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)

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defense Discretionary</td>
<td>$623</td>
</tr>
<tr>
<td>[Defense R&amp;D]</td>
<td>$84</td>
</tr>
<tr>
<td>Nondefense Discretionary</td>
<td>$640</td>
</tr>
<tr>
<td>[Nondefense R&amp;D]</td>
<td>$64</td>
</tr>
<tr>
<td>Social Security</td>
<td>$696</td>
</tr>
<tr>
<td>Medicare</td>
<td>$452</td>
</tr>
<tr>
<td>Medicaid</td>
<td>$290</td>
</tr>
<tr>
<td>Other Mandatory</td>
<td>$596</td>
</tr>
<tr>
<td>Net Interest</td>
<td>$136</td>
</tr>
</tbody>
</table>

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

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

Source: Budget of the United States Government FY 2010
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INTRODUCTION TO THE U.S. FEDERAL BUDGET

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
INTRODUCTION TO THE U.S. FEDERAL BUDGET

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**

- **Strategic 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 \(302(b)\)
- Hearings

**Write, pass, and conference twelve appropriation bills**

- 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

<table>
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<tr>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
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<tbody>
<tr>
<td>Budget Release</td>
<td>Budget Resolution 302(a) and (b)</td>
<td>Planning within Agency</td>
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<td>Write, pass, and conference twelve appropriation bills</td>
<td>Hearings</td>
<td>Agencies receive strategic guidance from OMB</td>
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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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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

DOD, $82.6
HHS (NIH), $31.2
NASA, $11.1
DOE, $10.6
All Other, $6.1
USDA, $2.6
NSF, $5.2
DHS, $1.2

Total R&D = $150.5 billion

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

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

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

- U.S., $369
- U.K., $39
- Other EU, $97
- Japan, $148
- Korea, $42
- China, $102
- Germany, $72
- All Other, $186

Total World R&D = U.S. $1,054 billion

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.
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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

  - 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