

Evaluating Fiscal Stimulus Packages: Before and After

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Based on joint research with
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Fiscal Stimulus Packages

U.S.A.:

- ❑ 2008: Mostly tax rebates
- ❑ 2009: ARRA: larger and more focus on G

Europe:

- ❑ 2008/9
 - ➔ The European Economic Recovery Plan
 - ➔ National plans: for example, in Germany, Konjunkturpaket 1 und 2

Other G20 countries: (IMF)

Two approaches to policy evaluation

(1) Simulations of models with counterfactuals

→ Natural to use *before* policy is implemented

- Cogan, Cwik, Taylor, Wieland, forthcoming *JEDC* 2010

→ But also used *after* policy is implemented

- Some seem to think there is new information.

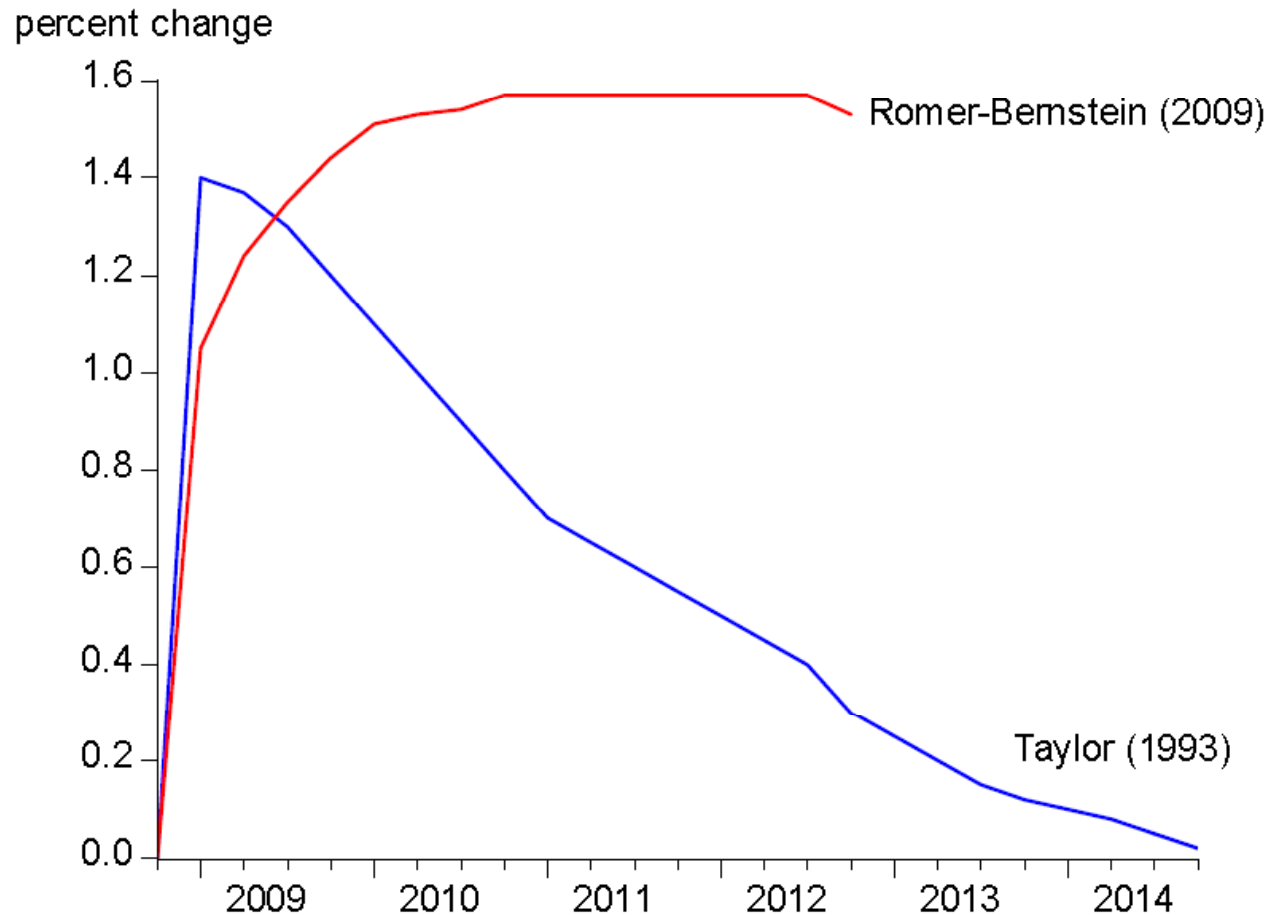
(2) Look at what actually happened and try to see if the policy worked

→ “Real time” policy evaluation: new information

→ Possible disadvantages

- May be too early to tell
- Only one patient, but...

