

Introduction to the U.S. Federal Budget

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for Switzer Foundation Environmental
Leadership Program

AAAS R&D Budget and Policy Program

<http://www.aaas.org/spp/rd>

See the “Seminars and Presentations” section for
copies of this presentation.

Federal Policy

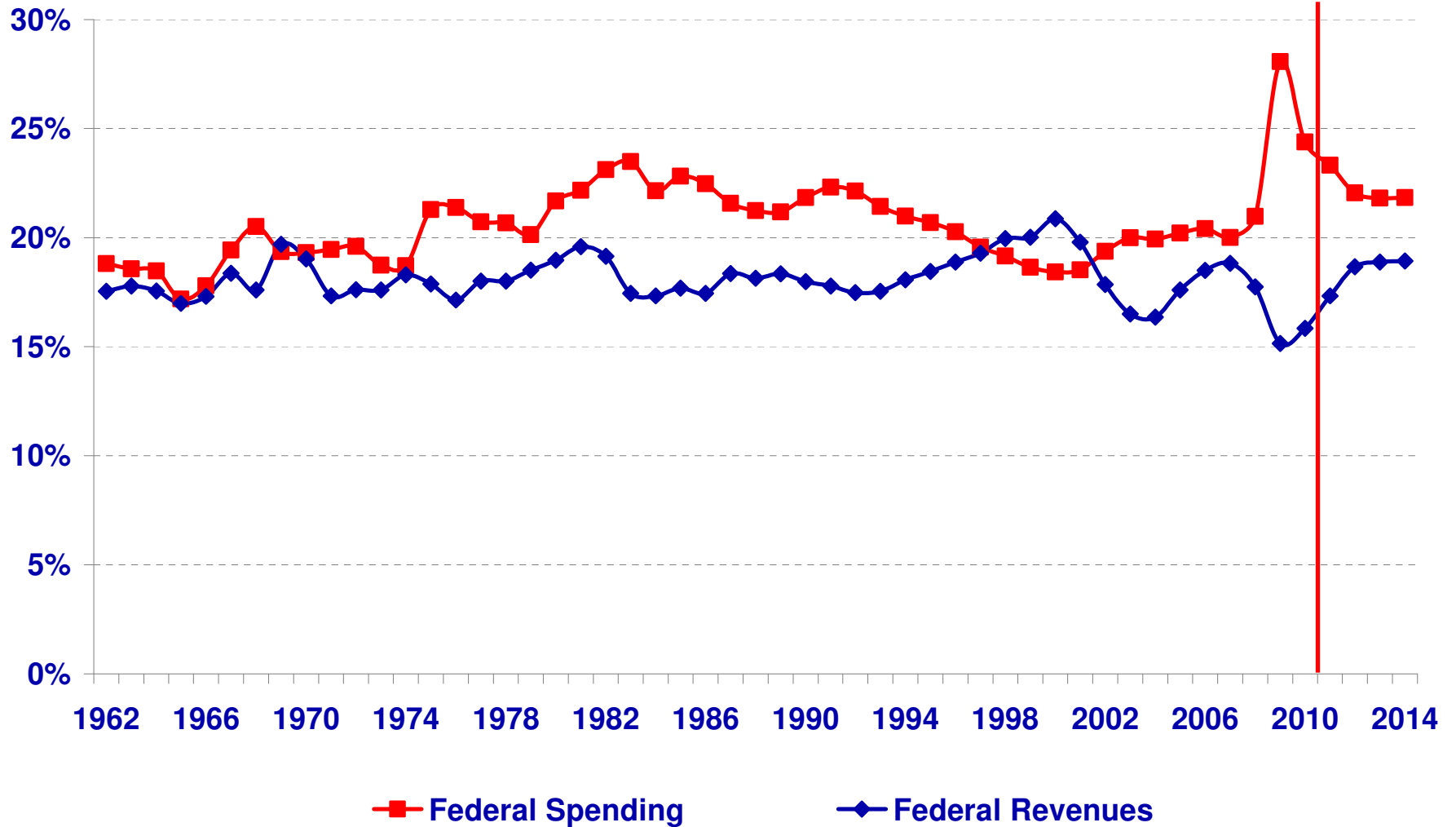
- How does the federal government implement policy?
- The budget is the primary way Congress directs U.S. policy and priorities
 - Almost all policy involves money, directly or indirectly
 - The budget cycle drives decision-making
 - Affects the health of U.S. science and engineering
 - \$150.5 billion on research and development
 - 60% of all university R&D is federally funded
 - Education and workforce training

The U.S. Federal Budget in FY 2010

- Total Budget: \$3.6 trillion
 - Over 1/5 of the total U.S. economy
- Total Receipts: \$2.3 trillion
 - Mostly from income and payroll taxes
- Deficit: \$1.3 trillion
 - \$134 billion borrowed from Social Security

Federal Spending and Revenues

(percent of GDP)



Source: *Budget of the United States Government, FY 2010*.
FY 2009 data are estimates. FY 2010-2014 data are budget projections.
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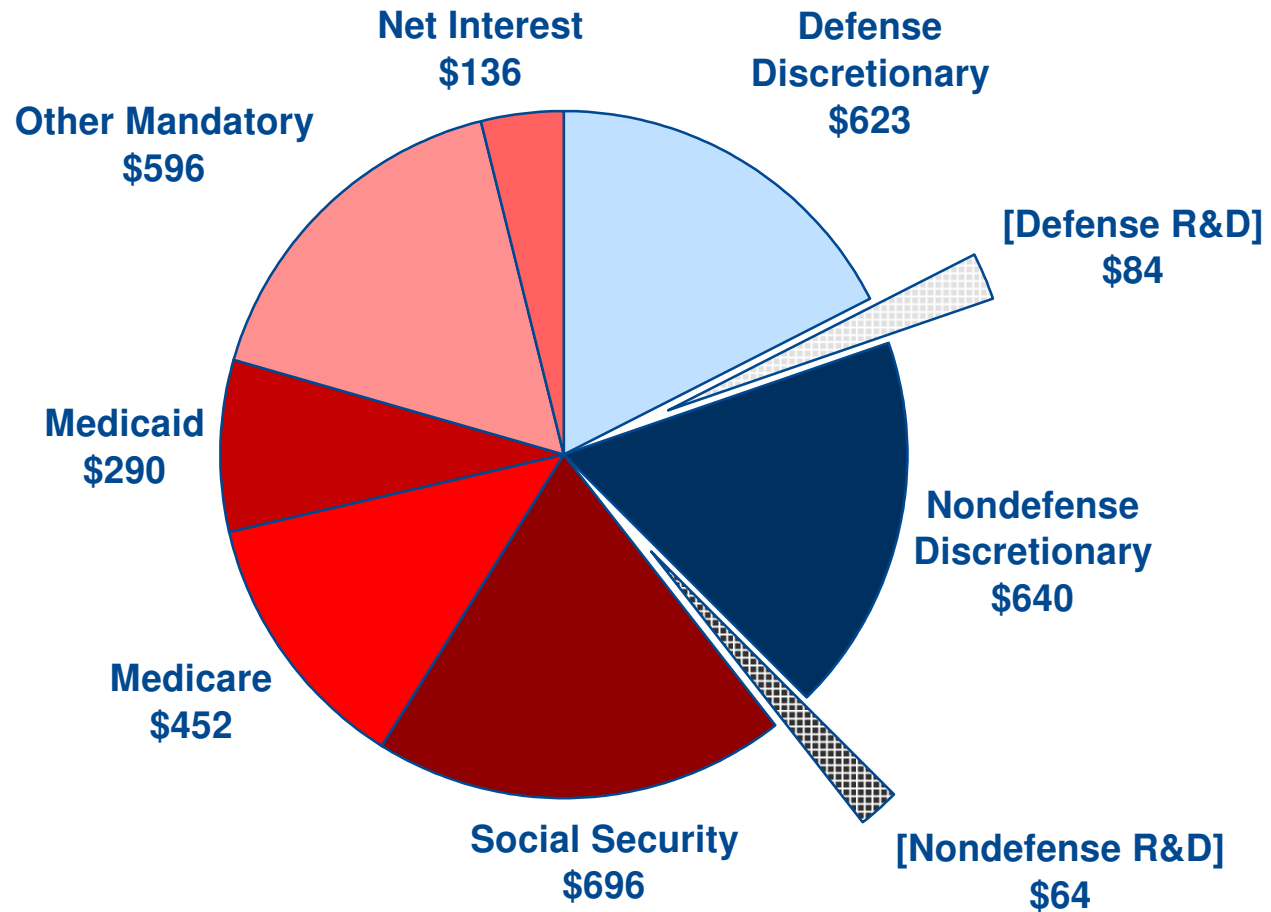
Discretionary vs Mandatory Spending

- Mandatory Spending (Entitlements)
 - Social Security, Interest on the debt, Medicare, etc.
 - Only adjusted by act of Congress
- Discretionary Spending
 - Military, salaries, construction, domestic programs, R&D, etc.
 - Appropriated to each agency in yearly budget
- FY 2010
 - \$1.4 trillion discretionary spending (9.1% increase)
 - \$704 billion nondefense spending (16.0% increase)

