

Dynamic Estimates of the Multiplier from Federal Medicaid Assistance to States

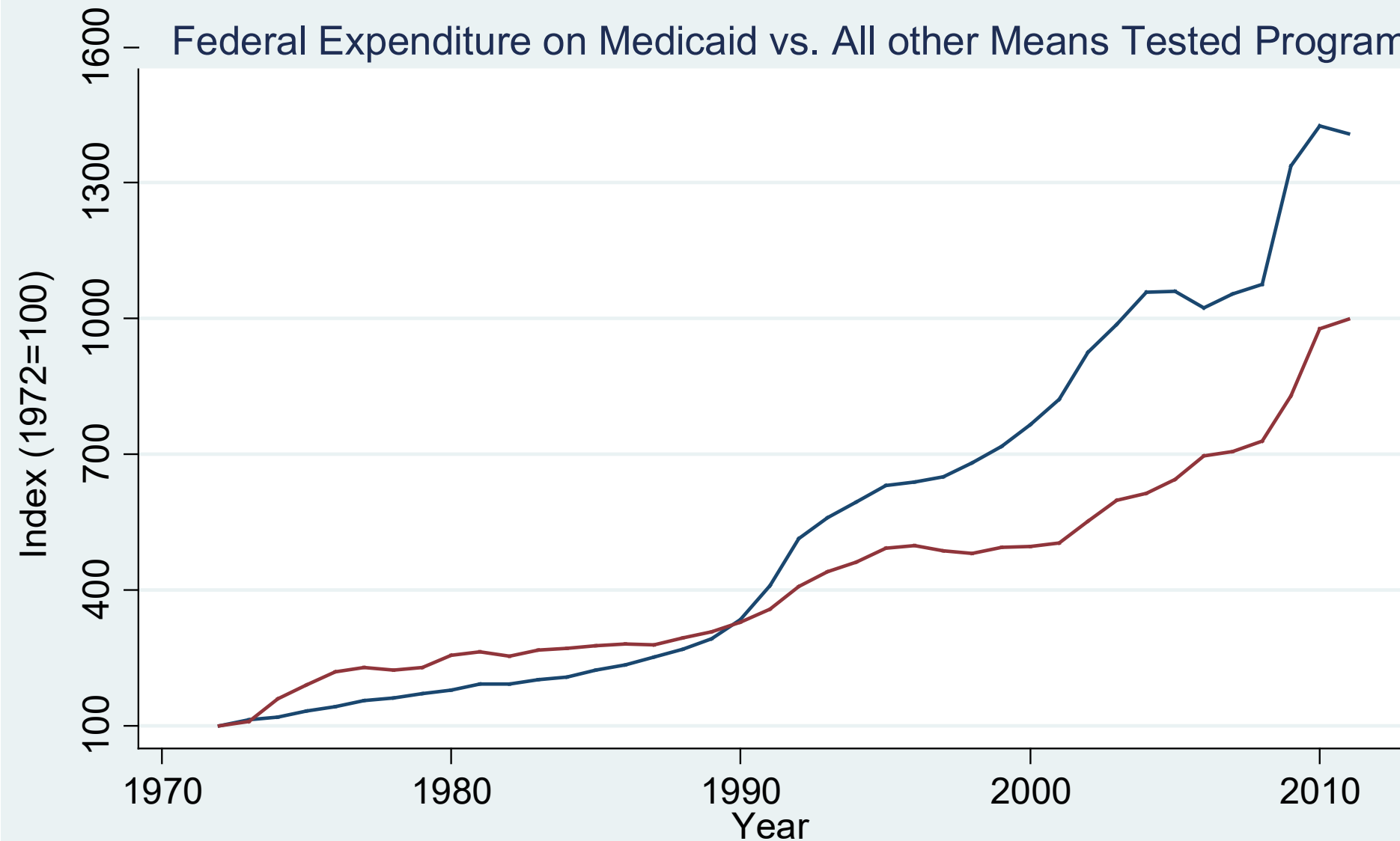
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Federal Expenditure on Medicaid vs. All other Means Tested Programs



