Motivation
Problem
Approach

How Transparency and Reproducibility Can Increase Credibility in Policy Analysis A Case Study of the Minimum Wage Policy Estimates

Fernando Hoces de la Guardia

APPAM Annual Conference November 5, 2016

Preliminary Version: Do Not Cite

Motivation: Doing Good Policy Analysis is Hard

Motivation

Approac

Results

Discussi

"I would give a different answer today than I would have given five years ago [...]. Five years ago I would have said 'we have got to demand high standards for the evidence' otherwise we just say that we don't know. [...] What I try to do in my role as a policy advisor [is] two things (i) represent the evidence that was out there and (ii) give my take on it [on how confident one should be in the analysis]."

 Alan Krueger (Chairman of CEA, 2011-2013)
 Answering a question on how to think about the frontier of policy and evidence, 2016 Motivation

Problem

Approac

Results

Discussio

Policy Analysis Often Has Low Credibility [Manski, 2013]

- Diagnosis: Little is known about the boundaries of the point estimates provided in policy reports.
- Prescription: In increasing order of desirability: (1) display standard errors; (2) bound estimated effects; (3) add [policy] decision criteria to the analysis (best).

Motivation

Problem

Doculto

Discussio

Policy Analysis Often Has Low Credibility [Manski, 2013]

- Diagnosis: Little is known about the boundaries of the point estimates provided in policy reports.
- **Prescription:** In increasing order of desirability: (1) display standard errors; (2) bound estimated effects; (3) add [policy] decision criteria to the analysis (best).

Contribution of this paper

As a complement to Manski's prescription, this paper incorporates practices and tools created in response to the reproducibility crisis in science into policy analysis. This methodological development is implemented in the case study.

Comparison of Low Transparency and Reproducibility (TR) in Research and Policy Analysis

Problem

Approac

Results

	Research	Policy Analysis	
Output	Peer review publication	Policy report	
Problems of low	Publication Bias.	Low credibility. Unclear	
TR	Specification Search	connection between research	
	(P-Hacking, Garden of	and policy. Hard to improve	
	forking paths). Data	systematically. Data fudging.	
	fudging.		
Common	Disclosure of key details.		
Solutions	Open data and materials.		
Common Tools	Dynamic documentation.		
	Distributed version control.		
Specific Solutions	Test for reproducibility;	Develop reproducibility;	
	Registration of	Systematic and continuous	
	pre-analysis	updating	
Who increases	Researchers, Funders,	Not the policy analysts (Policy	
TR	Journals	schools? Think tanks?	
		Discussion at the end)	

Motivation

Problem

Approac

Doculto

Discussio

We don't know how the sausage is made!

Motivation

Problem

Approach

Results

We don't know how the sausage is made!

Let's follow science, open up the kitchen. And publish the cook book with the recipe.

Description of Case study

Motivation

Problem

Approach

Poculte

Discussio

"The Effects of a Minimum-Wage Increase on Employment and Family Income" Congressional Budget Office (2014)

Description: CBO estimated the effects of a raise in the federal minimum wage from \$7.25/hr to \$10.10/hr.

Main policy estimates:

- 500,000 jobs would be lost.
- 16.5 million workers would receive a salary increase.
- Distributional effects: below poverty line (PL) +\$5billion; between one and three PL +\$12billion; between three and six PL +\$2billion; above six PL -\$17billion

Key research estimate: Elasticity of labor demand.

The TR Approach to Policy Analysis

Motivation

Droblom

Approach

Doculto

- Guidelines
- 2 Dynamic document
- 3 Git (Github/Open Science Framework)

Approach

Eight Standards at Three Levels

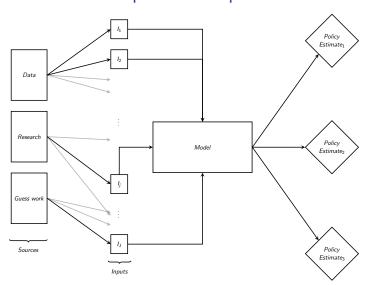
	Level 0	Level I	Level II	Level III
Citation Standards	Journal encourages citation of data, code, and materials, or says nothing	Journal describes citation of data in guidelines to authors with clear rules and examples.	Article provides appropriate citation for data and materials used consistent with journal's author guidelines	Article is not published until providing appropriate citation for data and materials following journal's author guidelines.
Data Transparency	Journal encourages data sharing, or says nothing	Article states whether data are available, and, if so, where to access them.	Data must be posted to a trusted repository. Exceptions must be identified at article submission.	Data must be posted to a trusted repository, and reported analyses will be reproduced independently prior to publication.
Analytic Methods (Code) Transparency	Journal encourages code sharing, or says nothing	Article states whether code is available, and, if so, where to access it.	Code must be posted to a trusted repository. Exceptions must be identified at article submission.	Code must be posted to a trusted repository, and reported analyses will be reproduced independently prior to publication.
Research Materials Transparency	Journal encourages materials sharing, or says nothing	Article states whether materials are available, and, if so, where to access them.	Materials must be posted to a trusted repository. Exceptions must be identified at article submission.	Materials must be posted to a trusted repository, and reported analyses will be reproduced independently prior to publication.
Design and	lournal	lournal articulates	lournal requires adherence to	lournal requires and enforces