Composition of the Proposed FY 2010 Budget

Total Outlays = \$3.6 trillion

outlays in billions of dollars



Source: *Budget of the United States Government FY 2010*

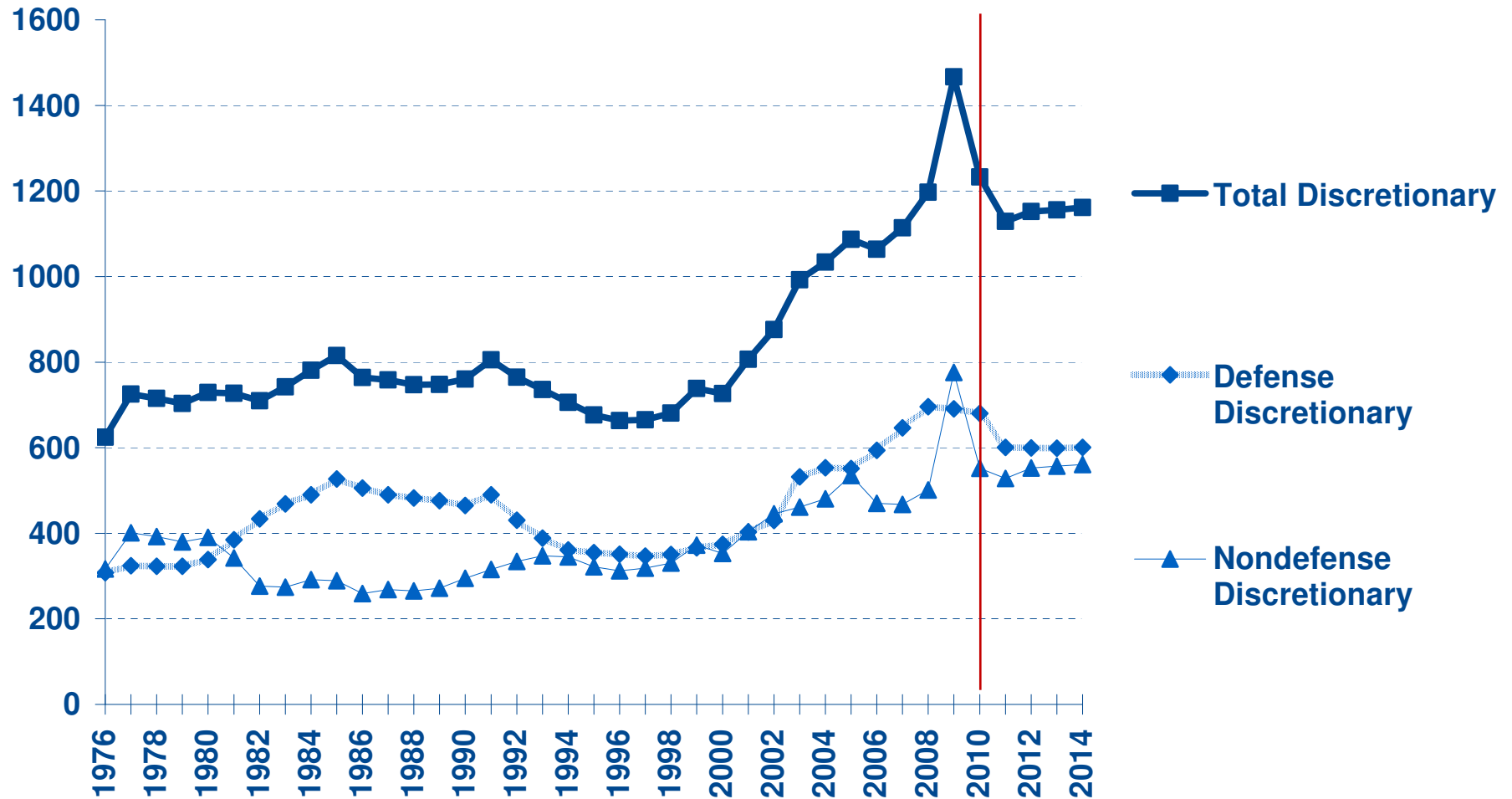
Projected unified deficit is \$1.3 trillion.

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Trends in Discretionary Spending, FY 1976-2014

outlays in billions of constant FY 2009 dollars



Source: *Budget of the United States Government, FY 2010.*

FY 2009-2014 data are budget projections.

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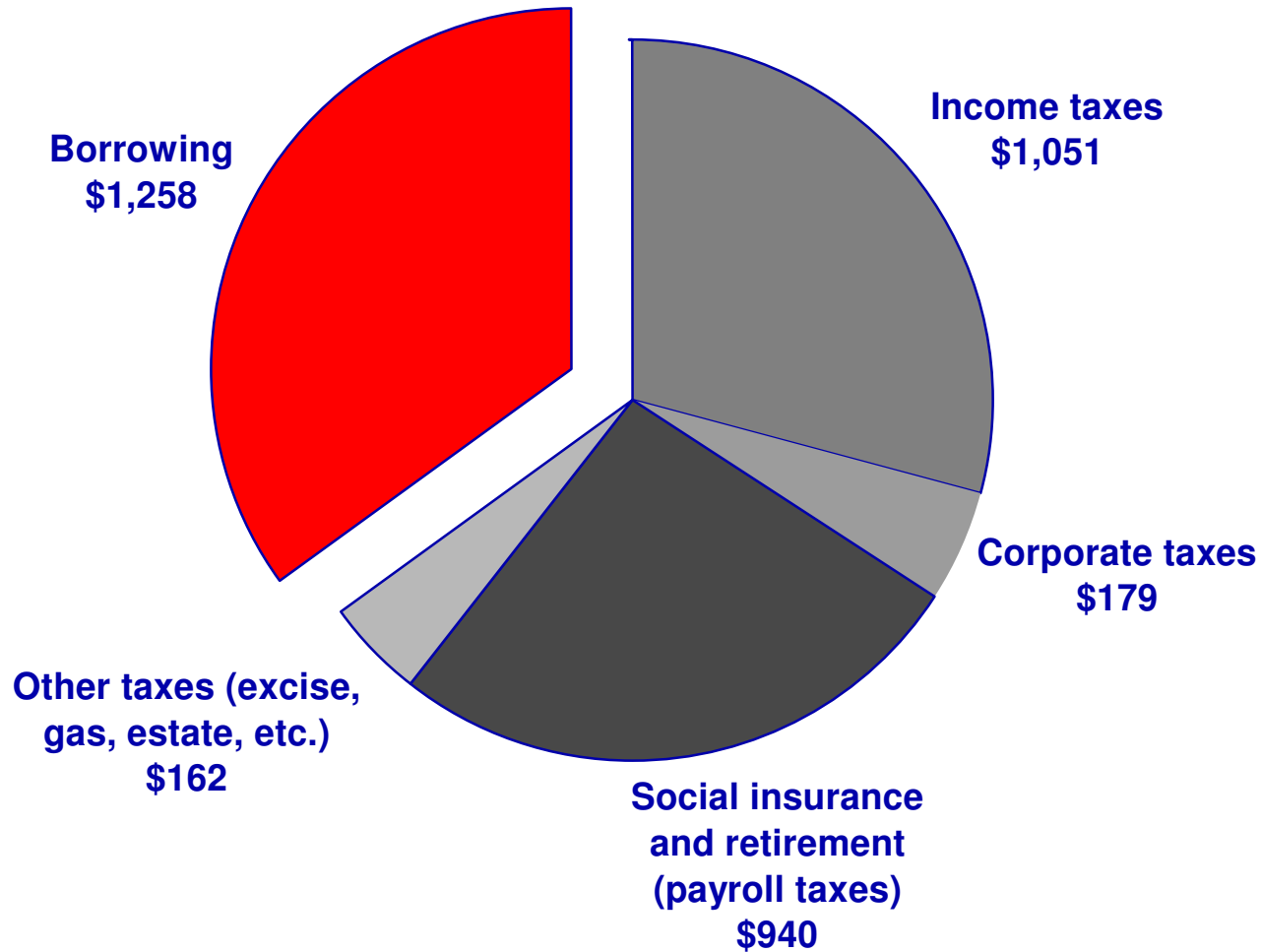
Deficit Spending

- The U.S. national debt dates back to our inception
 - Was zero briefly in 1835
 - Tends to expand quickly during wartime
- 35 percent of the FY 2010 budget is funded by loans
 - Government Bonds
 - Auctioned internationally - China, Japan, and UK are major lenders
- Debt limit is raised regularly
 - Currently at \$12.4 trillion (set in December 2009)

