Health Spending Growth: The Effects of the Great Recession

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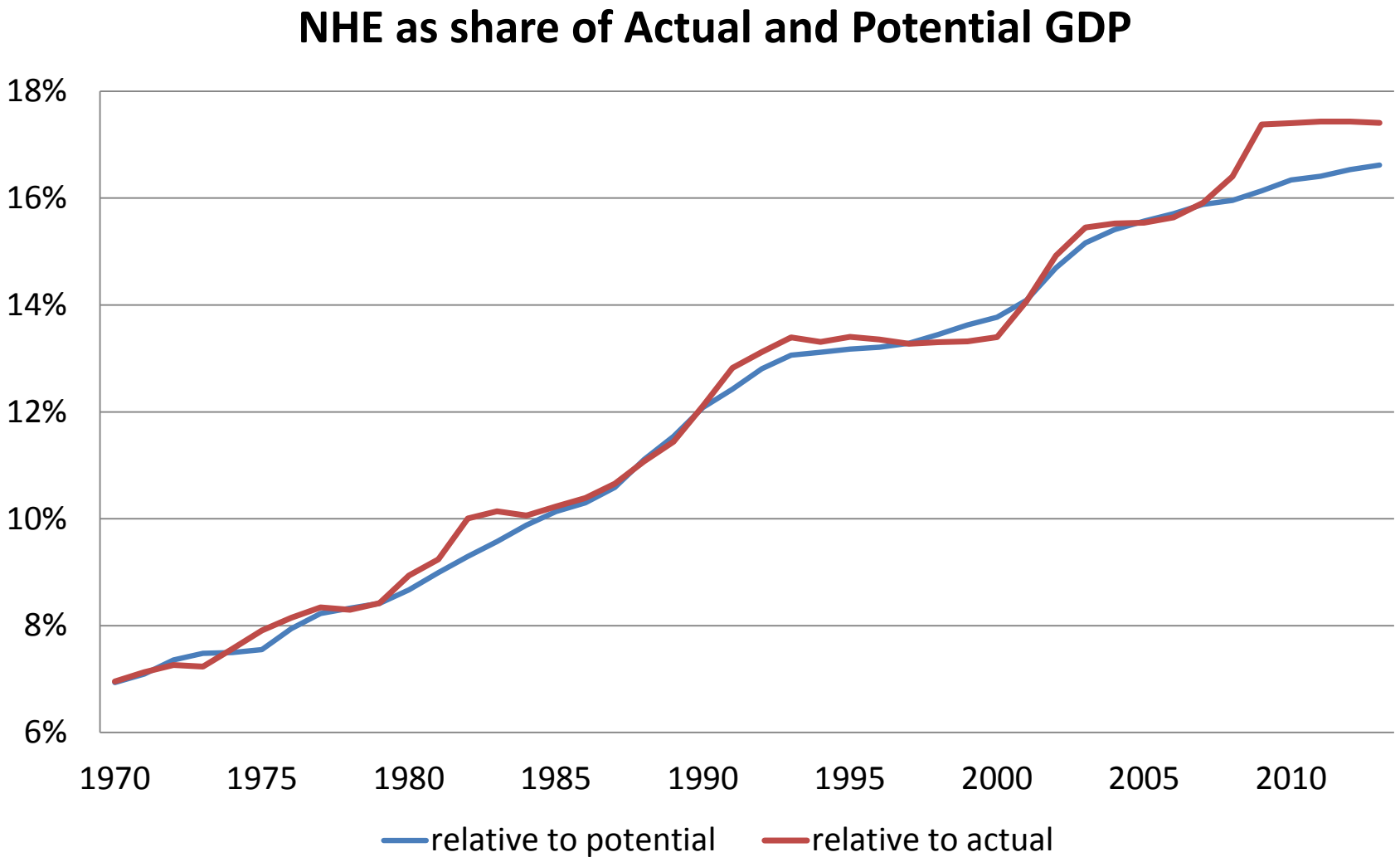
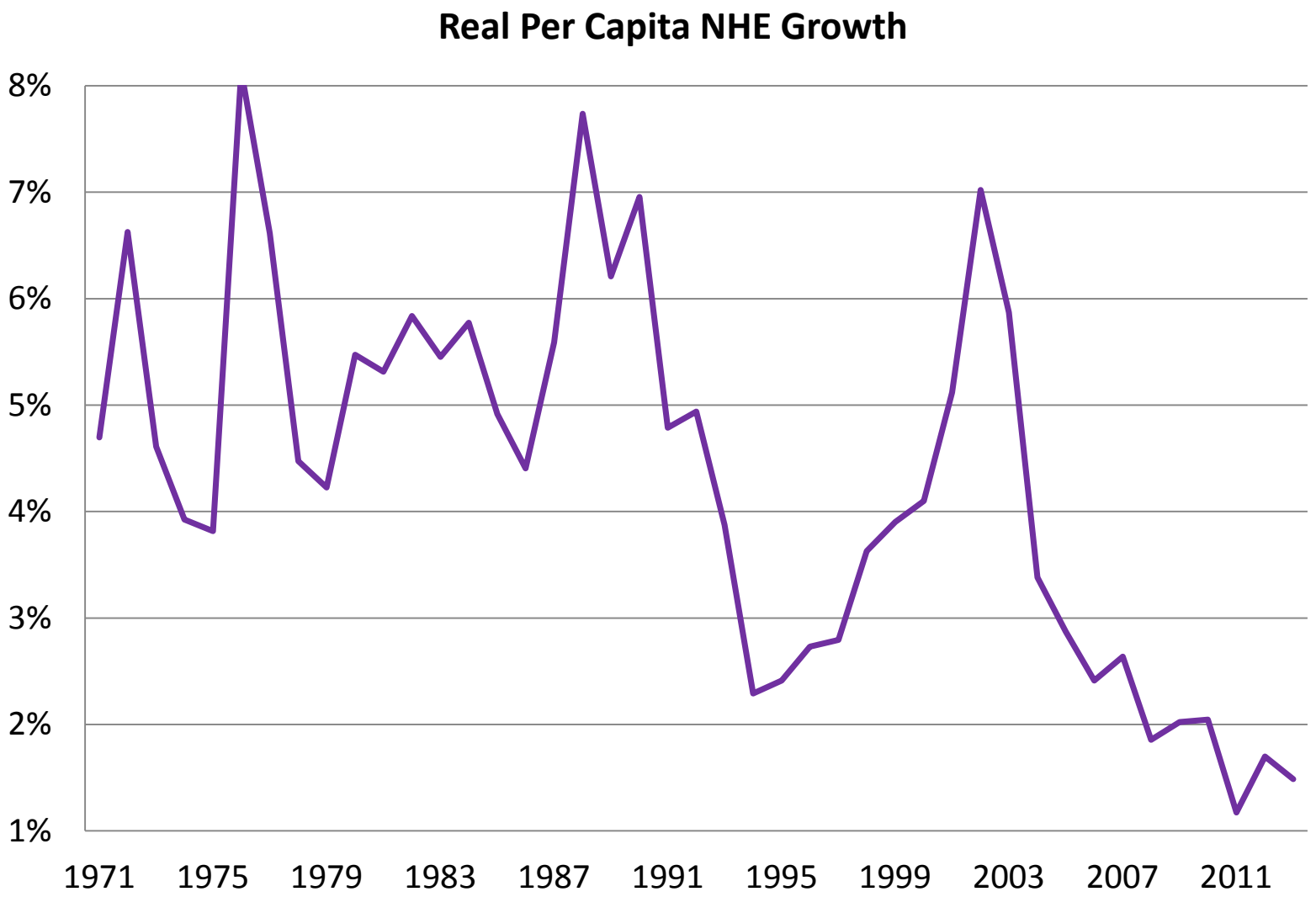
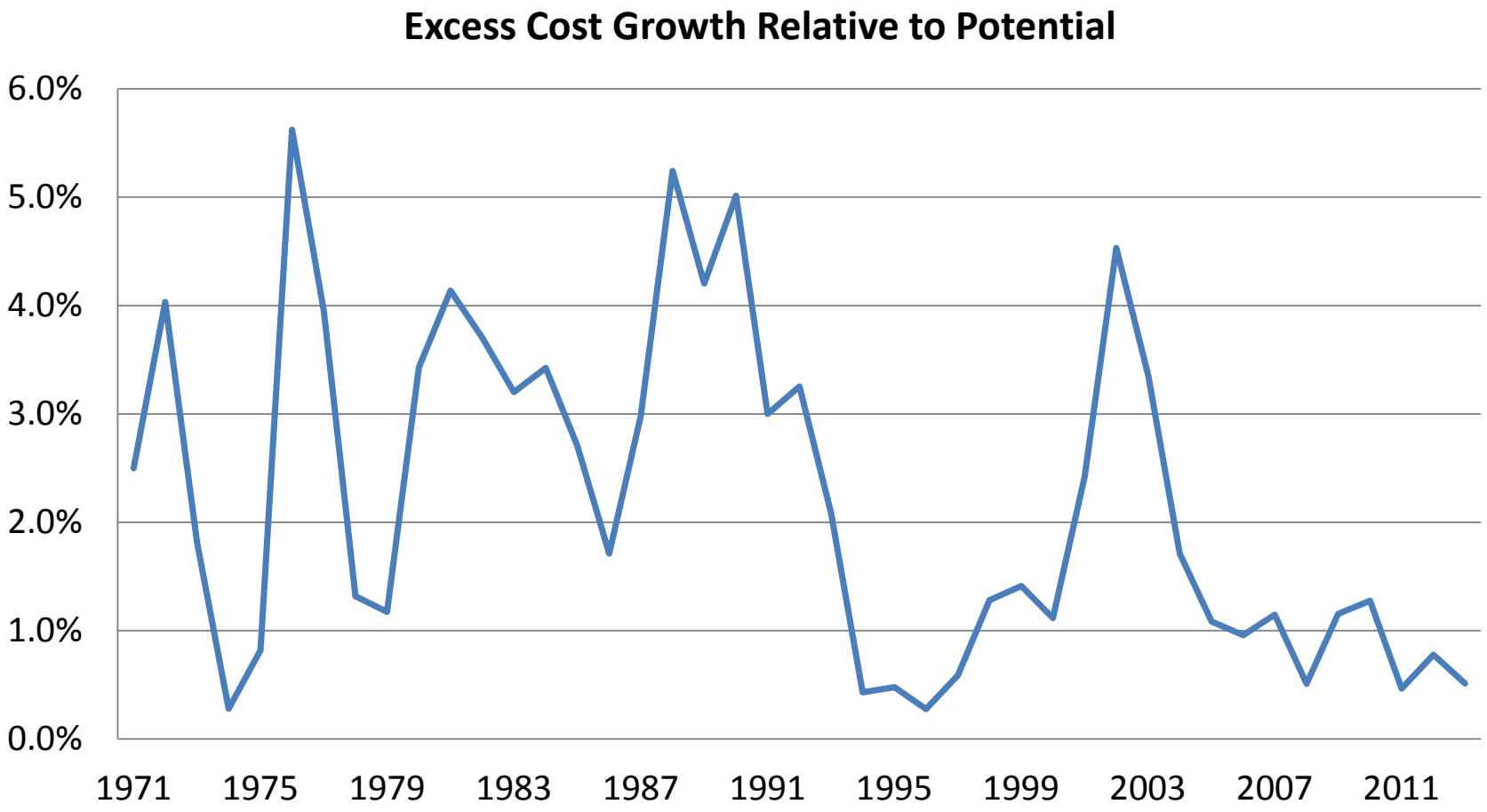
Health Spending Share of GDP Unchanged for 5 Years
But that's mostly due to GDP



But health spending growth has also been historically slow



Relative to potential GDP, excess cost growth hovering around 1 percent since 2005



Big Questions

- Is 1% Excess Cost Growth the new normal?

