	0.101	1.180	2.840	8.550	54.900
Polity	4.78	6.20	-10	2	8	10	10
Industry	33.13	13.31	13.00	24.00	29.80	36.50	78.20

Linear Regression Result:

Variable	Coefficient
Intercept	-0.28
GDP	0.31
Polity	0.04
Industry	0.04