

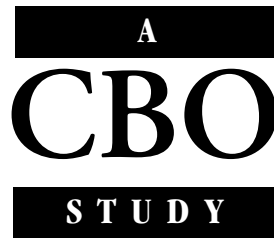
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

A
CBO
STUDY

JANUARY 2010

**Long-Term
Implications of the
Fiscal Year 2010
Defense Budget**





Long-Term Implications of the Fiscal Year 2010 Defense Budget

January 2010

Notes

Unless otherwise indicated, all years referred to in this paper are fiscal years, and all dollar amounts are expressed in 2010 dollars (using the implicit price deflator for gross domestic product) of total obligational authority.

The numbers in the text and tables may not add up to totals because of rounding.

The projections in this paper deal with resources for the Department of Defense (subfunction 051 of the federal budget) rather than for all defense activities (subfunction 050).

On the cover, clockwise from the top: A U.S. Air Force F-16 Fighting Falcon in flight (U.S. Air Force photo by Senior Airman Julianne Showalter); U.S. Army soldiers fire a howitzer during a training exercise at Fort Bragg, North Carolina, October 14, 2009 (U.S. Army photo by Spc. Jessica M. Kuhn); U.S. Marine on a security patrol in the Nawa District of Helmand province, Afghanistan, October 20, 2009 (U.S. Marine Corps photo by Corporal Artur Shvartsberg); the 5-inch/54-caliber (Mk 45) lightweight gun of the guided-missile cruiser USS Chosin (CG-65) is fired during a training exercise (U.S. Navy photo by Mass Communications Specialist 2nd Class Matthew A. Hepburn).

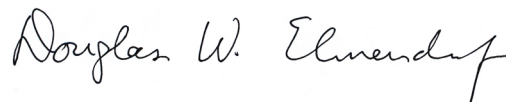


Preface

What amount of budgetary resources might be needed in the long term to carry out the Administration's plans for national defense as they were proposed during 2009? This Congressional Budget Office (CBO) study—prepared at the request of the Chairman and the Ranking Member of the Senate Budget Committee—addresses that question. The study updates the resource projections contained in CBO's January 2009 paper *Long-Term Implications of the 2009 Future Years Defense Program*, reflecting changes that the new Administration made to defense plans in preparing the President's budget request for fiscal year 2010. In keeping with CBO's mandate to provide impartial analysis, the paper makes no recommendations.

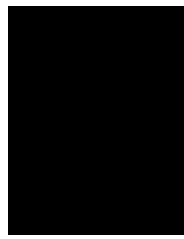
Adam Talaber and Daniel Frisk of CBO's National Security Division coordinated the preparation of this paper under the supervision of Matthew S. Goldberg. David Arthur, Michael Bennett, Kevin Eweker (formerly of CBO), Alec Johnson, Bernard Kempinski, Eric J. Labs, Frances Lussier, and Allison Percy of the National Security Division contributed to the analysis. Raymond Hall, David Newman, Dawn Sauter Regan, Matthew Schmit, and Jason Wheelock of CBO's Defense, International Affairs, and Veterans' Affairs Cost Estimates Unit also contributed to the report under the supervision of Sarah Jennings. James L. Wilson, an independent consultant, reviewed the manuscript before publication. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.)

Sherry Snyder edited the study, and Kate Kelly proofread it. Cindy Cleveland produced drafts of the manuscript. Maureen Costantino designed the cover and prepared the report for publication with assistance from Jeanine Rees. Lenny Skutnik printed the initial copies, Linda Schimmel handled the print distribution, and Simone Thomas prepared the electronic versions for CBO's Web site (www.cbo.gov).



Douglas W. Elmendorf
Director

January 2010



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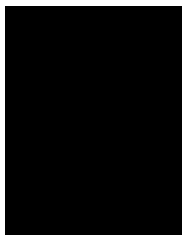
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Long-Term Implications of the Fiscal Year 2010 Defense Budget

Summary and Introduction

Over the past seven years, the Congressional Budget Office (CBO) has published a series of reports about its projections of the resources that could be required over the long term (typically two decades) to carry out the nation's defense plans.¹ This report presents CBO's analysis of the Department of Defense's (DoD's) 2010 budget request, which was transmitted in 2009, including projections of resource requirements for fiscal years 2011 through 2028.

In CBO's estimation, carrying out DoD's 2009 plans for 2010 and beyond—excluding overseas contingency operations (the wars in Iraq and Afghanistan and some much smaller military actions elsewhere)—would require defense resources averaging at least \$573 billion annually (in 2010 dollars) from 2011 to 2028 (see Table 1). That amount, CBO's base projection, is about 7 percent more than the \$534 billion in total obligational authority (TOA) the Administration requested in its regular 2010 budget, again excluding overseas contingency operations.² The projection also exceeds the peak of about \$500 billion (in 2010 dollars) during the height of the Reagan Administration's military buildup in the mid-1980s (see Figure 1). During that period, for example, DoD was pursuing a Navy fleet of 600 battle force ships, more than twice the size of the current fleet of 287.

1. The first of those Congressional Budget Office reports, *The Long-Term Implications of Current Defense Plans*, appeared in January 2003. Each year since then, CBO has published summary and detailed updates (the latter in annotated briefing format); all are available online at www.cbo.gov.

Assuming no changes to the department's plans, its resource requirements could be even greater. CBO has also estimated some "unbudgeted" costs that reflect the likelihood that weapon systems would cost more than initially estimated; that medical costs would grow at rates faster than DoD has anticipated; and that pay raises the Congress enacts for military personnel and DoD's civilian employees might exceed the percentages in the department's plans. Furthermore, additional appropriations may be necessary to fund overseas contingency operations (see Box 1).

Including the unbudgeted costs increases the projection to an annual average of \$632 billion through 2028, or 18 percent more than the regular funding requested for 2010. Some 35 percent of the total unbudgeted costs between 2013 and 2028 are associated with overseas contingency operations; in particular, 30,000 troops engaged in contingency operations from 2013 through 2028 would increase funding requirements by about \$20 billion per year. The total costs of \$670 billion at the end-point in 2028 would approach the peak of the past three years (measured in 2010 dollars), which includes the height of operations in Iraq (see Figure 1).

2. All funding in CBO's projection is calculated as TOA, most of which is for annual appropriations sought by the department. Budget authority differs from TOA in that it includes the effects of certain receipts, permanent spending in certain trust funds and other accounts, and certain payments to the Military Retirement Fund. In recent years, the difference between TOA and budget authority in subfunction 051 of the federal budget (Department of Defense, Military), which funds DoD, generally has been \$2 billion or less.

Table 1.**Resources for Defense in Selected Years**

(Billions of 2010 dollars)

| | Actual 2009 | Requested 2010 | Projected | | | Average 2011–2028 |
|--|-----------------|------------------------|------------|------------|------------|----------------------|
| | | | 2013 | 2020 | 2028 | |
| Regular Defense Budget | | | | | | |
| Acquisition | | | | | | |
| Procurement | 113 | 109 | 120 | 124 | 115 | 125 |
| Research, development, test, and evaluation | 81 | 79 | 57 | 61 | 54 | 59 |
| Subtotal | 194 | 187 | 177 | 185 | 168 | 185 |
| Operation and Support | | | | | | |
| Military personnel | 127 | 136 | 142 | 157 | 178 | 157 |
| Operation and maintenance ^a | 246 | 188 | 199 | 221 | 247 | 220 |
| Subtotal | 373 | 324 | 341 | 378 | 425 | 376 |
| Other | 28 | 23 | 11 | 11 | 13 | 12 |
| Total | 595 | 534 | 530 | 575 | 605 | 573 |
| Other Resources | | | | | | |
| Additional Supplemental, Emergency, and Contingency Funding | 74 ^b | 130 | n.a. | n.a. | n.a. | n.a. |
| Total | | | | | | |
| Including Additional Funding | 669 | 664 | 530 | 575 | 605 | 573 |
| Including Total Unbudgeted Costs | n.a. | 682^c | 573 | 634 | 670 | 632 |

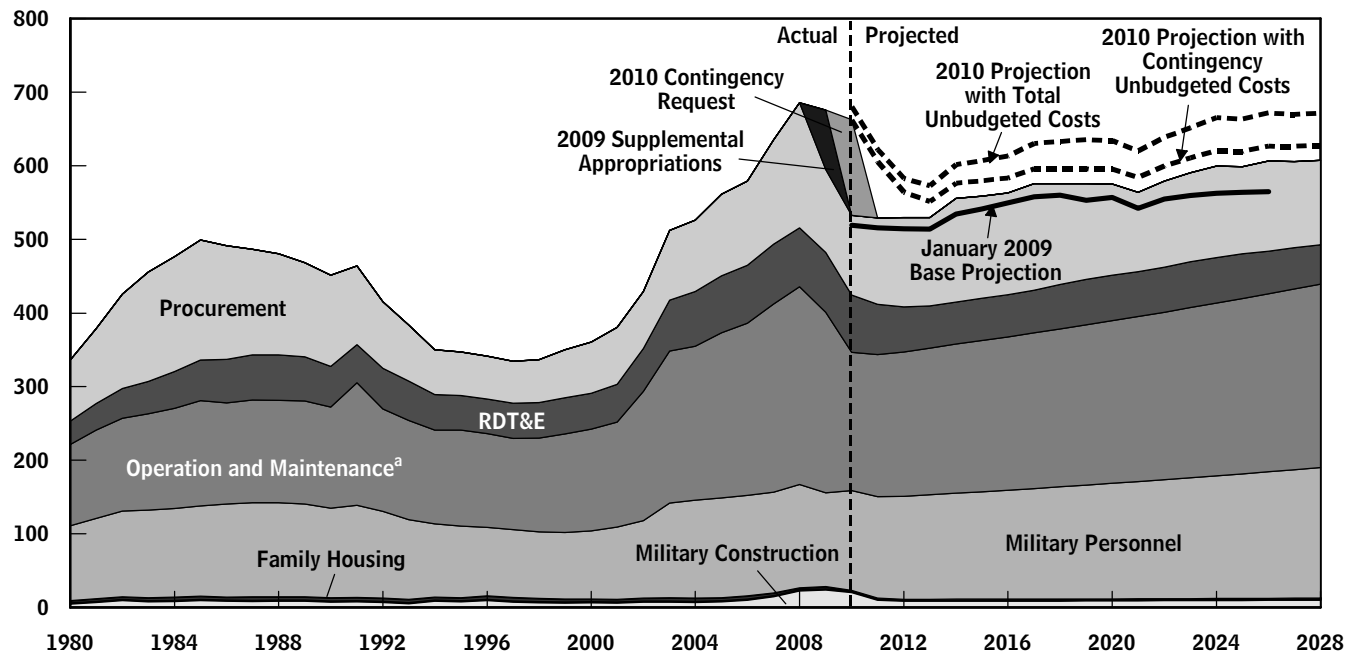
Source: Congressional Budget Office.

Note: n.a. = not applicable.

- For the current analysis, CBO folds the revolving funds into the appropriation for operation and maintenance. Those funds generate receipts from fees charged to customer organizations in the military services and defense agencies and may also receive appropriations.
- Excludes \$74 billion in other supplemental and emergency funding allocated among the appropriation titles listed above.
- Includes \$17 billion that the Administration has not requested but that CBO projects could be needed to fund either contingency operations or other unbudgeted costs.

Figure 1.**Resources for Defense**

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the appropriation titles.

RDT&E = research, development, test, and evaluation.

- a. For the current analysis, CBO folds the revolving funds into the appropriation for operation and maintenance. Those funds generate receipts from fees charged to customer organizations in the military services and defense agencies, which may be augmented by appropriations.