Figure: Screen shot of TOP Guidelines

Motivation

Problem

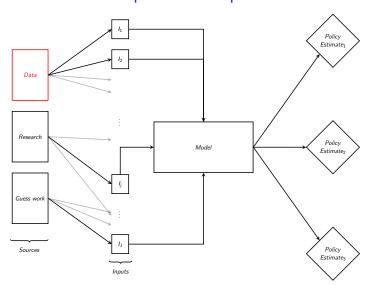
Approach



Motivation

Problem

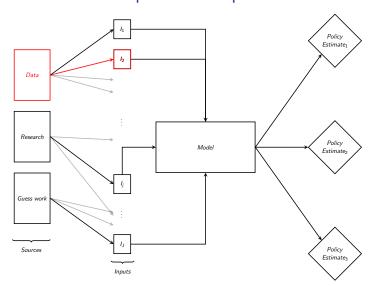
Approach



WIOLIVALIOII

Approach

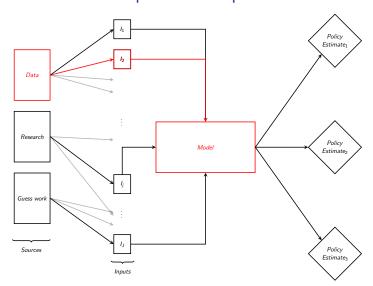
.



Motivation

Approach

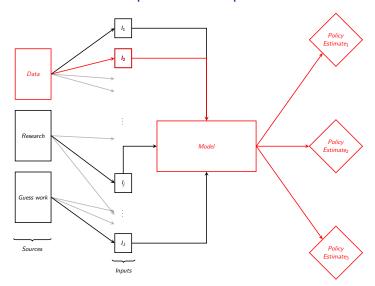
.



Motivation

Problem

Approach



Motivation

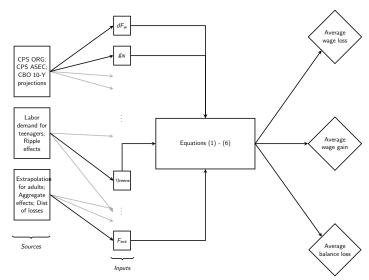
Problem

Approach

Results

Discussion

Map the complete policy analysis. Example with Case Study



Summary of Adapted Guidelines

Problem

 ${\sf Approach}$

Results

Discussio

Standard	Level 0	Level 1	Level 2	Level 3
Sources (Data, Re- search, Guess- work)	Report says nothing	Clearly stated whether all, some components, or none of the data is available, with instructions for access when possible.	Lvl 1 + report and data are in same place	LvI 2 + Code embedded in the report calls the data and changes in the data produce traceable changes in the report
Methods & Code	Key assumption are listed	Methods are described in prose. Large amount of work is required to reproduce qualitatively similar estimates	Methods and described in prose, with detailed formulas, and code is provided as supplementary material	Lvl 2 + All is in the same document where changes in the code affect the output automatically
Work- flow	Policy estimates vaguely described	All the inputs, and their corresponding sources, used in the calculations are listed	Lvl 1 + Policy estimates are listed, in same unit if possible	Lvl 2 + all the components can be modified with little effort

From TOP guidelines [Nosek et al., 2015]

Dynamic Documents and Git for Complete TR

- DD: Reporting technology that combines narrative, mathematical, and computational components of an analysis [Knuth, 1992] implemented using R [Xie, 2015].
- Git: Distributed Version Control System, allows for multiple parties to work on same project in an open source setting, tracking changes and versions. User friendly version: Open Science Framework.