Romer-Bernstein (2009) vs Taylor (1993) GDP Effect of Permanent 1% Increase in Government Purchases



Evidence of a lack of robustness?

The Government Purchases Multiplier

- Romer/Bernstein used **1.6 for 4 years**
 - average 2 models: unnamed firm & Fed
 - assume permanent increase in G
 - assume permanent interest rate peg
- Because of modelling uncertainty policy evaluations should be robust to alternative models and assumptions.
 - use new platform for a comparative approach to model-based policy analysis.

Alternative Model and Assumptions

- Model: Smets and Wouters (AER, 2007)
 - Estimated New-Keynesian DSGE model
 - Based on Christiano, Eichenbaun, Evans
 - Highlighted in Woodford's AEJ-Macro review
- Assumptions:
 - Interest rates constant for 1 (or 2) years then return to Taylor rule.
 - Actual ARRA spending plan.
- Range of sensitivity exercises.

Romer-Bernstein (09) vs Smets-Wouters (07)

- ❑ 1% permanent increase in government spending.
- ❑ 1 year of constant interest rates (2009), anticipated.

	Percentage increase in real GDP				
	2009Q1	2009Q4	2010Q4	2011Q4	2012Q4
Romer/Bernstein	1.05	1.44	1.57	1.57	1.55
Smets/Wouters	0.96	0.67	0.48	0.41	0.40

Romer-Bernstein (09) vs Smets-Wouters (07)

- ❑ 1% permanent increase in government spending.
- ❑ 2 years of constant interest rates (2009 and 2010), anticipated.

Percentage increase in real GDP					
	2009Q1	2009Q4	2010Q4	2011Q4	2012Q4
Romer/Bernstein	1.05	1.44	1.57	1.57	1.55
Smets/Wouters	1.03	0.89	0.61	0.44	0.40

ARRA 2009

Fiscal Year	Increase in Federal Purchases	Increase in Transfers to States, Localities	Increase in Federal Deficit*
2009	21	48	184
2010	47	107	400
2011	46	47	134
2012	36	8	36
2013	25	4	27
2014	27	0	22
2015	11	0	5
2016	-2	0	-8
2017	-3	0	-7
<u>2018</u>	<u>-2</u>	<u>0</u>	<u>-6</u>