In CBO's base projections, four main factors account for the greater resources required in the long term to sustain the 2010 budget plan:

- The likelihood of continued real growth in pay and benefits for DoD's military and civilian personnel;
- The projected increases in the costs of operation and maintenance for aging equipment and for newer, more complex equipment;
- DoD's plans to develop and field advanced weapon systems to replace many of today's military systems that are nearing the end of their service life; and
- Investments in new capabilities, such as advanced intelligence, surveillance, and reconnaissance systems, to meet emerging security threats.

These long-term projections differ from CBO's baseline, under which discretionary defense appropriations grow at the rate of inflation without reference to the Department of Defense's plans.³ CBO's base projection uses the prices that DoD has assumed would apply to the levels of personnel and acquisitions in its plans. CBO's unbudgeted cost projection includes prices that CBO anticipates are more likely to be faced, as well as contingency operations not in the plans. CBO views the base projection as a lower bound on the costs of the plans, and the projection including total unbudgeted costs as a much more likely outcome (for additional details on CBO's projection methods, see Box 2).

This report uses information from a variety of sources about defense plans through May 2009 to project the

3. Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2009 to 2019* (January 2009).

Box 1.**CBO's Estimate of the Costs of Overseas Contingency Operations**

The U.S. military is currently engaged in overseas contingency operations that consist of the wars in Iraq and Afghanistan and some much smaller military actions elsewhere. Supplemental and emergency appropriations for those purposes peaked at \$180 billion in 2008 (\$185 billion in 2010 dollars), 27 percent of total budget authority for the Department of Defense (DoD) in that year. In 2009, those appropriations dropped to \$146 billion (\$147 billion in 2010 dollars), or 22 percent of DoD's appropriations.

As of June 2009, the U.S. military had deployed 172,000 service members to the Iraq theater and 59,000 to the Afghanistan theater. Along with its regular defense budget for 2010, the Administration requested and received \$130 billion for war-related funding, albeit to support a smaller total number of deployed troops: 100,000 service members in Iraq and 68,000 in Afghanistan.¹ The average number of personnel in Iraq (100,000) is consistent with the schedule for withdrawing U.S. forces from Iraq that the President outlined in a speech he delivered at Camp Lejeune, North Carolina, on February 27, 2009.² Although the 2010 budget planned for an increase in U.S. service members in Afghanistan from 59,000 to 68,000, neither that budget nor the Congressional Budget Office's (CBO's) projection anticipated the further increase of 30,000 troops in Afghanistan that the President proposed on December 1, 2009.³

CBO does not have access to DoD's estimates of costs for overseas contingency operations in 2011 or later. Those estimates would have been contained in the 2010 Future Years Defense Program, an adjunct to the budget submission that the Administration chose not to submit to the Congress for 2010. In lieu of those estimates, CBO has developed a scenario under which all U.S. troops would be withdrawn from Iraq by December 31, 2011. That scenario is consistent with the Status of Forces Agreement signed by the governments of Iraq and the United States in November 2008 and with the President's speech of February 27, 2009. The total number of U.S. military personnel deployed to Afghanistan and to contingency operations at all other locations worldwide under that scenario would decline to 30,000 starting in fiscal year 2013. (That figure excludes U.S. military personnel permanently based overseas in locations such as South Korea or Okinawa, Japan, who are not engaged in contingency operations.) CBO estimates that supporting a deployment of that size would require recurring annual appropriations of about \$20 billion in 2010 dollars.⁴

1. Department of Defense, *Fiscal Year 2010 Budget Request: Summary Justification* (May 2009), http://comptroller.defense.gov/defbudget/fy2010/fy2010_SSJ.pdf.

2. Remarks of President Barack Obama, "Responsibly Ending the War in Iraq," February 27, 2009, www.whitehouse.gov/the_press_office/Remarks-of-President-Barack-Obama-Responsibly-Ending-the-War-in-Iraq. CBO's analysis of that withdrawal schedule is found in Congressional Budget Office, "Withdrawal of U.S. Forces from Iraq: Possible Timelines and Estimated Costs," letter to the Honorable John F. Tierney (October 7, 2009).

3. Remarks by the President, "Address to the Nation on the Way Forward in Afghanistan and Pakistan," December 1, 2009, www.whitehouse.gov/the-press-office/remarks-president-address-nation-way-forward-afghanistan-and-pakistan. CBO has estimated the costs for 2010 and 2011 of increasing the number of U.S. troops in Afghanistan along with corresponding changes to the number of troops in Iraq. See Congressional Budget Office, "CBO's Analysis of Scenarios for Funding the Wars in Afghanistan and Iraq," letter to the Honorable John M. Spratt Jr. (January 21, 2010).

4. Congressional Budget Office, *The Budget and Economic Outlook: An Update* (August 2009), pp. 21–26. CBO also developed a second scenario in which the number of U.S. military personnel deployed to contingency operations would decline more slowly, reaching 75,000 by 2014. That scenario would require annual appropriations of about \$50 billion starting in 2014. The recurring annual costs referenced in the current study exclude an estimated \$5 billion for diplomatic operations and foreign aid; that amount is funded through other agencies and does not appear in DoD's budget.

costs of those plans over the next 18 years. The main sources were DoD's budget request for 2010 and budget justification materials the Administration provided to the Congress in May 2009 along with that request.⁴ Among the other sources were DoD's press releases and briefing materials and Secretary of Defense Robert M. Gates's announcement in April 2009 of changes to the nation's defense plans that foreshadowed the actual budget submission.⁵ CBO also used information in DoD's Future Years Defense Program (FYDP), although the most recent FYDP containing data for future years was submitted with the 2009 budget request.

Real (inflation-adjusted) defense resources would continue to increase under CBO's projection of DoD's plans for 2010 but not as rapidly as U.S. gross domestic product (GDP), and the share of GDP devoted to national defense would therefore steadily decline.⁶ That share fell from an annual average of 5.6 percent in the 1980s to 3.8 percent in the 1990s and rose again above 4 percent starting in 2008, with supplemental and emergency funding included. If DoD's plans for 2010 were carried

out, defense spending would decline to 3.2 percent of GDP in 2015 and to 2.6 percent of GDP by 2028 under CBO's base projection. Spending would be higher when unbudgeted costs are included, but it would still decline to 3.8 percent of GDP in 2015 and to 3.1 percent of GDP by 2028 (see Figure 2).

Projections of Funding for Operation and Support

CBO defines operation and support (O&S) as the sum of the appropriations for military personnel, operation and maintenance (O&M), and the revolving funds.⁷ The 2010 regular budget request (excluding overseas contingency operations) includes \$188 billion (35 percent of the total) for O&M and \$136 billion (25 percent of the total) for military personnel (see Table 1 on page 2). Over the longer term, carrying out DoD's plans for 2010 would push O&S funding from \$324 billion in 2010 to \$425 billion in 2028 (annual real growth of 1.5 percent), increasing from 61 percent to 72 percent of the total budget (see Table 2). Including unbudgeted costs, the annual real growth rate of O&S funding would be 2.0 percent.

For its projections, CBO divided O&S funding into the functional categories used by DoD's program analysts:⁸

- *Operating forces*—combat and support units assigned to combatant commands;

4. This report is based on the fiscal year 2010 budget request, Department of Defense, "DoD [2010 Budget Request]," <http://comptroller.defense.gov/Budget2010.html>. The Department of Defense Appropriations Act, 2010 (Public Law 111-118) was enacted in December 2009. The appropriation act includes \$530 billion in regular funding and \$130 billion in contingency funding. The total of \$660 billion comprises \$130 billion for procurement; \$80 billion for research, development, test, and evaluation; \$150 billion for military personnel; \$272 billion for operation and maintenance; and \$28 billion in other funding. Although DoD will update its plans to reflect Congressional actions, those changes will not be visible in its plans until DoD submits the 2011 Future Years Defense Program.

5. Department of Defense, "Defense Budget Recommendation Statement" (as prepared for delivery by Secretary of Defense Robert M. Gates, April 6, 2009), www.defense.gov/speeches/speech.aspx?speechid=1341.

6. CBO's estimate of future growth in GDP is based on continuing the time series on GDP presented in its report *The Budget and Economic Outlook: An Update* (August 2009). Defense spending in this paragraph is measured by the actual disbursements (outlays) from the Treasury that arise from funding for defense programs.

7. For the current analysis, CBO folds the revolving funds into the O&M appropriation. Those funds generate receipts from fees charged to customer organizations in the military services and defense agencies. To augment those receipts, DoD also requested appropriations for the following funds in 2010: the National Defense Sealift Fund, the Defense Commissary Agency, Defense Coalition Support, and the working capital funds of the Army and the Air Force.

8. The definitions of those categories are adapted from Ronald E. Porten, Daniel L. Cuda, and Arthur C. Yengling, *DoD Force and Infrastructure Categories: A FYDP-Based Conceptual Model of Department of Defense Programs and Resources* (Alexandria, Va.: Institute for Defense Analyses, September 2002).

Box 2.**CBO's Methods for Projecting the Resource Requirements of the Department of Defense**

The Congressional Budget Office's (CBO's) projection of defense plans is an estimate of the resources that would be required to sustain the plans, programs, and policies described in the Department of Defense's (DoD's) budget and in its Future Years Defense Program (FYDP).¹ In contrast to a projection, which assumes that future appropriations and other legislative actions will facilitate the continuation of DoD's current plans, a forecast or prediction would allow for legislative actions that could compel DoD to revise those plans.

In light of pressures on spending in the overall federal budget, it may become increasingly difficult for the Congress to continue to provide the appropriations necessary to sustain DoD's current programs or those planned up to five years into the future. The defense programs in the current plan may have to be curtailed to fit within a compressed defense "top-line." One value of a projection, such as the one presented in this study, is that it highlights the tension between current plans and future fiscal realities.

CBO has developed several projections of DoD's budget, which are intended to answer different questions and which use different simplifying assumptions. CBO constructs its baseline, which it publishes in *The Budget and Economic Outlook* each year, in accordance with the provisions set forward in the Balanced Budget and Emergency Deficit Control Act of 1985 and in the Congressional Budget and

Impoundment Control Act of 1974. (Although the provisions of the Deficit Control Act that pertain to the baseline expired at the end of September 2006, the agency generally continues to follow that law's specifications in preparing its baseline.)

That baseline begins with appropriations to date in the current fiscal year and projects that sum by adjusting it using a forecast of inflation in future years. The value of the budget baseline is that it clarifies the extent to which Congressional choices (changes to the laws determining mandatory spending or enactment of authorization bills determining discretionary spending) will increase or decrease federal spending (and, in conjunction with estimates of future revenues, increase or decrease the federal debt).

The budget baseline is problematic, however, for projecting supplemental and emergency appropriations for overseas contingency operations. Although the Congress often provides some funding for those operations at the beginning of a fiscal year, that initial funding is usually supplemented by additional funding provided later in the year. The budget baseline applies future years' inflation to the sum appropriated at the time the baseline estimate is published. The resulting estimate could understate the full-year cost of continued conflict in the near term but overstate costs over the longer term if the United States withdraws its military forces from ongoing conflicts. To avoid that conundrum, CBO also publishes alternative paths that project funding under two illustrative schedules for withdrawing troops from wartime operations.²

Just as the budget baseline is problematic when dealing with the costs of overseas contingency operations, the projections in the FYDP are problematic in

1. Concurrent with its budget request, DoD delivers to the Congress a FYDP that comprises a historical record of defense forces and funding as well as DoD's plans for future programs. The historical portion shows costs, forces, and personnel levels since 1962. The plan portion presents DoD's program budget (estimates of funding needed for the next five or six years, based on the department's current plans for all of its programs). A recent exception is the FYDP that accompanied DoD's fiscal year 2010 budget request, which did not contain any information for the out-years.