Source: CBO



Motivation

- Federal government sent \$375 billion to states as its share of the total Medicaid spending of \$605 billion in 2017
- Media reports point to significant spillovers from federal Medicaid dollars to states' economies
 - State-by-state economic impact studies suggest large multiplier effect from Medicaid
- Few estimates of Medicaid multiplier
 - Chodorow-Reich et al. (2012) used pre-recession Medicaid spending as IV for ARRA Medicaid funding in 2009-2010
- Identifying such effects remains a challenge
 - Unobserved shocks to fiscal position may be correlated with both Medicaid spending (X) and economic activity (Y)

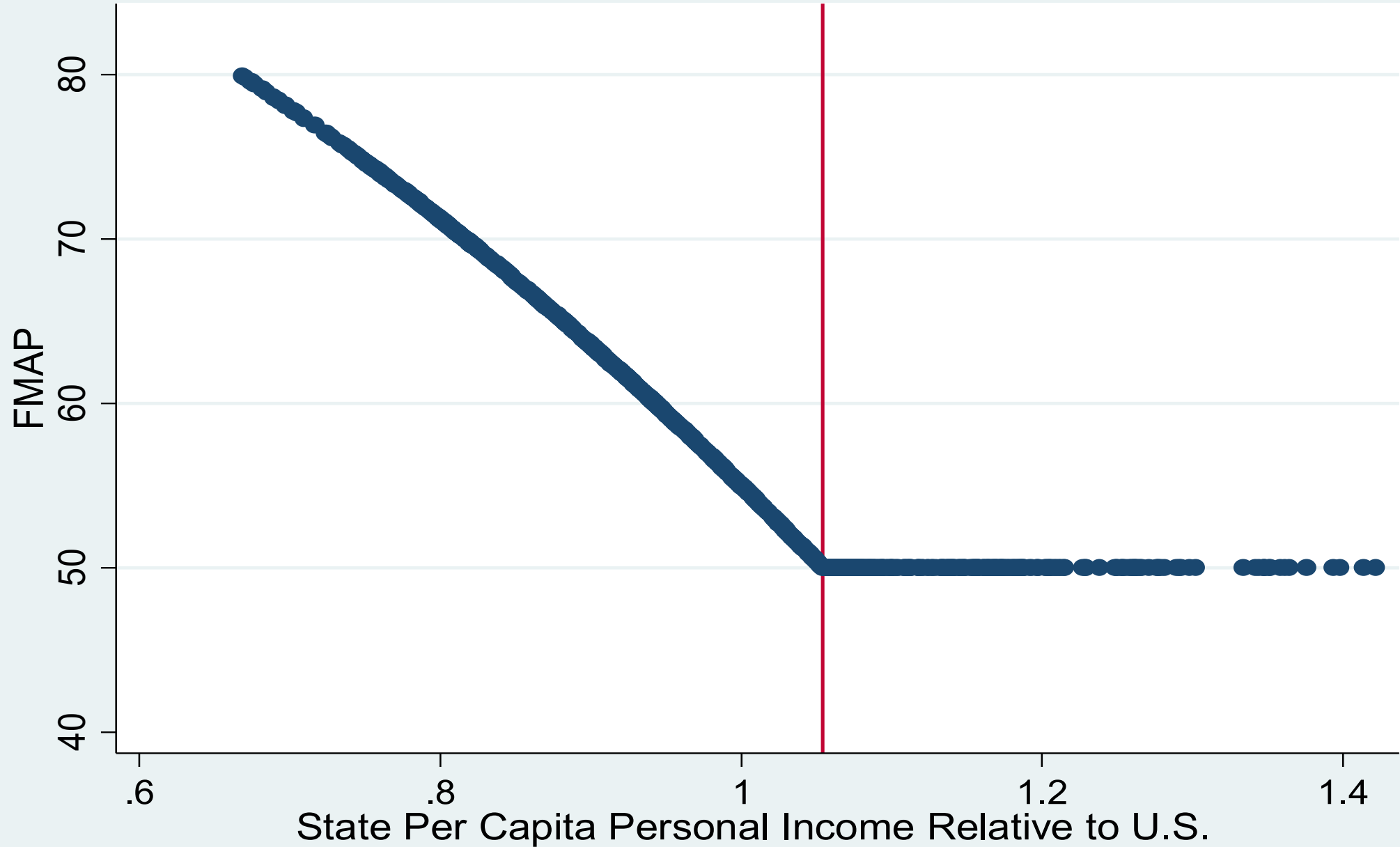
Contributions

- We propose a new instrument plausibly more robust to problems of policy endogeneity
 - Use the kink in FMAP with respect to lagged state PCPI ratio as an instrument for per-capita federal Medicaid assistance
- Use data from 1990 to 2013 to present dynamic and long-term estimates of the federal Medicaid assistance multiplier

