

Discussion of

“Taxes and Business Investment”  
Alan Auerbach and Kevin Hassett

by Matthew D. Shapiro  
University of Michigan

Conference on Tax Policy Lessons from the 2000s  
American Enterprise Institute, May 30, 2008



# Overview of Bonus Depreciation Policy

## *2002 Tax Bill (JCWAA)*

- Bonus depreciation allowance (30%)
  - a. Immediately deduct 30%
  - b. Remaining 70% depreciated as normal
- Must have tax recovery period  $\leq 20$  years
- Purchase before January 1, 2005

## *2003 Tax Bill (JGTRRA)*

- Bonus depreciation increased to 50%
- Expiration remains January 1, 2005 for most equipment
- 
- Extension of bonus through 2005 for large projects

## *2008 Economic Stimulus*

- Bonus depreciation of 50% in 2008
- Same eligibility rules as 2003 law

## **Salient Features of Bonus Depreciation**

- Temporary investment incentive

## Salient Features of Bonus Depreciation

- Temporary investment incentive
- Value of bonus differs across tax lives
  - Bonus of modest value for most equipment because depreciation already accelerated
  - Bonus valuable for long-lived equipment (quasi-structures)
  - No bonus for capital goods with >20 year lives (structures)

## Salient Features of Bonus Depreciation

- Temporary investment incentive
- Value of bonus differs across tax lives
  - Bonus of modest value for most equipment because depreciation already accelerated
  - Bonus valuable for long-lived equipment (quasi-structures)
  - No bonus for capital goods with >20 year lives (structures)
- Discontinuity at 20-year lifetime

## **Complexities for Studying Bonus Depreciation**

- Substantial increase in Section 179 Expensing

## **Complexities for Studying Bonus Depreciation**

- Substantial increase in Section 179 Expensing
- Uncertainty about expiration

## **Complexities for Studying Bonus Depreciation**

- Substantial increase in Section 179 Expensing
- Uncertainty about expiration
- Time to build, gestation lags for large projects benefiting from bonus

## Subsidy from 50% bonus

Tax Life (years)	Subsidy	Share in GDP	Examples
5	0.8-1.3%	5.1%	Computers; office equipment; autos and trucks
7	1.1-1.8%	2.7%	Miscellaneous equipment, office furniture, agricultural equipment
10	1.6-2.8%	0.0%	Water transportation equipment, single purpose agricultural structures
15	2.6-3.9%	0.3%	Radio towers; cable lines; pipelines; electricity generation and distribution systems, drainage systems, docks, bridges; engines and turbines.
20	3.3-4.8%	0.3%	Farm buildings; railroad structures, telephone communications, electric utilities, water utilities structures including dams, and canals
39	0%	1.7%	Commercial structures.

## **Analysis of 2002-2004 Bonus Depreciation [House-Shapiro, *AER* (forthcoming)]**

Theoretical result: Temporary investment incentives

- Price of long-lived investment goods moves by exactly amount of the subsidy

## **Analysis of 2002-2004 Bonus Depreciation [House-Shapiro, *AER* (forthcoming)]**

Theoretical result: Temporary investment incentives

- Price of long-lived investment goods moves by exactly amount of the subsidy
- Requires long-lived capital and temporary incentives

## **Analysis of 2002-2004 Bonus Depreciation [House-Shapiro, *AER* (forthcoming)]**

Theoretical result: Temporary investment incentives

- Price of long-lived investment goods moves by exactly amount of the subsidy
- Requires long-lived capital and temporary incentives
- Implication follows from arbitrage alone

## **Analysis of 2002-2004 Bonus Depreciation [House-Shapiro, *AER* (forthcoming)]**

Theoretical result: Temporary investment incentives

- Price of long-lived investment goods moves by exactly amount of the subsidy
- Requires long-lived capital and temporary incentives
- Implication follows from arbitrage alone
- Shadow price (reflecting internal adjustment costs)
- Can infer elasticity of supply from quantities alone

Application of result to 2002-2004 bonus depreciation:  
*Quantities of Investment*

- Purchases of long-lived responded by up to 40%

Application of result to 2002-2004 bonus depreciation:  
*Quantities of Investment*

- Purchases of long-lived responded by up to 40%
- Subsidy roughly 4%

Application of result to 2002-2004 bonus depreciation:  
*Quantities of Investment*

- Purchases of long-lived responded by up to 40%
- Subsidy roughly 4%
- Elasticity of supply therefore about 10

Application of result to 2002-2004 bonus depreciation:  
*Price of Investment*

- No discernable movements in prices

Application of result to 2002-2004 bonus depreciation:  
*Price of Investment*

- No discernable movements in prices
- Explanations
  - Internal adjustment cost
  - Variance of price movements swamp subsidy
  - Measurement issues