2. Congressional Budget Office, *The Budget and Economic Outlook: An Update* (August 2009), pp. 21–26.

Continued

Box 2.**Continued****CBO's Methods for Projecting the Resource Requirements of the Department of Defense**

assuming that the Administration's defense plans can be conducted at the costs or prices that DoD has assumed. DoD has often underestimated the costs of developing and purchasing new weapon systems. The cost of a plan that calls for procuring a particular number of units of a weapon system at a particular price may change if, as is frequently the case, the unit cost of that weapon system increases. Similarly, the military's medical costs may continue to rise faster than DoD has anticipated; the Congress may enact pay raises for military personnel and civilians working in DoD that exceed what the department has planned for. All such costs have increased in the past and are likely to do so in the future.

On the basis of those and other factors, CBO has estimated the unbudgeted costs that show the difference between what would occur if the Administration was able to execute all of its plans at the prices it assumes and what would occur if the Administration attempted to execute all of its plans at the prices it is more likely to face.

In conventional risk analysis, the base projection is, if not the most likely case, at least a case to which rela-

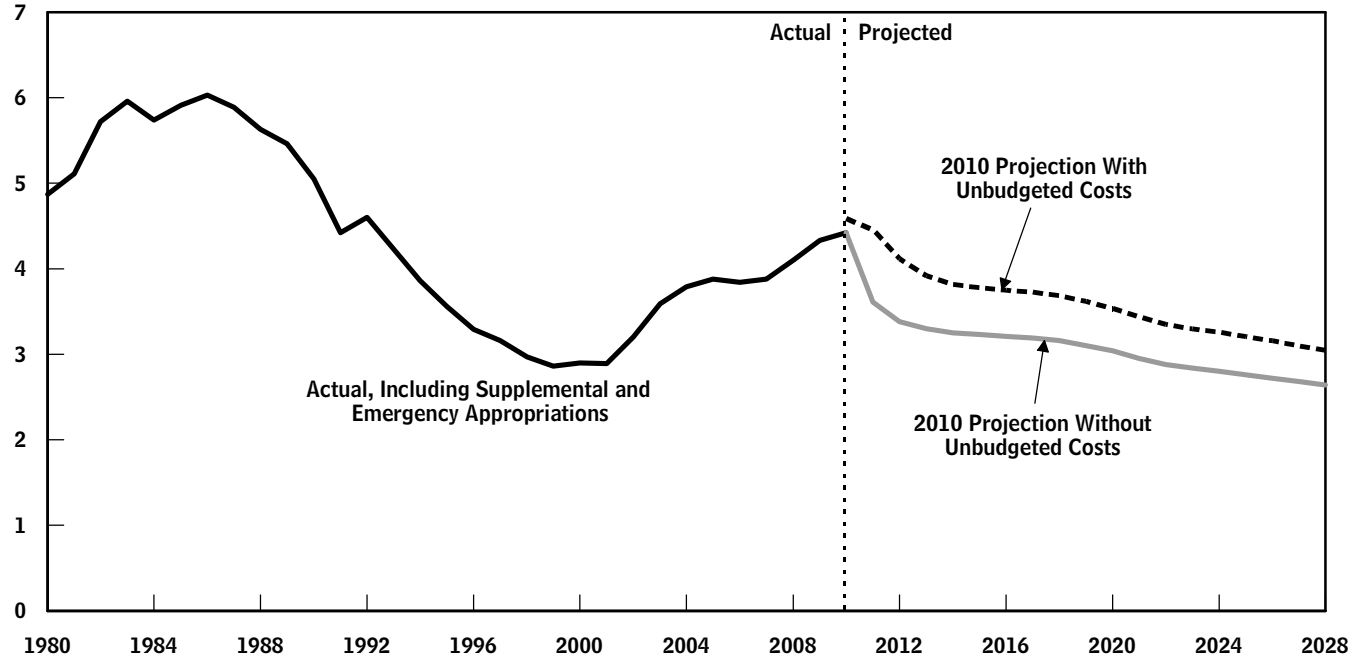
tively high probability is attached.³ However, in CBO's view, the base projection that incorporates all of DoD's planning and cost assumptions is more like a lower bound: Costs may turn out to be that low, are unlikely to be any lower, and are much more likely to be higher, perhaps considerably so. CBO's projection that includes unbudgeted costs is intended to represent a much more likely outcome than does the base projection of the FYDP, although the specific probability attached to that outcome and its percentile rank relative to all other outcomes are impossible to estimate in light of the confluence of many underlying risk factors.

3. M. Granger Morgan and Max Henrion, *Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis* (Cambridge, England: Cambridge University Press, 1990); and Paul Garvey, *Analytical Methods for Risk Management: A Systems Engineering Approach* (Boca Raton, Fla.: CRC Press, 2009).

Figure 2.

Defense Resources as a Share of Gross Domestic Product

(Percent)



Source: Congressional Budget Office.

Table 2.**Resources for Operation and Support in Selected Years**

(Billions of 2010 dollars)

| | Actual | Requested | Projected | | | Average |
|---|-----------------|------------------------|------------|------------|------------|------------|
| | 2009 | 2010 | 2013 | 2020 | 2028 | 2011–2028 |
| Regular Defense Budget | | | | | | |
| Operating Forces | 161 | 124 | 130 | 141 | 154 | 140 |
| Medical | 44 | 46 | 54 | 70 | 90 | 69 |
| Bases, Installations, and Infrastructure | 52 | 47 | 48 | 51 | 54 | 51 |
| Command and Intelligence | 22 | 22 | 23 | 24 | 25 | 24 |
| Central Training | 33 | 32 | 33 | 35 | 37 | 35 |
| Central Logistics | 21 | 16 | 17 | 19 | 21 | 19 |
| Headquarters and Administration | 39 | 36 | 37 | 39 | 43 | 39 |
| Subtotal | 373 | 324 | 341 | 378 | 425 | 376 |
| Other Resources | | | | | | |
| Additional Supplemental, Emergency, and Contingency Funding | 47 ^a | 105 | n.a. | n.a. | n.a. | n.a. |
| Total | | | | | | |
| Including Additional Funding | 420 | 429 | 341 | 378 | 425 | 376 |
| Including Total Unbudgeted Costs | n.a. | 429^b | 363 | 407 | 465 | 408 |

Source: Congressional Budget Office.

Note: Operation and support consists of the appropriations for military personnel, operation and maintenance, and the revolving funds.

n.a. = not applicable.

- a. Excludes \$64 billion in other supplemental and emergency funding allocated among the funding categories listed above.
- b. Includes \$300 million that the Administration has not requested but that CBO projects could be needed to fund either contingency operations or other unbudgeted costs.

- *Medical*—uniformed medical personnel, operation of military medical treatment facilities (MTFs) in the direct care system, medical care purchased from the private sector, pharmaceuticals, and accrual charges that fund health care for military retirees and dependents who are eligible for Medicare;⁹
- *Bases, installations, and infrastructure*—installations for military forces, communications and information infrastructure, central benefit programs for DoD personnel, and miscellaneous activities;
- *Command and intelligence*—operational headquarters, command-and-control systems, and intelligence collection;
- *Central training*—training at central locations away from service members’ duty stations;
- *Central logistics*—depot-level maintenance, supplies, and transportation of materiel; and
- *Headquarters and administration*—central administration of acquisition programs, science and technology programs, central personnel administration, and departmental management.

CBO assumes that all costs other than those for military and civilian pay and the two categories labeled “operating

9. CBO’s projections for defense medical spending include only funding in the appropriations for operation and maintenance and military personnel. The 2010 budget also identified approximately \$1 billion in medical-related military construction and small amounts (around \$1 million) in procurement and in research, development, test, and evaluation. The latter appropriations are excluded from this section but are included elsewhere in this report in CBO’s projections of acquisition spending. Medical accrual charges are intragovernmental payments—payments from one governmental account to another—representing future medical costs that current service members (and their eligible family members) will incur to pay for care from civilian providers under the military’s TRICARE for Life program and at medical treatment facilities once they retire from the military and become eligible for Medicare. Each year, the Treasury, on behalf of DoD, contributes an amount to the Medicare-Eligible Retiree Health Care Fund based on the current number of military personnel. Although the Treasury makes the contribution, the amount is included in DoD’s funding in the budget and appropriation process. Within the FYDP, medical accrual charges are distributed among all of the O&S functional categories. To provide a comprehensive estimate of DoD’s medical costs, CBO consolidated all such charges in the medical category.

forces” and “medical” grow at the same rate as the deflator for gross domestic product, which is a standard measure of general inflation in the U.S. economy (see Figure 3). In CBO’s projections, the costs of operating forces increase over time because weapon systems become more expensive to operate and maintain as they age. Moreover, new generations of weapon systems are likely to be more complex and thus more expensive to operate and maintain than are the systems they replace.¹⁰

Medical costs also have grown faster than other O&M-funded activities in the past, and DoD anticipates growth in per capita medical spending in the categories of in-house care, purchased care, and military personnel. However, DoD expects that pharmaceutical funding per capita will experience a one-time decrease of about 11 percent from 2009 to 2010, largely because of a recent federal regulation that applies federal ceiling prices to pharmaceuticals covered by DoD’s TRICARE system and purchased through its retail pharmacy network.¹¹

Military and Federal Civilian Pay and Benefits

CBO projects continued real growth in military and civilian pay. In November 2003, Congress passed a law that indexed the annual increase in basic military pay to the percentage increase in the Bureau of Labor Statistics’ employment cost index (ECI) for wages and salaries in private industry.¹² The ECI grew more rapidly than the GDP deflator in all years but two from 1981 to 2009; CBO projects that the same pattern will continue

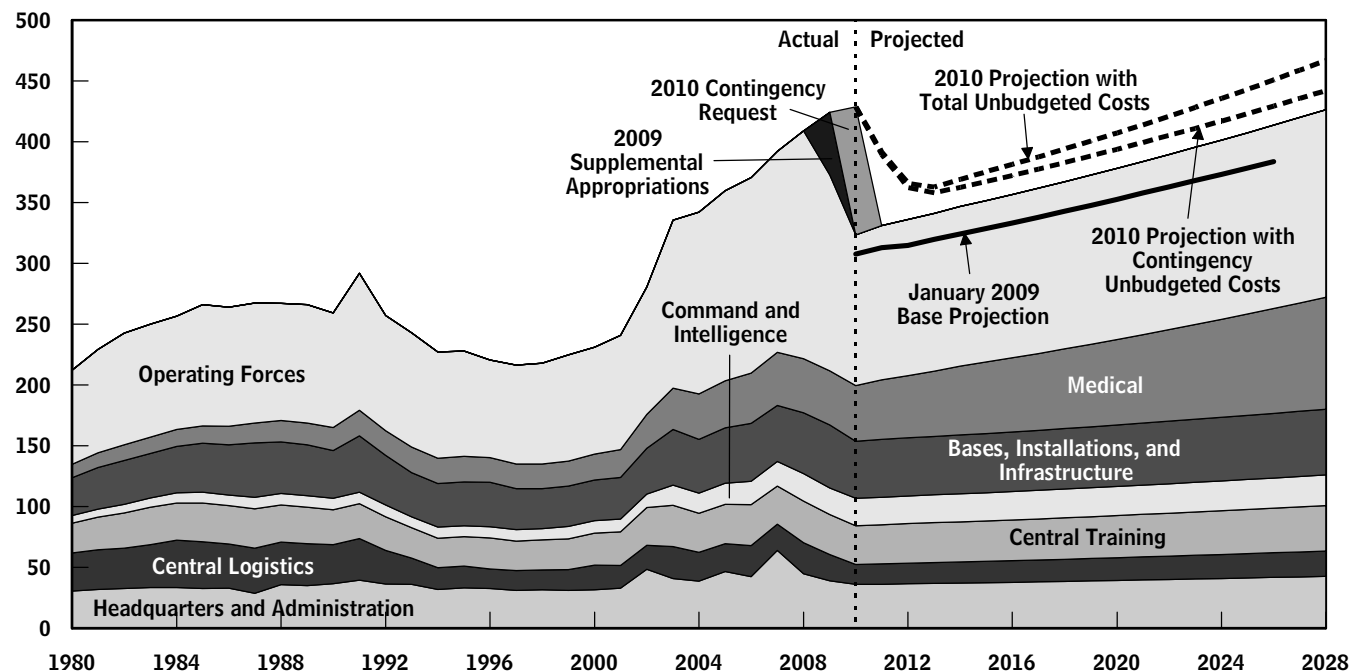
10. Congressional Budget Office, *The Effects of Aging on the Costs of Operating and Maintaining Military Equipment* (August 2001).