Applying Guidelines to CBO Report

Standard Level 0 Level 1 Sources Report Clearly stated whether all some (Data. savs Renothing components, or search. none of the data Guessis available, with work) instructions for access when possible. Methods Key as-Methods are & sumption described in prose. Code are listed Large amount of work is required to reproduce qualitatively similar estimates Work-Policy All the inputs, and Lvl 2 + all the flow estimates their vaguely corresponding described sources, used in the calculations are listed [80%]

Results

Adapted from TOP guidelines

Steps taken to verify the analysis & employment variation $(\widehat{\Delta E} \times 1000)$ at each line 1

Results

^{^1}Assuming target population \approx 22 million, $\overline{\Delta w_{w \leq MW'}} \approx$ 14%, and non-compliance \approx 15%

Steps taken to verify the analysis & employment variation $(\widehat{\Delta E} \times 1000)$ at each line 1

1 Find an elasticity: -0.1 (page 25): $\widehat{\Delta E} \approx 300$

Results

Assuming target population \approx 22 million, $\Delta w_{w \leq MW'} \approx$ 14%, and non-compliance \approx 15%

Steps taken to verify the analysis & employment variation $(\widehat{\Delta E} \times 1000)$ at each line 1

1 Find an elasticity: -0.1 (page 25): $\Delta \hat{E} \approx 300$

Results

2 What about adults? $\eta^{adults} = \frac{1}{3}\eta^{teens}$ (page 28): $\widehat{\Delta F} \approx 100$

^{^1}Assuming target population \approx 22 million, $\Delta w_{w \leq MW'} \approx$ 14%, and non-compliance \approx 15%

Steps taken to verify the analysis & employment variation $(\widehat{\Delta E} \times 1000)$ at each line 1

1 Find an elasticity: -0.1 (page 25): $\Delta \hat{E} \approx 300$

Results

- **2** What about adults? $\eta^{adults} = \frac{1}{3}\eta^{teens}$ (page 28): $\widehat{\Delta E} \approx 100$
- 3 What about the adjustment? $\eta_{w \leq MW}^{g} = \frac{\eta_{lit}^{g}}{p_{w \leq MW}^{g}} \times \frac{\% \Delta MW}{\% \Delta w^{g}}$ (page 26-28 + 2 papers): $\widehat{\Delta E} \approx 1,100$

^{^1}Assuming target population \approx 22 million, $\overline{\Delta w_{w \leq MW'}} \approx$ 14%, and non-compliance \approx 15%

Motivation

Approac

Results

Discussio

Example: Verifying dis-employment by looking for elasticity values in report. **Before**

Steps taken to verify the analysis & employment variation $(\widehat{\Delta E} \times 1000)$ at each line 1

- 1 Find an elasticity: -0.1 (page 25): $\Delta E \approx 300$
- **2** What about adults? $\eta^{adults} = \frac{1}{3}\eta^{teens}$ (page 28): $\widehat{\Delta E} \approx 100$
- 3 What about the adjustment? $\widehat{\eta_{W \leq MW}^g} = \frac{\eta_{lit}^g}{p_{W \leq MW}^g} \times \frac{\% \Delta MW}{\% \Delta w^g}$ (page 26-28 + 2 papers): $\widehat{\Delta E} \approx 1,100$
- 4 The adjustment factors $\frac{1}{p_{w \leq MW}^g} imes \frac{\% \Delta MW}{\% \Delta w^g} = F_{adj}^g$ are not computed from the data (3.2 teens, 19.5 adults). Instead: $F_{adj}^{teen} = F_{adj}^{adult} = 4.5$ (page 28) $\widehat{\Delta E} \approx 500$

Steps 2-4 took several days of work!