- Or, has health spending slowed because it responds to GDP?
  - Slowdown started in 2003, **before** recession.
  - But also recession in 2001.
  - And excess cost growth moves in cycles.
  - Perhaps without recession excess cost growth would have moved up again.

- Other possible reasons for the slowdown:
  - Patent expiration for prescription drugs
  - ACA: Provider cuts and efficiency incentives?

Why Health Spending Could Respond to GDP: Demand-side channels

- More uninsured →lower spending on health
- Tight household budgets →lower spending on health
- Firms make health insurance offerings less generous: rise of high-deductible plans
  - Share of workers with ESI with deductible > $2,000 increased from 3 percent in 2006 to 18 percent in 2014.
- State budget stress → lower Medicaid reimbursements, tighter eligibility requirements, less public health spending

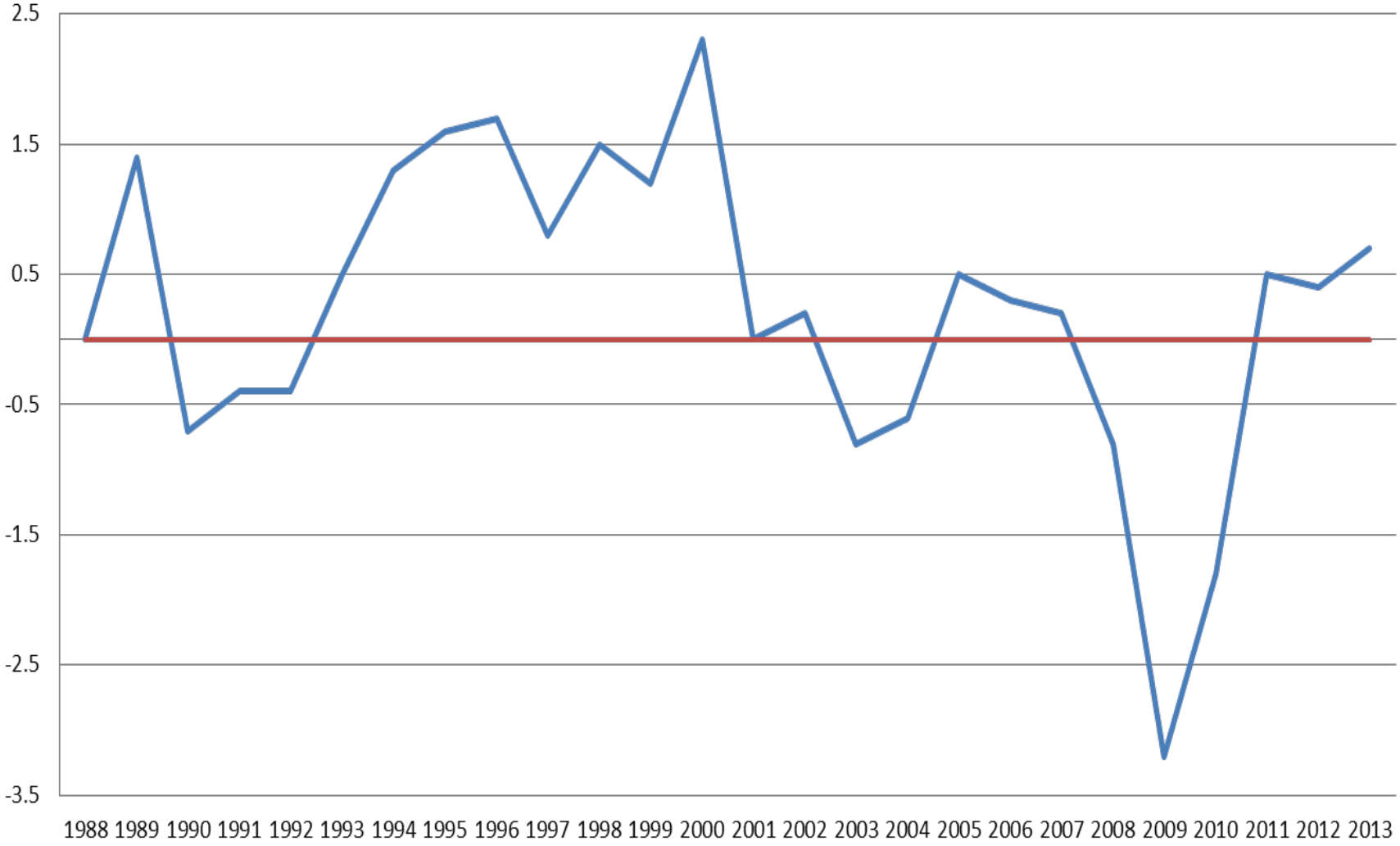
Why Health Spending Could Respond to GDP: Supply-side channels

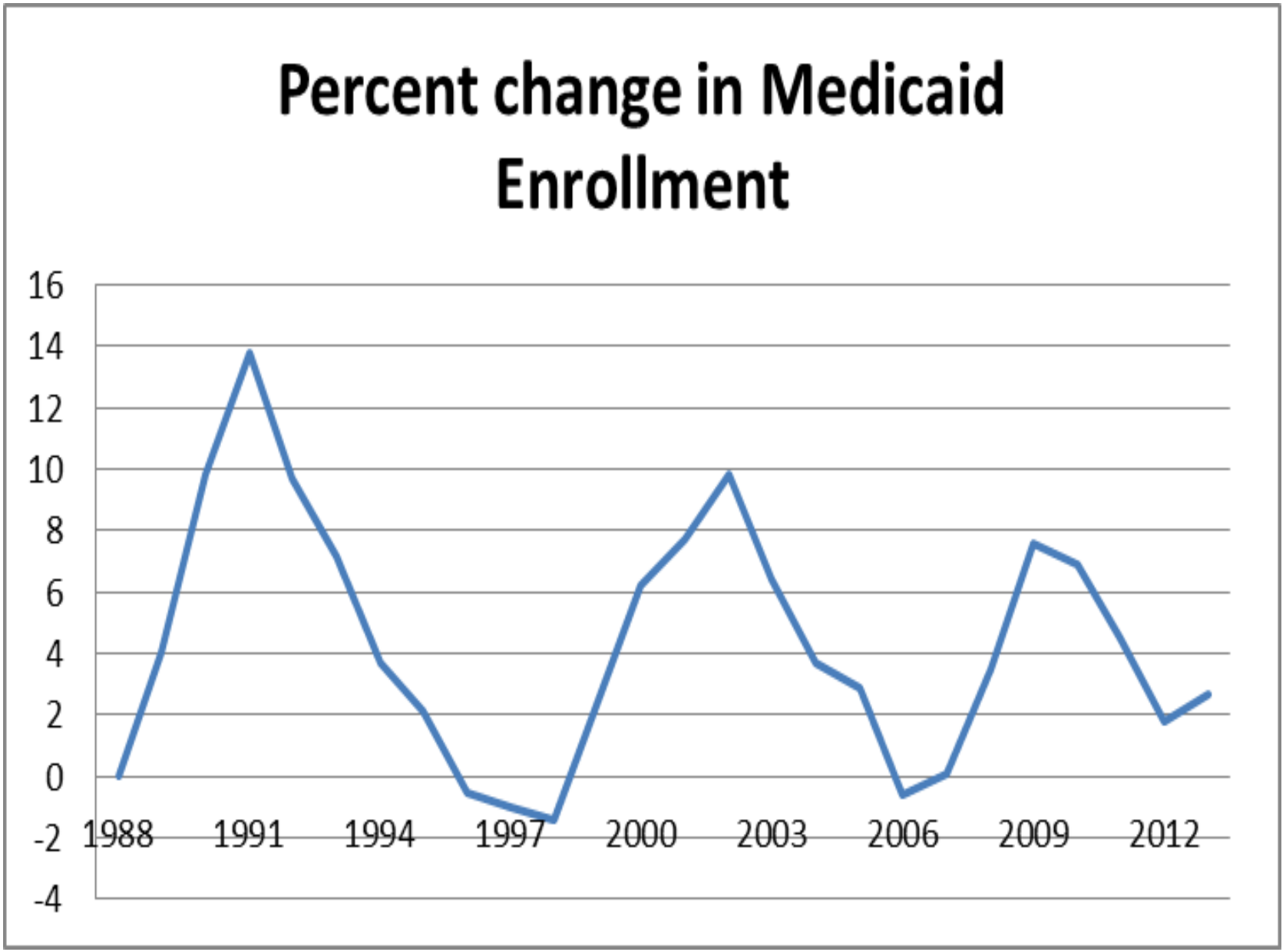
- Slower wage growth:
  - Job losses in other industries increase supply of unspecialized workers
  - Highly-specialized workers increase labor supply as spouses lose jobs
    - Staiger, Auerbach, and Buerhaus show large temporary increase in labor supply of RNs during recession
- Slower Technology Growth: Lower investment during recession years
- Insurers with market power respond to recession by cutting premiums (and profits)
- Shift from private to Medicaid insurance during recession lowered average price paid