11. Manufacturers may sell drugs to federal agencies or under Medicaid as long as the prices they charge the “big four” government agencies (DoD, the Department of Veterans Affairs, the Public Health Service, and the Coast Guard) for brand-name drugs are no higher than the federal ceiling prices, which are computed as a fixed percentage of the previous year’s average price paid to manufacturers by wholesalers. See Congressional Budget Office, *Prices for Brand-Name Drugs Under Selected Federal Programs* (June 2005), p. 8.

12. Section 602 of the National Defense Authorization Act for Fiscal Year 2004 (NDAA, P.L. 108-136, 117 Stat. 1498, amending 37 U.S.C. 1009). See Department of Labor, Bureau of Labor Statistics, “Employment Cost Trends: Data Usage,” www.bls.gov/ncs/usage.htm; and Charles A. Henning, *Military Pay and Benefits: Key Questions and Answers*, CRS RL33446 (Congressional Research Service, updated October 31, 2008), http://assets.opencrs.com/rpts/RL33446_20081031.pdf.

Figure 3.
Resources for Operation and Support

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Operation and support consists of the appropriations for military personnel, operation and maintenance, and the revolving funds.

Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories.

between 2010 and 2028 and that growth of the ECI will exceed growth of the GDP deflator by an average of 1.4 percentage points per year. In 20 of the past 28 years, the annual pay raise for federal civilians has been set equal to (and, in one year, above) the percentage increase in basic military pay.¹³ Assuming that pay raises for federal civilians continue to keep pace with those for military personnel, CBO projects continued real growth in pay for both groups.

Enhanced Military Benefits. CBO's projections reflect several developments over the past decade that provided new or enhanced military benefits:

13. In three other years—2000, 2001, and 2007—the pay raise for civilian employees was set equal to the across-the-board increase in basic military pay, but the Congress enacted additional military pay raises tied to seniority. Thus, the average military pay raise exceeded the civilian pay raise in those three years.

Changes to the REDUX Retirement System. The immediate annuity paid to military personnel who retire after 20 years of active service increased from 40 percent to 50 percent of a service member's "high-three" basic pay, and the system now provides full (rather than partial) cost-of-living adjustments each year.¹⁴

Establishment of TRICARE for Life. Expanded health care coverage is now available for military retirees and their families who are eligible for Medicare. That coverage pays most of the costs that would otherwise have been the share of the costs that retirees pay out of pocket under

14. Basic pay is the single largest component of military pay, received by all members and determined by the member's grade (usually the same as rank) and years of service. The basic pay that determines an active-duty service member's retirement annuity is computed as the average of the 36 highest months of basic pay in the service member's career. The retirement changes were enacted in the NDAA for fiscal year 2000 (P.L. 106-65, 113 Stat. 512) and affected service members who retired beginning in 2006.

Medicare; it also funds care for retirees at MTFs if space is available.¹⁵

Elimination of the Social Security Offset for the Survivors' Benefit Plan. The retirement annuity for surviving spouses who participate in the plan and are age 62 or older increased from 35 percent to 55 percent of the deceased service member's retirement pay.¹⁶

Changes in the Rules Regarding Concurrent Receipt. Several classes of retired military personnel are now permitted to receive military retirement pay without any offset for compensation for a service-connected disability they receive from the Department of Veterans Affairs.¹⁷

Provision of Early Receipt of Retirement Pay for Some Reservists. The age at which retired members of the reserve components can receive retirement pay was lowered to under age 60 in some cases and is based on the accumulation of periods on active duty in support of a contingency operation during the member's time spent in a reserve component.¹⁸

Pay Comparability with Private-Sector Workers. In the early 1980s, several relatively large increases in military pay were enacted that purportedly equalized the pay scales for military personnel and private-sector workers. However, many observers assert that, since 1982, the equality has gradually eroded and a gap has developed between basic military pay and wages and salaries in the private sector. The Congress has passed several measures in an effort to close that gap and restore pay equality. Those measures affect the pay of active-duty service members and their future retirement annuities. DoD

makes payments into the Military Retirement Fund to reflect its accruing liabilities for service members' retirement benefits. Those payments are charged against the military personnel accounts. Higher basic pay today leads to higher projections of future retirement annuities, in turn requiring larger payments today from the military personnel accounts into the retirement fund.¹⁹

Until 2003, the annual increase in basic military pay had been loosely linked to the percentage increase in the General Schedule pay scale under the Federal Employees Pay Comparability Act of 1990.²⁰ In November 2003, the Congress enacted a law requiring that annual increases in basic pay from 2007 forward be indexed to the ECI. That law also stipulated that the pay increases for 2004, 2005, and 2006 exceed the increase in the ECI by one-half of one percentage point.²¹ Those increases in pay—and the ones enacted in 2008 and 2009, which also exceeded the percentage increase in the ECI—reduced the pay gap that had once stood at 13.5 percent (in 1998 and 1999) to 2.9 percent (see Figure 4).²²

The pay gap, measured as described above, might not provide the best information on the adequacy of military compensation. First, the broad sample of civilian workers included in the survey that is used to produce the ECI consists of people who are, on average, older than military personnel and more likely to have a college degree. Since 1980, the pay of college-educated workers has risen faster than that of high school graduates in the civilian sector. Also, the pay of older civilian workers generally has grown faster than that of younger workers.

15. TRICARE for Life was enacted in the NDAA for fiscal year 2000. The program is funded on an accrual basis, with payments into the Medicare-Eligible Retiree Health Care Fund charged against the military personnel accounts.

16. That change was enacted in section 644 of the NDAA for fiscal year 2005 (P.L. 108-375, 118 Stat. 1960, 10 U.S.C. 1451).

17. The rules for concurrent receipt have been relaxed successively in section 636 of the NDAA for fiscal year 2003 (P.L. 107-314, 116 Stat. 2574, 10 U.S.C. 1413a, as amended by section 642 of the NDAA for fiscal year 2004, P.L. 108-136, 117 Stat. 1516) and in section 641 of the NDAA for fiscal year 2008 (P.L. 110-181, 122 Stat. 156).

18. That change was enacted in section 647 of the NDAA for fiscal year 2008 (P.L. 110-181, 122 Stat. 160, 10 U.S.C. 12731).

19. Those calculations are revisited each year by DoD's Office of the Actuary, most recently in "Valuation of the Military Retirement System: September 30, 2008" (December 2009), <http://actuary.defense.gov/valbook2008.pdf>.

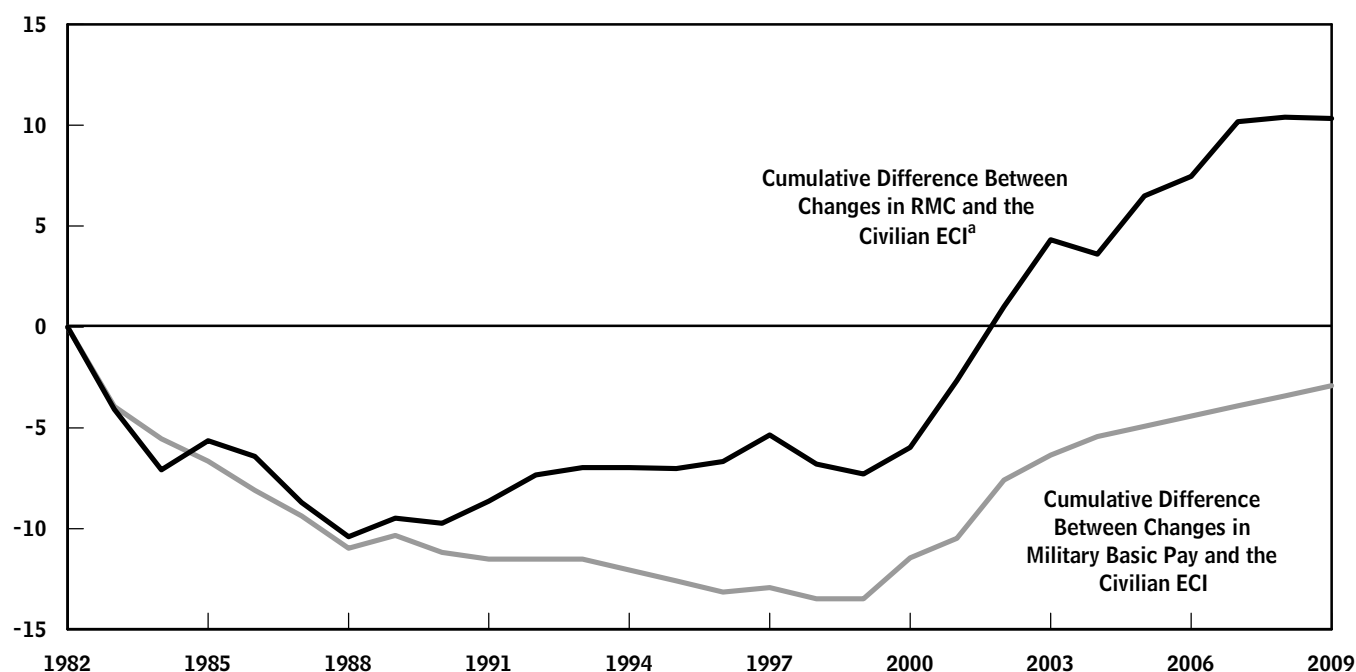
20. An exception was the "pay table reform," which provided additional increases in basic military pay tied to seniority, spread over calendar years 2000 and 2001.

21. Section 602 of the NDAA for fiscal year 2004 (P.L. 108-136, 117 Stat. 1498, amending 37 U.S.C. 1009).

22. Rick Maze, "War of words heats up over 2010 pay raise," *Army Times*, March 12, 2009, www.armytimes.com/news/2009/03military_payraise_MOAA_031009w. The pay gap, which was 13.5 percent in 2008 and 2009, is the percentage by which the cumulative increase in military basic pay since 1982 fell short of the cumulative increase in the ECI for wages and salaries in private industry.

Figure 4.**Cumulative Difference Between Changes in Military and Private-Sector Pay Raises Since 1982**

(Percent)



Source: Congressional Budget Office.

Note: The employment cost index (ECI) measures wages and salaries in private industry.

- a. Regular military compensation (RMC) includes basic pay, allowances for housing and subsistence, and the federal tax advantage that occurs because those allowances are not taxed.

Basic pay for enlisted personnel closely matches the 50th percentile (median) earnings for civilian counterparts of comparable age and education. With cash allowances added to the equation, pay for the average enlisted member in 2006 matched the 75th percentile of civilian earnings, exceeding DoD's stated goal of paying at the 70th percentile.²³

Calculation of the pay gap focuses on one component of military compensation—basic pay—and ignores changes in other components. Regular military compensation (RMC) is a broader measure that, in addition to basic pay, includes housing and food allowances, which are not

subject to the federal income tax. In addition to raising basic pay in 2000, DoD requested and lawmakers authorized a restructuring of housing allowances that eliminated out-of-pocket expenses typically paid by service members (those payments had averaged about 20 percent of housing costs).²⁴ Other changes included more closely linking allowance rates to increases in local housing prices and protecting service members from any declines in those prices.