## **Examine investment by type**

- Use structures as control (no bonus)

## **Examine investment by type**

- Use structures as control (no bonus)
- Overstates effect (no controls for GE effects)

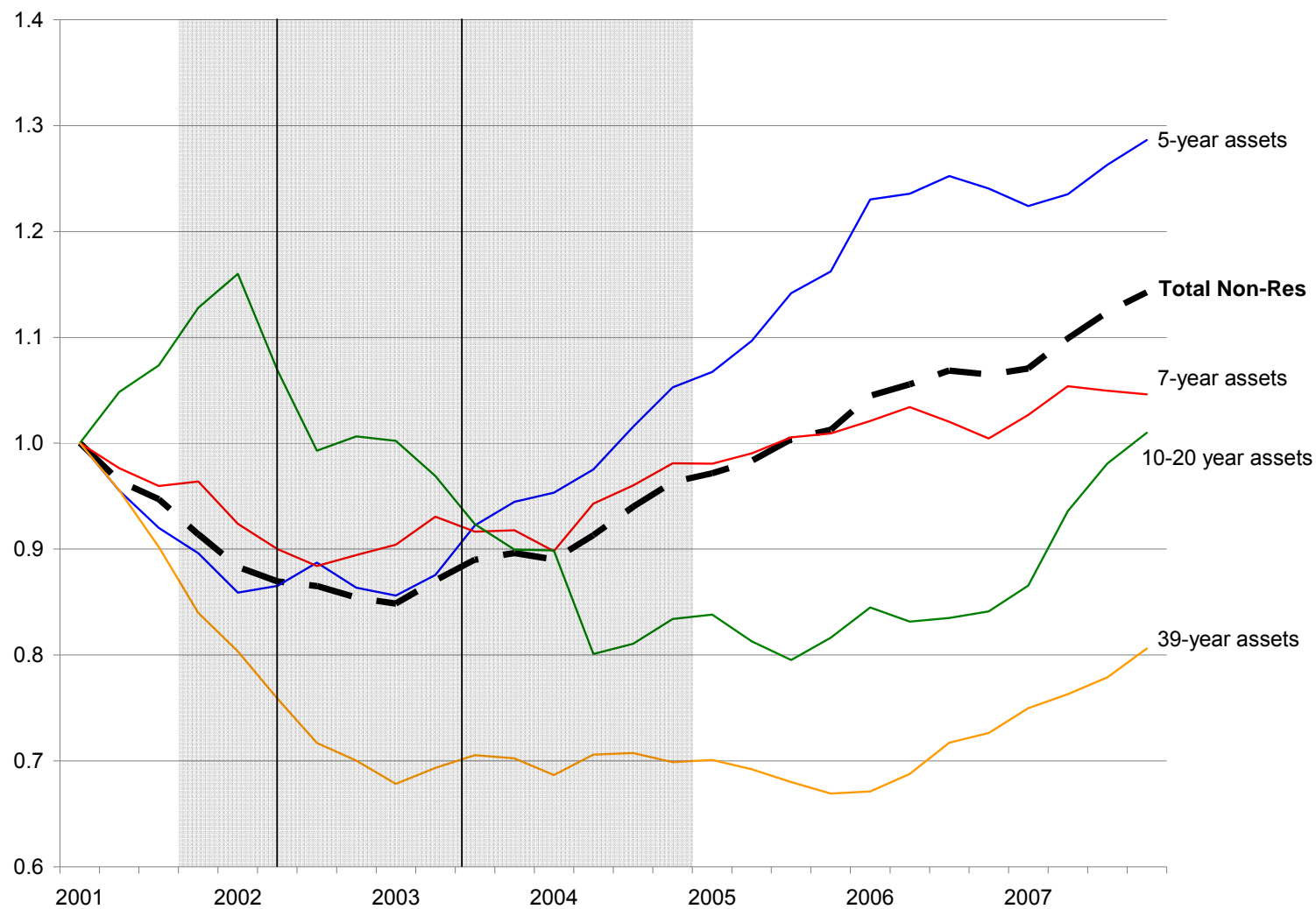
## Examine investment by type

- Use structures as control (no bonus)
- Overstates effect (no controls for GE effects)
- Results
  - Large effects for 10-20 year capital
  - Timing: Anticipation/Expiration
  - 2008:1—no effects of 2008 policy yet