FY 2010 Budget by Source of Funds

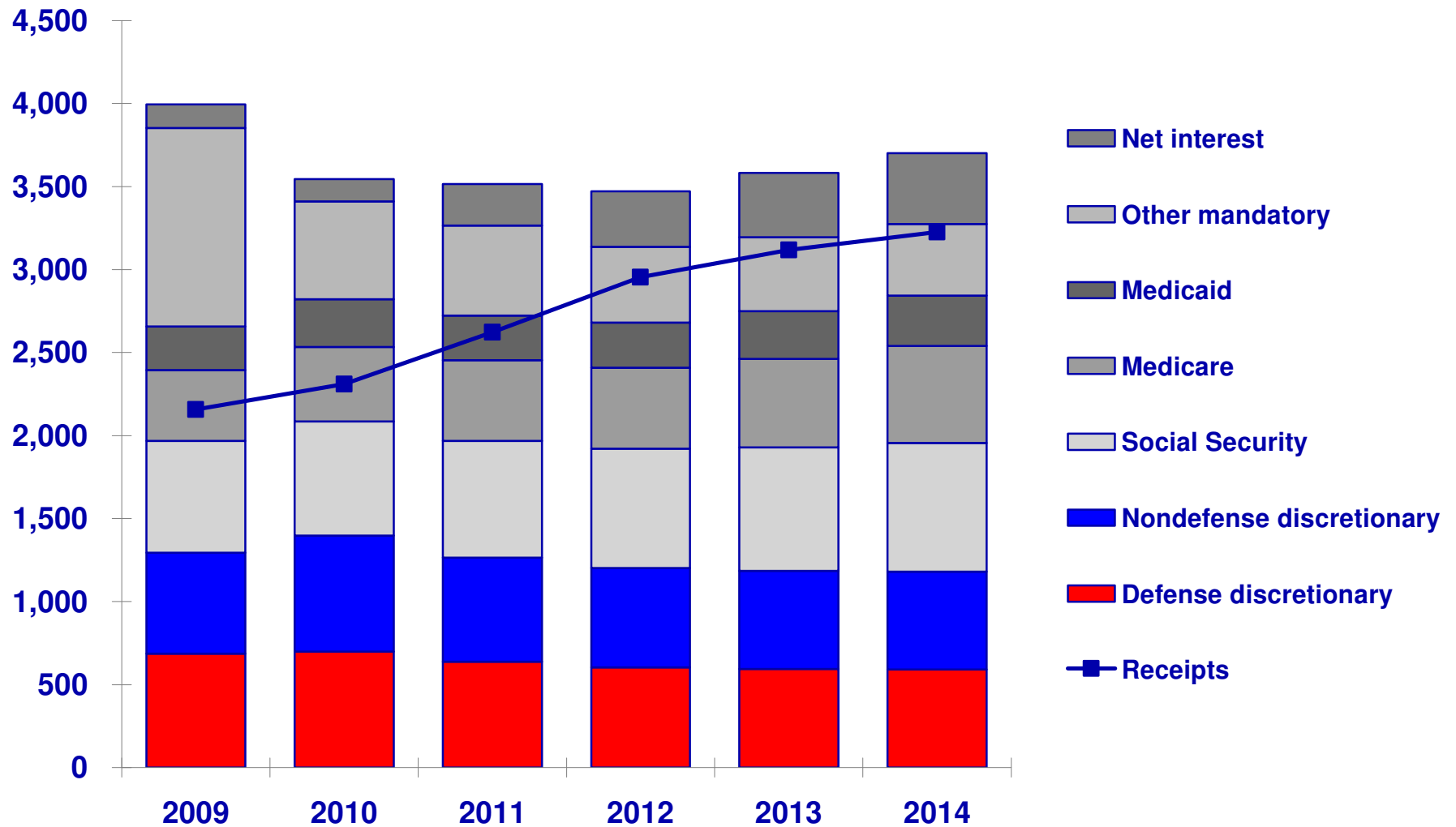
Total Outlays = \$3.6 trillion

Total Receipts (without borrowing) = \$2.3 trillion



FY 2010 Budget Projections

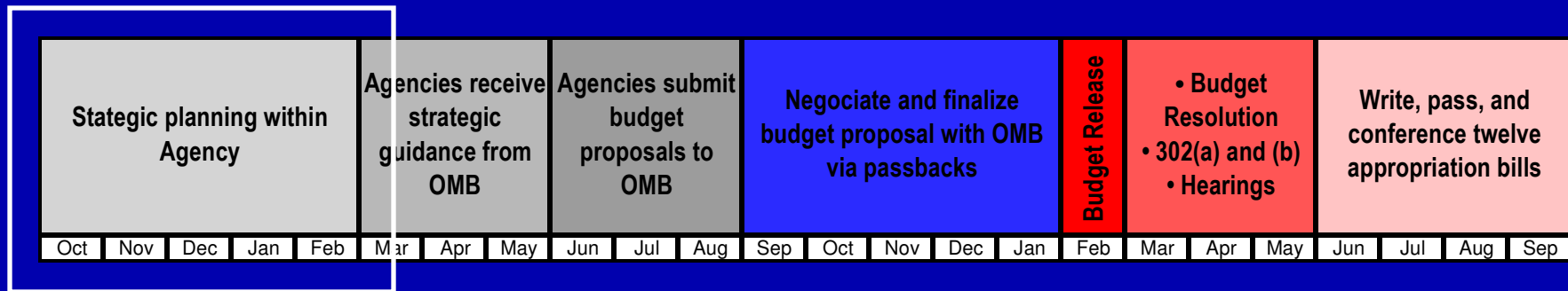
outlays in billions of constant FY 2009 dollars



Source: *Budget of the United States Government FY 2010*.
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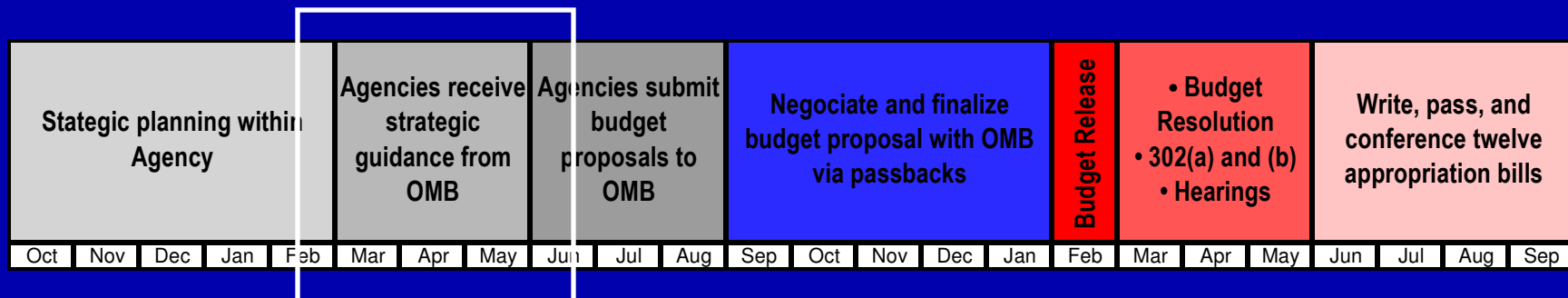


The Federal Budget Cycle



- Discussions within agencies among upper management about possible priorities and initiatives

The Federal Budget Cycle



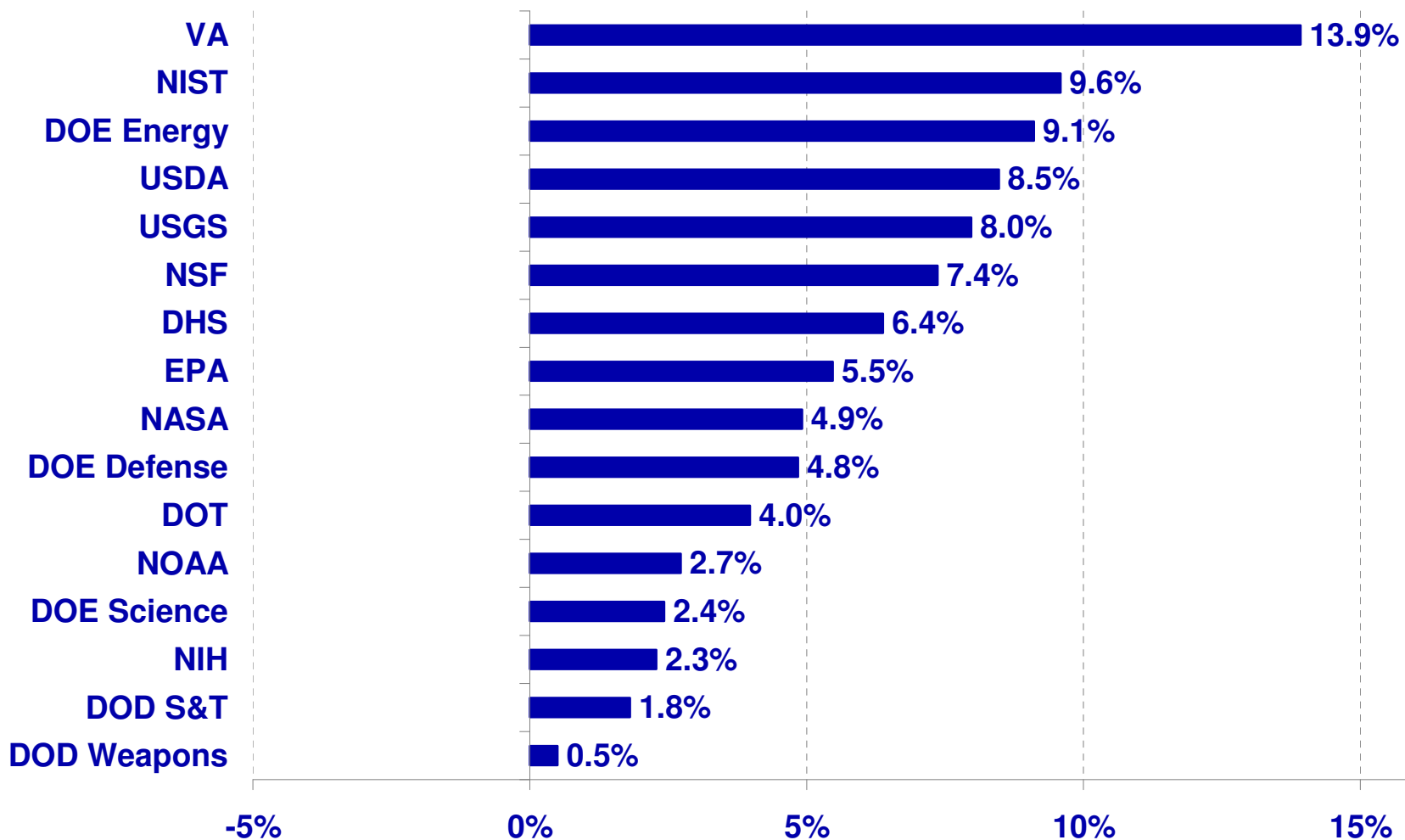
- Joint memorandum from Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP) lays out Presidential priorities and provides broad guidance

FY 2010 R&D Investment Priorities

- Investing in the Sciences for a Prosperous America
 - General increases in science funding, especially basic research (3.4% increase, plus ARRA)
- A Clean Energy Future
 - DOE Energy Programs (5.4% increase, plus ARRA)
- Healthy Lives for All Americans
 - National Institutes of Health (1.5% increase, plus ARRA)
- A Safe and Secure America
 - Homeland Security Funding (23.8% increase)

FY 2010 R&D Appropriations

percent change from FY 2009



Source: AAAS estimates of R&D in FY 2010 appropriation bills and reports.
DOD S&T includes R&D in 6.1 through 6.3 categories plus medical research.
DOD weapons includes R&D in 6.4 and higher categories.