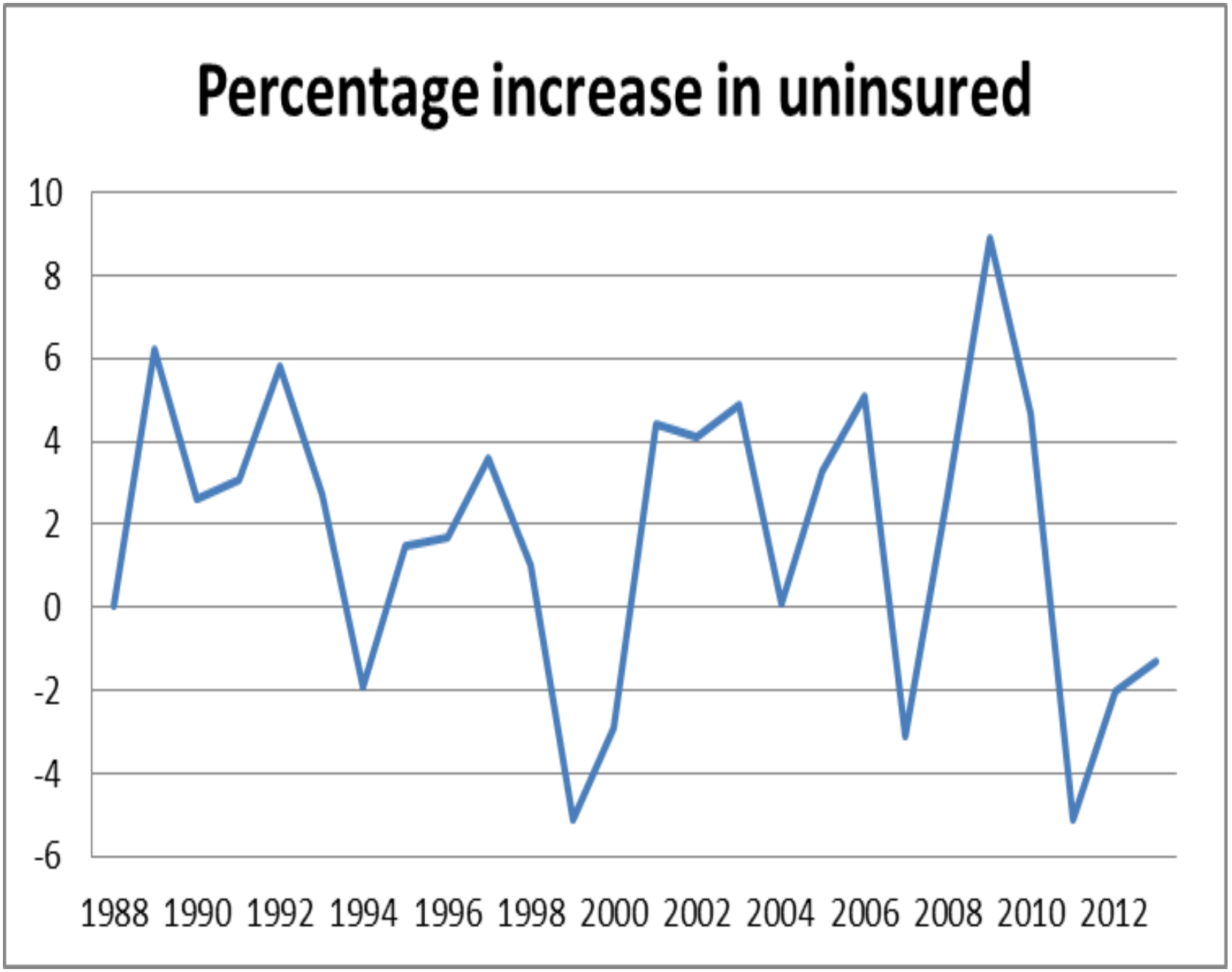
Price Declines

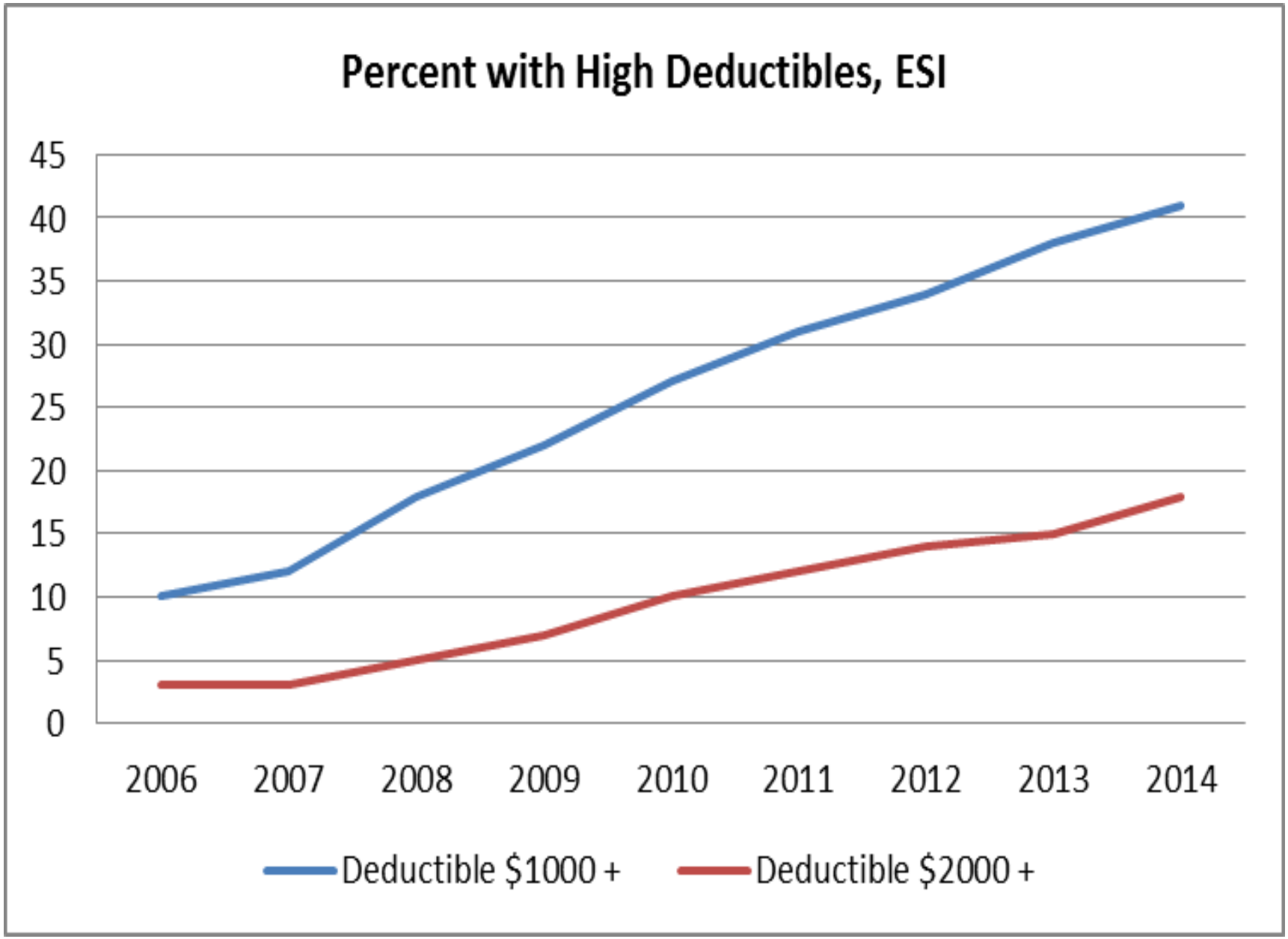
- Large price declines for drugs as surge in patent expirations
- Price declines owing to Medicare policy
- Declines in Medicaid reimbursements
- Decline in health worker wages passed through to private insurers?

Private HI Enrollment




Percent change in Medicaid Enrollment
16
14
12
10
8
6
4
2
0
-2
-4
1988
1991
1994
1997
2000
2003
2006
2009
2012

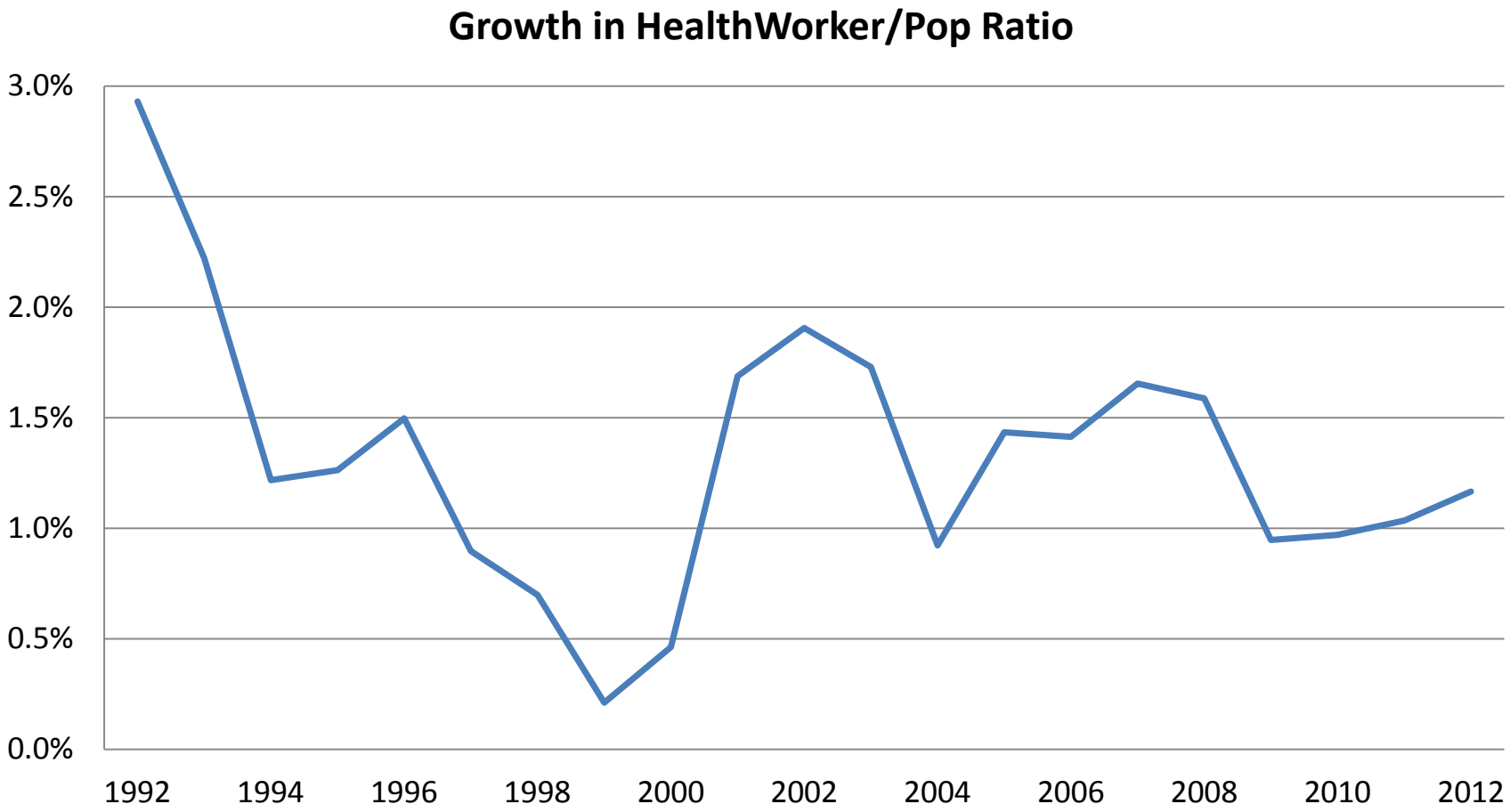

Percentage increase in uninsured
10
8
6
4
2
0
-2
-4
-6
1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012


