

*September 20, 2012*

*Eroding Our Foundation:  
Sequestration's Impact on R&D,  
Innovation and U.S. Economic  
Growth*

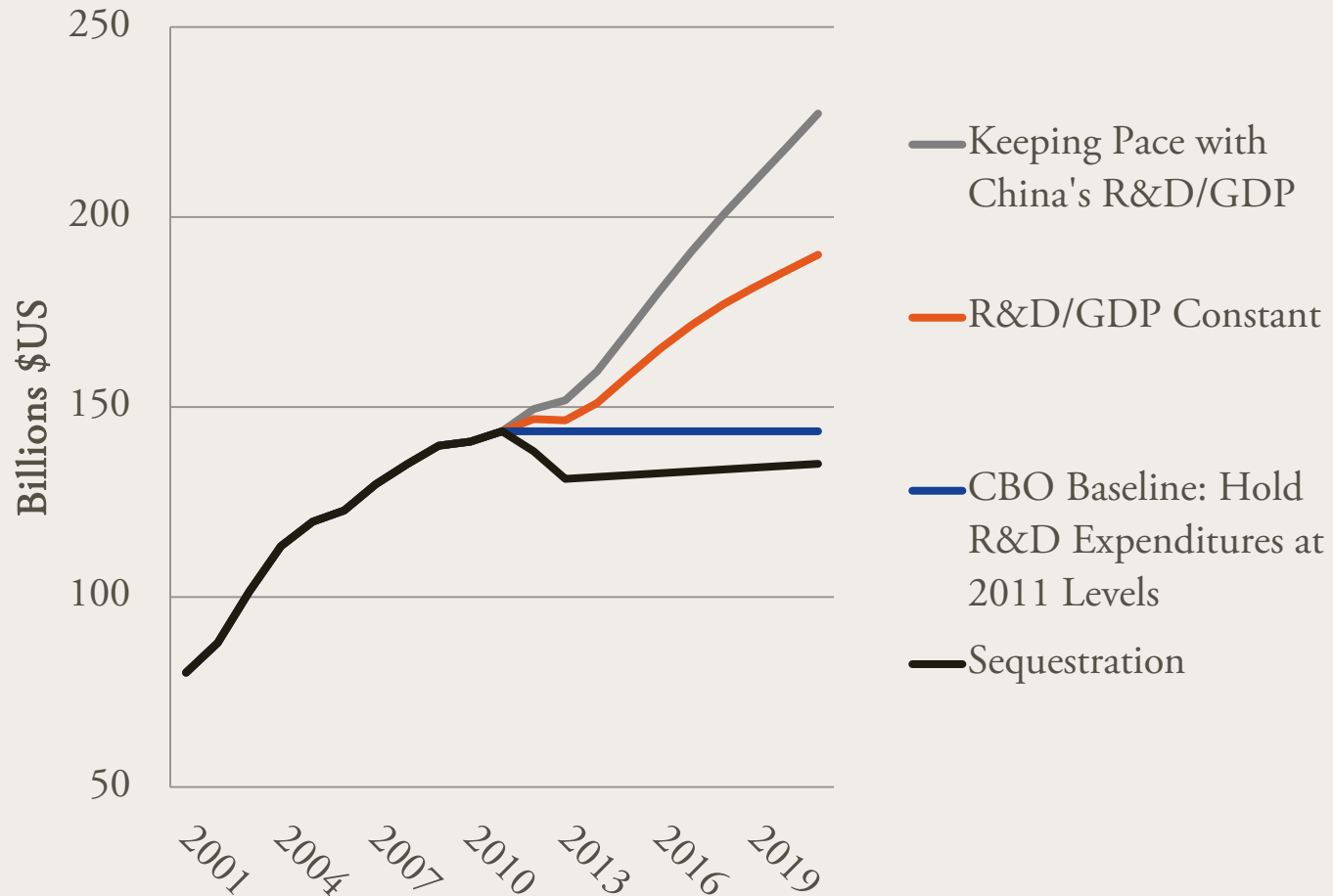
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# ■ The Report