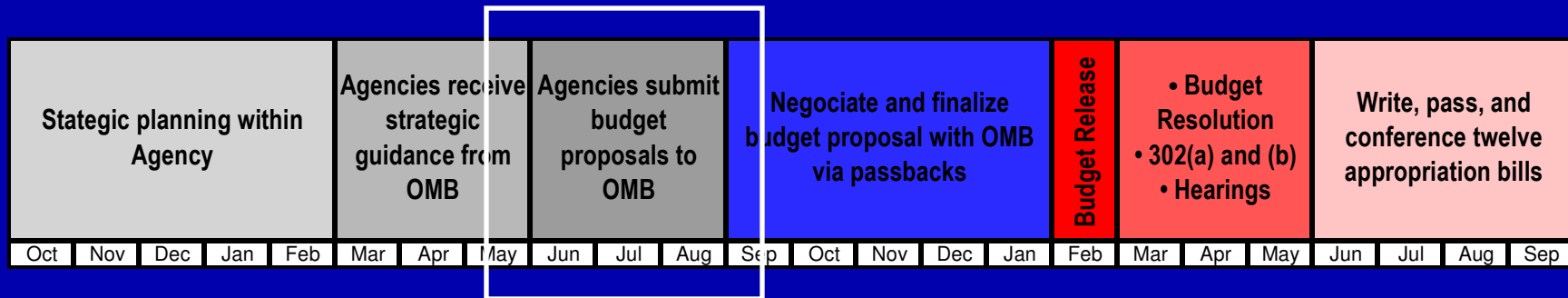
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FY 2011 R&D Practical Challenges

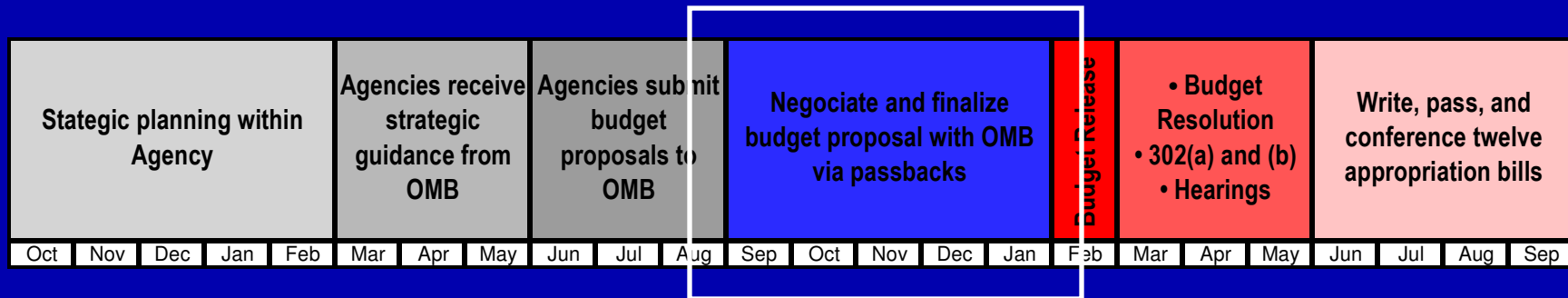
- Apply S&T to drive economic recovery, job creation, and economic growth
- Promote energy technologies to reduce energy imports and create green jobs and business
- Apply biomedical science and information to help Americans live longer and healthier lives while reducing health care costs
- Assert that we have the technology to protect our troops, citizens, and national interests

The Federal Budget Cycle



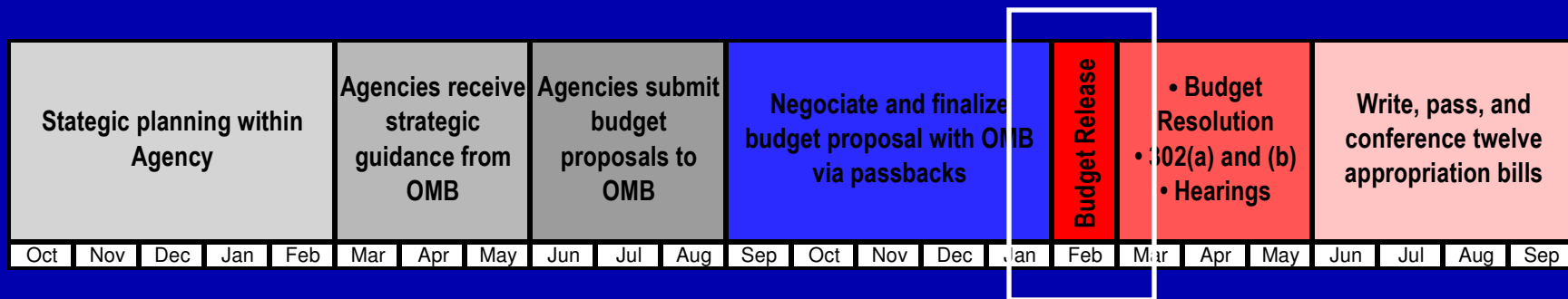
- Agencies deliver budget justifications to OMB

The Federal Budget Cycle



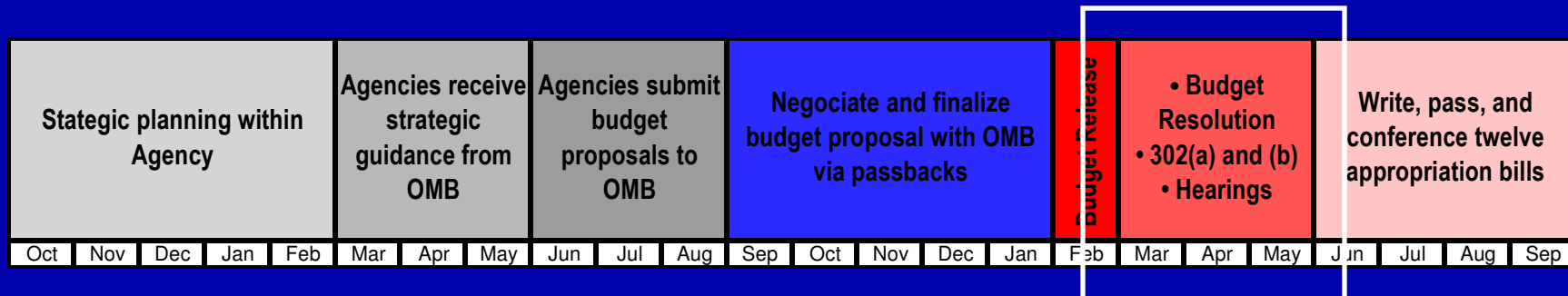
- Agencies negotiate with OMB over their budget proposals with OSTP serving an advisory role
- Budget proposals are finalized in January

The Federal Budget Cycle



- President presents the proposed budget to Congress on the first Monday of February

The Federal Budget Cycle

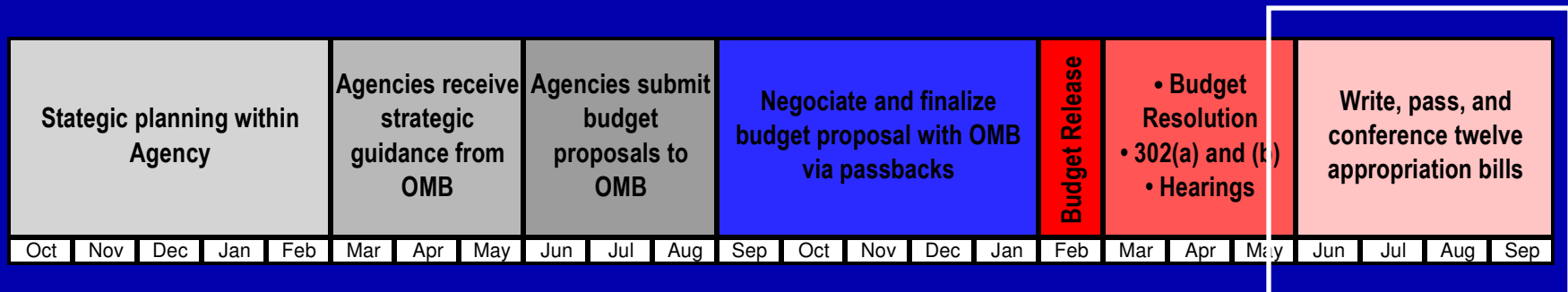


- Congress holds hearings on agency budgets and initiatives
- Authorizing committees create authorizations for agencies
- Congress approves budget resolution, the big-picture spending plan
- Appropriations committees receive 302(a) allocations and determine 302(b) allocations for each appropriations bill
- Determine need to allow for reconciliation bill

Reconciliation Bill

- A special bill which modifies tax law or mandatory programs to reconcile with the budget resolution
- Reconciliation is optional, and not always necessary
- Reconciliation bills have special procedural rules
 - Can not filibuster, so the Senate only needs 51 votes to pass a reconciliation bill
- In FY 2010, both health care and education are subject to reconciliation

The Federal Budget Cycle



- Appropriation committees write and approve appropriations bills
- Bills have to pass the full chamber by majority vote
- The different versions passed by both chambers are conferenced
- Each chamber then has to agree to the conference report before President can sign
- The fiscal year ends on Sept 30, any unfunded agency must shutdown unless a continuing resolution (CR) is passed
- Omnibus bill is created to pass remaining appropriations bills



The Federal Budget Cycle

FY 2010	----- Spend Fiscal Year Budget -----																				
FY 2011	Budget Release	Budget Resolution 302(a) and (b) Hearings	Write, pass, and conference twelve appropriation bills		----- Spend Fiscal Year Budget -----																
FY 2012	Planning within Agency	Agencies receive strategic guidance from OMB	Agencies submit budget proposals to OMB			Negotiate and finalize budget proposal with OMB via passbacks						Budget Release	• Budget Resolution 302(a) and (b) Hearings			Write, pass, and conference twelve appropriation bills					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