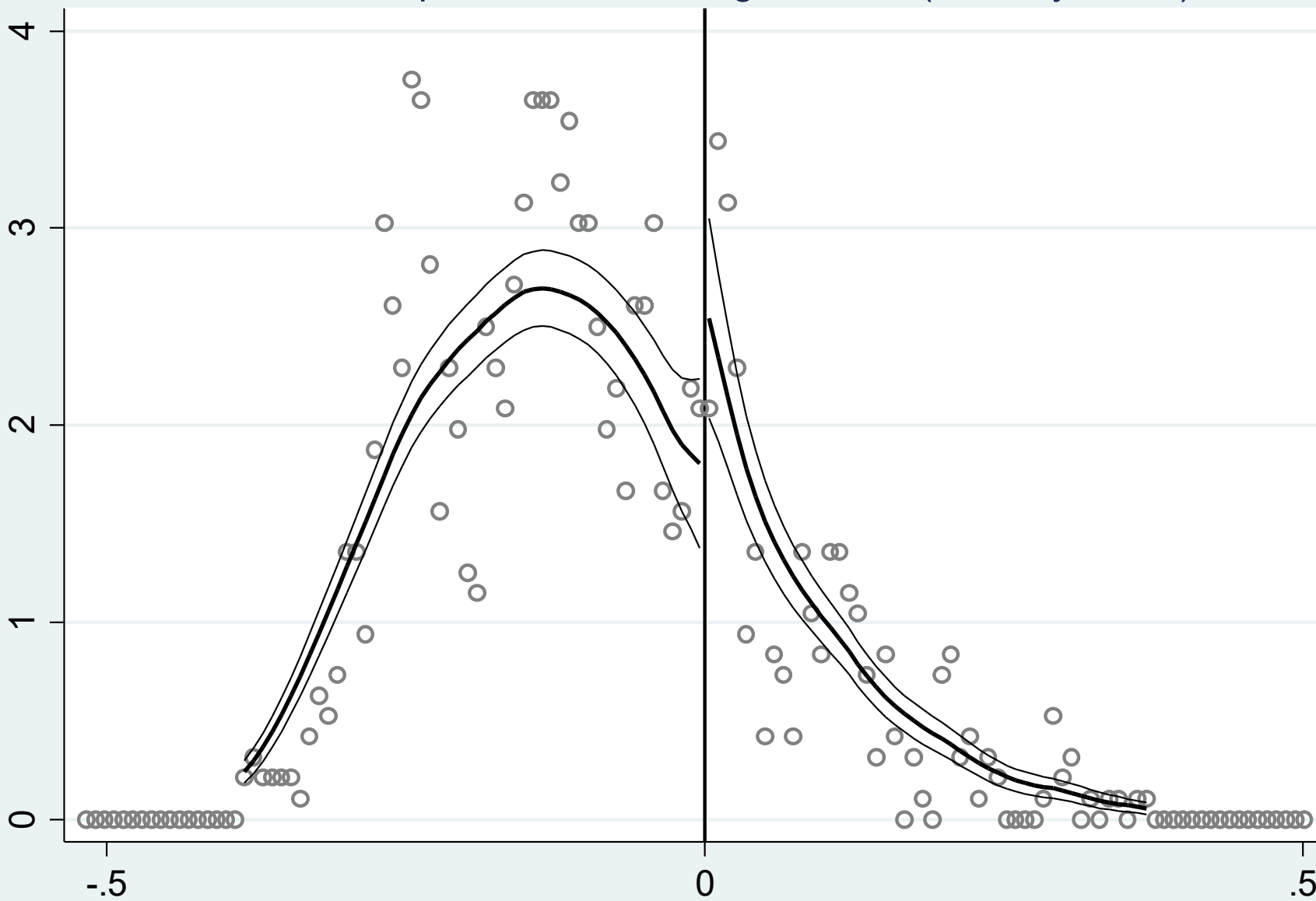
Key Findings

- Per-capita federal Medicaid assistance has a significant kink around the same location as the kink in FMAP and can serve as IV
- Federal Medicaid dollars have a modest positive multiplier