Dynamic Document

Motivation

Problem

Approach

Results



Clear Display of Policy Estimates: Step 1/3

Motivation Problem

Results

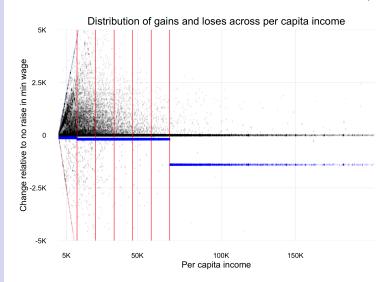


Figure: Gains and losses. Different Units

Clear Display of Policy Estimates: Step 2/3

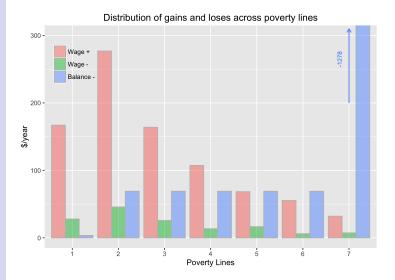


Figure: Gains and losses. Different Denominator

Clear Display of Policy Estimates: Step 3/3

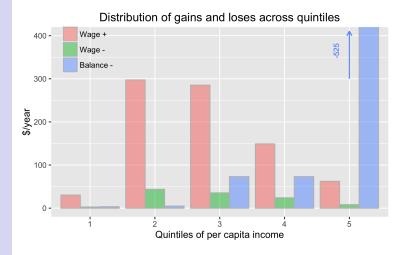


Figure: Gains and losses. Same units and denominator

Sensitivity Analysis: Status Quo

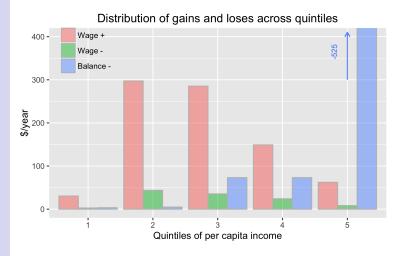


Figure: Default settings

SA: Change in Elasticity of Labor Demand

Motivation
Problem
Approach
Results

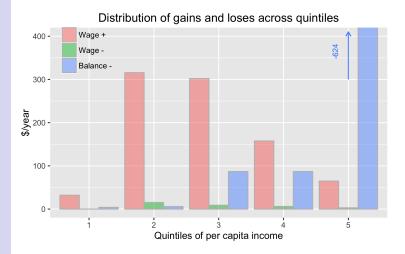


Figure: From $\eta_{lit}^{teens} = -0.1$ to $\eta_{lit}^{teens} = -0.01(\Delta^-90\%)$

Sensitivity Analysis: Status Quo

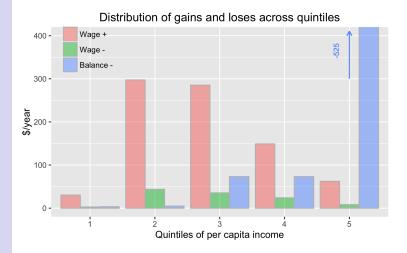


Figure: Default settings

SA: Change in Distribution of Balance Loses

Motivation
Problem
Approach
Results

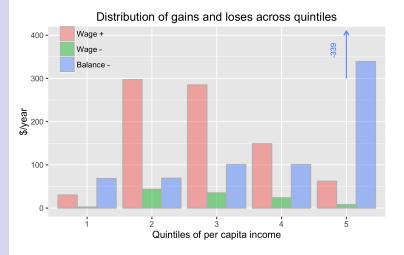


Figure: From $(1PL, 6PL) \sim (1\%, 29\%, 70\%)$ to (20%, 40%, 40%)

Discussion

- Who should work on this:
 - Analytic reviewers of report; Research division within agencies; Study Commissions ("MWSC or MSWC?" [Card and Krueger, 2016])
 - Public policy schools.
 - Think tanks; Bank of knowledge [Clemens and Kremer, 2016].
- Two type of contributions (~software development):
 - Short term: Within a given time period the model should
 - Long term: Structural revisions occur in parallel and are
- Let's assume this becomes the new status quo.
 - Costs of producing the next report on effects of min wage
 - Every additional effort will imply improvements on the

Discussion

- Who should work on this:
 - Analytic reviewers of report; Research division within
 - Public policy schools.
 - Think tanks: Bank of knowledge [Clemens and Kremer,
- Two type of contributions (~software development):
 - Short term: Within a given time period the model should be taken as given. Less freedom, but direct impact on the policy analysis.
 - Long term: Structural revisions occur in parallel and are incorporated in future cycles of the analysis.
- Let's assume this becomes the new status quo.
 - Costs of producing the next report on effects of min wage
 - Every additional effort will imply improvements on the

Discussion

- Who should work on this:
 - Analytic reviewers of report; Research division within
 - Public policy schools.
 - Think tanks; Bank of knowledge [Clemens and Kremer,
- Two type of contributions (~software development):
 - Short term: Within a given time period the model should
 - Long term: Structural revisions occur in parallel and are
- Let's assume this becomes the new status quo.
 - Costs of producing the next report on effects of min wage will be very small.
 - Every additional effort will imply improvements on the "state of the art" report (e. g. dBL; $\eta(MW), \alpha_1(MW)$)
 - Much easier to have a substantive and normative policy debate (next step:Shiny App!)

Motivation

Problem

Approach

Results

Discussion

Thank you.

https://fhoces.github.io

Back-up slides

Melissa S Anderson, Brian C Martinson, and Raymond De Vries. Normative dissonance in science: Results from a national survey of us scientists. Journal of Empirical References Research on Human Research Ethics, 2(4):3–14, 2007. Pierre Azoulay, Christian Fons-Rosen, and Joshua S Graff Zivin. Does science advance one funeral at a time? Technical report, National Bureau of Economic Research, 2015.

> David Card and Alan Krueger. Interview with card and krueger. http://davidcard.berkeley.edu/interviews/interview% 20with%20Card%20and%20Krueger.pdf, April 2016. (Accessed on 10/26/2016).

> David Card and Alan B Krueger. Time-series minimum-wage studies: a meta-analysis. The American Economic Review, 85(2):238–243, 1995.