- Agencies are working on 3 budgets at any given time

Supplemental Appropriations

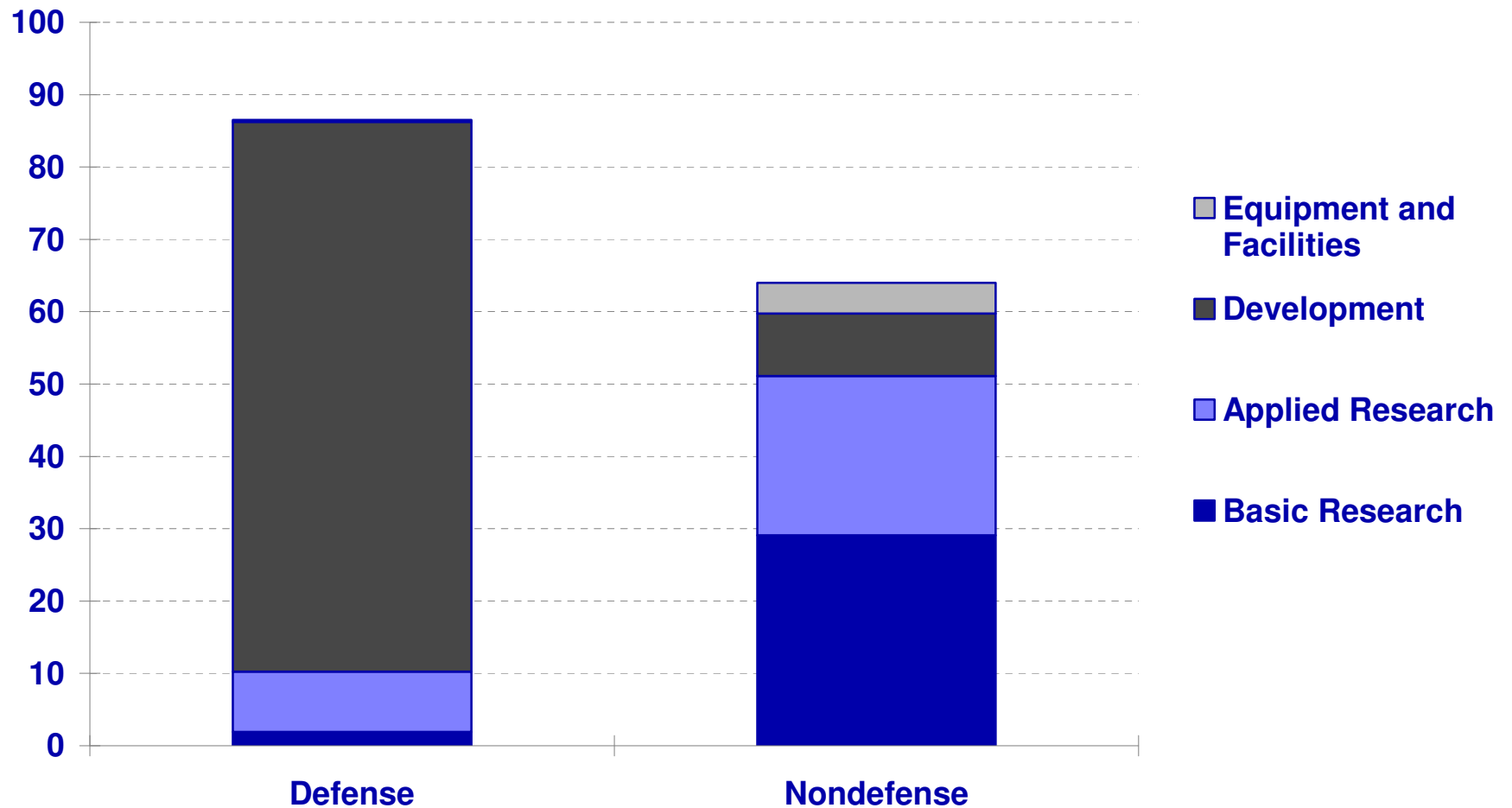
- Throughout the year, as necessary, Congress can introduce a supplemental appropriation bill
 - Usually for natural disasters or emergencies
- Examples
 - February 2009 - The American Recovery and Reinvestment Act (ARRA) - \$787 billion for economic recovery
 - June 2009 - \$106 billion for war operations and flu preparations
 - August 2009 - \$2 billion to extend “cash for clunkers” program

Federal R&D in Context

- The federal R&D investment is spread across over two dozen departments and agencies
 - Only two manage more than 10% of the investment
 - Department of Defense (54.2%)
 - Department of Health and Human Services (21.0%)
- Role of federal R&D
 - Supports federal missions
 - Drives U.S. innovation

Character of Defense and Nondefense R&D, FY 2010

budget authority in billions of dollars



Source: AAAS estimates of R&D in FY 2010 appropriations bills and reports.

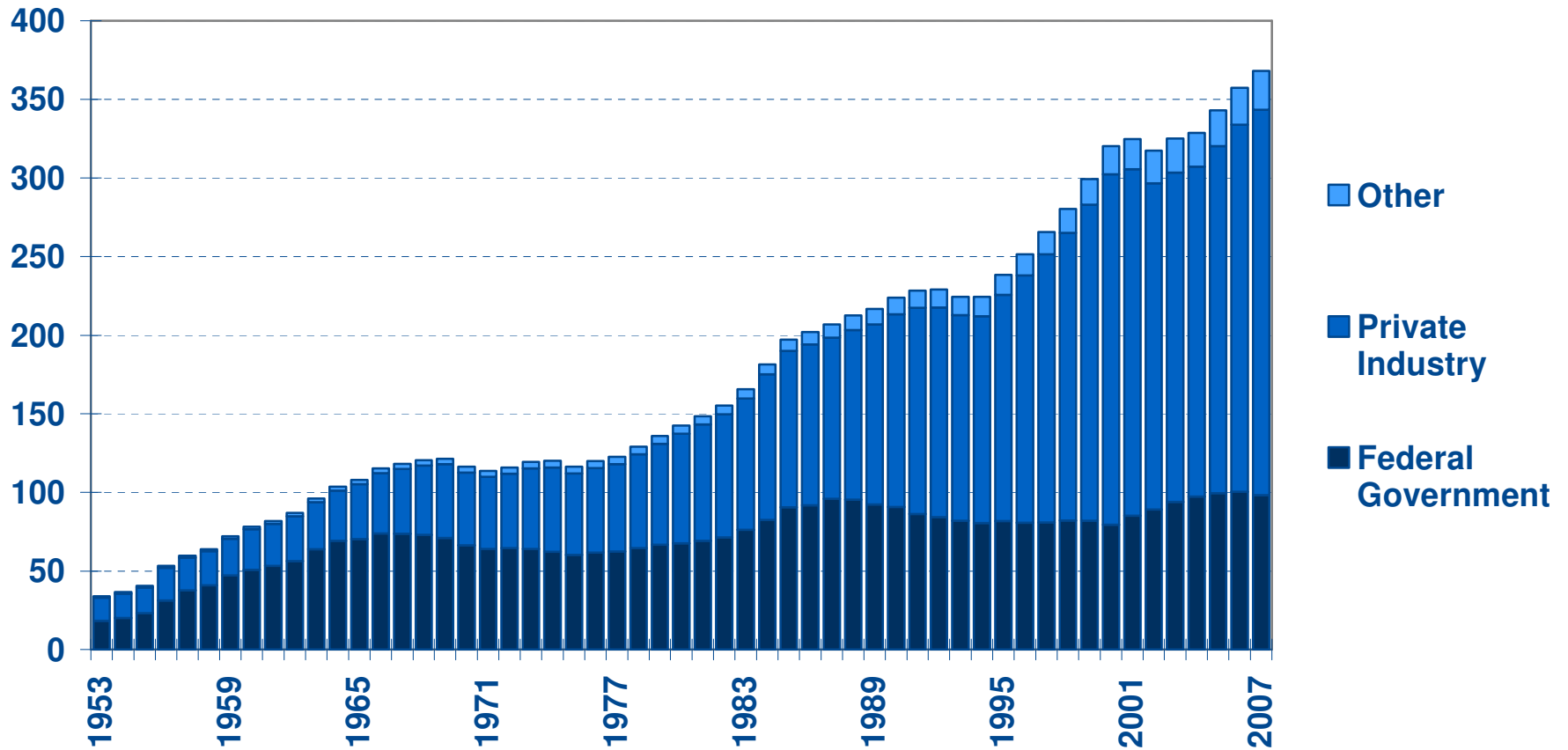
Defense R&D = DOD + DOE defense.

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U.S. R&D Funding by Source, 1953-2007

expenditures in billions of constant 2007 dollars



Source: NSF, Division of Science Resources Statistics,
National Patterns of R&D Resources (NSF 08-318)