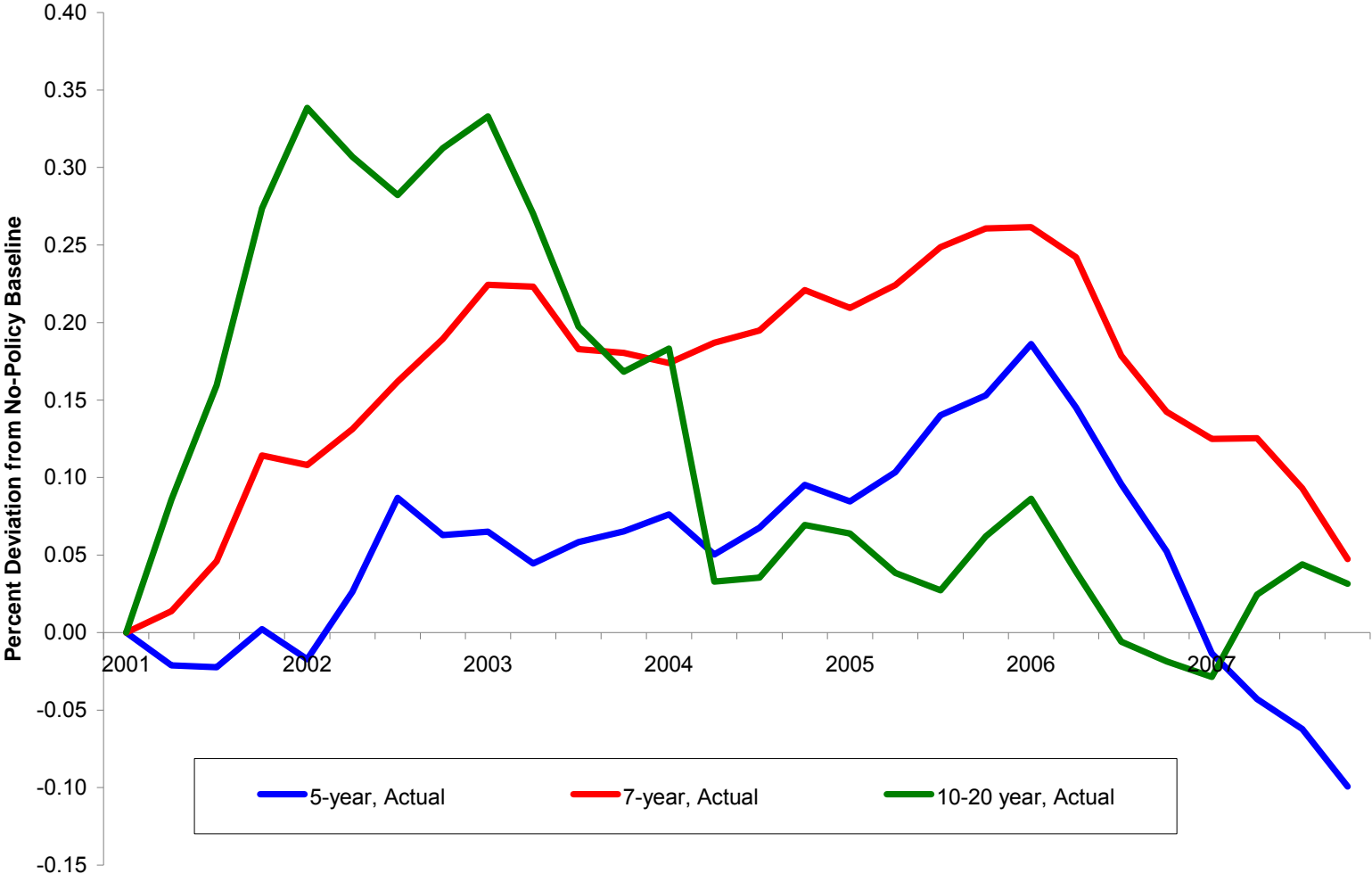
## Examine investment by type

- Use structures as control (no bonus)
- Overstates effect (no controls for GE effects)
- Results
  - Large effects for 10-20 year capital
  - Timing: Anticipation/Expiration
  - 2008:1—no effects of 2008 policy yet
- Thanks to Dan Wilson (FRB San Francisco)