Michael A Clemens and Michael Kremer. The new role for the world bank. The Journal of Economic Perspectives, 30(1): 53-76, 2016.

Gruber. It's good to be first: Order bias in reading and citing 1/22

Daniel R Feenberg, Ina Ganguli, Patrick Gaule, and Jonathan

Publication bias in the social sciences: Unlocking the file drawer. <i>Science</i> , 345(6203):1502–1505, 2014.
Solomon M Hsiang, Marshall Burke, and Edward Miguel. Quantifying the influence of climate on human conflict. <i>Science</i> , 341(6151):1235367, 2013.
Donald E Knuth. Literate programming. CSLI Lecture Notes, Stanford, CA: Center for the Study of Language and Information (CSLI), 1992, 1, 1992.
Edward E Leamer. Let's take the con out of econometrics. <i>The American Economic Review</i> , 73(1):31–43, 1983.
Charles F Manski. Public policy in an uncertain world: analysis

Annie Franco, Neil Malhotra, and Gabor Simonovits.

Economic Research, 2015.

References

nber working papers. Technical report, National Bureau of

Sendhil Mullainathan and Eldar Shafir. Scarcity: Why having too little means so much. Macmillan, 2013.

BA Nosek, G Alter, GC Banks, D Borsboom, SD Bowman, SJ Breckler, S Buck, CD Chambers, G Chin, G Christensen, 19/22

and decisions. Harvard University Press, 2013.

- References
- et al. Promoting an open research culture: Author guidelines for journals could help to promote transparency, openness, and reproducibility. *Science (New York, NY)*, 348(6242): 1422, 2015.
- Sandra M Nutley, Isabel Walter, and Huw TO Davies. *Using evidence: How research can inform public services*. Policy press, 2007.Robert Rosenthal. The file drawer problem and tolerance for
- null results. *Psychological bulletin*, 86(3):638, 1979.

 Neil Buddy Shah, Paul Wang, Andrew Fraker, and Daniel
 Gastfriend. Evaluations with impact: decision-focused
 - Gastfriend. Evaluations with impact: decision-focused impact evaluation as a practical policymaking tool. Technical report, 3ie Working Paper, 2015.
- Uri Simonsohn, Leif D Nelson, and Joseph P Simmons.

 P-curve: A key to the file-drawer. *Journal of Experimental Psychology: General*, 143(2):534, 2014
- Psychology: General, 143(2):534, 2014.

 Birte Snilstveit, Martina Vojtkova, Ami Bhavsar, and Marie

evidence-informed policy and prioritizing future research. World Bank Policy Research Working Paper, (6725), 2013.

References

Eva Vivalt. How much can we generalize from impact evaluations. *Unpublished manuscript*, 2015.



1 Introduction

2 Employment effects

- 2.1 Data, wages, and forecast
- 2.2 Get the N
- 2.3 Get the $\eta \times \Delta w$
- 2.4 Other factors
- 2.5 Computing effects on employment
- 3 Distributional effects
- 3.1 Computing Family income
- 3.2 Imputing policy effects
- 3.3 Computing family income under status quo and minimum wage increase
 - 3.4 Other considerations
- 4 Results

Reader Companion for CBO report on Min Wage (Preliminary Version. Do Not Circulate)

Fernando Hoces de la Guardia + (hopefully) a lot more people Last edit: 2016-10-16

1 Introduction

The role of policy analysis is to connect research with policy. Because of heavy time constrains, policy analyses are typically ambiguous regarding the details of how the analysis was carried out. This creates three problems: (i) its hard to understand the connection between research and policy, (ii) allows policy makers to cherry pick policy reports, and (iii) hinders systematic improvement and/or automation of parts of the analysis. In this document we demonstrate the use of a reproducible workflow to reduce the ambiguity in policy analysis.

Here we attempt to contribute to the policy discussion of the minimum wage. The minimum wage is a contentious policy issue in the US. Increasing it has positive and negative effects that different policymakers value differently. We aim to add clarity on what those effects are, how much do we know about them, and how those effects vary when elements of the analysis change. We select the most up-to-date, non-partisan, policy analysis of the effects of raising the minimum wage, and build an opensource reproducible analysis on top of it.

In 2014 the Congressional Budget Office published the report titled "The Effects of a Minimum-Wage Increase on Employment and Family Income". The report receive wide attention from key stakeholders and has been used extensible as an input in the debate around the minimum wage¹. To this date we consider the CBO report to be the best non-partisan estimation of the effects of raising the minimum wage at the federal level. Although there was disagreement among experts around some technical issues, this disagreement has been mainly circumscribed around one of the many inputs used in the analysis, and we can fit the opposing positions in to our framework.