- An additional \$100,000 in Medicaid assistance creates about 15 jobs over five years
 - 3 job-years at a cost per job of \$33,000

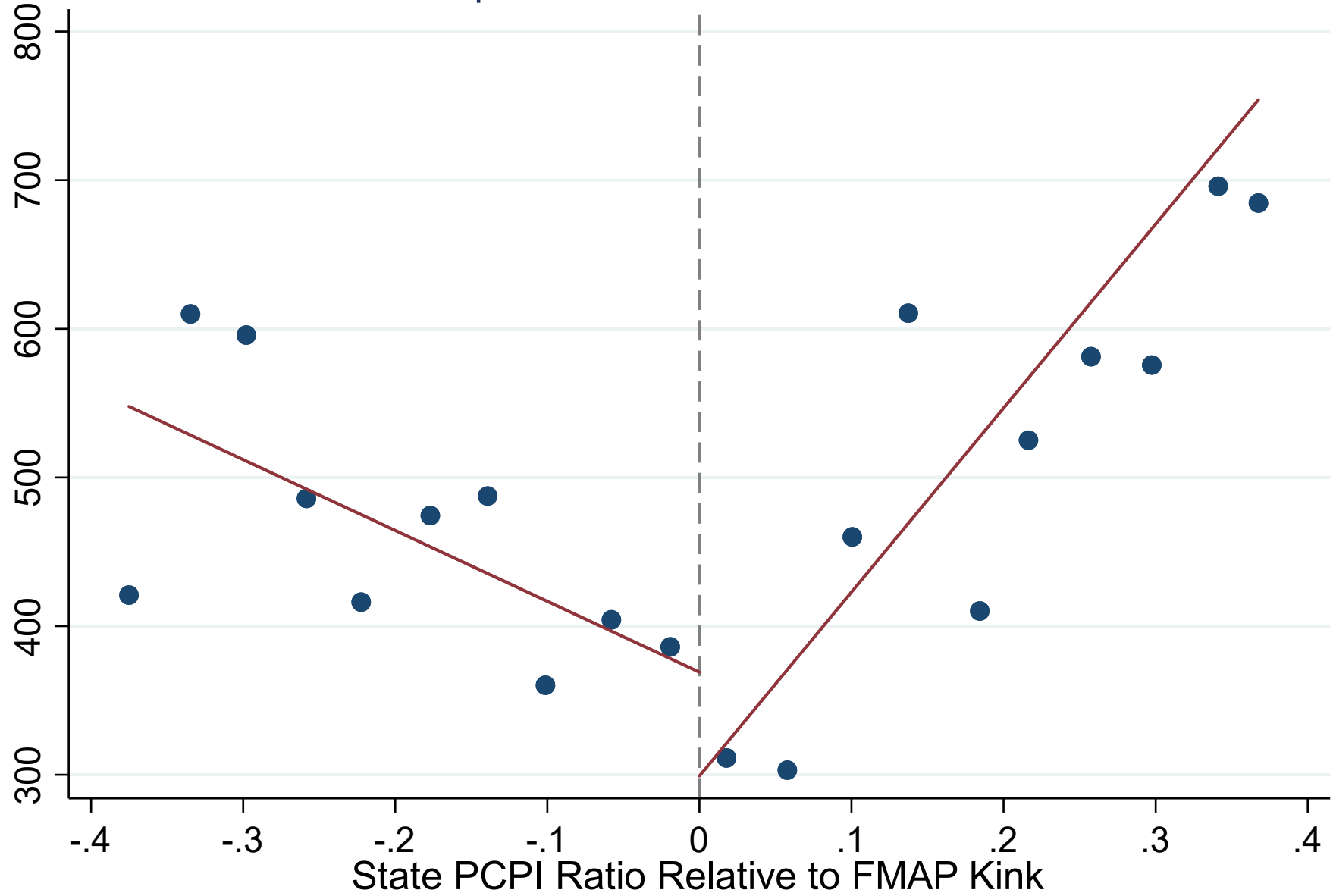
Formula for FMAP based on State Relative Per-Capita PI