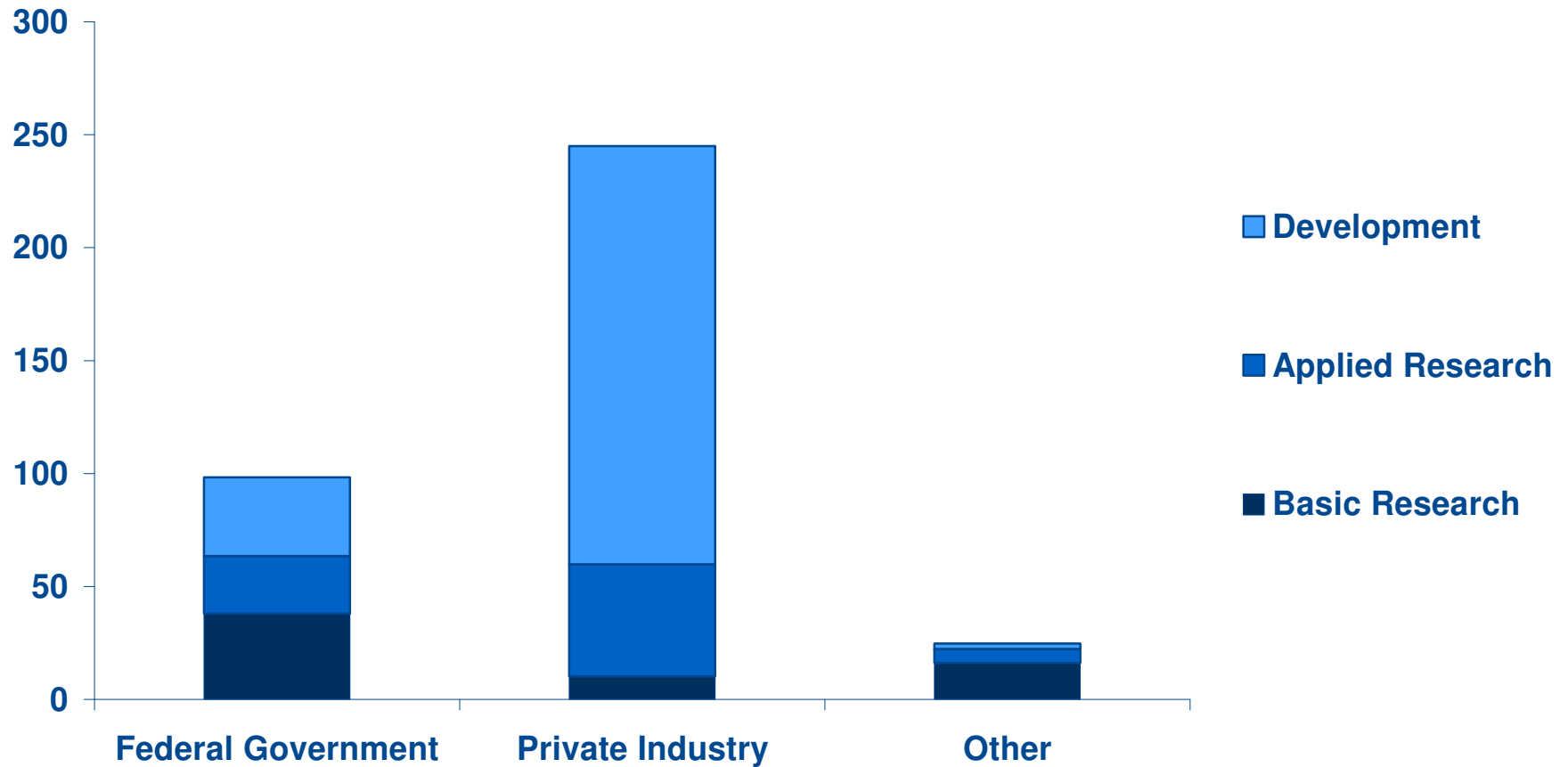
2007 figures are preliminary.

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Character of R&D, 2007

expenditures in billions of dollars



Source: NSF, Division of Science Resources Statistics,

National Patterns of R&D Resources (NSF 08-318)

2007 figures are preliminary.

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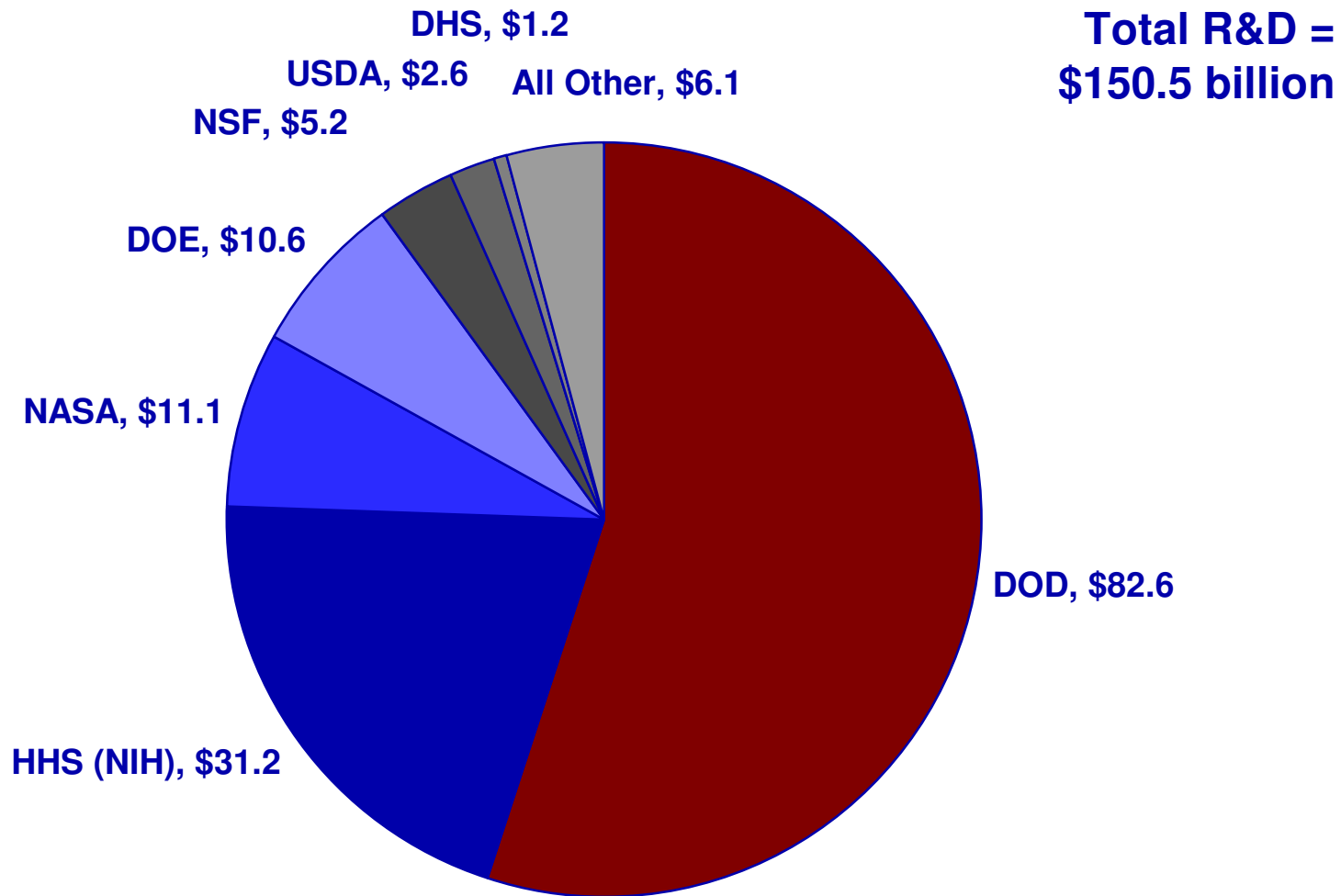


The FY 2010 Federal R&D Investment

- \$150.5 billion, 2.4% increase from FY 2009
 - Basic Research – \$31.0 billion, 4.0% increase
 - Applied Research – \$30.4 billion, 3.6% increase
 - Development – \$84.6 billion, 1.4% increase
 - Equipment and Facilities – \$4.5 billion, 1.0% increase
- 1.3% increase in real dollars from FY 2009
 - 2.8% increase in R&D investment since 2005

Total R&D by Agency, FY 2010

budget authority in billions of dollars



Source: AAAS estimates of R&D in FY 2010 appropriation bills and reports.

R&D includes conduct of R&D and R&D facilities.

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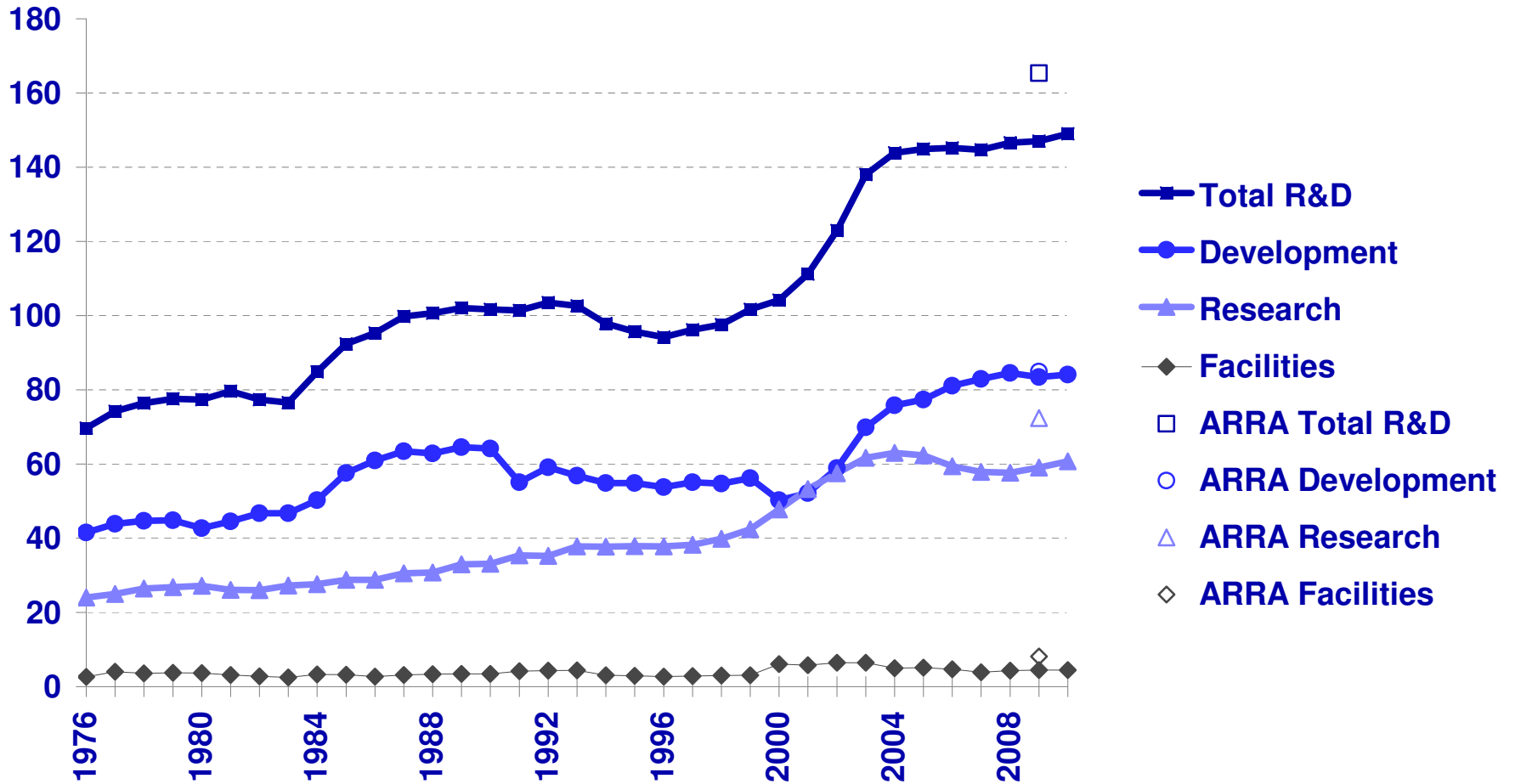


