



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



***Selected Poster/Paper prepared for presentation at the Agricultural & Applied Economics Association's 2017 AAEA Annual Meeting, Chicago, Illinois, July 30-August 1, 2017***

*Copyright 2017 by [authors]. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*

### Why study West Virginia?

IT IS THE FOURTH LARGEST ENERGY PRODUCER IN THE COUNTRY (EIA, 2016)

IT'S ALSO THE SECOND LARGEST COAL PRODUCER IN THE NATION, WHILE HAVING LARGE RESERVES OF NATURAL GAS

GAS PRICES AFTER HYDRAULIC FRACTURING (FRACKING) HAVE LED PLANTS TO SWITCH FROM COAL TO GAS IN THE U.S.

### What has been said about fracking?

FEYRER, MANSUR, AND SACERDOTE (2015) STUDY THE DISPERSION OF THE EFFECTS ON INCOME AND EMPLOYMENT, WITHIN THE COUNTY WHERE PRODUCTION OCCURS AND TRACKING THEIR GEOGRAPHIC AND TEMPORAL PROPAGATION.

WEBER (2012) STUDIES THE EFFECTS OF THE NATURAL GAS BOOM ON GENERAL EMPLOYMENT IN COLORADO, TEXAS, AND WYOMING.

THE IMPACTS OF FRACKING ON HOUSING PRICES HAVE BEEN STUDIED BY MUEHLENBACHS, SPILLER, AND TIMMINS (2015) WITH MIXED EFFECTS.

DELEIRE, ELIASON, AND TIMMINS (2014) STUDY THE IMPACT OF DEVELOPMENT OF THE MARCELLUS SHALE BASIN ON TOTAL EMPLOYMENT IN PENNSYLVANIA.

WE INVESTIGATE THE EFFECT OF INCREASED NATURAL GAS PRODUCTION

### Data

THE DATA USED IN THIS PAPER ARE MONTHLY AND COME FROM A VARIETY OF SOURCES, COVERING A TIME SPAN OF 2004-2015.

THE NYMEX FOR COAL FUTURES PRICES

COAL PRODUCTION DATA FROM THE WV OFFICE OF MINERS' HEALTH SAFETY AND TRAINING

NATURAL GAS PRICES AND PRODUCTION (GROSS WITHDRAWALS) DATA COME FROM THE EIA

NONFARM UNEMPLOYMENT DATA COME FROM BLS

### Models

A GENERALIZED DIFFERENCE IN DIFFERENCE MODEL ALLOWS FOR THE COMPARISON OF THE EFFECTS OF FRACKING ACROSS INDUSTRIES IN THE STATE. SINCE THE EMPLOYMENT ACROSS INDUSTRIES IS IN THE THOUSANDS WE RUN THE MODEL ON THE NATURAL LOGARITHM OF IT

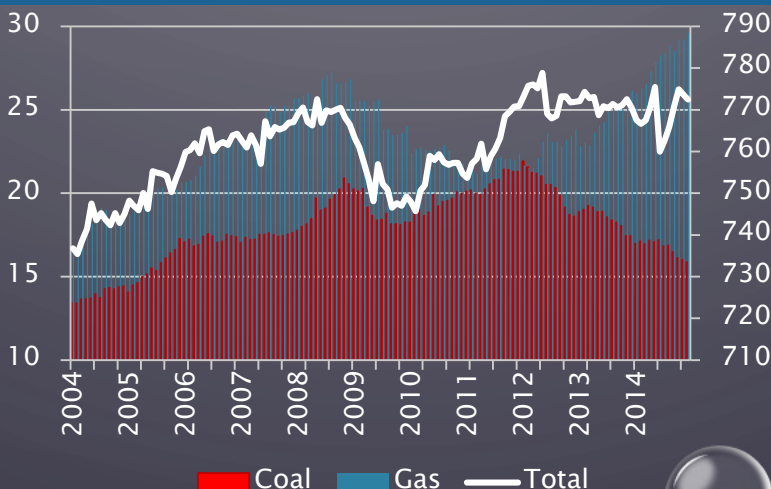
$$\ln(EMP\_WV) = \alpha_1 + \lambda + \delta + \alpha_2 PostHF1 + \alpha_3 PostHF2 + \alpha_j Industry$$

$$+ \alpha_k PostHF1 * industry + \alpha_l PostHF2 * Industry + \epsilon$$

WHERE  $\alpha_1$  IS THE INTERCEPT,  $\lambda$  AND  $\delta$  ARE YEAR AND INDUSTRY FIXED EFFECTS,  $PostHF1$  INDICATES THE INITIAL POPULARIZATION OF FRACKING IN 2008,  $PostHF2$  IS THE SECOND WAVE IN 2012 AND  $Industry$  DENOTES THE DIFFERENT SECTORS OF EMPLOYMENT CONSIDERED.

THE OTHER TERMS ARE THE INTERACTIONS BETWEEN EACH OF THE WAVES OF FRACKING AND EACH INDUSTRY. EACH INTERACTION SHOWS IF THERE HAS BEEN AN EFFECT ON EMPLOYMENT IN THE SECTOR AS WELL AS THE MAGNITUDE AND DIRECTION OF SUCH.

### Employment in West Virginia



### Results

Parameter	Estimate	Standard Error
Constant	13.4491***	0.0115
Frac1	-0.0005	0.0093
Frac2	0.0227***	0.0038
Coal	-3.8568***	0.0046
frac1#coal	0.1944***	0.0029
frac2#coal	-0.1469***	0.0166
Gas	-5.8824***	0.0090
frac1#gas	0.1138***	0.0117
frac2#gas	0.0609***	0.0080
Const	-3.0077***	0.0184
frac1#const	-0.0838***	0.0030
frac2#const	-0.0294***	0.0057
Durable	-2.9763***	0.0042
frac1#durable	-0.2128***	0.0020
frac2#durable	-0.0880***	0.0036
Nondurable	-3.4996***	0.0055
frac1#nondurable	-0.1381***	0.0026
frac2#nondurable	-0.0522***	0.0013
Service	-0.1903***	0.0010
frac1#service	0.0119***	0.0003
frac2#service	0.0081***	0.0009
N	1008	
RSq	0.9987	

### Conclusions

FRACKING HAS A NON NEGLIGIBLE EFFECT ON THE EMPLOYMENT IN WEST VIRGINIA

THE EFFECT OF THE SECOND WAVE OF FRACKING IS STRONGER THAN THE FIRST ONE

NATURAL GAS AND SERVICE INDUSTRY ARE THE BIG WINNERS IN WEST VIRGINIA

COAL AND MANUFACTURING HAVE BEEN NEGATIVELY IMPACTED BY THE ADVENT OF FRACKING IN WEST VIRGINIA

TO WHAT EXTENT HAS THE INCREASE COMPENSATED THE DECREASE IS STILL TO BE DETERMINED