Percent with High Deductibles, ESI
45
40
35
30
25
20
15
10
5
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
Deductible $1000 +
Deductible $2000 +

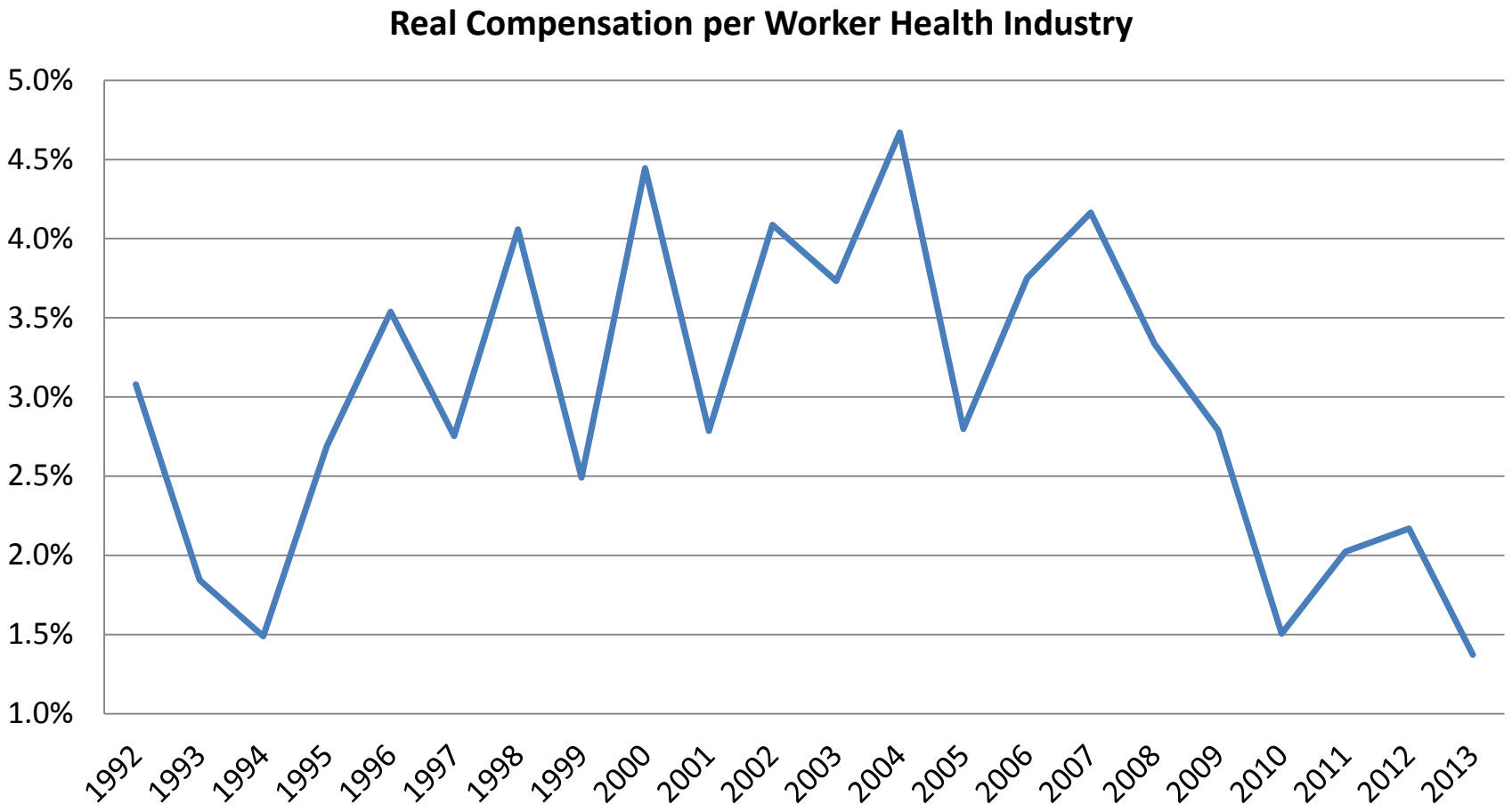
Components: Prescription drug spending declined the most – physician and hospital spending the least

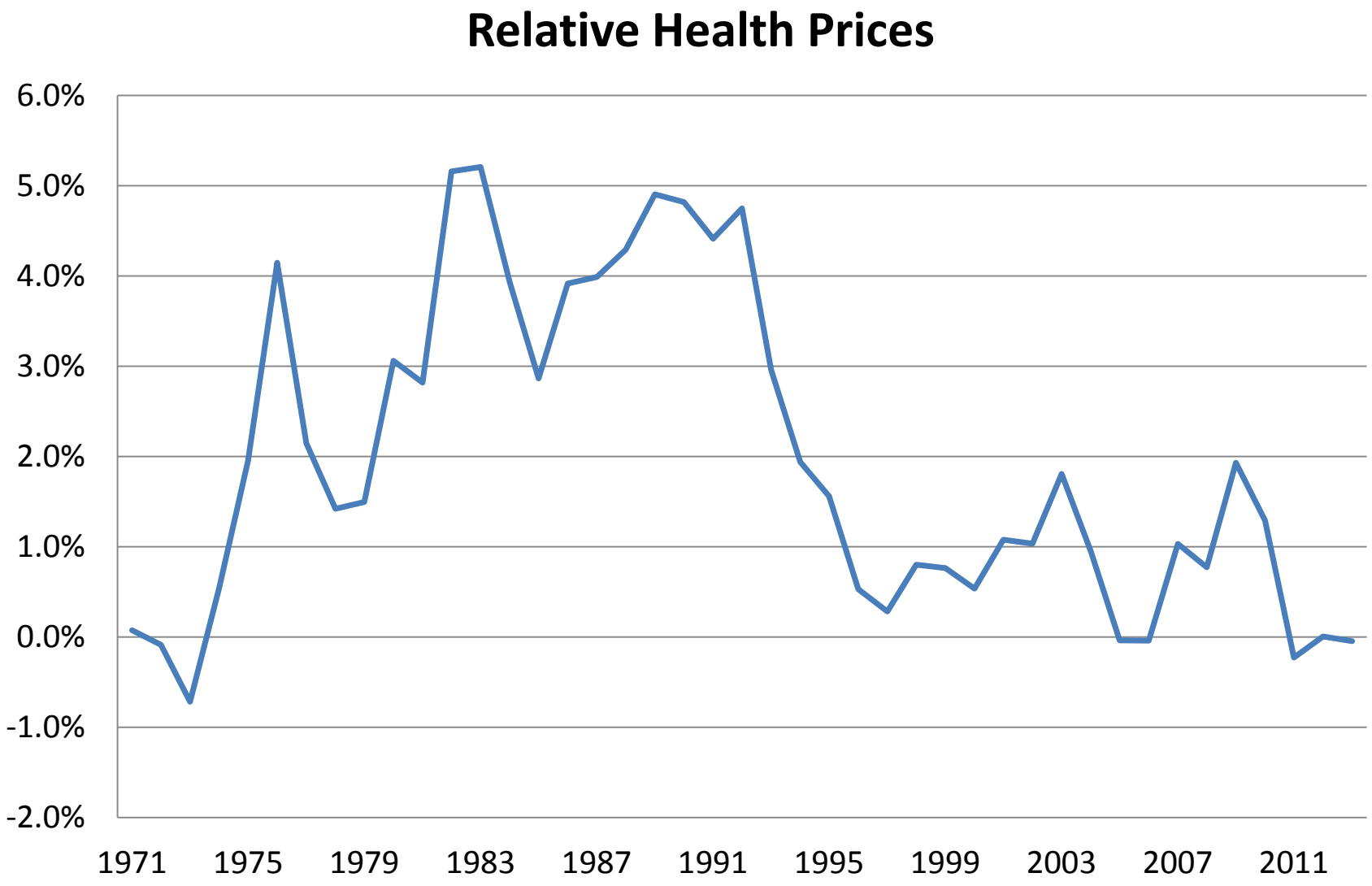
	Slowdown In Real per Capita Health Spending 2008-2013 Relative to:	
	1993-2007	2000-2007
National Health Expenditures	2.0%	2.5%
Personal Health Consumption	1.5%	2.0%
Drugs	8.2%	7.3%
Dental	3.6%	3.5%
Durable and other non-durable goods ex drugs	1.5%	1.3%
Nursing Home and Home Health	1.5%	1.0%
Physician and Other Professional	1.1%	1.6%
Hospital Services	-0.2%	1.1%
Research, Admin, Public Health, Investment, Insur. Profits	4.2%	4.9%
NOTE:		
Personal Health Consumption Less RX	0.8%	1.3%

Health employment growth strong in first few years of recession, but leveled off since



Sharp decline in wage growth in health care industry




Relative Health Prices
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
-1.0%
-2.0%
1971
1975
1979
1983
1987
1991
1995
1999
2003
2007
2011

Health Spending Responds to Lagged GDP in National Data:

Regression of Real Per Cap NHE Growth on Real Per Cap GDP Growth , 1975-2007

Sum of Coefficients on GDP	**0.71**	**0.83**	**0.8**	**0.72**
GDP Growth	0.15	0.17*	0.15	0.16*
GDP $Growth_{t-1}$	0.02	0.12	0.11	0.07
GDP $Growth_{t-2}$	0.04	0.11	0.1	0.06
GDP $Growth_{t-3}$	0.18	0.17*	0.17**	0.16**
GDP $Growth_{t-4}$	.32**	.26**	.27**	.27**
Relative Medical Price Inflation		.006**	.005**	.003**
Year			-.0004*	
Post-1991				-.011**
Constant	.03**	.01**	.75**	.03**
Rsq adj	0.14	0.58	0.63	0.67

What can state data tell us?

- State data with state and year-fixed effects provide a different source of variation than national data. Controls for national trends.