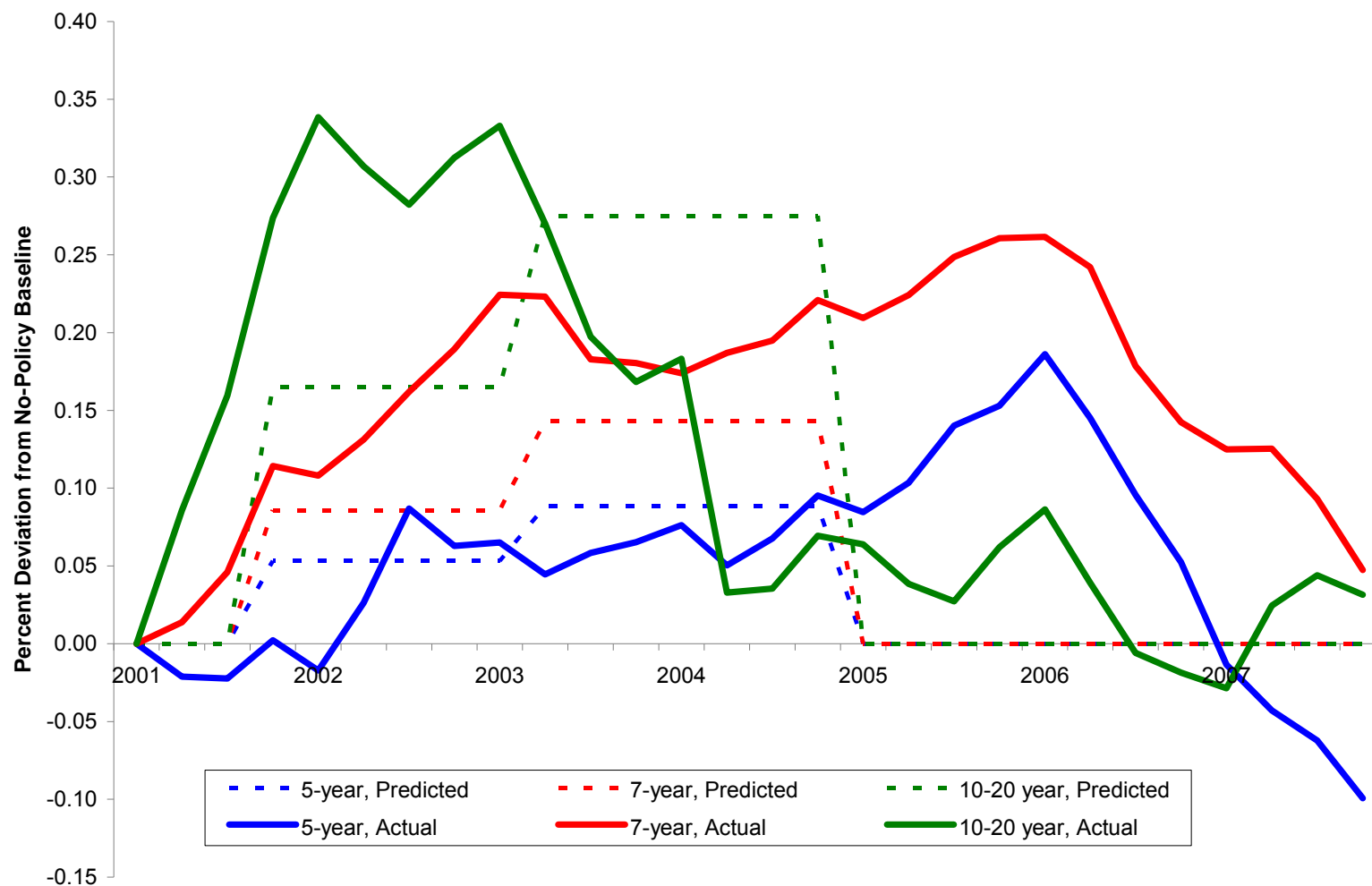
# Quarterly Real Investment, by Asset Class, 2001:1=1



# Actual Investment Response, by Asset, Relative to Structures



## Predicted vs. Actual Investment Response, by Asset, Relative to Structures



## Temporary Investment Incentives: Other Implications

*No pothole after expiration*

- Burst of investment in long-lived capital moves investment forward over many years, not particularly from period following expiration
- No *pothole* in level of output/invest

## Temporary Investment Incentives: Other Implications

*User cost formula: Approach with caution*

- Price (shadow price) movements exactly offset investment subsidy
- ⇒ User cost should not change across onset/expiration of *temporary* subsidy for *long-lived* capital

## Temporary Investment Incentives: Other Implications

*User cost formula: Approach with caution*

- Price (shadow price) movements exactly offset investment subsidy
  - ⇒ User cost should not change across onset/expiration of *temporary* subsidy for *long-lived* capital
- $MPK = \text{user cost}$ 
  - ⇒ very different implications for policy analysis:
    - temporary incentives:  $K$  quasi-fixed
    - lasting incentives: steady state changes in  $K$

## **Temporary Investment Incentives: Other Implications**

*Non-movement of observed investment prices in 2003/2004*

- Consistent with theory if adjustment costs internal
- Yet, perhaps surprising that no external price effects for categories of investment that moved by 40%
- Data quality for prices of quasi-structures?

Thanks to Alan Auerbach and Kevin Hassett for  
a valuable survey!