With all of those legislated changes, the 10 annual pay raises between 2000 and 2009 added 65 percent in nominal terms (or an average of 5.1 percent compounded annually) to RMC; the comparable increase in basic pay was 52 percent (or an average of 4.3 percent per year). Recomputed using RMC, the pay gap reversed sign in

23. Comparisons of the percentiles were reported in Congressional Budget Office, *Evaluating Military Compensation* (June 2007). DoD's goal of paying at the 70th percentile was first stated in Department of Defense, *Report of the Ninth Quadrennial Review of Military Compensation* (2002), <http://prhome.defense.gov/qrmc/Vol1/Pref.pdf>.

24. Those changes were enacted in section 605 of the NDAA for fiscal year 2001 (P.L. 106-398, 114 Stat. 1654A-147, 37 U.S.C. 403).

2002 and stood at +10.3 percent on January 1, 2009 (see Figure 4).

Many factors complicate the process of determining a military pay raise that is perceived as fair and facilitates the military's efforts to meet its goals for recruiting and retaining high-quality personnel. Military service involves more sacrifices than many other occupations, including frequent moves during peacetime and, since 2002, the prospect of deployment to Afghanistan or Iraq. Military compensation includes payments in kind (such as medical care for service members and their eligible family members) and deferred compensation (such as retirement pay and medical care for retired service members and their families); additional deferred compensation is available through the Department of Veterans Affairs, although it is not included in DoD's budget. Given the unique aspects of military life and the emphasis on non-cash compensation, assessing the validity of benchmarking contemporaneous military pay against the 70th or any other percentile of the civilian wage distribution is difficult.²⁵ Ultimately, the best barometer of the effectiveness of DoD's compensation system is how well the military attracts and retains high-quality personnel. Overall, in recent years, DoD has met its goals in recruiting and retaining active-duty members, perhaps because military compensation compares favorably with civilian options.²⁶

Many of the same considerations apply to DoD's civilian personnel. DoD's 2010 budget calls for employing 745,000 full-time-equivalent civilians who would earn \$70 billion in compensation in that year. Of that sum, \$56 billion would be paid from the O&M appropriation.²⁷ The same pressures that real increases (above general inflation) in military compensation exert on the appropriation for military personnel are reinforced by real increases in civilian compensation in the O&M and other

appropriations, both contributing to the real increases in funding required for operation and support.

Military Medical Costs

Under DoD's plans for 2010, the department's medical funding will grow from \$46 billion in 2010 to \$90 billion by 2028, CBO estimates, for a real increase of 97 percent compared with the 2010 amount. Medical funding accounts for almost half of the growth projected for O&S funding between 2010 and 2028.

For the base projection of medical costs without unbudgeted costs, CBO used the 2010 budget as a starting point and then used information provided by DoD's TRICARE Management Activity to estimate changes in direct care, purchased care, and pharmaceutical costs for 2011 through 2015. Although the implied rates of cost growth for that period differ from those estimated for the general U.S. population, they reflect the evolving demographics of the military population, the structure of the military health care benefit, and policy initiatives specific to military medicine. For fiscal years 2016 through 2018, CBO assumed that DoD's per capita spending on health care would grow at rates similar to those anticipated for medical spending elsewhere in the economy.²⁸

Pay increases for uniformed medical personnel account for only 4 percent of the overall growth in medical costs that CBO projects between 2010 and 2028. Various other expenses—most notably accrual charges for TRICARE for Life and the costs of pharmaceuticals and of purchased care and contracts—will be more important (see Figure 5). Accrual payments make up about 29 percent of the projected increase in medical funding. For the base projection, CBO assumes that medical accrual payments will grow at a long-run nominal rate of 6.25 percent per year from 2011 through 2018, then gradually drop to an annual rate of 4.87 percent by

25. Congressional Budget Office, *Evaluating Military Compensation*.

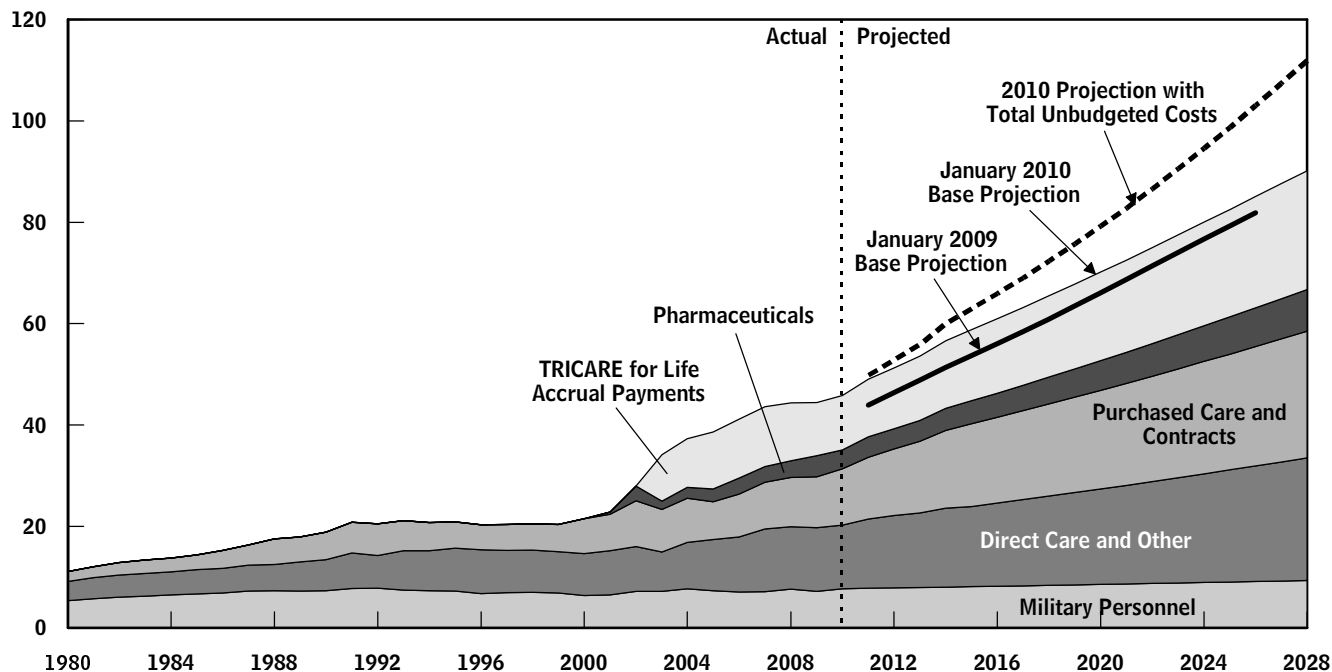
26. Congressional Budget Office, *Recruiting, Retention, and Future Levels of Military Personnel* (October 2006).

27. See the "Green Book," namely, Department of Defense, *National Defense Budget Estimates for FY 2010* (June 2009), Tables 6-1, 6-2, and 7-5, http://comptroller.defense.gov/defbudget/fy2010/Green_Book_Final.pdf. (The remaining civilians would be paid from other appropriation titles: For instance, civilians in military laboratories might be paid from the appropriation for research, development, test, and evaluation; civilians in acquisition program offices might be paid from the procurement appropriation.)

28. CBO derived its estimates for the growth of funding for pharmaceuticals, direct care, and purchased care for 2016 through 2018 from the projections for pharmaceuticals, hospital care, and physician and clinical services in "National Health Expenditure Projections 2008–2018," www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2008.pdf, published by the Centers for Medicare and Medicaid Services. Those projections extend only to 2018, and CBO assumed that growth would slow after that date, eventually reaching a rate in 2033 that was 1 percentage point higher than the growth of per capita GDP.

Figure 5.**Resources for the Military Medical System**

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Note: Before 2001, pharmaceutical costs were not separately identifiable but were embedded in the costs of two categories, "Purchased Care and Contracts" and "Direct Care and Other." Starting in 2001, most pharmaceutical costs are separately identifiable, but some of those costs may be embedded in the category "TRICARE for Life Accrual Payments."

2028.²⁹ CBO estimates that accrual charges will increase by 118 percent in real terms between 2010 and 2028, from \$10.8 billion to \$23.4 billion.

DoD anticipates that pharmaceutical spending per capita will decrease by about 11 percent in nominal terms from 2009 to 2010, largely because of a recent federal regulation that applies federal ceiling prices to pharmaceuticals purchased through TRICARE's retail pharmacy network. DoD expects that regulatory change and other factors

will hold growth in pharmaceutical spending below historical rates during most of the 2011–2015 period. CBO projects that per capita costs for pharmaceuticals will then resume increasing at a nominal annual rate of 7 percent beginning in 2016, slowing to about 5 percent per year by 2028. CBO estimates that pharmaceutical spending will increase by 121 percent in real terms between 2010 and 2028, from \$3.7 billion to \$8.2 billion.

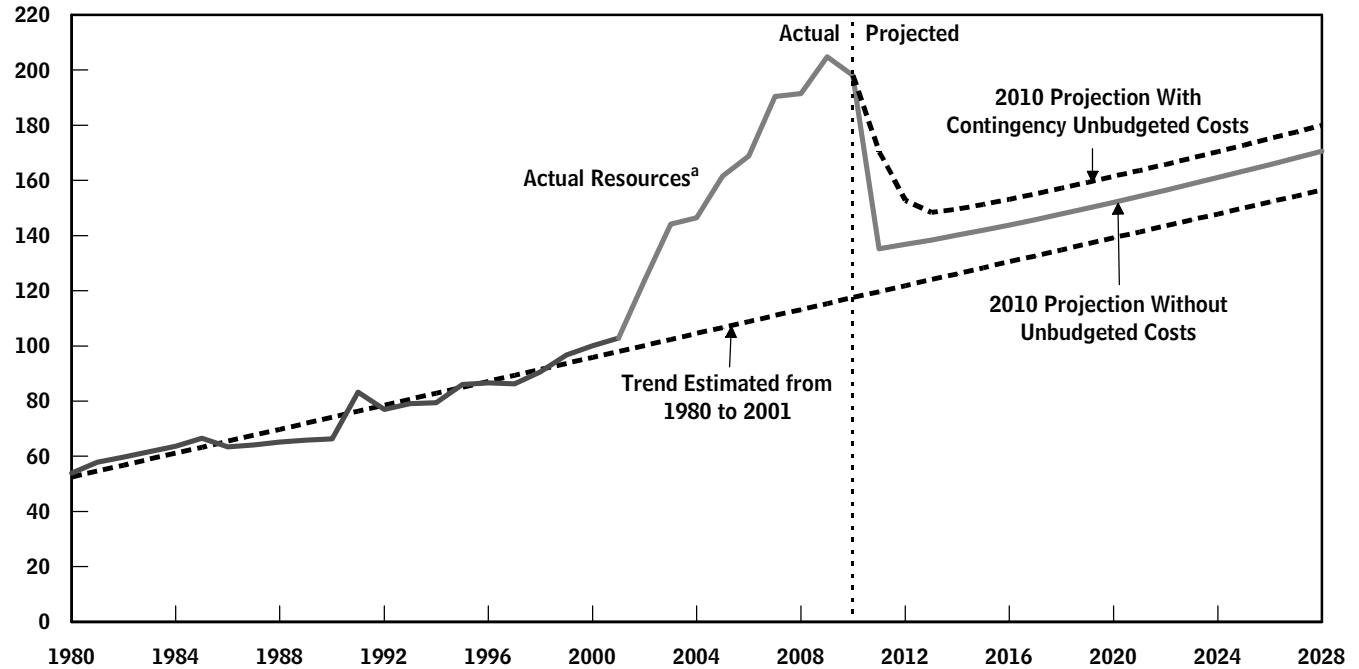
DoD expects that per capita funding for purchased care will increase by 11 percent in nominal terms between 2009 and 2010 and that per capita funding for direct care in MTFs will remain flat in those years. In CBO's projections, per capita funding for direct care and purchased care grows at rates averaging 6 percent and 9 percent, respectively, per year from 2011 through 2015; beginning in 2016, growth rates for both types of care drop, averaging about 5 percent per year through 2028. Pay for uniformed medical personnel is projected to follow the same trend as for other military personnel in DoD's budget.