Test for Manipulation of Running Variable (Mccrary, 2007)



Per Capita Federal Medicaid Assistance



Instrumental Variable Specification

- First Stage

$$FMA_{s,t} = \alpha_0 + \eta_1[\tilde{R} \times D] + \gamma_1\tilde{R} + \alpha_3\Delta y_{s,t-1} + \delta X_{st} + v_{s,t}$$

- Second Stage

$$y_{s,t+h} - y_{st} = \beta_0 + \beta_1^h \widehat{FMA}_{s,t} + \beta_3\tilde{R} + \beta_2\Delta y_{s,t-1} + \gamma X_{st} + u_{s,t+h}$$

Table 1: Summary Statistics

	Mean	SD	Median	Min	Max
<i>Outcome Variable</i>					
3-year Change in PC Jobs	1.46	19.07	5.47	-83.22	59.69
<i>Endogenous variable</i>					
Per-Capita Fed Medicaid Assist.	585.01	277.69	526.65	111.64	2415.88
<i>Instrument</i>					
1(State/USPCPI>1.054)* State/USPCPI	0.03	0.08	0	0	0.47
<i>Controls</i>					
State/US Per-Capita Personal Income	0.97	0.15	0.94	0.67	1.52
Lagged Change in PC Jobs	0.72	8.69	2.38	-48.42	44
Share Age 65+	16.04	2.21	16.16	6	21.93
Share Female	51.8	1	51.87	49.05	54.97
Share White	76.57	15.91	80.12	18.15	98.82
Share Black	10.2	11.17	6.34	0.11	67.58
Share Hispanic	7.04	8.5	3.94	0.09	43.96
Share with Highschool	29.75	8.85	31.93	2.04	43.75
Share with Some College	26.06	4.27	26.1	12.48	36.12
Share with College+	22.89	5.64	22.11	9.95	54.47
Lagged Union Coverage	14.35	5.96	13.8	3.3	31.9
Lagged Manufacturing Share of GDP	14.43	6.66	14.38	0.2	31.47
Lagged Population (Millions)	5.53	6.17	3.77	0.45	38.06
Lagged Per-Capita Real GDP	46123	18767	43301	23904	183971

Table 2. Instrument Validity

	(1)	(2)	(3)	(4)
	Per Capita- TANF Spending	Per Capita-Non- Medicaid Spending	Per-Capita Federal Medicaid	5-yr Accumulated Jobs Impact
Instrument ($\tilde{R} \times D$)	90.218 (124.148)	1600.035 (4064.452)	0.026** (0.010)	0.156* (0.085)
Observations	1150	1145	1213	969

Table 3. OLS Estimates of Medicaid Employment Multiplier

	(1)	(2)	(3)	(4)	(5)	(6)
	Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Sum
Per-Capita Federal Medicaid (\$100,000)	0.256** (0.115)	0.623** (0.238)	1.132** (0.372)	1.693** (0.490)	2.268** (0.631)	7.435** (1.912)
Observations	1162	1111	1060	1009	958	958