Our purposes are twofold: First, promote the technical discussion around a recurrent policy issue (minimum wage) by making explicit and visible all the components and key assumptions of its most up-to-date official policy analysis. Second, demonstrate how new scientific practices of transparency and reproducibility (T & R) can be applied to policy analysis. We encourage the reader to collaborate in this document and help develop an ever-improving version of the important policy estimates² (re)produced here.

Snapshots of DD.

Refe 1 Introduction

2 Employment effects

2.1 Data, wages, and forecast

2.2 Get the N

2.3 Get the $n \times \Delta w$

2.4 Other factors

2.5 Computing effects on employment

3 Distributional effects

3.1 Computing Family income

3.2 Imputing policy effects

3.3 Computing family income under status quo and minimum wage increase

3.4 Other considerations

4 Results

2 Employment effects

At a general level the effects on employment $(\widehat{\Delta E})$ will be calculated using a more detailed version of the following equation:

 $\widehat{\Delta F} = N \times n \times \% \Delta w + Other factors$

Where N represents the relevant population, n the elasticity of labor demand. Δw the relevant percentual variation in wages. and the Other factors will encapsulate effects on employment through an increase in the aggregate demand.

To describe the methodology behind each of those four components we first describe the data used, the wage variable choose, and the procedure used to forecast the wage and population distribution of 2016 using data from 2013.

2.1 Data, wages, and forecast

To simulate the policy effects we need the distribution of wages and employment under the status quo. From the perspective of 2013, this implies forecasting to 2016 data on employment and wages.

2.1.1 Data

The Current Population Survey (CPS) was used to compute the effects on employment. From the analysis in the section on distributional effects we can deduce that the data corresponds to the Outgoing Rotation Group (ORG). CPS is a monthly cross sectional survey. The same individual is interviewed eight times over a period of 12 months. The interviews take place in the first and last 4 months of that period. By the 4th and 12th interview, individuals are asked detailed information on earnings. The CPS ORG file contains the information on this interviews for a given year. We analyze the data for 2013.

Currently three versions of these data sets can be found online: CPS raw files, ORG NBER and ORG CEPR. The analysis will be performed using the CPER ORG data base.

The weights used in our analysis will be orgwgt/12

2.1.1.1 Code to load the data

Stata

Snapshots of DD.

Ref

2 Employment effects

2.1 Data, wages, and forecast

2.2 Get the ${\cal N}$

2.3 Get the $\eta \times \Delta w$

2.4 Other factors

2.5 Computing effects on employment

3 Distributional effects

3.1 Computing Family income

3.2 Imputing policy effects

3.3 Computing family income under status guo and minimum wage increase

3.4 Other considerations

4 Results

performed using the CPER ORG data base.

The weights used in our analysis will be orgwgt/12

2.1.1.1 Code to load the data

```
call.cps.org.data <- function(){
  data use <- "CPER ORG"
  # Using CEPR ORG data
 if (data use == "CPER ORG") {
 # Checking if working directory contains data, download if not.
   if ( !("cepr org 2013.dta" %in% dir()) ) {
       # create name of file to store data
       tf <- "cepr org 2013.zip"
       # download the CPS repwats zipped file to the local computer
       download.file(url = "http://ceprdata.org/wp-content/cps/data/cepr org 2013.zip", tf , mode
= "wb" )
       # unzip the file's contents and store the file name within the temporary directory
       fn <- unzip( zipfile = tf , overwrite = T )
    df <- read.dta("cepr_org_2013.dta")
  # Using NBER ORG data
  if (data use == "NBER ORG") {
   # Checking if working directory contains data, download if not.
   if ( !("morgl3.dta" %in% dir()) ) {
     # Downloading data 53mb
     df <- read.dta("http://www.nber.org/morg/annual/morg13.dta")</pre>
    df <- read.dta("morg13.dta")
```

Snapshots of DD.

References

es, and

 $\times \Delta w$

:ors

g effects on

l effects

g Family

policy effects g family stus guo and

ncrease siderations

2.5 Computing effects on employment

Putting all elements together we get:

$$\widehat{\Delta E} = \sum_{g \in \{A,T\}} \left(\widehat{N_g^{final}} \times \widehat{\eta_{w \leq MW}^g} \times \overline{\% \Delta w^g} \right) - \widehat{OF}$$

2.5.1 Code to compute each component

Stata

Components of Elasticities

	Adult	Teen
η_{lit}	-0.03	-0.10
$\eta_{w \leq MW'}$	-0.23	-0.13
F_{adj}	4.50	4.50
%∆w	13.81	16.65
$\widetilde{\eta_{w \leq MW}}$	-0.15	-0.45

Using all the components described above we get $\overline{\Delta} = \overline{E} = 478$ thousand jobs. The report however compute F_{adjy}^R in a different fashion and gets a value of 4.5 (when computing the values of F_{adjy}^R from the table below - as oppose to using historical values - we get $\overline{\Delta} = \overline{E} = -321$ thousand jobs).