Effect of ARRA on GDP

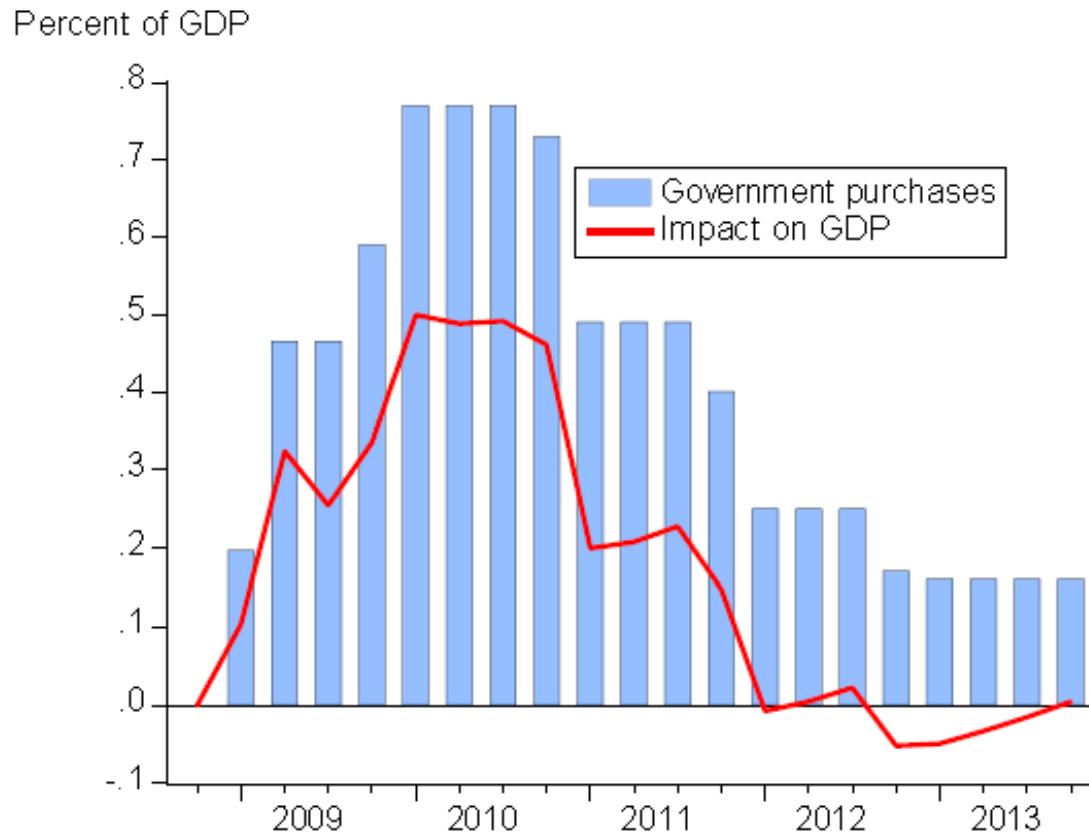


Figure 2. Estimated Output Effects of Government Purchases in the February 2009 Stimulus Legislation. (Government purchases equal federal purchases plus 60 percent of transfers to state and local governments for purchases of goods and services)

Effect on Private Spending

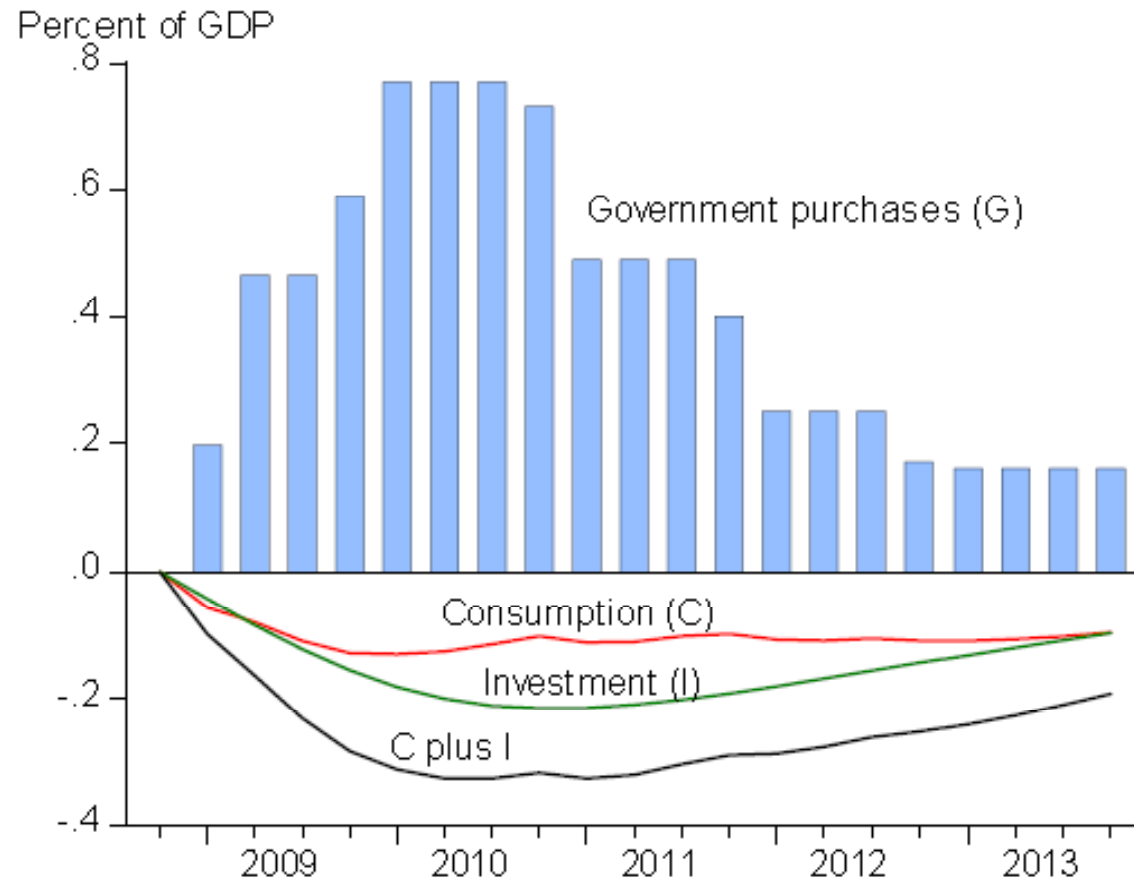


Figure 3. Crowding Out of Consumption and Investment in the February 2009 Stimulus Legislation (Government purchases are as in Figure 2)