Table 5. IV Estimates of Medicaid Multiplier

	(1)	(2)	(3)	(4)	(5)	(6)
	Year 1	Year 2	Year 3	Year 4	Year 5	5-yr Sum
Per-Capita Federal Medicaid (\$100,000)	0.655* (0.388)	1.400* (0.791)	2.534** (1.193)	3.860** (1.580)	5.214** (1.992)	14.700** (5.926)
Observations	1162	1111	1060	1009	958	958
R-Sq	0.731	0.737	0.726	0.711	0.702	0.729
First_Stage_F	14.676	12.872	12.252	11.998	11.998	11.998

Dynamic IV Estimates of Medicaid Multiplier

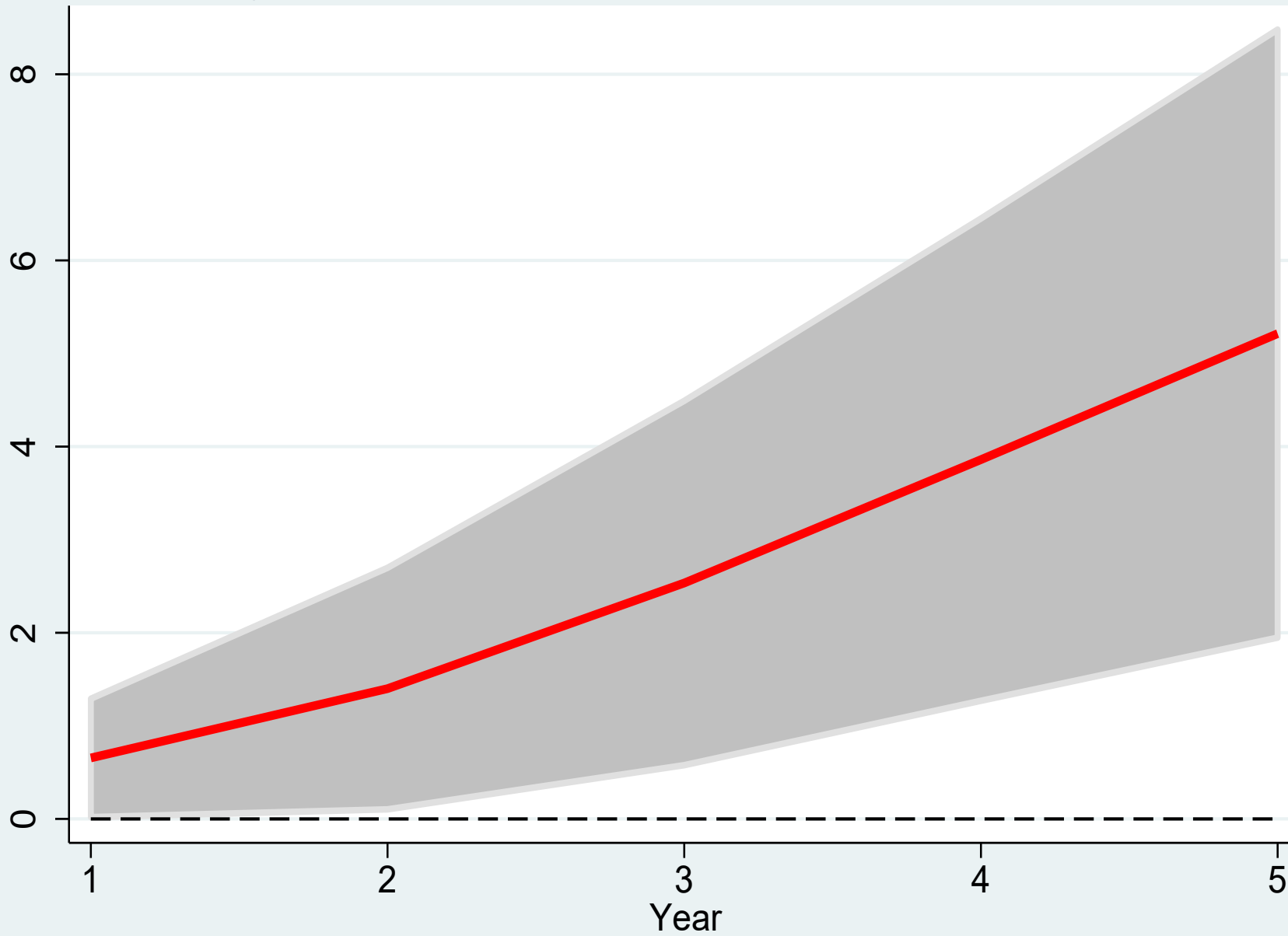


Table 7. IV Estimates of Medicaid Multiplier (5-Year Accumulated Impact): by Year