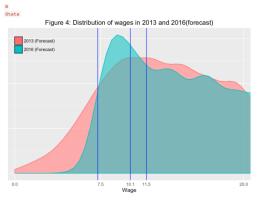
3 Distributional effects

In the first step towards obtaining the policy estimates presented in the introduction we concluded with



Snapshots of DD•

References



Comparison of 2013 and 2016 under the status quo

	2013	2016: status quo	
Salary workers	122,593,557	129,545,571	
Madianusas	17.70	20.56	1

Snapshots of DD•

Final replication output (nothing in the "learn more" button yet)

Policy estimates in CBO report and Replication Results

	Effects/Policy Estimates	Replication			[1PL,		
wage gains (billions of \$)	31	53.4					
wage losses (bns of \$)	~5	7.4	Balance	<1PL	3PL) ~3.4		>6PL
Balance losses (bns of	~24	43.9	losses (bns of \$)				
\$)			Net effect (bns of \$)	5	12	2	-17
Net effect (bns of \$)	2	2	Replication	-0.4	-6.4	-6.4	-30.8
# of Wage gainers	16.5	23.1/16.9	loses Replication	17.6	14.6	-0.1	-30.1
(millions)			NE	17.0	14.0	0.1	30.1
#of Wage losers (millions)	0.5	0.5					

Learn more

References

Hinders automation and/or systematic improvements of reports

- Large effort (Res. & PA) to quantify the effects of policies. Effort tends to end with the publication (of paper or report).
- Policy estimates are insensitive to variations in key parameters after publication (interest rate, important prices, cost of technology, etc.).
- We are learning that even the best of analysts, with negligible time constraints, have important biases in their work [Azoulay et al., 2015, Feenberg et al., 2015, Mullainathan and Shafir, 2013].

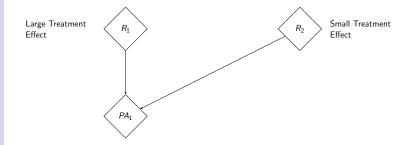
Hinders automation and/or systematic improvements of reports

- Large effort (Res. & PA) to quantify the effects of policies. Effort tends to end with the publication (of paper or report).
- Policy estimates are insensitive to variations in key parameters after publication (interest rate, important prices, cost of technology, etc.).
- We are learning that even the best of analysts, with negligible time constraints, have important biases in their work [Azoulay et al., 2015, Feenberg et al., 2015, Mullainathan and Shafir, 2013].

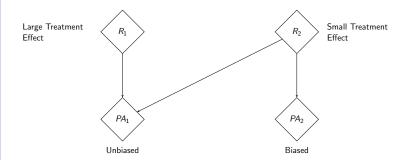
Hinders automation and/or systematic improvements of reports

- Large effort (Res. & PA) to quantify the effects of policies. Effort tends to end with the publication (of paper or report).
- Policy estimates are insensitive to variations in key parameters after publication (interest rate, important prices, cost of technology, etc.).
- We are learning that even the best of analysts, with negligible time constraints, have important biases in their work [Azoulay et al., 2015, Feenberg et al., 2015, Mullainathan and Shafir, 2013].

References



References



References

Large Treatment Effect

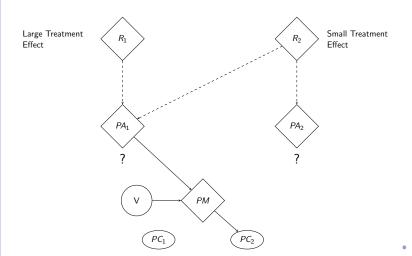








References

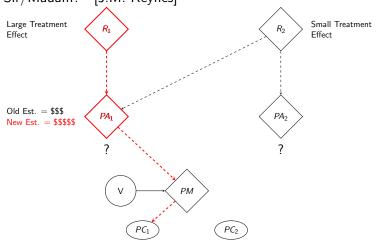


References

"When the facts change, _____. What do you do Sir/Madam?" Large Treatment Small Treatment Effect Effect Old Est. = \$\$\$ PA_1 PA_2 New Est. = \$\$РМ

References

"When the facts change, I change my mind. What do you do Sir/Madam?" [J.M. Keynes]



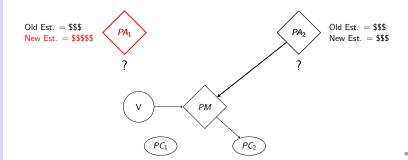
References

"When the facts change, I change my facts!. What do you do Sir/Madam?" [?]