CCTW: Impact of Total Package by 2010 Q4

+ .46 percent of GDP (due to G)

+ .19 percent of GDP (due to TaxTransfer,
back-of-the envelope
calculation)

= .65 percent of GDP

i.e. closer to $\frac{1}{2}$ rather than $3\frac{1}{2}$ million additional
jobs as estimated by Romer/Bernstein.

Sensitivity Analysis

1. Make model more Old Keynesian by adding rule-of-thumb households
2. Use alternative method to impose zero bound: simulate a state of deep recession where rate cannot go below zero-interest-rate floor.

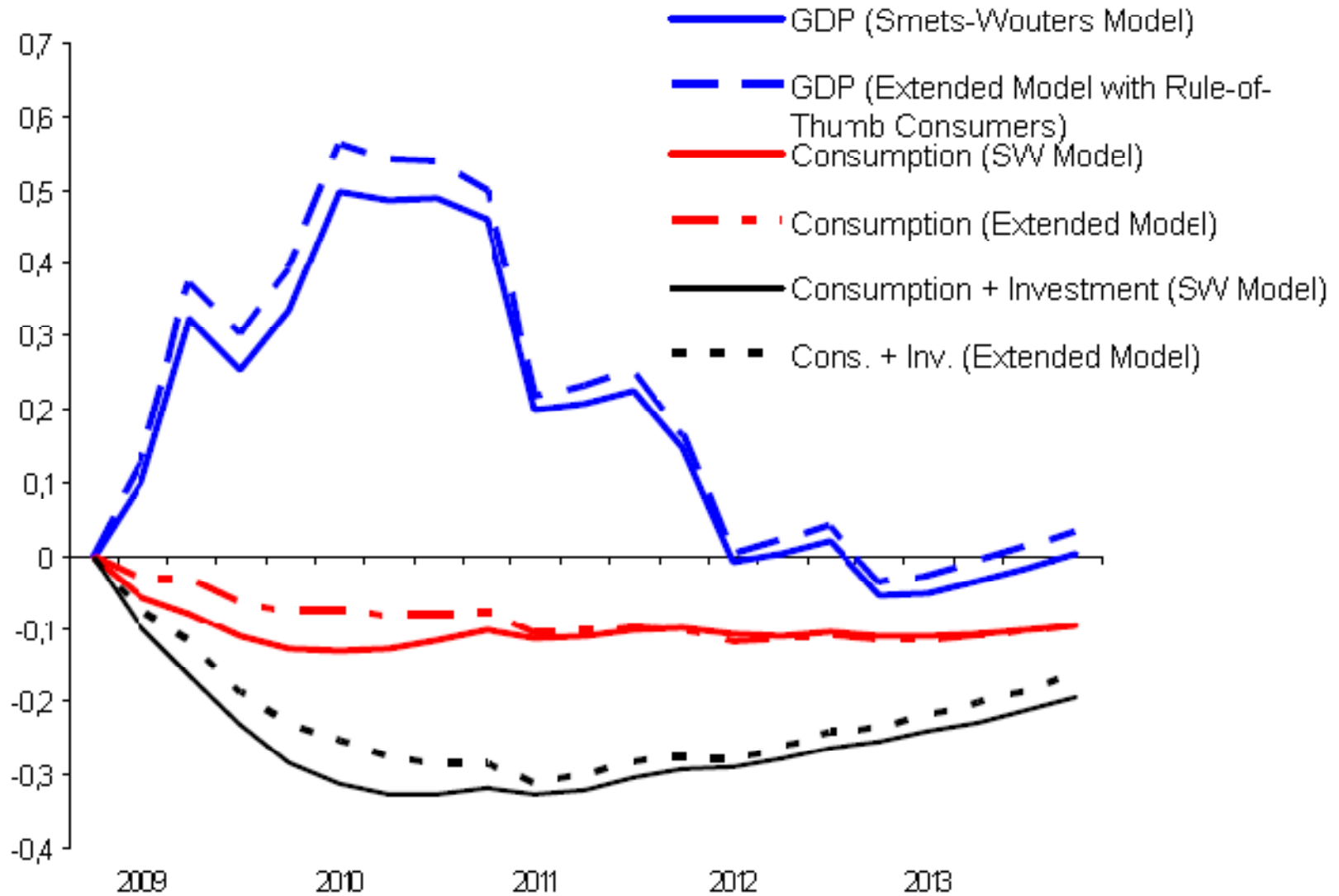
1. More Old Keynesian

- Extend the Smets-Wouters model to allow for two types of consumers.
 - rule-of-thumb'ers: simply consume current disposable income.
 - Rational's: forward-looking, optimizing consumption-savings choice.
 - Ricardian-equivalence fails: path of taxes matters, even though still lump-sum.
 - Include government debt and tax policy rule.

Estimate: 28 Percent Are of Households are Rule-of-Thumb

		Smets- Wouters (2007)	Our Estimates of the New-Keynesian DSGE Model with Rule-of-Thumb Consumers			
		post. mean	prior mean	Post. mode	s.d.	post. mean
ω	Share of non-Ricardian households	-	0.5	0.286	0.062	0.2651
σ_c	Inverse of intertemporal elasticity of substitution	1.380	1.500	1.332	0.134	1.286
h	Degree of habit formation	0.713	0.700	0.660	0.055	0.673
ξ_p	Sticky prices (Calvo parameter)	0.652	0.500	0.639	0.058	0.645