- Expect smaller effects from a local shock to income:
  - Multi-state firms might not change insurance policy generosity on state-by-state basis
  - Wage effects would likely be smaller because inter-state labor mobility will reduce effects of local shocks on wages.
  - Technology effects muted because technology crosses borders.

Data Used

- National Health Accounts by State, 1990-2009: Misses most of recent slowdown
- BEA PCE by State: Health Services: 1998-2012
- BEA Data on health employment and compensation by state: through 2013
- MEPS premiums for single policies, by state: 2009-2012
- Medicare FFS Spending by state, 2008-2012

State-level Regressions of Per Capita Health Spending on Personal Income, 1991-2009

	(1)	(2)	(3)	(4)
Sum of coefficients on income growth	**.84**	**.92**	**.41**	**.43**
Income Growth	.03	.03	.11**	.10**
Income Growth$_{t-1}$	-.02	-.01	.02	.01
Income Growth$_{t-2}$	.14**	.16**	.05	.07**
Income Growth$_{t-3}$	.27**	.28**	.05	.06*
Income Growth$_{t-4}$	.18**	.19**	.05	.05
Income Growth$_{t-5}$	.13**	.14**	.04	.05
Income Growth$_{t-6}$	.11**	.13**	.09**	.09**
Constant	.02**	.04**	.03**	.05**
State Dummies	No	Yes	No	Yes
Year Dummies	No	No	Yes	Yes
Rsq adj	.19	.26	.37	.42
Observations	900	900	900	900

** significant at 5% level; * significant at 10% level

State-level Regressions of Per Capita Health Spending by Component on Personal Income, 1991-2009

	Hospital	Physician	RX	Dental
Sum of coefficients on income growth	**.56**	**.37**	**.3**	**.91**
Income Growth	0	.07	.30**	.24**
Income Growth$_{t-1}$	.01	-.02	-.08	.20**
Income Growth$_{t-2}$	.10*	.07	-.01	.21**
Income Growth$_{t-3}$	.06	.08	.11	.20**
Income Growth$_{t-4}$	.08	.05	-.06	.09
Income Growth$_{t-5}$	.16**	0	.07	-.03
Income Growth$_{t-6}$	.15**	.12*	-.03	0
Constant	.06**	.06**	-.02**	.07**
Rsq adj	.32	.18	.62	.38
Observations	900	900	900	900

** significant at 5% level; * significant at 10% level

Non-Medicare Spending Growth More Responsive to Income Growth

	All Hospital and Physican and Other Professional	Non-Medicare Hospital and Physican and Other Professional	Non-Medicare Hospital	Non-Medicare Physician
Sum of coefficients on income growth	**.47**	**.71**	**.76**	**.33**
Income Growth	.03	.03	-.04	.07
Income Growth$_{t-1}$	0	.04	.04	-.03
Income Growth$_{t-2}$	.09*	.12*	.13	.06
Income Growth$_{t-3}$	.06	.07	.05	.07
Income Growth$_{t-4}$	.07	.12*	.15*	.04
Income Growth$_{t-5}$	.1**	.15*	.27**	0
Income Growth$_{t-6}$	.12**	.18**	.16**	.12*
Constant	.06**	.05**	.04**	.06**
Rsq adj	.36	.34	.29	.18
Observations	900	900	900	900

State-level Regressions of Health Worker Wages and Health Employment on Personal Income, 1991-2009

	Health Worker Wages	Health Employment per Cap	Health Compensation per Cap
Sum of coefficients on income growth	**.66**	**-.14**	**.54**
Income Growth	.15**	.01	.17**
Income Growth$_{t-1}$	.12**	-.04**	.09**
Income Growth$_{t-2}$	.14**	-.02	.12**
Income Growth$_{t-3}$	.09**	-.03*	.06**
Income Growth$_{t-4}$	.09**	-.03*	.06**
Income Growth$_{t-5}$	.03*	-.02	.01
Income Growth$_{t-6}$	.04**	-.01	.03
Constant	-.01**	.02**	.01
Rsq adj	.54	.49	.63
Observations	1850	1850	1850

** significant at 5% level; * significant at 10% level

Relationship between Medicare and non-Medicare spending growth in state-level regressions, 1991-2009

	Non-Medicare	Non-Medicare	Non-Medicare 1991-2000	Non-Medicare 2000-2009	Non-Medicare Hospital	Non-Medicare Physician
Medicare Growth	-.23**	-.23**	-.20**	-.30**		
Medicare Hospital					-.27**	
Medicare Physician						.03
Income Growth and 6 Lags	No	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Health worker wage growth 6 lags	No	Yes	No	No	No	No
Observations	900	900	450	450	900	900

** significant at 5% level; * significant at 10% level

State-level Regressions of BEA Per Capita Spending for Health Services, 1998-2012

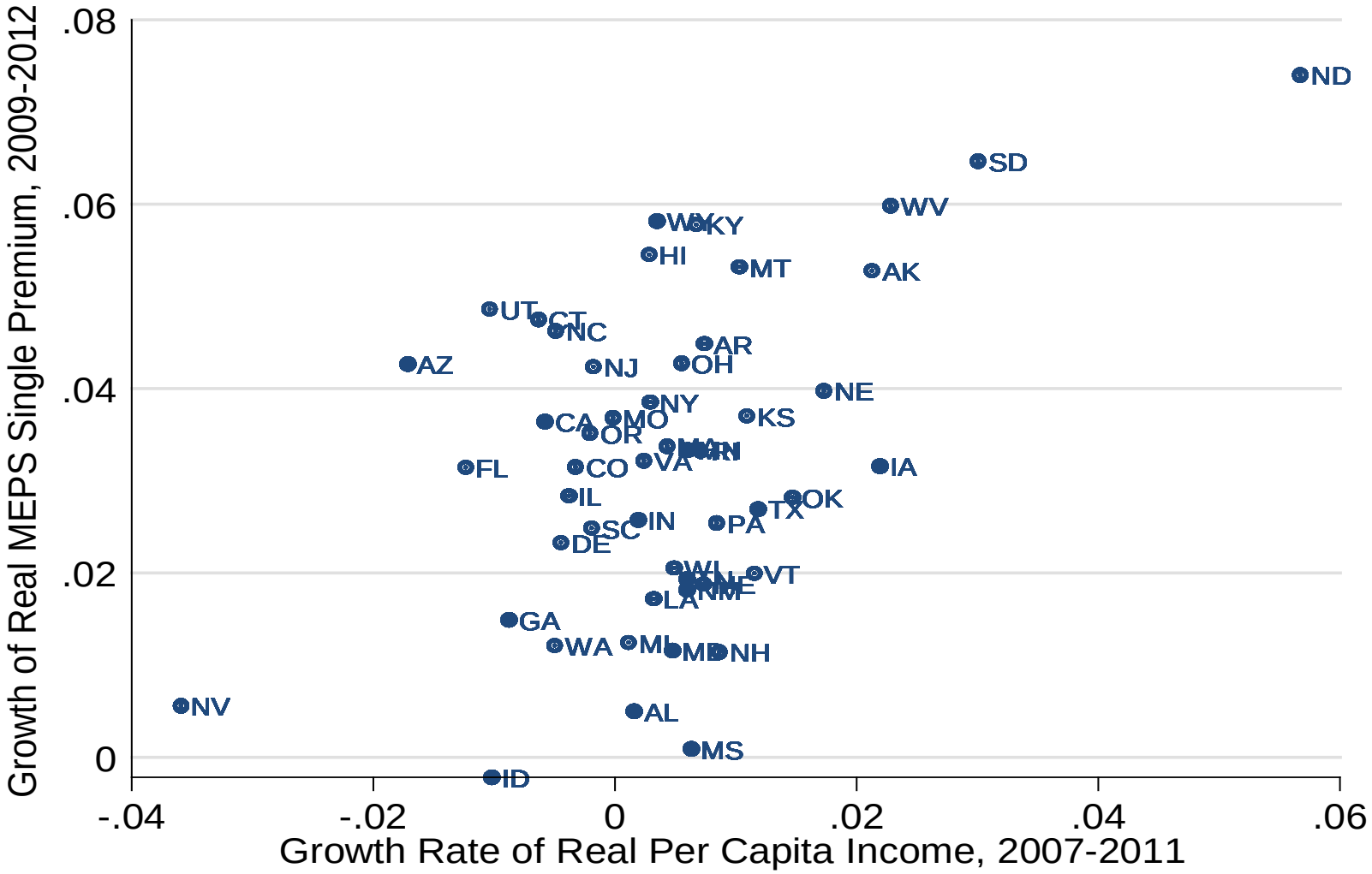
	(1)	(2)
Sum of coefficients on income growth	**.75**	**.25**
Income Growth	-.05**	.12**
Income Growth$_{t-1}$	.10**	.05
Income Growth$_{t-2}$	.11**	.06
Income Growth$_{t-3}$	.16**	.08**
Income Growth$_{t-4}$	.24**	.01
Income Growth$_{t-5}$	.11**	-.06
Income Growth$_{t-6}$	.08**	0
Constant	.02**	.02**
State Dummies	No	Yes
Year Dummies	No	Yes
Rsq adj	.18	.5
Observations	750	750