Large Treatment Effect



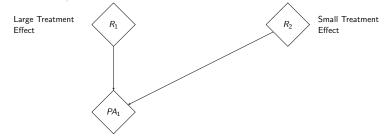




What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

References

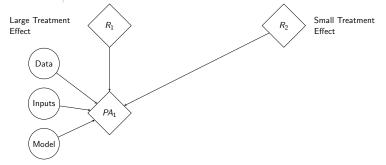
With the final policy estimate and citations to original research, we can only speculate of impact.



Hard to understand what is the impact of research on policy estimates

What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

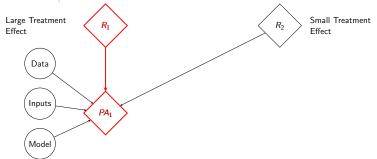
With the final policy estimate and citations to original research we can only speculate of impact.



What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

References

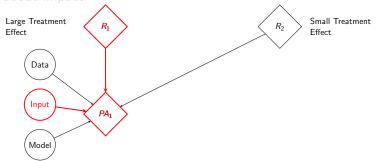
With the final policy estimate and citations to original research, we can only speculate of impact.



What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

References

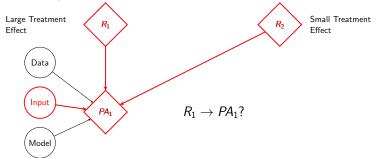
With the final policy estimate and citations to original research, we can only speculate of impact.



What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

References

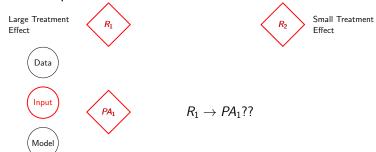
With the final policy estimate and citations to original research, we can only speculate of impact.



Hard to understand what is the impact of research on policy estimates

What is the impact of R_1 on policy analysis? Can we separate it from a change in inputs? What about R_2 ?

With the final policy estimate and citations to original research, we can only speculate of impact.



Why so little evidence on the role of evidence? •

References

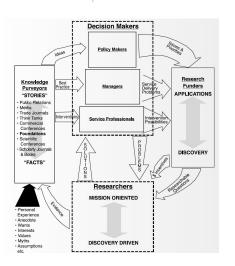


Figure: Reproduced from Nutley et al. [2007] citing CHSRF (2000)

Why so little evidence on the role of evidence? • Complex issue

References

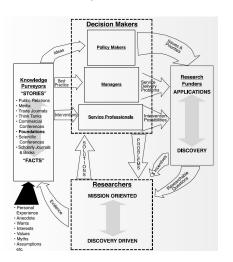


Figure: Reproduced from Nutley et al. [2007] citing CHSRF (2000)

Simpler conceptual model

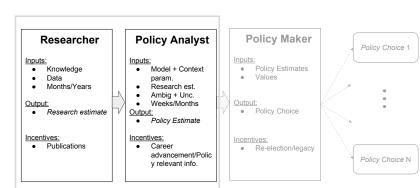
References

Policy Maker Researcher **Policy Analyst** Policy Choice 1 Inputs: Inputs: Inputs: Policy Estimates Knowledge Model + Context Values Data param. Months/Years Research est. Ambig + Unc. Output: Output: Weeks/Months Policy Choice Research estimate Output: Policy Estimate Incentives: Incentives: Incentives: Publications Career Re-election/legacy advancement/Polic Policy Choice N y relevant info.

Simpler conceptual model•

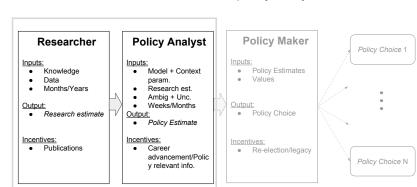
Simpler question:

How does research affect policy analysis?



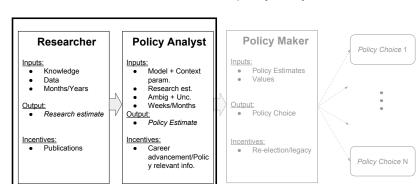
Simpler conceptual model• Simpler question:

How does research affect policy analysis?



Simpler conceptual model• Simpler question:

How does research affect policy analysis?



Reasons for Selecting the Case Study.

References

- Scalable: CBO's reputation: among the most transparent and rigorous policy analysis offices. Lessons from TR that apply to CBO should apply also to most agencies. Additionally the policy issue is widely known which facilitates parallels.
- Recurrent: This policy analysis will be conducted again in the future. The case study can be directly used in future calculations.

Reasons for Selecting the Case Study.

References

- Feasible: available data, good description of the analysis, and only one policy lever to analyze.
- Relevant:



Figure: Google Search Intensity of "Minimum Wage"