Effects of ARRA Spending

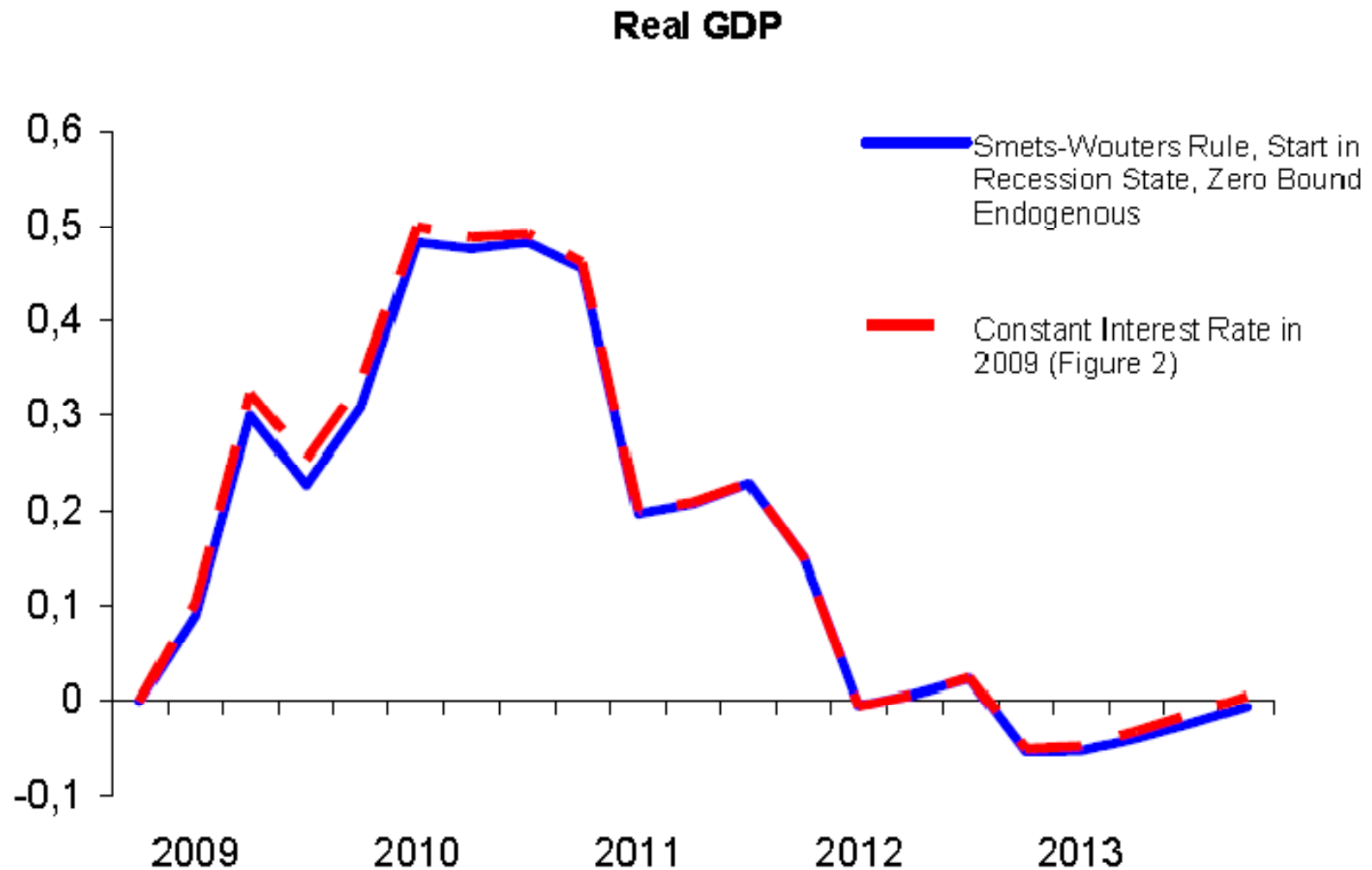