** significant at 5% level; * significant at 10% level

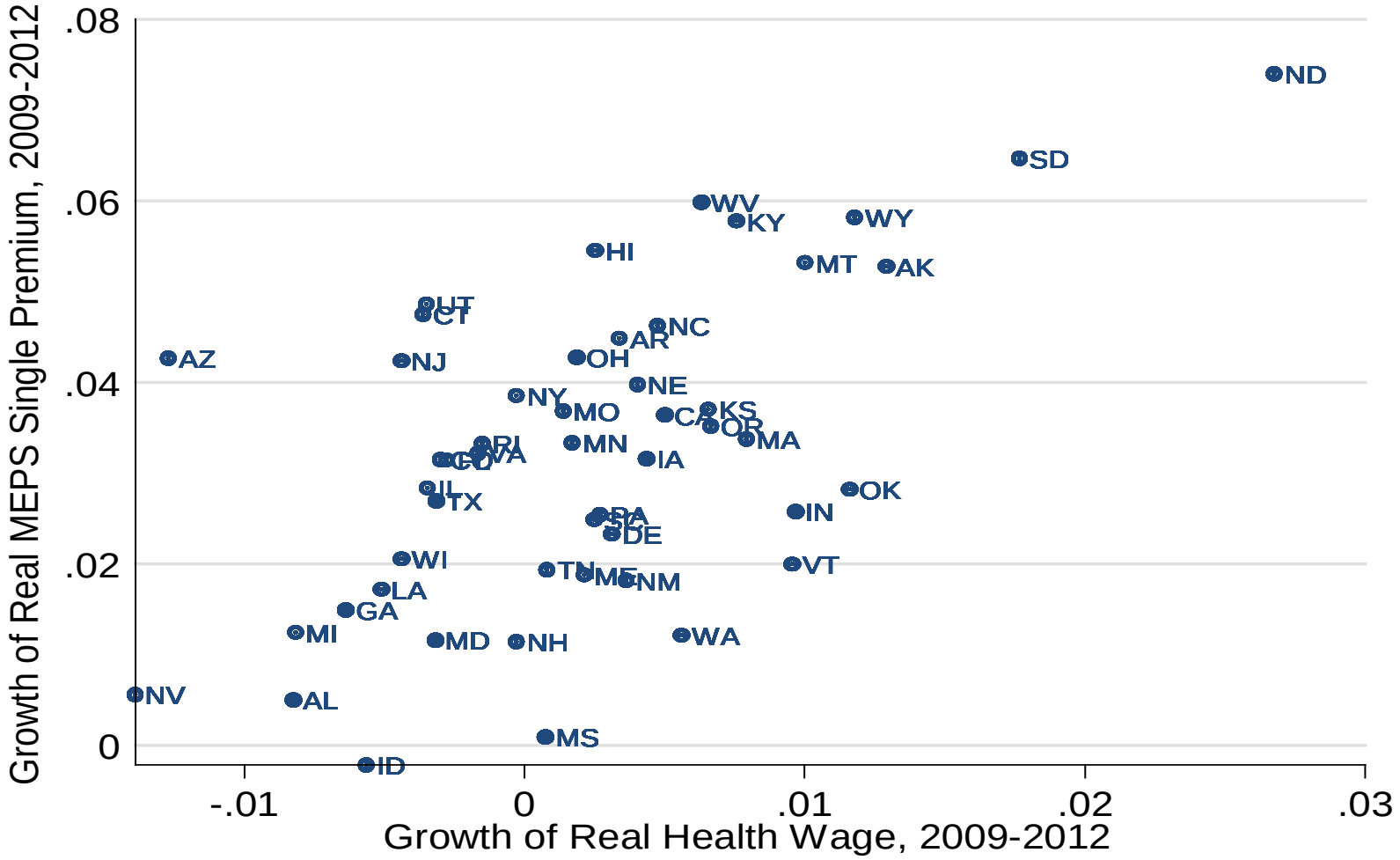
What can we learn with state data about this recession?

- Has slowdown been greater in harder-hit states?
- Can state data help distinguish between slowdown due to ACA vs slowdown due to recession?
- Worth looking at, but power is weak because recession very broad based
  - End up relying on outliers like ND, SD, and NV
- Use avg annual real personal income growth from 2007 to 2011 as measure of recession depth

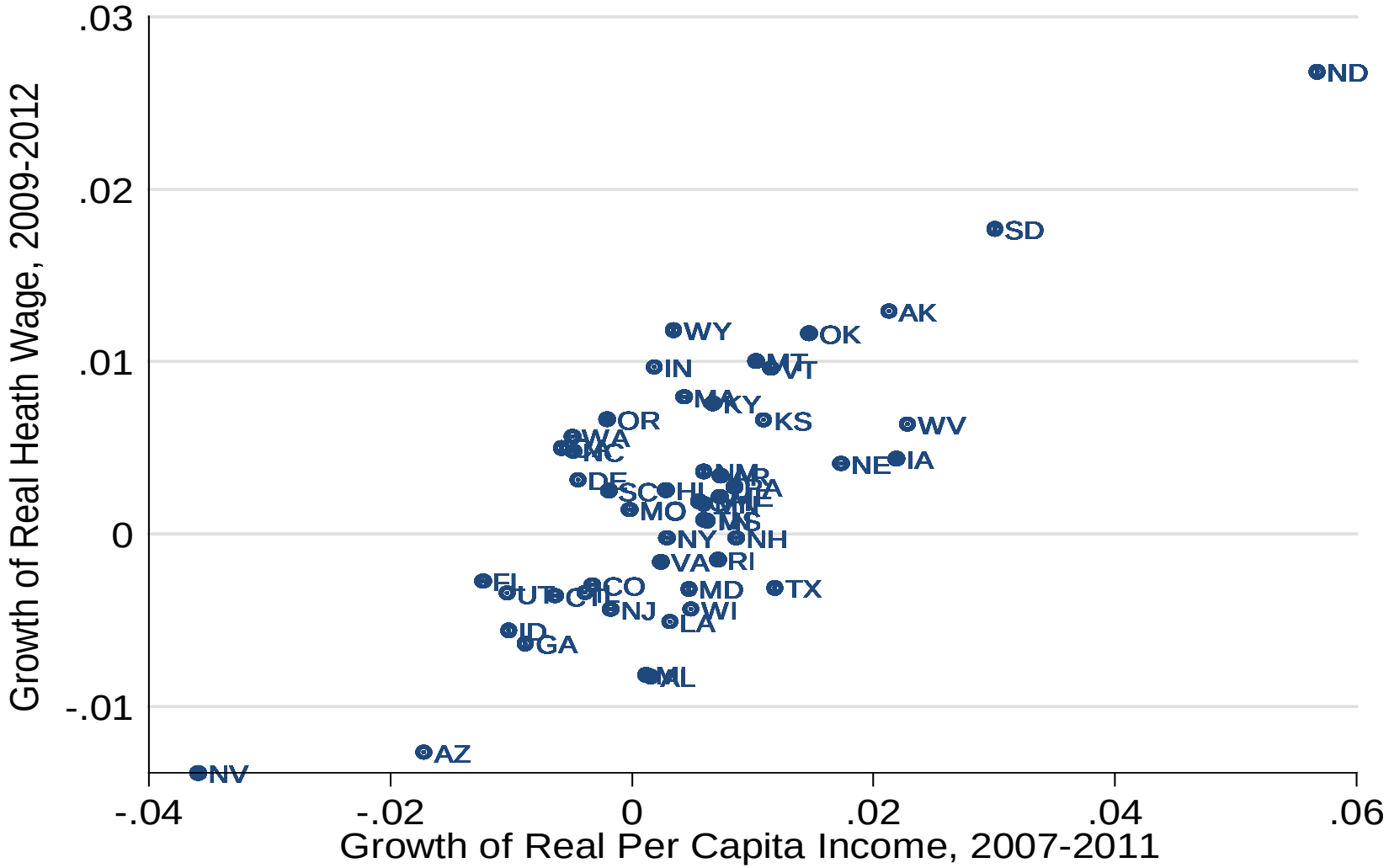
Insurance Premium Growth Higher Where States Did Better



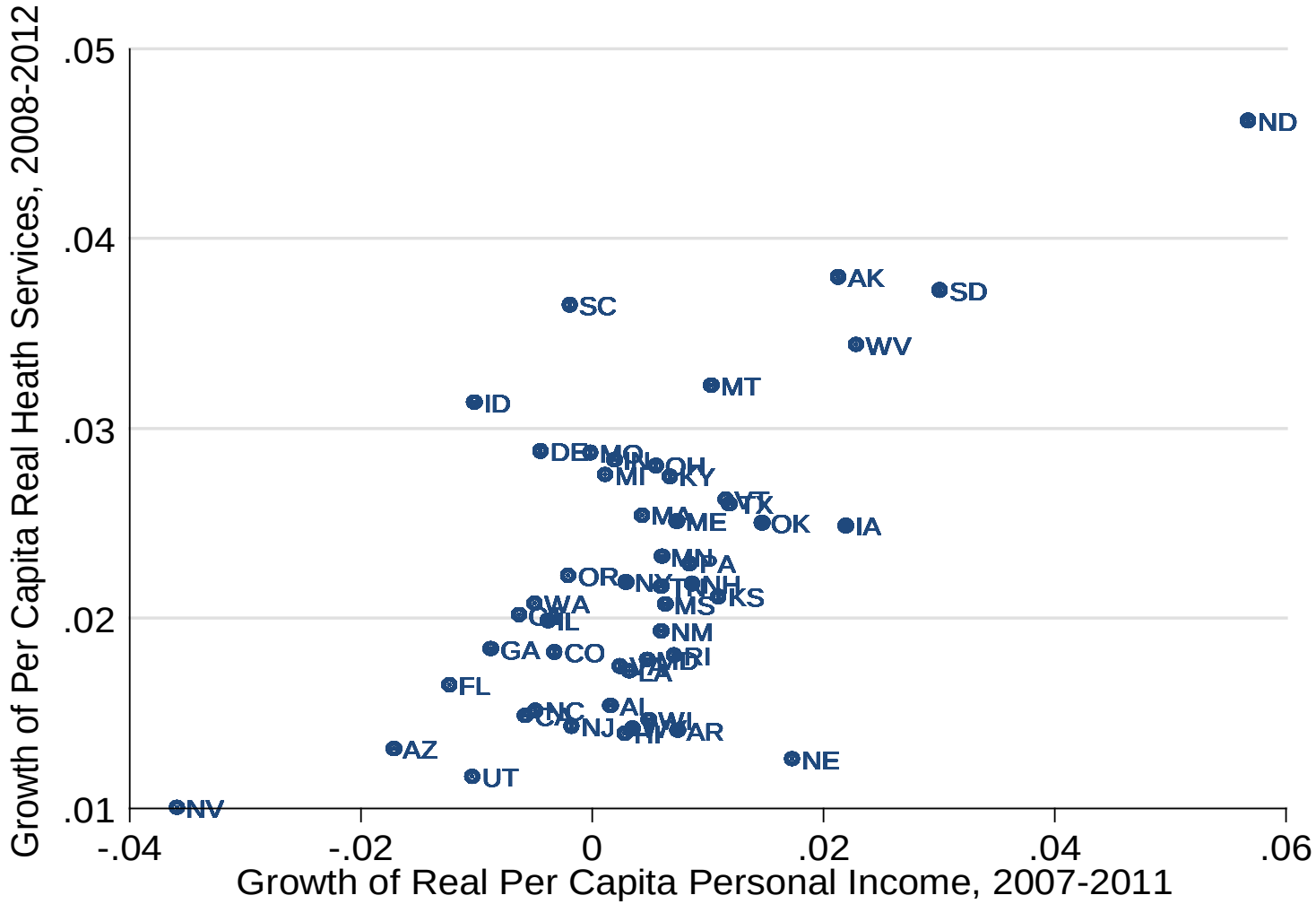
Insurance Premium Growth higher where Health Wage Growth Higher