- Estimates the Impact of Sequestration on Federally-Funded R&D: 2013-2021
- Estimates the Economic Impacts of Diminished R&D:
  - GDP
  - Knowledge Base
  - Employment

# ■ R&D Expenditure Paths



## ■ R&D Expenditure Shortfalls (\$2012 Millions)

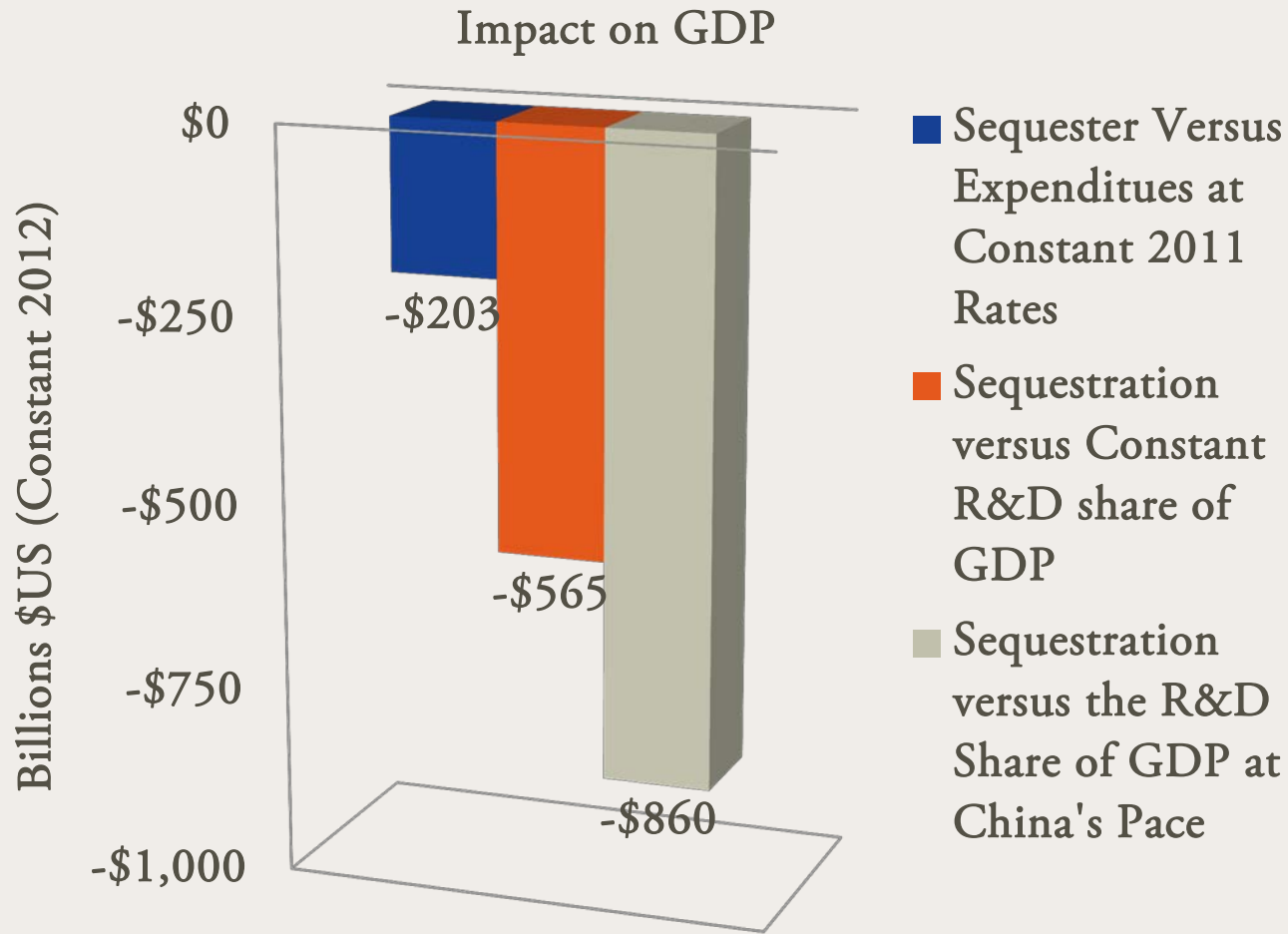
Year	Sequestration vs. R&D at 2011 Level	Sequestration vs. Stable R&D Share of GDP	Sequestration vs. Expanding R&D Share of GDP at China's Rate
<b>2013</b>	-\$12,484	-\$15,326	-\$20,646
<b>Cumulative: 2013-2021</b>	-\$94,976	-\$329,856	-\$510,930