2. Recession and zero bound

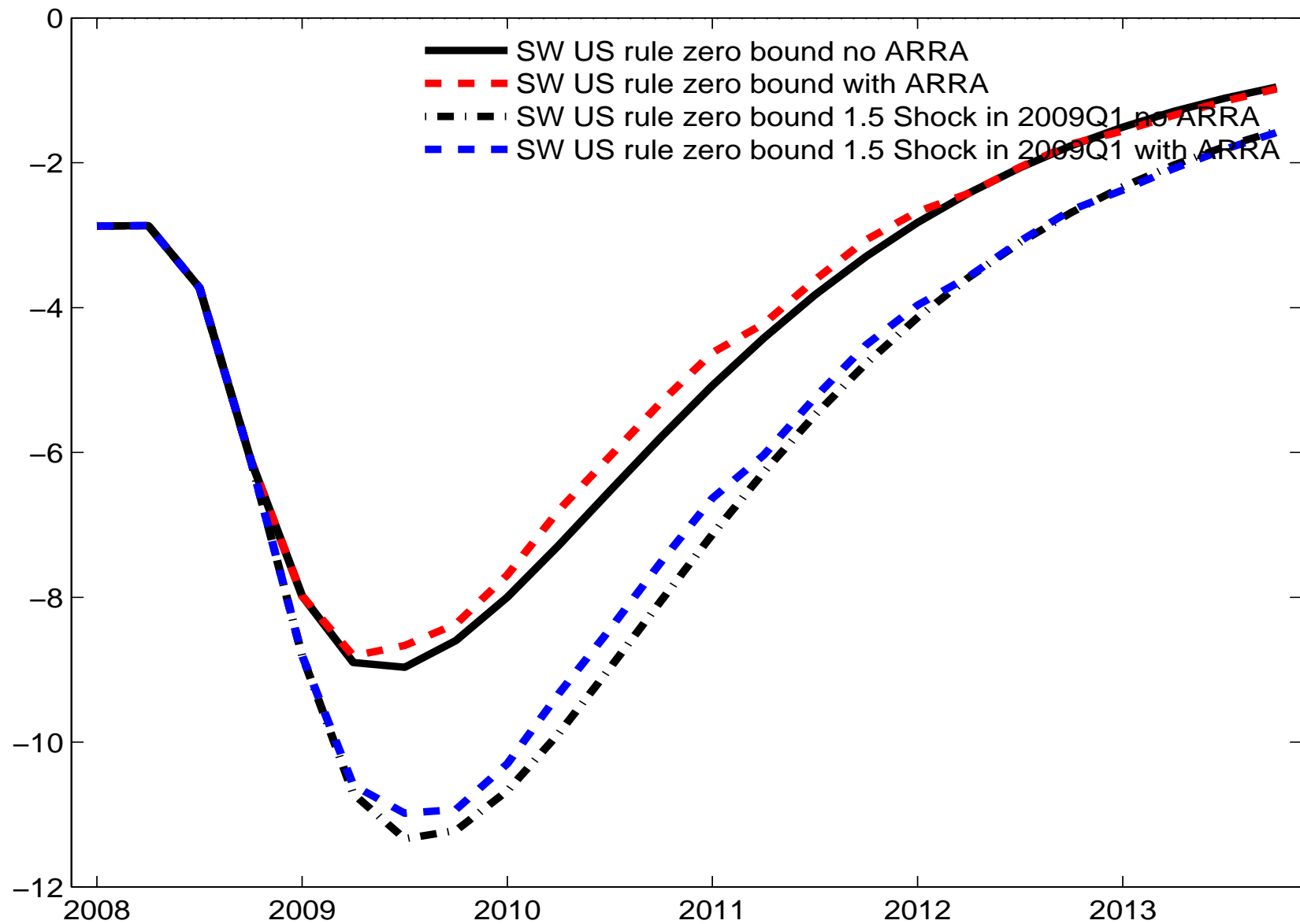
□ Baseline scenario:

- Simulate SW model with actual US data up to and including 2009:Q1.
- then project forward from 09:Q1 onwards with and without fiscal stimulus.
- Compute difference.
- with Fed following Taylor rule, the zero bound is not binding when simulating the SW 07 model. If SW rule instead...

Impact of ARRA Spending



What if recession was deeper?

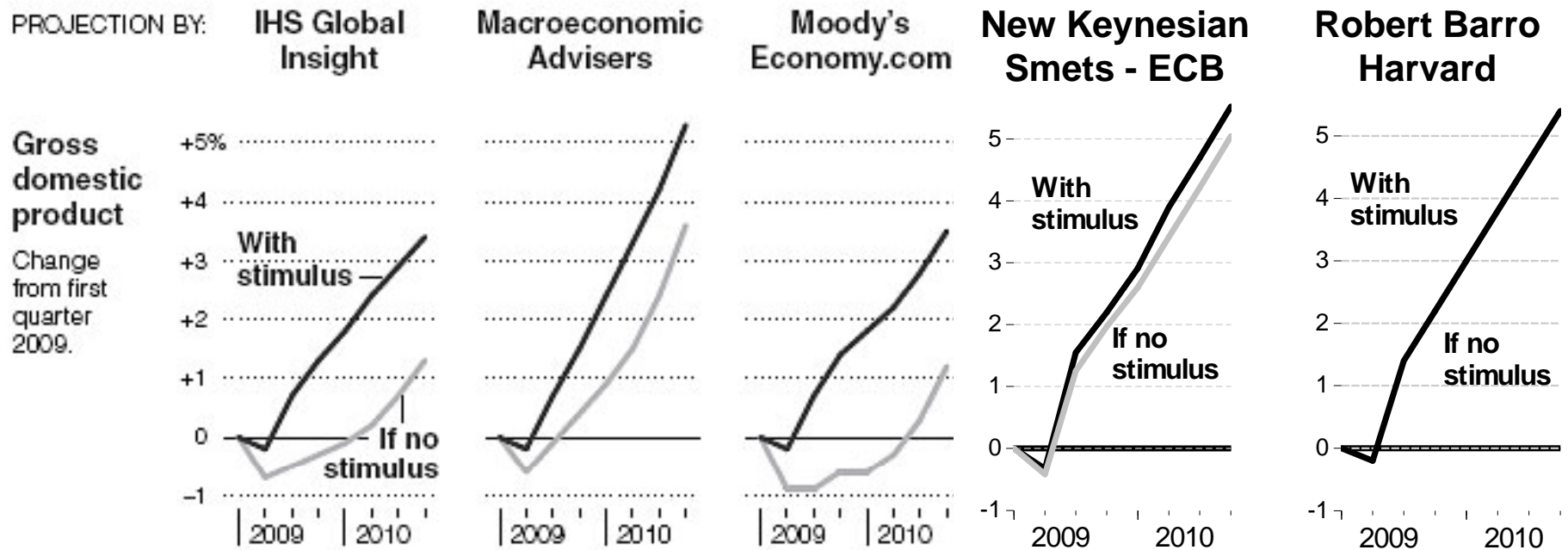


Now on to the “after” question: “Is It Working?”

