# Important Thoughts Concerning Serious Things*

## Term Paper

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October 6, 2021

**Abstract**

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*JEL-Codes*: Code1, Code2, Code3.
*Keywords*: Keyword1, Keyword2, Keyword3.
*Number of Characters*: XXXXX Characters.

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# List of Abbreviations

| | |
|---|---|
| MLE | Maximum likelihood estimator |
| OLS | Ordinary least squares |
| PML | Pseudo maximum likelihood |
| PPML | Poisson pseudo maximum likelihood |

# 1 Introduction

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com. When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.

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The remainder of the paper proceeds as follows. In Section 2, I describe the theoretical model. In Section 3, I outline the estimation strategy. Section 4 contains a description of the data, whereas empirical results can be found in Section 5. Section 6 concludes.

# 2 The Model

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The model is given by:

$$
\begin{aligned}
Y &= F(K, L) && (1) \\
\Rightarrow dY &= F_K dK + F_L dL. && (2)
\end{aligned}
$$

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# 3 Estimation Strategy

I estimate variants of the following model:

$$DEM_{it} = \alpha DEM_{i,t-1} + \gamma \log(GDP_{i,t-1}) + \mathbf{x}'_{i,t-1}\boldsymbol{\beta} + \mu_t + \delta_i + u_{i,t}. \qquad (3)$$

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# 4 Data

You can also refer to the code within the text. For example the `stargazer` package is used to create beautiful tables from statistical output in R. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

```r
# install.packages("stargazer)
library(stargazer)
library(dplyr)

f1 <- read.csv("F1.csv")
stargazer(f1, title="Summary Statistics", omit.summary.stat=c("p25","p75"),
          header = FALSE)
```

Table 1: Summary Statistics

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| fhpolrigaug | 147 | 0.591 | 0.344 | 0.000 | 1.000 |
| lrgdpch | 147 | 8.381 | 1.121 | 5.964 | 10.414 |

# 5 Results

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```r
library(lfe)
data <- read.csv("5YearPanel.csv")
data <- data %>%
  group_by(code) %>%
  mutate(fhpolrigaug_lag = lag(fhpolrigaug), lrgdpch_lag = lag(lrgdpch))

library(plm)
## Column 2.1 Pooled OLS
reg1 <- felm(fhpolrigaug ~ fhpolrigaug_lag + lrgdpch_lag | year,
             data=filter(data, sample==1))

## Column 2.2 FE OLS
reg2 <- felm(fhpolrigaug ~ fhpolrigaug_lag + lrgdpch_lag | year + code,
             data=filter(data, sample==1))

stargazer(reg1,reg2, type = "latex", header=FALSE,
          title="\\label{tab:tab2}Results of Fixed-Effects-Regressions, Base Sample,
          1960-2000", no.space=TRUE, omit= c("Constant"),
          covariate.labels=c('Democracy\\textsubscript{t-1}',
                             'Log GDP p.c.\\textsubscript{t-1}'),
          dep.var.labels=c("Democracy","Democracy2"), model.names = FALSE,
          column.labels=c("Pooled OLS","FE OLS"), omit.stat = c("adj.rsq","f","ser"),
          add.lines = list(c("Countries",150,150))
          )
```

Table 2: Results of Fixed-Effects-Regressions, Base Sample, 1960-2000

| | *Dependent variable:* | |
|---|---|---|
| | Democracy | |
| | Pooled OLS | FE OLS |
| | (1) | (2) |
| Democracy$_{t-1}$ | 0.706$^{***}$ | 0.379$^{***}$ |
| | (0.024) | (0.033) |
| Log GDP p.c.$_{t-1}$ | 0.072$^{***}$ | 0.010 |
| | (0.008) | (0.026) |
| Countries | 150 | 150 |
| Observations | 945 | 945 |
| $R^2$ | 0.725 | 0.796 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

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You can also embed plots, for example:

```
library(ggplot2)
ggplot(f1, aes(y=fhpolrigaug, x=lrgdpch, label=code)) +
  geom_smooth(method=lm, se=FALSE, colour="red", size=0.5) +
  labs(title="Democracy and Income, 1990s",
       x ="Log GDP per Capita", y ="Freedom House Measure of Democracy") +
  geom_text(size=1.75) + scale_y_continuous(breaks=seq(0,1,0.2)) +
  theme(plot.title = element_text(hjust = 0.5))
```

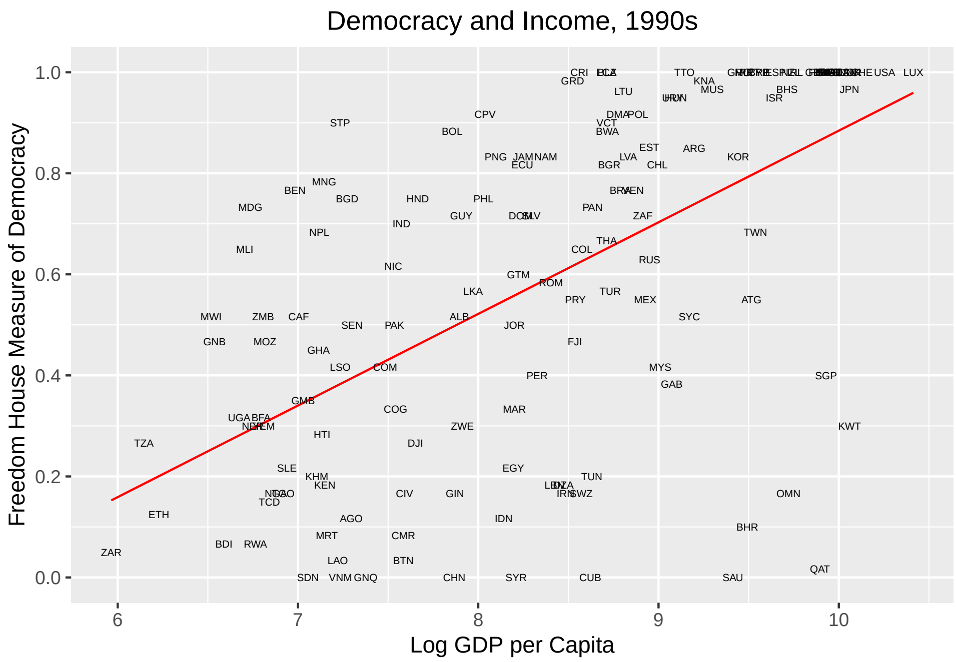


Figure 1: Democracy and income, 1990s.

Figure 1 depicts the association between the Freedom House measure of democracy and log income per capita in the 1990s. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

# 6 Conclusion

Finally, some references for the bibliography: Whereas Kennedy (2005) is a nice paper, Leamer (1975) and Leamer (1983) are even nicer. A nice example of regression analysis in a growth context is given by Sala-I-Martin (1997), and a really nice textbook is (see Wooldridge 2008, 244)

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# Eidesstaatliche Versicherung

Hiermit versichere ich, Adam Smith, geboren am 5. Juni 1723, wohnhaft in der Joseph-Schumpeter-Allee 42 in 95444 Bayreuth, gegenüber der Rechts- und Wirtschaftswissenschaftlichen Fakultät der Universität Bayreuth an Eides statt, dass ich meine Abschlussarbeit

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Bayreuth, den 12. September 2021