	(1)	(2)	(3)	(4)
	1990-1994	1995-1999	2000-2006	2007-2008
Per-Capita Federal Medicaid (\$100,000)	10.955* (5.611)	10.537 (6.611)	21.876** (10.712)	62.788 (48.977)
Observations	250	254	352	102
R-Sq	0.759	0.732	0.536	0.013
First_Stage_F	18.614	16.880	7.157	1.019

Conclusion

- Propose a new instrument to estimate the federal Medicaid assistance multiplier
- Present dynamic and long-term estimates of the multiplier using state-level data from 1990-2013
- Federal Medicaid dollars have a modest positive multiplier—an additional \$100,000 in Medicaid assistance creates about 15 jobs over five years
 - 3 job-years at a cost per job of \$33,000

Additional Slides

Previous Literature

- Chodorow-Reich et. al. (2012): ARRA-induced federal Medicaid transfers led to significant employment gains at a cost of \$26,000 per job (implied output multiplier of 2.1)
- Dupor and Guerrero (2018): Estimate multiplier for government-financed health care spending including both Medicaid and Medicare (cannot identify the effect of Medicaid separately).
- Other papers focused on general government spending under ARRA rather than Medicaid and found more modest employment effects (Wilson, 2012; Feyrer and Sacerdote, 2011; Conley and Dupor, 2011).
- Using non-ARRA programs, Sahm, Shapiro, and Slemrod (2012) and Main and Sufi (2012) also found small multipliers

Motivation

- Medicaid the largest means-tested program in the U.S. accounting for:
 - 44 percent of expenditure
 - 30 percent of beneficiaries
- Jointly funded by federal and state governments
- Provides public insurance coverage to low-income individuals: families with children, elderly, and disabled
- Explosive long-term growth in Medicaid expenditure and enrollment
 - 0.5 percent of GDP in 1980 to 2 percent in 2011
 - 9 percent of population in 1980 to 17 percent in 2011

RKD Estimation Details

- Fuzzy RKD
- Choice of polynomial order, Kernel, and bandwidth are key (specially bandwidth)
 - Bandwidth chosen using MSE-optimal method in Calonico, Cattaneo, and Titiunik (2014)
- Local linear and local quadratic models estimated
- Triangular Kernel used
- Standard errors clustered by state

Average Medicaid Monthly Participation Rate (2012)

Group	Percent with Medicaid
All U.S.	15.3
Family Under FPL	44.3
Family Above FPL	9.3
65 Years and Over	7.8
Female Headed Households	37.3
Married Couples	10.7

Federal Medical Assistance Percentage (FMAP)

- Formula for federal share of state's total Medicaid cost

$$FMAP_{st} = \min \left(\max \left(0.5, 1 - 0.45 * \left(\frac{\overline{PCPI}_{st}}{\overline{PCPI}_t^{US}} \right)^2 \right), 0.83 \right)$$

$$\overline{PCPI}_{st} = (PCPI_{st-3} + PCPI_{st-4} + PCPI_{st-5})/3$$

$$\overline{PCPI}_t^{US} = (PCPI_{t-3}^{US} + PCPI_{t-4}^{US} + PCPI_{t-5}^{US})/3$$

- FMAP 55 percent if $\overline{PCPI}_{st} = \overline{PCPI}_t^{US}$
 - Varies inversely with $\frac{\overline{PCPI}_{st}}{\overline{PCPI}_t^{US}}$
 - Kink in FMAP at $\frac{\overline{PCPI}_{st}}{\overline{PCPI}_t^{US}} = 1.054$
- FMAP largely unchanged since inception with some exceptions