- ❑ Most attempts to answer this question continue to look at the same model simulations
 - ➔ The answer is built into the model just as much “after” as “before”
- ❑ Consider the following example based on a news article from last November

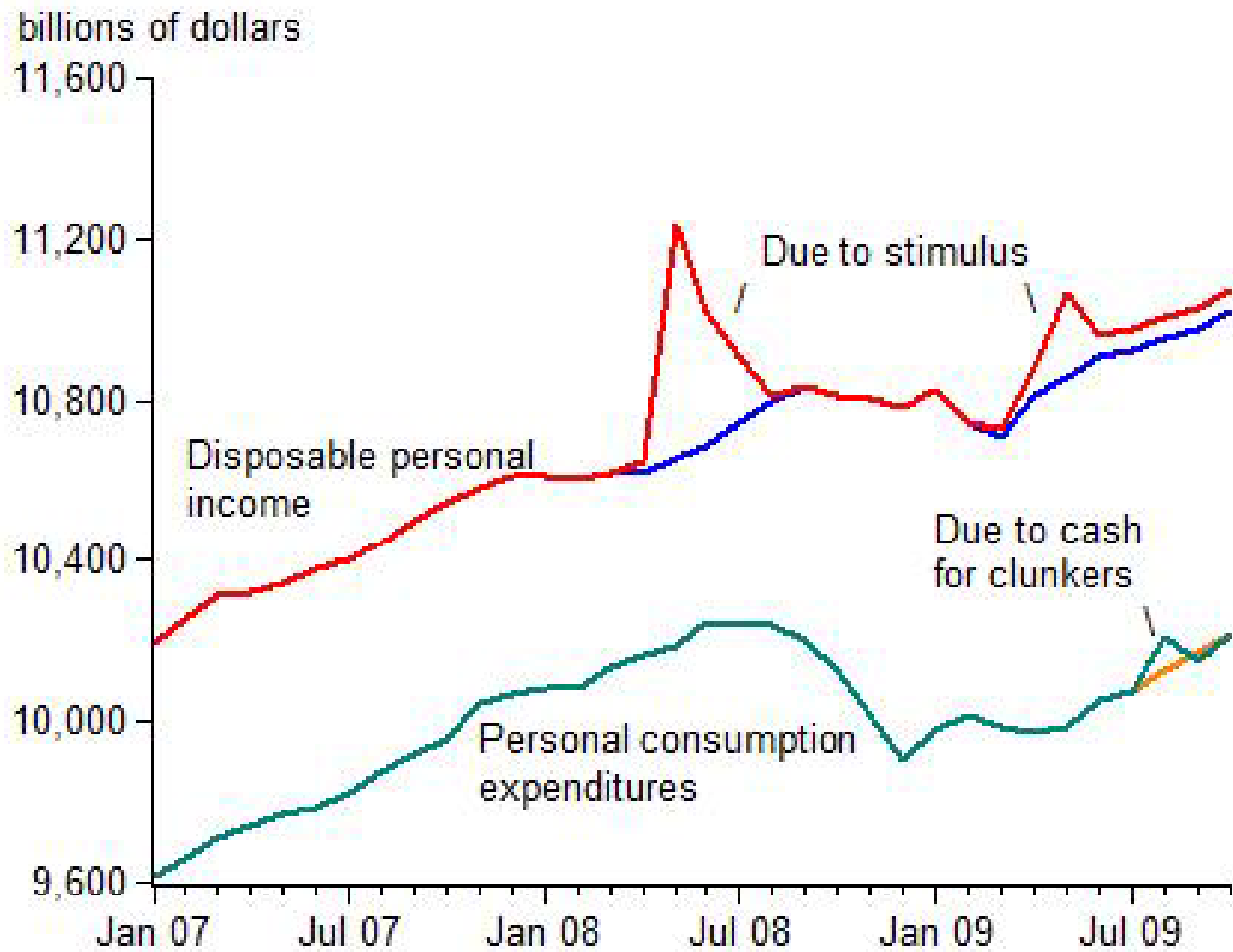
Projections Show It Could Have Been Worse

Projections of economic indicators by three companies that specialize in macroeconomic forecasting show similar trends when comparing how each indicator would do with and without the federal stimulus package.



“The accumulation of hard data and real-life experience has allowed more dispassionate analysts to reach a consensus that the stimulus package, messy as it is, is working”

New York Times November 12, 2009



Change in growth and contributions - 1st to 2nd quarter
Percentage points

Real GDP	5.7	
Consumption	-1.1	
Investment	5.9	
Net Exports	-1.0	
Government	1.9	
Defense		1.0
Non Defense		0.2
State and Local		0.7