American Recovery and Reinvestment Act

- \$18.4 billion in R&D (12.5 percent of FY 2009 Investment)
 - National Institutes of Health - \$10.4 billion
 - National Science Foundation - \$3.0 billion
 - DOE Office of Science - \$1.6 billion
 - National Institute of Standards and Technology - \$600 million
- ARRA Obligation Deadline: September 30, 2010
- Different agencies, different mechanisms

Trends in Federal R&D, FY 1976-2010

in billions of constant FY 2009 dollars



Source: AAAS estimates of R&D in FY 2010 appropriation bills and reports.
 R&D includes conduct of R&D and R&D facilities.
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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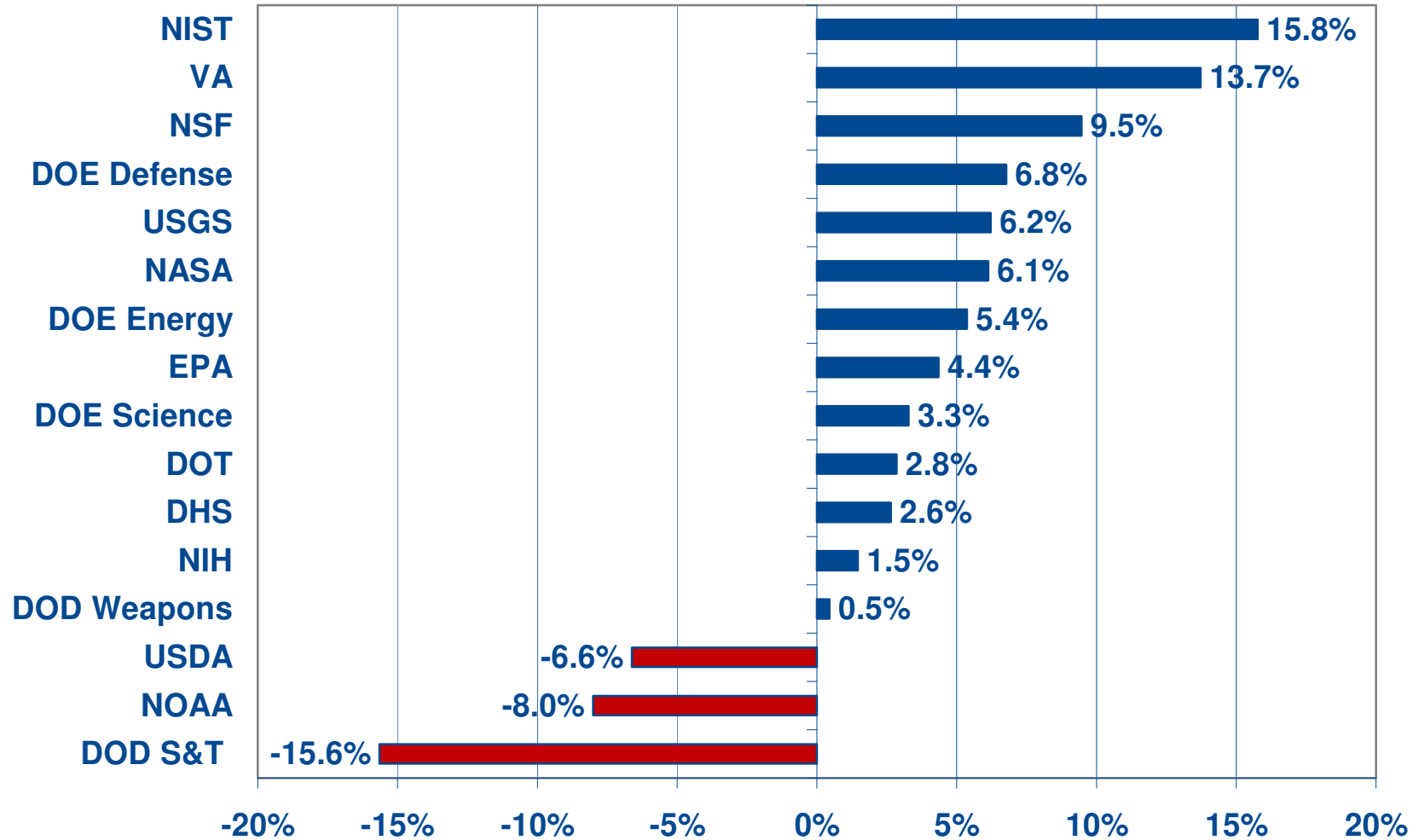


Doubling Funding for Basic Research Agencies

- National Science Foundation
 - 8.5% increase to \$7.0 billion
 - R&D – 9.5% increase to \$5.3 billion
- DOE Office of Science
 - 3.5% increase to \$4.9 billion
 - R&D – 3.3% increase to \$2.2 billion
- National Institute of Standards and Technology
 - 2.4% increase to \$849 million
 - R&D – 15.8% increase to \$637 million

FY 2010 R&D Budget Request

Percent Change from FY 2009



Source: AAAS Report XXXIV: Research & Development FY 2010.

DOD "S&T" = DOD R&D in "6.1" through "6.3" categories plus medical research.

DOD weapons = DOD R&D in "6.4" and higher categories.

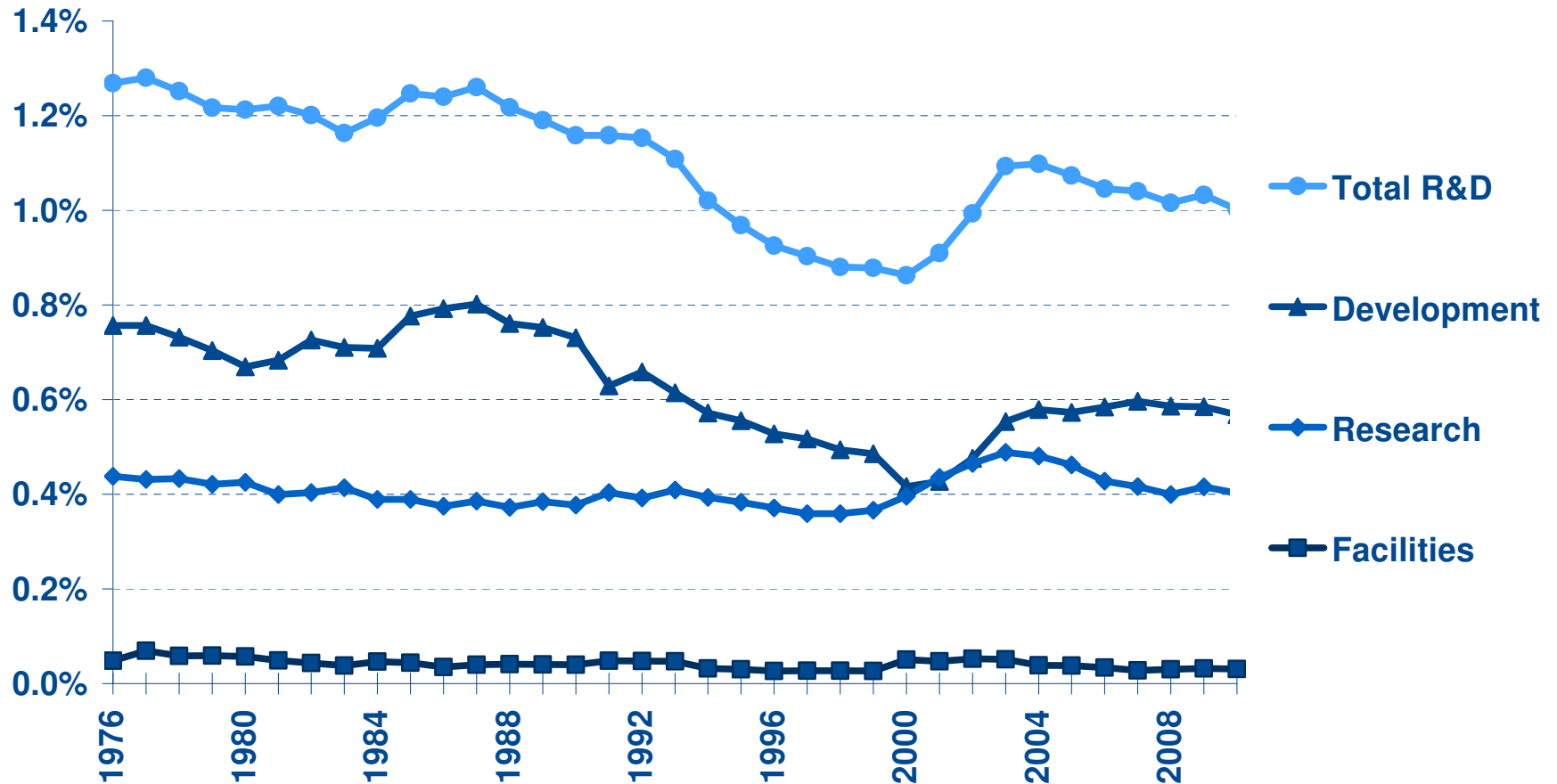
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3.0% of GDP Investment in R&D