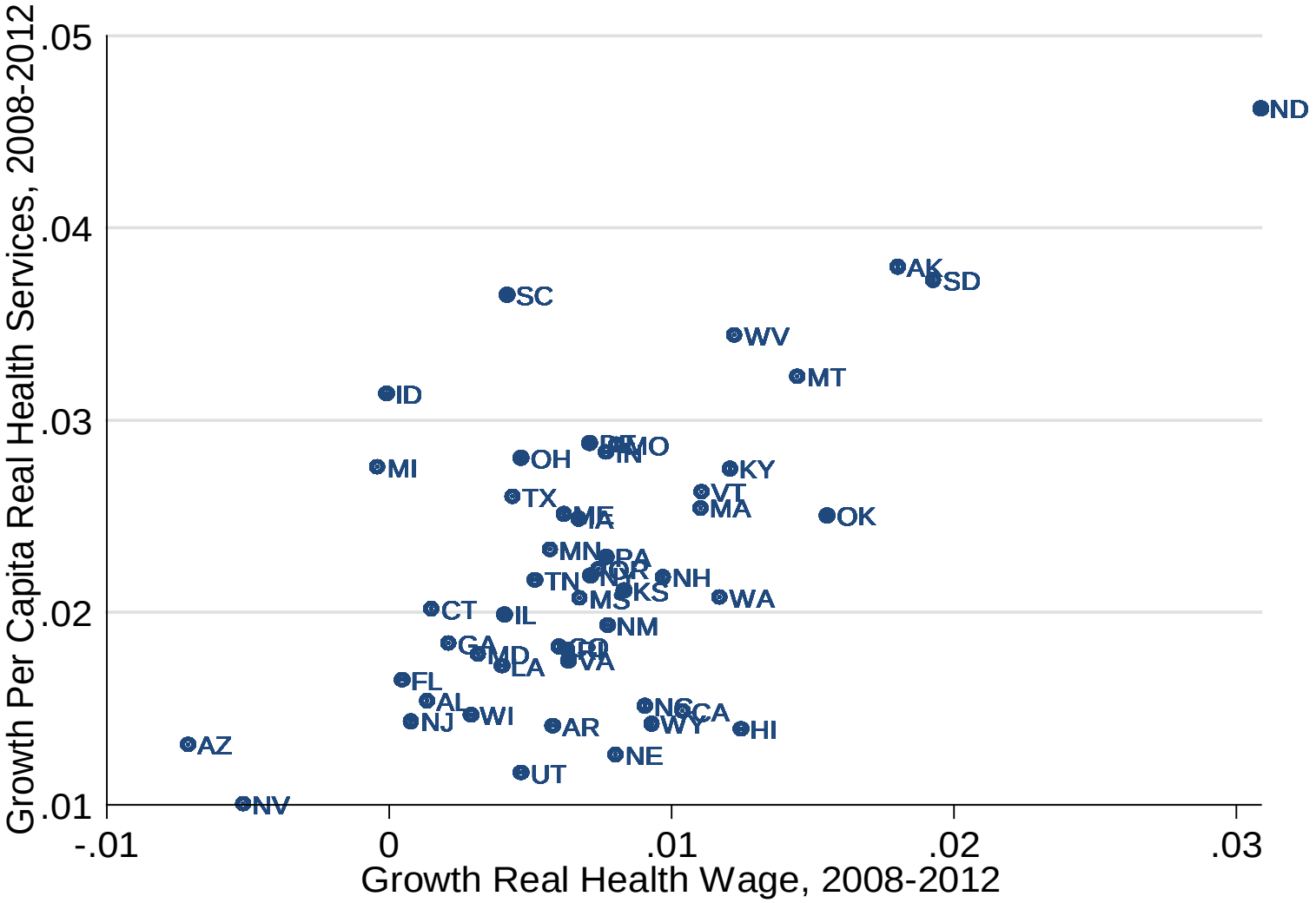
Health Industry Wage Growth Related to Income Growth



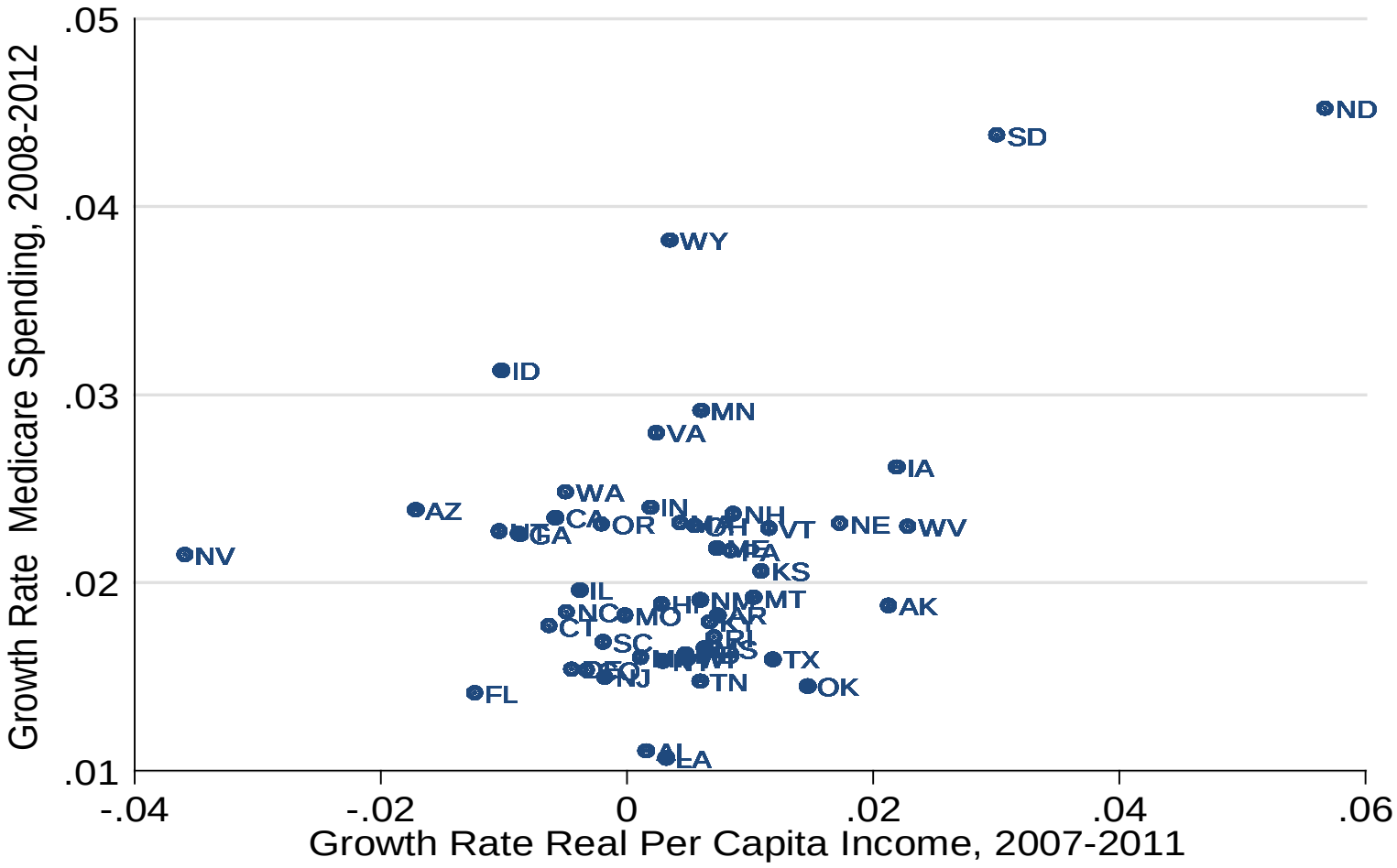
BEA Health Services also Related to Income



And to health wages



Medicare FFS also loosely related to Income



Insurance Premium, BEA Measure, Medicare all related to income, but mostly through wages

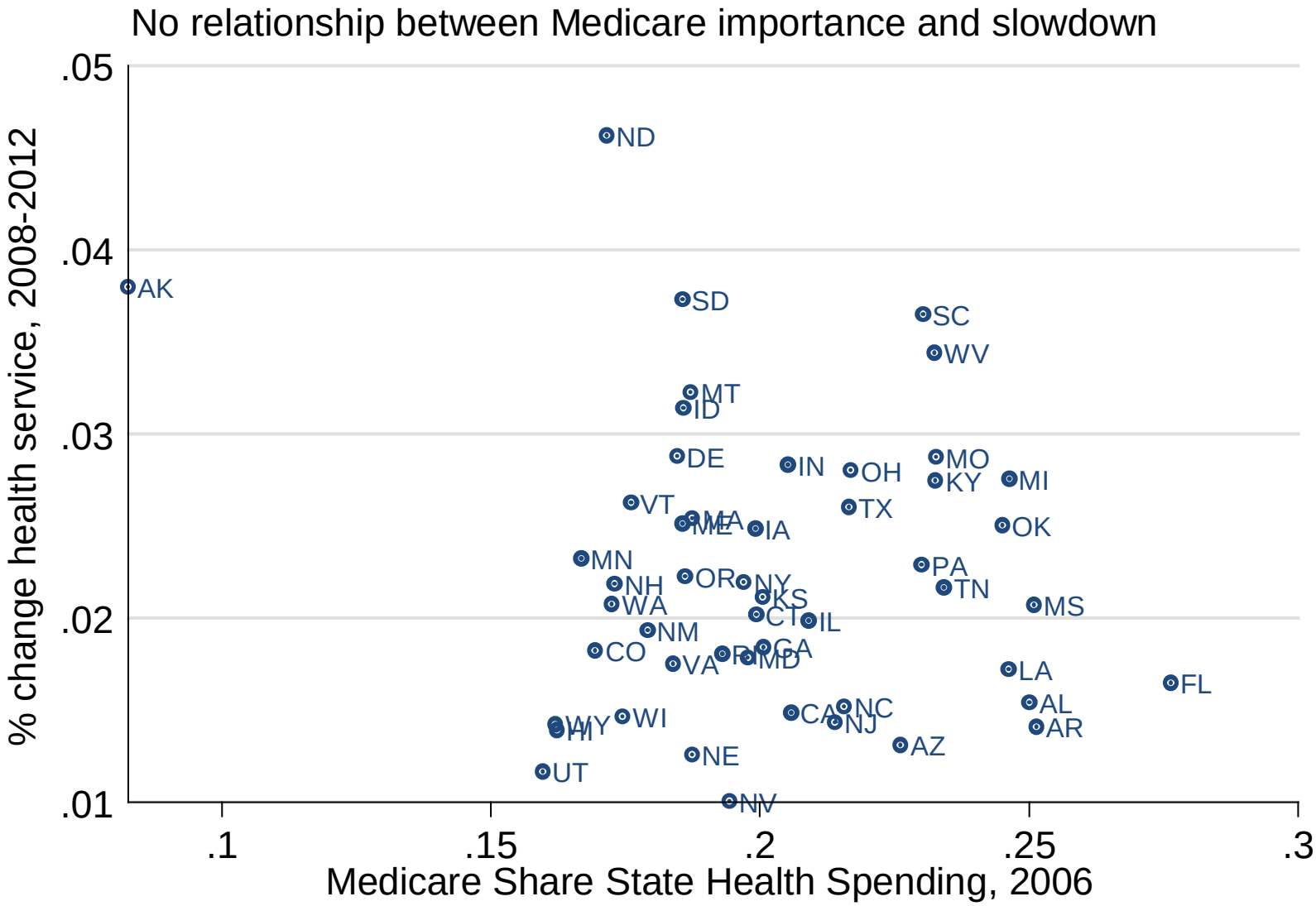
Relationship between Health Spending Growth and Income During Recession and Recovery