29. The independent Board of Actuaries for DoD's Medicare-Eligible Retiree Health Care Fund annually updates its estimate of the accrual charges necessary to fund TRICARE for Life. Those accrual charges are intended to fund health care for military retirees and dependents who are eligible for Medicare. Using assumptions similar to those applied to spending on direct care, purchased care, and pharmaceuticals, CBO assumed that the growth in those accrual charges would eventually slow, reaching a rate equal to 1 percentage point above growth in GDP per capita by 2033.

Figure 6.

Trends in Resources for Operation and Maintenance per Active-Duty Service Member

(Thousands of 2010 dollars)



Source: Congressional Budget Office.

a. Includes supplemental and emergency appropriations that had been enacted or requested at the time of the 2010 budget submission.

Those projections suggest that between 2010 and 2028, DoD’s funding in real terms would rise by 21 percent for military medical personnel, 121 percent for pharmaceuticals, 93 percent for direct care, and 124 percent for purchased care and contracts.

Trends in O&M Funding per Active-Duty Service Member

Between 1980 and 2001, O&M costs per active-duty service member increased steadily by about \$2,200 per year (in 2010 dollars) because of factors such as medical inflation and civilian pay raises, discussed above (see Figure 6). O&M costs have fluctuated above that trend since 2002 because the wars in Iraq and Afghanistan have required large amounts of O&M funding but more modest increases in active end strength (the number of active-duty military personnel as of the last day of the fiscal year.)³⁰ Those funds supported U.S. military forces in the Iraq and Afghanistan theaters, providing food, housing, and security contracts; fuel, spare parts, and maintenance

for military equipment; transportation of personnel and equipment to and from the theater; and other services.

CBO’s projections through 2028 include O&M funding that starts above the prewar trend by between \$12,000 and \$15,000 per service member per year, then continues to increase at roughly the prewar rate (see Figure 6). That jump reflects, in part, Secretary of Defense Gates’s initiative to move support funding into the regular (or “base”) defense budget that had previously been provided instead through supplemental and emergency appropriations:

I just wanted to see that the needs of the warfighter—on the battlefield, at home, or in the hospital—had a seat at the table when priorities were being set and long-term base

30. The Army’s active-duty end strength increased from 480,000 in 2001 to 544,000 in 2008—an increase of 13 percent. The supplemental and emergency appropriations for Army O&M in 2008 totaled twice the amount in the regular budget for that year.

budget decisions were being made. And one of the things I've learned since entering government 43 years ago is that the best way to ensure that an organization really cares for and fights for something—as a lioness does for her cubs—is to put that thing in its base budget. So, the top priority recommendation I made to the President was to move programs that support the warfighters and their families into the services' base budget, where they can acquire a bureaucratic constituency and long-term funding. This includes, among others, more funding for medical research and treatment for TBI [traumatic brain injuries] and post-traumatic stress, improved child care, spousal support, lodging, and education.³¹

Still more O&M funding would be required to support overseas contingency operations. CBO estimates that funding would level off at \$9,000 per service member annually in 2014 and beyond under the scenario of 30,000 troops deployed worldwide (see Figure 6).

Projections for Military Construction and Family Housing

Appropriations for military construction pay for the planning, design, construction, and major restoration of military facilities. Those appropriations also pay for the base realignment and closure (BRAC) process, including environmental assessments of sites designated for closure and construction projects needed to help consolidate personnel and units. Since 1980, appropriations for military construction (excluding funding for BRAC) have averaged about \$7 billion annually. DoD plans to dedicate enough funding to its facilities to achieve a recapitalization rate of 67 years. (The recapitalization rate is calculated by dividing the replacement value of all military facilities by the average funding used to restore or replace a portion of them annually.) That goal will require average funding of between \$8 billion and \$11 billion per year, CBO estimates.

The Administration's plans for 2010 include \$8 billion in funding for military construction for the round of base realignments and closures that began in 2005; CBO esti-

mates that \$4 billion will be required beyond 2010 to complete that round. DoD projects that recurring annual savings will eventually reach more than \$5 billion.³² Unlike previous BRAC rounds, which were more likely to close facilities, the current round would achieve savings primarily by consolidating activities more efficiently on existing military bases. Because few facilities would be completely closed, that round would have a minimal effect on future requirements for recapitalizing DoD's facilities. Further, in CBO's projections, the savings from consolidating bases do not reduce DoD's total demand for resources. Instead, the projections incorporate the assumption that DoD will retain the budget authority for that money and use it for unspecified purposes not necessarily related to maintaining facilities.

Appropriations for family housing pay for the construction, operation, maintenance, and leasing of military family housing. Since 1980, those appropriations have averaged \$5 billion per year. The 2010 budget and CBO's projections envision that such funding will drop to \$2 billion in future years, because some funding for military housing will come from third-party financing that is not recorded in the federal budget. Although such plans would reduce DoD's funding for building and operating family housing, they also could increase expenditures for the basic allowance for housing that military personnel receive to rent private housing units.³³

Unbudgeted Costs of Operation and Support

CBO analyzed the potential unbudgeted costs that might result from changes in several assumptions regarding the 2010 budget. If all of those assumptions were changed, funding for O&S would total \$465 billion in 2028, some 9 percent more than the amount in CBO's base projection that excludes unbudgeted costs.

Unbudgeted Costs for Contingency Operations. As part of the budget that it submitted in May 2009, the Administration requested \$130 billion for 2010 to fund contingency operations involving 100,000 U.S. military personnel deployed to Iraq and 68,000 deployed to

31. Department of Defense, speech delivered by Secretary of Defense Robert M. Gates at the Air War College, Maxwell-Gunter Air Force Base, Alabama, April 15, 2009, www.defense.gov/speeches/speech.aspx?speechid=1344.

32. Department of Defense, *Base Realignment and Closure Report*, vol. 1 (May 2005), p. 4.

33. Housing allowances are not included in the family housing budget, but they appear among military personnel costs in the O&S budget. CBO's projection of overall military personnel costs beyond 2015 implicitly incorporates changes in the basic allowance for housing that reflect changes in the 2010 budget.

Afghanistan.³⁴ Subsequently, in December 2009, the President announced his plan to increase (“surge”) the number of U.S. military personnel in Afghanistan by 30,000. Because the President’s announcement was not anticipated in the Administration’s 2010 budget request, implementing his plan would require additional supplemental appropriations. Although the President indicated that the one-year cost of a surge of 30,000 troops would be about \$30 billion, the Administration has not provided a projection of troop levels beyond 2010 or estimates of the associated costs in those later years.³⁵

CBO’s projection of the 2010 budget does not specifically account for the surge in Afghanistan either. Instead, CBO has developed a longer-term scenario in which the total number of U.S. military personnel deployed to contingency operations worldwide would decline to 30,000 starting in fiscal year 2013, although those troops would be in unspecified locations and not necessarily in Iraq or Afghanistan.³⁶ CBO estimates that supporting that number of deployed service members would require recurring annual appropriations of about \$20 billion (in 2010 dollars), of which about \$16 billion would consist of O&S costs.

Unbudgeted Medical Costs. As has often happened, medical costs could rise more rapidly than anticipated. Growth rates could be higher if any of the following items rise faster than anticipated: prices of the goods and services used as inputs to medical care; the range of medical services provided; the average intensity of services provided; or the number of eligible beneficiaries relying on TRICARE rather than on other sources of care (for

example, employer-provided health insurance or the health facilities of the Department of Veterans Affairs).

For its analysis of unbudgeted costs, CBO assumed that DoD’s medical costs per capita would increase during fiscal year 2010 at the rates outlined in the department’s annual memorandum on inflation guidance.³⁷ For fiscal years 2011 and beyond, CBO assumed that per capita medical costs would increase 30 percent faster than the rates used in the base case.³⁸ For direct care and purchased care, those nominal rates would average 8 percent and 12 percent per year, respectively, between 2011 and 2015 and then slow to 6 percent per year by 2028 (compared with 6 percent and 9 percent, respectively, falling to 5 percent, as in the base projection). For pharmaceuticals, CBO assumed 9 percent growth in 2016, falling to 7 percent in 2028 (rather than 7 percent falling to 5 percent, as in the base projection).

Finally, for estimating unbudgeted costs CBO assumed that accrual charges would rise steadily at a nominal rate of 6.25 percent per year even in later years rather than falling gradually after 2018, as is assumed in the base projection. The higher rate reflects the current estimate by DoD’s independent Board of Actuaries of the long-term growth for health care spending by military retirees and dependents who are eligible for Medicare. Under all of those alternative assumptions, DoD’s total medical spending would increase by 144 percent (rather than by 97 percent) in real terms from 2010 to 2028 if unbudgeted costs are included, rising to \$112 billion by 2028 (rather than to \$90 billion, as in the base projection), CBO estimates.

34. Department of Defense, *Fiscal Year 2010 Budget Request: Summary Justification* (May 2009), http://comptroller.defense.gov/defbudget/fy2010/fy2010_SJ.pdf.

35. Remarks by the President, “Address to the Nation on the Way Forward in Afghanistan and Pakistan,” December 1, 2009. CBO’s estimates of the costs for 2010 and 2011 of increasing the number of U.S. troops in Afghanistan are contained in Congressional Budget Office, “CBO’s Analysis of Scenarios for Funding the Wars in Afghanistan and Iraq,” letter to the Honorable John M. Spratt Jr. (January 21, 2010).

36. Congressional Budget Office, *The Budget and Economic Outlook: An Update* (August 2009), pp. 21–26.

37. DoD anticipates that medical costs will escalate more rapidly than general inflation. In DoD’s most recent programming guidance, the DoD comptroller promulgated inflation rates for 2010 of 7 percent for private-sector medical care purchased by the Defense Health Program, 10.1 percent for the program’s pharmacy outlays, and 6.2 percent for its other outlays (mostly for in-house care provided at military medical treatment facilities). See Department of Defense, “Inflation Guidance—Fiscal Year (FY) 2010 President’s Budget” (memorandum from the Under Secretary of Defense [Comptroller], February 13, 2009), www.ncca.navy.mil/services/PB2010_Inflation_Guidance_Feb_13_2009.pdf.

38. For the justification of the 30 percent acceleration in costs, see Congressional Budget Office, *Growth in Medical Spending by the Department of Defense* (September 2003), p. 14.

Unbudgeted Costs for Military and Civilian Pay Increases. CBO's base projection assumes that military and civilian pay raises from 2011 forward will be set equal to the percentage increase in the ECI.³⁹ CBO has estimated the additional costs that would accrue if the military and civilian pay raises from 2011 through 2015 instead equaled its projection of the percentage increase in the ECI plus a premium of 0.5 percentage points. Funding larger pay raises over those five years would require an additional appropriation of \$2.8 billion for military personnel and \$1.4 billion for O&M (to fund higher civilian salaries) in 2015. Although pay raises are assumed to revert to the ECI after 2015, the funding necessary to sustain the larger pay raises assumed from 2011 through 2015 would continue to compound in future years, requiring total appropriations of \$3.6 billion for military personnel and \$1.8 billion for O&M in 2028.