- Goal set by President Obama
 - April 27, National Academy of Sciences Annual Meeting
- 3.0% of GDP also chosen as EU goal in 2000
- Many Asian nations' investment in R&D is increasing
- Significant share of U.S. R&D investment is for defense
 - 57.0% at \$84 billion

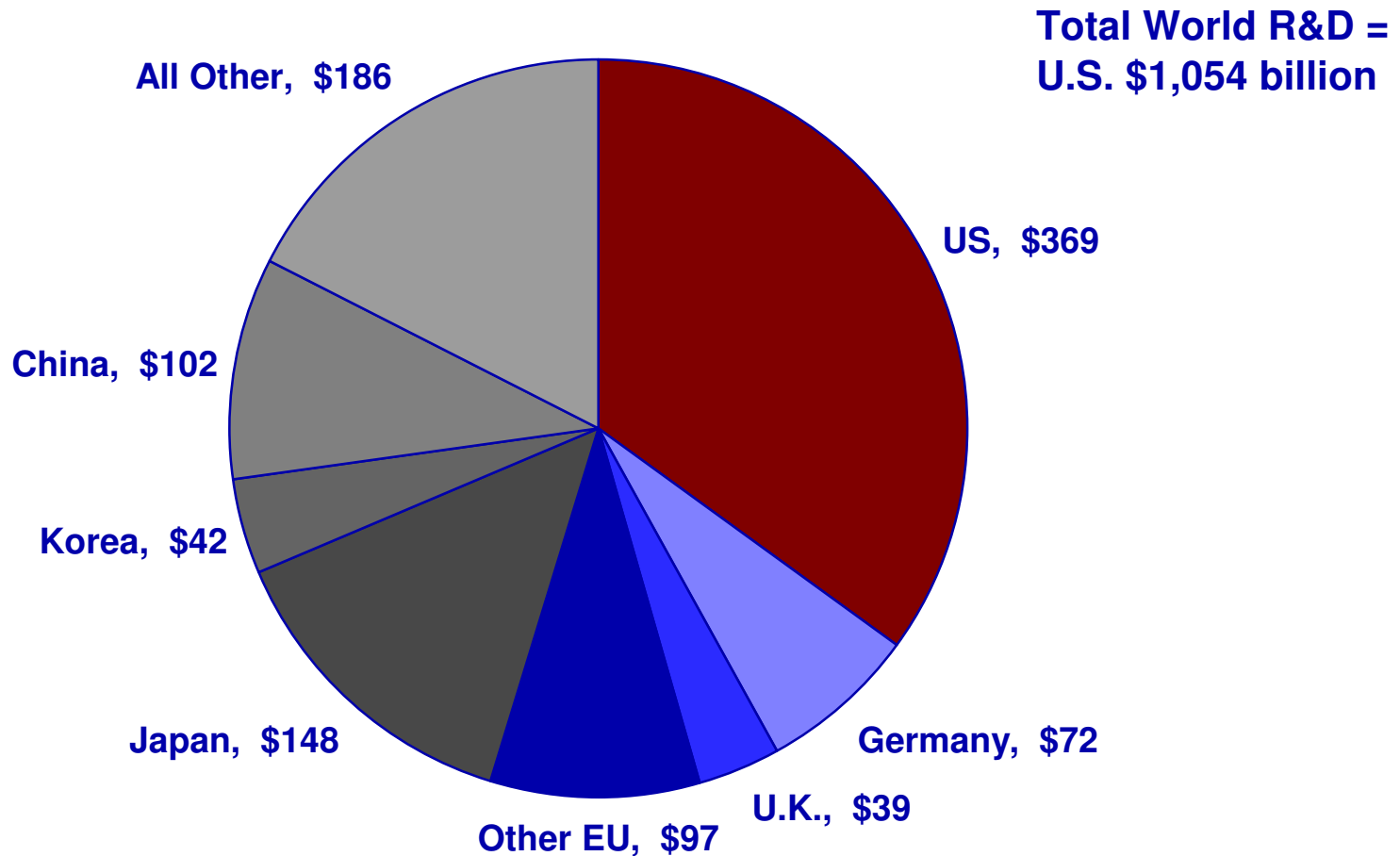
Trends in Federal R&D as Percent of GDP, FY 1976-2010



Source: AAAS Report: *Research and Development* series.
 FY 2010 figures are latest AAAS estimates of the FY 2010 request.
 R&D includes conduct of R&D and R&D facilities.
 Data to 1984 are obligations from the NSF Federal Funds survey.
 GDP figures are from OMB, *Budget of the U.S. Government FY 2010*.
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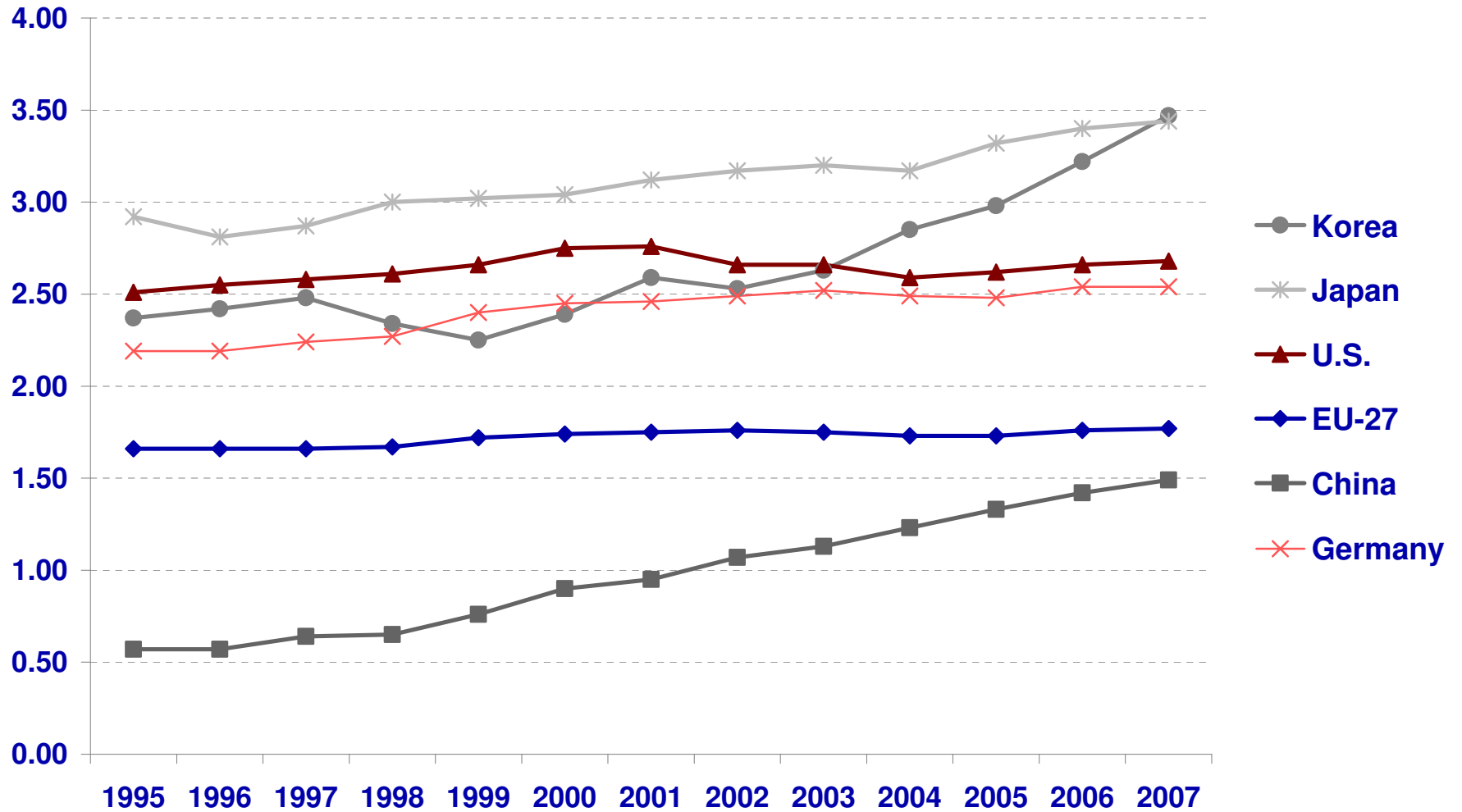
Shares of Total World R&D, 2007



Source: OECD, Main Science and Technology Indicators, May 2009.
World = OECD members plus Argentina, China, Israel, Romania,
Russian Federation, Singapore, Slovenia, South Africa, Taiwan.
Calculated using purchasing power parities.
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National R&D Investment as % of GDP, 1995-2007



Source: OECD, Main Science and Technology Indicators, May 2009.

Source: UNESCO, Institute for Statistics.

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The Federal R&D Investment

- \$150.5 billion for FY 2010
 - Plus \$18.4 billion from The American Recovery and Reinvestment Act
- Double Budget for Basic Research Agencies
- 3.0% of GDP Investment in R&D
- Four R&D Investment Priorities

Workshop

- Conference the Commerce, Justice, Science and Related Agencies (CJS) appropriations bill
- Determine mechanism for compromise
- Fill in final conference numbers
- Appoint a spokesperson to hold a press conference and take questions

Homework

- Compare your conference figures with the actual Conference report
- <http://www.aaas.org/spp/rd/fy2010/>
- http://rules.house.gov/bills_details.aspx?NewsID=4520
 - Division B for CJS

For More Information...

The AAAS R&D web site is
<http://www.aaas.org/spp/rd>

The AAAS Forum on
Science and Technology
Policy is
May 13–14, 2010 in
Washington, DC