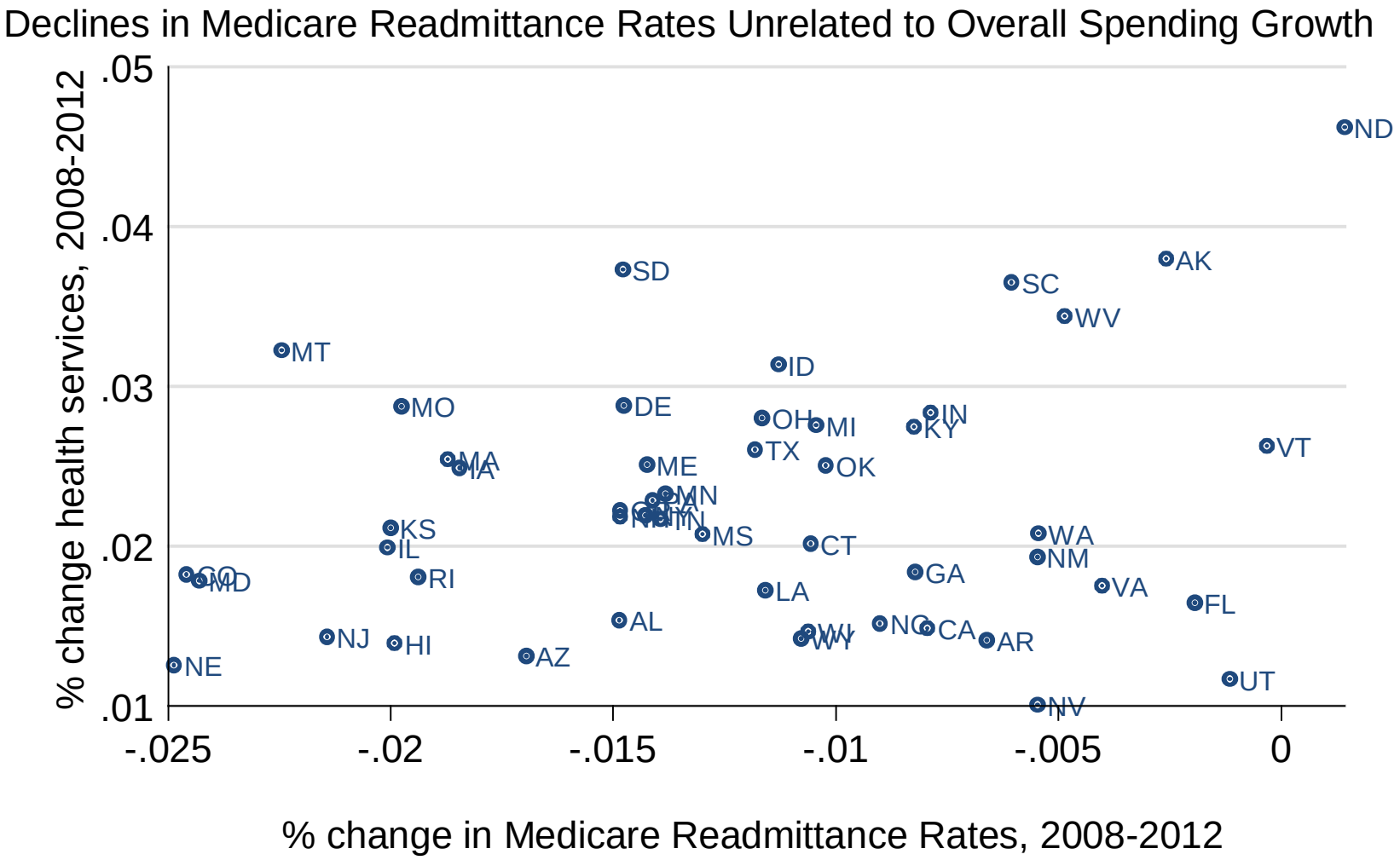
	Change in Personal Income 2007-2011	Change in Health Worker Wage	Rsq adj
Change in Health Worker Wage, 2009-2012	.43**		0.57
Change in MEPS Health Insurance Premium, 2009-2012	.60**		0.2
Change in MEPS Health Insurance Premium, 2009-2012	0.06	1.27**	0.31
BEA Health Service Spending, 2008-2012	.37**		.38
BEA Health Service Spending, 2008-2012	.23**	0.37	.4
Medicare FFS Spending, 2008-2012	.22**		0.15
Medicare FFS Spending, 2008-2012	0.05	.45*	0.19
Price and Risk Adjusted Medicare FFS, 2008-2012	-0.16	0.35	0

** significant at 5% level; * significant at 10% level

Possible Effects of the ACA?

- Did changes in Medicare affect changes in non-Medicare?
- Look at relationship between Non-Medicare spending growth, income and Medicare variables
- Medicare variables:
  - Importance of Medicare to health system, 2006
  - Growth in Medicare, 2008-2012
  - Reduction in readmissions, 2008-2012
  - Change in % beneficiaries with inpatient admissions, 2008-2012
  - Change in # outpatient visits per beneficiary, 2008-2012


No relationship between Medicare importance and slowdown
% change health service, 2008-2012
.05
.04
.03
.02
.01
.1
.15
.2
.25
.3
Medicare Share State Health Spending, 2006
ND
AK
SD
SC
WV
MT
ID
DE
IN
OH
MO
KY
MI
VT
TX
IA
OK
MN
PA
OR
NY
NH
TN
WA
KS
MS
CT
IL
NM
CO
VA
MD
LA
FL
AL
WI
CA
NC
NJ
AR
AZ
NE
UT
NV


Declines in Medicare Readmittance Rates Unrelated to Overall Spending Growth
% change health services, 2008-2012
.05
.04
.03
.02
.01
-.025
-.02
-.015
-.01
-.005
0
% change in Medicare Readmittance Rates, 2008-2012
ND
AK
SD
SC
WV
MT
ID
MO
DE
OH
MI
IN
KY
TX
VT
MA
IA
ME
OK
MN
KS
MS
CT
WA
IL
NM
GA
RI
LA
VA
FL
AL
NJ
HI
AZ
NC
CA
AR
NE
UT
NV

Relationship Between Medicare and non-Medicare Spending

	Change in Personal Income 2007-2011	Change in Medicare Variable	Rsq adj
Dependent Variable is Change In Real MEPS Premium, 2009-2012			
Medicare Variable:			
Growth in Medicare FFS Spending, 2008-2012	0.46**	.65*	.24
Growth in Price-and Risk-Adjusted FFS Medicare	.61**	0.31	0.2
Medicare Share of Total Health Spending, 2006	.56**	-0.08	0.2
Change in Medicare Readmissions. 2008-2012	.60**	0.12	0.18
Change in Medicare Admission Rate, 2008-2012	.61**	0.21	0.19
Change in Medicare Outpatient Visits, 2008-2012	.62*	-.05	0.18
Dependent Variable is Change In Real Per Capita Spending on Health Services, 2008-2012			
Medicare Variable:			
Growth in Medicare FFS Spending, 2008-2012	.34**	.15	0.38
Growth in Price-and Risk-Adjusted FFS Medicare Spending, 2008-2012	.37**	0.08	0.37
Medicare Share of Total Health Spending, 2006	.36**	-0.07	0.37
Change in Medicare Readmissions. 2008-2012	.36**	.22*	0.4
Change in Medicare Admission Rate, 2008-2012	.38*	0.16	0.4
Change in Medicare Outpatient Visits, 2008-2012	.30**	.13**	0.44

How much of a slowdown has there been accounting for GDP growth?

- Depends on relationship between GDP Growth and Health Spending
  - Reasonable range from this research: coefficient on current and lagged GDP = .4 to .8

- Depends on comparison period:
  - Compare entire 1993-2007 period and 2001-2007 period

All of slowdown in personal health less RX relative to 1993-2007 period accounted for by slower GDP

	GDP Coefficient = .8		GDP Coefficient = .6		GDP Coefficient = .4	
	Slowdown relative to		Slowdown relative to		Slowdown relative to	
	1993-2007	2000-2007	1993-2007	2000-2007	1993-2007	2000-2007
National Health Expenditures	0.3%	1.2%	0.7%	1.5%	1.1%	1.8%
Health Consumption	0.2%	1.1%	0.6%	1.4%	1.0%	1.7%
Personal Health Consumption	-0.2%	0.7%	0.3%	1.0%	0.7%	1.4%
Drugs	6.6%	6.0%	7.0%	6.4%	7.4%	6.7%
Dental	1.9%	2.2%	2.3%	2.6%	2.7%	2.9%
Durable and other non-durable goods ex drugs	-0.2%	0.0%	0.3%	0.3%	0.7%	0.7%
Nursing Home and Home Health	-0.2%	-0.3%	0.2%	0.0%	0.7%	0.3%
Physician and Other Professional	-0.5%	0.3%	-0.1%	0.6%	0.3%	0.9%
Hospital Services	-1.9%	-0.2%	-1.5%	0.1%	-1.1%	0.4%
Research, Administration, Public Health, Investment, Health Insurance Profits	2.5%	3.6%	3.0%	3.9%	3.4%	4.2%
NOTE:						
Hospital, Physician, Other Professional	-1.3%	0.0%	-0.9%	0.3%	-0.5%	0.6%
Personal Health Consumption Less RX	-0.9%	0.0%	-0.5%	0.4%	0.0%	0.7%

Conclusions

- Lots of evidence that health spending responds to current GDP: components of spending, national regressions, state regressions, recent cross-state

- Some response appears demand-side, but supply-side appears quite important as well.

- Medicare appears not to respond to economy in general, although did respond through wages this recession

- Not much evidence for ACA spillovers to non-Medicare

- With reasonable coefficients on GDP, and given patent cliff, not much evidence *so far* of major changes in health care cost growth