Projections of Funding for Acquisition

The Department of Defense's acquisition account has two components: research, development, test, and evaluation (RDT&E) and procurement. DoD's plans for 2010 call for acquisition spending of \$187 billion in 2010. Carrying out those plans over the long term would cause acquisition funding—excluding unbudgeted costs—to peak at \$202 billion in 2017, CBO projects, and to average about \$185 billion annually from 2011 through 2028 (see Figure 7).

CBO's current projections of procurement and of total acquisition funding—based on DoD's 2010 budget request—differ from CBO's earlier projections that were based on DoD's 2009 budget and FYDP. Comparing a future year common to both analyses, CBO currently projects procurement funding of \$124 billion (\$8 billion below its earlier projection) in 2020 and total acquisition

funding \$185 billion (\$7 billion below its earlier projection) in that year (see Table 3).⁴⁰ The new, smaller projections incorporate changes to DoD's acquisition plans announced by the Secretary of Defense and are embedded in the department's 2010 budget request.

CBO has estimated the unbudgeted costs that measure the difference between two budget requirements—one in which DoD is able to execute all of its plans at the costs and prices it assumes; and one in which DoD attempts to execute all of its plans at the prices it is more likely to face. Including those unbudgeted costs and the costs for repairing, replacing, and upgrading equipment used in contingency operations, CBO projects that acquisition funding based on the 2010 request would peak in 2017 at \$231 billion. In that case, funding for acquisition would average \$212 billion annually, about 15 percent more than in the case excluding unbudgeted costs.⁴¹

Army Acquisition

The resources for acquisition allocated to the Department of the Army in the 2010 budget, excluding supplemental and emergency appropriations, total \$48 billion. CBO projects that an average of \$32 billion per year would be needed between 2011 and 2028 to carry out the Army's acquisition programs (see Figure 8).

In 2009, the Army received \$17 billion in supplemental and emergency appropriations in the RDT&E and procurement accounts. That funding was used to repair and replace equipment that had been worn out, damaged, or destroyed in operations in Iraq and Afghanistan; to upgrade equipment; and to buy new equipment, including equipment for the Army National Guard. Supplemental and emergency appropriations provided 31 percent of the Army's total acquisition funding in 2009. CBO's base projection does not anticipate any future supplemental or emergency appropriations. However, CBO has estimated

39. CBO's base projection assumed a 2.9 percent pay raise for military personnel, consistent with DoD's 2010 budget request; CBO allowed for the possibility of a 3.4 percent pay raise with attendant unbudgeted costs. Section 601 of the NDAA for fiscal year 2010 authorized the military pay raise of 3.4 percent that took effect on January 1, 2010 (P.L. 111-84, 123 Stat. 2347, 37 U.S.C. 1009), so the unbudgeted costs associated with the additional 0.5 percent pay raise were actually realized. There are no corresponding unbudgeted costs for civilian pay because the Administration's request for a 2.0 percent raise was enacted in section 744 of the Consolidated Appropriations Act for Fiscal Year 2010 (P.L. 111-117), which provided an increase averaging 2.0 percent—an increase in base pay of 1.5 percent and an increase in locality pay averaging 0.5 percent.

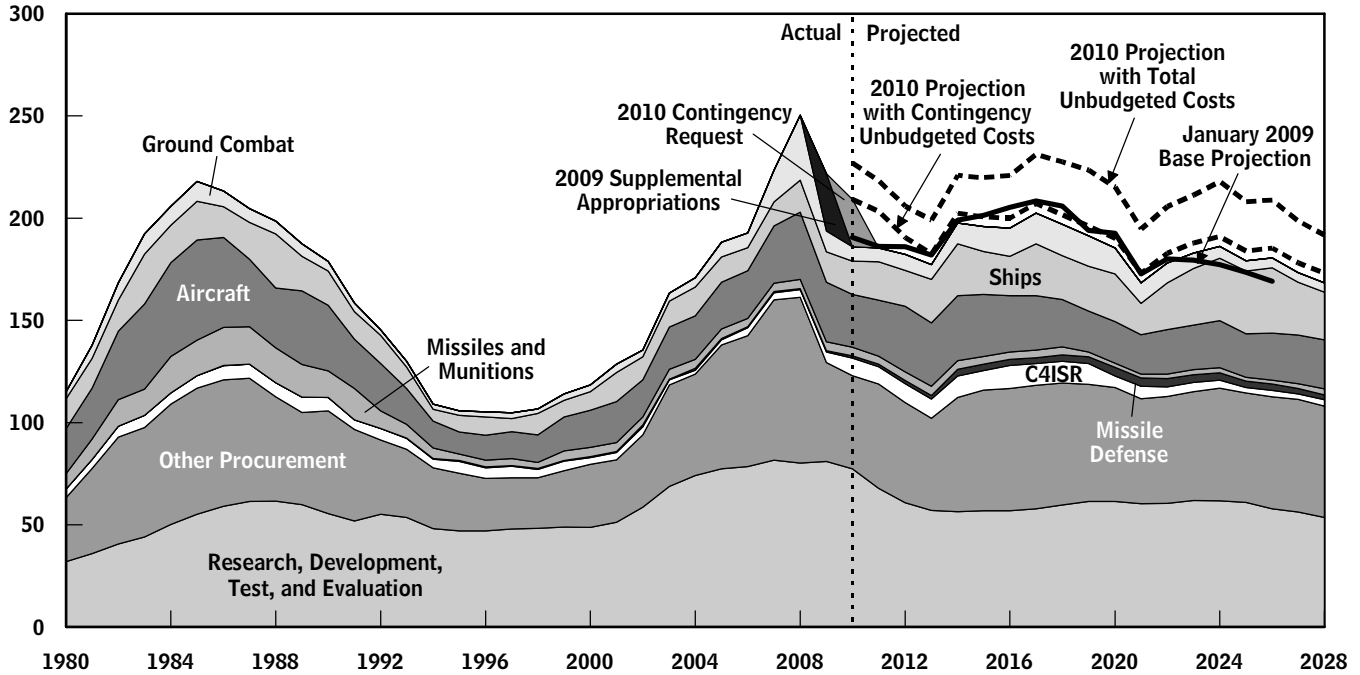
40. See Congressional Budget Office, *Long-Term Implications of the Fiscal Year 2009 Future Years Defense Program* (January 2009).

41. Historical analysis of DoD's acquisition programs indicates that costs have grown substantially relative to initial estimates. See Mark V. Arena and others, *Historical Cost Growth of Completed Weapon System Programs*, TR343-AF (prepared by RAND for the United States Air Force, 2006), www.rand.org/pubs/technical_reports/2006/RAND_TR343.pdf; and Obaid Younossi and others, *Is Weapon System Cost Growth Increasing? A Quantitative Assessment of Completed and Ongoing Programs*, MG-588-AF (prepared by RAND for the United States Air Force, 2007), www.rand.org/pubs/monographs/2007/RAND_MG588.pdf.

Figure 7.

Resources for Acquisition

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories. C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

that the Army’s acquisition funding may average as much as \$42 billion annually when the unbudgeted costs of equipment for future contingencies and likely cost growth in procurement programs are included.⁴²

CBO’s projection of the Army’s acquisition resources, which incorporates changes announced by the Secretary of Defense in April 2009, would require less annual funding for that purpose in each year from 2010 to 2028 than in CBO’s earlier projection, which was based on the 2009 FYDP. The primary reason for that reduction is the

change in the Future Combat Systems (FCS) program announced by the Secretary. In its projection, CBO assumed that the FCS program, as previously conceived, would be canceled and that some of the resulting savings would be reinvested in upgrading current combat vehicles and in fielding some of the less technologically challenging components of the FCS to the Army’s combat brigades on an accelerated schedule. Compared with the 2009 FYDP, that change in the Army’s acquisition strategy would yield significant savings, starting in 2013, when the previous FCS program would have begun to require annual investments of \$3 billion or more. Between 2017 and 2020, the increased investment that CBO projects would be needed to upgrade the Army’s combat vehicles and to field FCS technologies to combat brigades would offset much of the savings realized by canceling the FCS program. After 2020, however, almost the full \$6 billion that the Army would have needed annually to complete the FCS program could be saved, according

42. CBO’s projection of the Army’s acquisition program beyond 2010 includes funds to procure missile defense systems such as the Medium Extended Air Defense System, the Terminal High-Altitude Area Defense, and interceptors for a boost-phase missile defense. Most of the research for those programs is currently funded by the Missile Defense Agency, but DoD plans to transfer procurement funding for those systems to the military services when the systems enter production.

Table 3.
Resources for Acquisition in Selected Years

(Billions of 2010 dollars)

| | Actual 2009 | Requested 2010 | Projected | | | Average 2011–2028 |
|--|-----------------|------------------------|------------|------------|------------|----------------------|
| | | | 2013 | 2020 | 2028 | |
| Regular Defense Budget | | | | | | |
| Procurement | | | | | | |
| Ground combat | 10 | 7 | 7 | 13 | 5 | 9 |
| Ships | 15 | 16 | 21 | 23 | 23 | 24 |
| Aircraft | 29 | 26 | 31 | 20 | 24 | 25 |
| Missiles and munitions | 4 | 4 | 5 | 2 | 3 | 3 |
| Missile defense | 1 | 1 | 2 | 4 | 2 | 3 |
| C4ISR | 5 | 9 | 9 | 6 | 3 | 7 |
| Other | 48 | 46 | 45 | 56 | 55 | 55 |
| Research, Development, Test, and Evaluation | 81 | 79 | 57 | 61 | 54 | 59 |
| Subtotal | 194 | 187 | 177 | 185 | 168 | 185 |
| Other Resources | | | | | | |
| Additional Supplemental, Emergency, and Contingency Funding | 25 ^a | 23 | n.a. | n.a. | n.a. | n.a. |
| Total | | | | | | |
| Including Additional Funding | 219 | 211 | 177 | 185 | 168 | 185 |
| Including Total Unbudgeted Costs | n.a. | 227^b | 199 | 215 | 192 | 212 |

Source: Congressional Budget Office.

Note: C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance; n.a. = not applicable.

a. Excludes \$6 billion in other supplemental and emergency funding allocated among the funding categories listed above.

b. Includes \$17 billion that the Administration has not requested but that CBO projects could be needed to fund either contingency operations or other unbudgeted costs.

to CBO's projections. Thus the Army's acquisition profile shows a notch in 2013, followed by a hump through 2020 similar to CBO's earlier projection, then finally a rapid falloff after 2020 for the remainder of the projection period (see Figure 8).