## ■ Federal R&D Drives Innovation & Growth

For every 1 percent addition to the U.S. R&D capital stock, productivity and GDP grow by 0.13 percent.



# R&D Cuts Reduce GDP



R&D Funding Shortfalls and the Related Losses in Real GDP 2013-2021 Cumulative Effect, Sources: NSF, OMB, CBO, BEA, ITIF

# ■ R&D Cuts Reduce New Knowledge

	Journal Publications	Patents
<b>2013</b>	<b>-9.2%</b>	<b>-3.3%</b>
<b>2013-2021</b>	<b>-7.8%</b>	<b>-2.8%</b>

(Sequestration Compared to CBO Baseline)

# ■ R&D Cuts Reduce Jobs

	“Keynesian” Effect	“Schumpeterian” Effect	Net Effect
<b>2013</b>	<b>-124,837</b>	<b>-94,472</b>	<b>-219,308</b>
<b>Average Annual Losses: (2013-2016)</b>	<b>-117,771</b>	<b>-81,453</b>	<b>-199,224</b>

(Sequestration Compared to CBO Baseline)



- Not Everything Should Be On the Table





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# Innovation Illustration: Gene Sequencing



Ph.D. supported by NIH

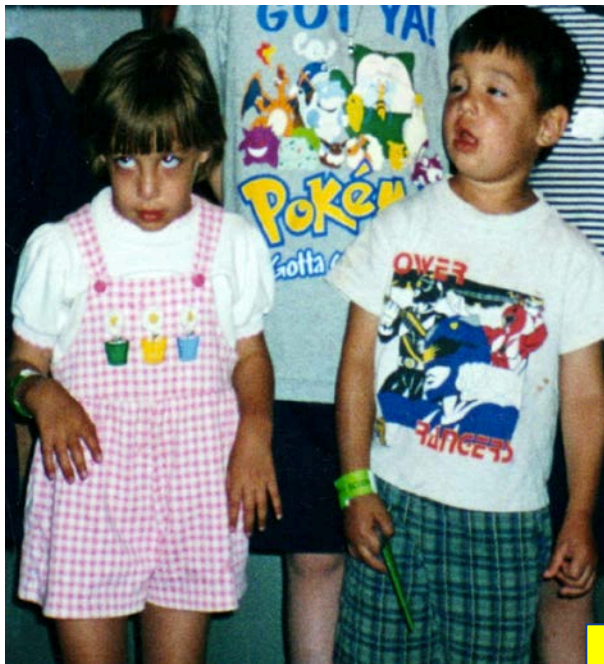
Early technology development supported by NIH SBIR

Human Genome Project: \$3.8 billion, 10 year international effort led by U.S. maps first complete human genome in 2003

\$100Ms of private capital; multiple successful start ups

Battelle analysis: \$798 Billion in US economic benefit so far. Platform technology that will transform research, healthcare, energy, agriculture, public health

This month: started shipping the Ion Proton desktop gene sequencer, capable of *sequencing a full human genome in a few hours for a few thousand dollars*



### ▪ **Twins Alexis and Noah Beery**

- Suffered profound symptoms for 14 years
- Thought to be cerebral palsy
- \$M spent looking for a diagnosis, treatment
- Sequencing in Baylor study uncovered the cause
- Symptoms stopped with simple prescription
- Father is Life Technologies CIO



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