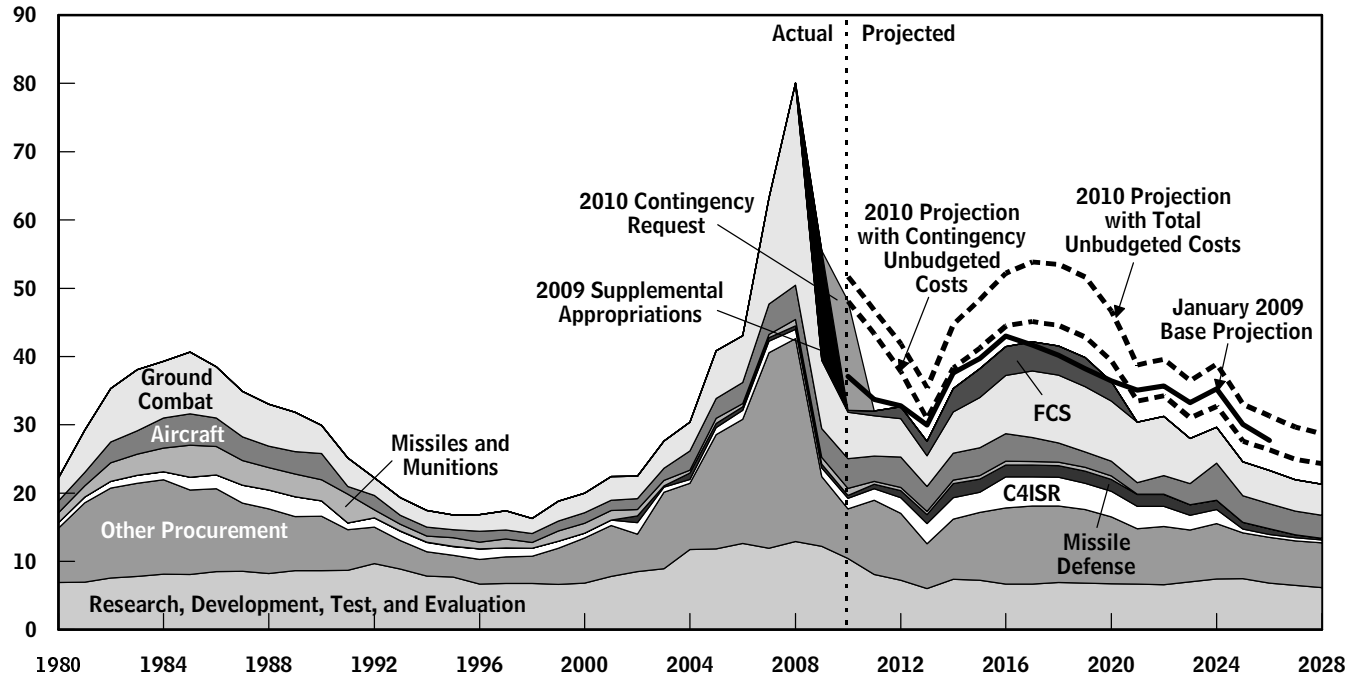
DoD's Plans to Lower the Target Number of BCTs in the Active Army from 48 to 45. According to the 2009 FYDP, DoD planned to expand the active Army from 42 to 48 brigade combat teams (BCTs) by 2013 and to have 28 BCTs in the Army National Guard. In its 2009 edition of *Budget Options*, CBO noted that the active Army would probably be unable to identify 23,000 additional soldiers (beyond those already identified) to fully populate 6 new brigades under the then-current cap of 547,000 active-duty soldiers.⁴³ In April 2009, the Secretary of Defense

proposed curtailing the number of active BCTs at 45 (versus 48) to ensure that deployed units would be fully staffed and to end the routine use of "stop loss" (the practice of involuntarily retaining deployed soldiers past the end of their enlistment or reenlistment contracts until after their units return to the United States). The Secretary also proposed maintaining the active Army's planned end strength at 547,000. About three months later, the Secretary announced a temporary increase in the active Army's end strength from 547,000 to 569,000 through fiscal year 2012, for the purpose of "[ensuring] that our deploying units are properly manned, and not to create

43. Congressional Budget Office, *Budget Options, Volume 2* (August 2009), Option 050-1, p. 6.

Figure 8.
Resources for Army Acquisition

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories.

FCS = Future Combat Systems; C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

new combat formations.⁴⁴ Thus, the Army's plan for 2010 is to level off at 45 active brigades and to have

28 brigades in the Army National Guard, for a total of 73 brigades.

44. Department of Defense, "DoD News Briefing with Secretary Gates and Chairman, Joint Chiefs of Staff, Admiral Michael Mullen" [news transcript, July 20, 2009], http://comptroller.defense.gov/defbudget/fy2010/fy2010_oco.pdf. The Secretary indicated that the increase in end strength for fiscal years 2009 and 2010 could be achieved without requesting any additional budget authority. Subsequently, the Department of Defense identified a requirement for about \$1 billion in 2010 to pay for 15,000 additional soldiers and recommended that those funds be reprogrammed from various accounts, including about \$700 million originally slated for Army operations and to purchase medium tactical vehicles and high-mobility multipurpose wheeled vehicles. See Department of Defense, *Budget Amendment to the FY2010 President's Budget Request for Overseas Contingency Operations (OCO), Summary and Explanation of Changes, Exhibits for FY2010, Amended Justification Material* (August 2009), pp. 3–5, http://comptroller.defense.gov/defbudget/fy2010/fy2010_oco.pdf. The proposed source for funding in 2011 and 2012 remains to be determined.

Future Combat Systems. In early April 2009, the Secretary of Defense outlined changes to plans for the Future Combat Systems program and recommended that those changes be incorporated into the Administration's fiscal year 2010 budget request for defense.⁴⁵ Although the 2010 request was submitted in May 2009, it did not contain the programmatic details typically associated with budget submissions. In particular, the Administration announced that, unlike previous budget requests, the request for fiscal year 2010 would not be accompanied by

45. Details concerning the revised FCS program will probably not be available until the budget for 2011 is submitted in February 2010. The changes the Secretary specified included canceling the manned vehicle portion of the FCS program, counterbalanced by accelerating the fielding of other FCS technologies to all of the Army's combat brigades.

revised and updated Selected Acquisition Reports, which would have supplied programmatic details for years after 2010.

Canceling the basic FCS program and removing all of the related funding would save \$110 billion in CBO's 2010 projection compared with the one associated with the 2009 FYDP. However, the fielding of certain FCS technologies to the Army's combat brigades would incur additional costs. In CBO's projections, the Army would field unattended ground sensors, the two classes of unattended aerial vehicles, and the small unmanned ground vehicle and the non-line-of-sight launch system to all of its combat brigades.⁴⁶ The Army would also continue to develop the network portion of the FCS program and field the necessary hardware to all of its combat brigades so that information gathered by the sensors could be shared by all elements within the brigade.⁴⁷

The investments needed to insert FCS technologies into existing systems and units could cost \$40 billion through 2028, CBO estimates. Those funds would be used to insert technologies within the Army's 73 combat brigades and would be \$27 billion more than the amount included for the comparable program in last year's projection. All told, costs for FCS-related acquisitions would be \$75 billion less from 2011 to 2026 in CBO's latest projection than in the previous one.

Programs to Purchase and Upgrade Other Ground Combat Vehicles. CBO's current projection includes significantly more funding for the purchase of Stryker vehicles and upgrades to the Army's tanks and Bradley vehicles than was included in its previous projection. That increase is primarily due to CBO's inclusion of additional funds in its projection to purchase and upgrade existing vehicles to offset the loss of the FCS vehicles that would have been introduced into Army units under the now canceled FCS program. Specifically,

46. For a detailed discussion of the Army's FCS program and its costs, see Congressional Budget Office, *An Analysis of the Army's Transformation Programs and Possible Alternatives* (June 2009).

47. CBO's projection does not include the cost to field the unmanned ground vehicles that were part of the former FCS program and that may be retained in the restructured program. Nor does it include funds to develop and procure an entirely new ground combat vehicle. If those portions of the FCS program, as included in the 2009 FYDP, were included in CBO's current projection, the overall cost of FCS-related acquisition would be roughly equal to that included in CBO's previous projection.

in the case of the Stryker program, CBO's current projection includes the annual cost of roughly \$3 billion for purchasing 700 Stryker vehicles each year (compared with 300 annually in last year's projection) from 2015 to 2022. Those projected purchases reflect the Army's goals as reported in *Army Modernization Strategy 2008* and various press reports that indicate the Army's intention to replace its aging fleet of M113-based vehicles with Stryker vehicles.⁴⁸

The Army's plans to upgrade its self-propelled 155-millimeter howitzers will revitalize the entire fleet at an annual cost of about \$200 million from 2010 through 2021. For the rest of the combat vehicles, CBO assumed that upgrading Abrams tanks and Bradley vehicles would have a combined cost of roughly \$2 billion annually. Future budgetary constraints could result in some of those programs receiving amounts less than those currently projected by CBO, particularly if the Army carries through on reported plans to field an entirely new ground combat vehicle in the next 5 to 10 years.

Truck Programs. CBO's latest projection for the Army's truck programs is roughly the same as last year's estimates for the common years through 2026. About \$28 billion would be used to purchase a new vehicle the Army and Marines are developing—the joint tactical light vehicle—as a replacement for the Army's high-mobility multipurpose wheeled vehicles, of which it has more than 100,000. The newer vehicle is expected to be safer and more fuel-efficient than the vehicle it replaces, but the large quantities required would result in average expenditures from 2015 to 2028 of \$1.7 billion per year. Additional purchases planned for 2011 to 2028 include trucks from the family of medium tactical vehicles and upgrades to extend the service life of the Army's heavy trucks. All told, CBO's projection includes expenditures for trucks that average \$2.7 billion per year from 2011 to 2028 and peak at \$4.0 billion in 2018.

Aviation Programs. The Army's aviation programs could require a total of \$66 billion in procurement funding between 2010 and 2028, CBO estimates. The primary

48. U.S. Army, *Army Modernization Strategy 2008* (July 25, 2008), p. 30; Stephen Speakes and Gregory Martin, "Army Modernization in an Era of Persistent Conflict," *Army*, vol. 58, no. 1 (January 2008), pp. 31–36; and Jason Sherman, "Army Eyes Major Boost to Stryker Fleet Size to Replace Aging M113s," *Inside the Army*, April 7, 2008.

change to CBO's current projection relative to its projection based on the 2009 FYDP is the cancellation of the armed reconnaissance helicopter program that was being developed to replace the Army's OH-58D Kiowa Warriors. CBO's projection assumes that a new program (similar in scope to the canceled program) would begin in 2010 to develop and procure more than 500 armed reconnaissance helicopters to replace the OH-58Ds. Funding for the Army's aviation programs would also pay for the purchase of more than 300 new light-utility helicopters to replace the UH-1H Hueys and OH-58C Kiowas that are slated for retirement. In addition, the Army has tentative plans to begin a new joint heavy-lift rotorcraft program. CBO's updated projection incorporates those programs along with programs to upgrade and extend past 2028 the service life of the Army's Apache, Blackhawk, and Chinook helicopters.

Missile Defense. CBO's projection assumes that the Army will invest an average of \$1.4 billion per year from 2011 to 2028 to purchase equipment to defend against ballistic missiles. The Army's purchases would include the Terminal High-Altitude Area Defense system, the Patriot Advanced Capability-3 system, and the Medium Extended Air Defense System to defend against tactical ballistic missiles. (Details of CBO's projection for missile defenses are provided in a later section.)

Navy and Marine Corps Acquisition

The President's budget for 2010 includes \$64 billion for acquisition by the Department of the Navy, which includes the Marine Corps. In CBO's projections, acquisition funding would rise to \$76 billion in 2017 and then decline to \$48 billion by 2028. Between 2011 and 2028, the Navy's acquisitions would average \$63 billion a year. Including unbudgeted costs, the department's acquisition funding could peak at \$86 billion in 2017 and then fall back to about \$56 billion by 2028—averaging \$72 billion a year from 2011 to 2028 (see Figure 9).

The uneven funding profile for ships reflects the construction schedule in the Navy's 2009 shipbuilding plan (the Navy did not release a plan for 2010).⁴⁹ Generally, CBO assumes that Navy ships are fully funded in the year they are authorized, with the exception of aircraft carriers, for which funding can, by law, be spread over four years. Between 2010 and 2028, CBO projects, shipbuilding costs would reach a low of \$15.3 billion in 2021, a year in which the Navy plans to buy only six ships—two cruisers,

two attack submarines, and two oilers—although that projection also includes partial funding for a new aircraft carrier and for refueling the nuclear reactor of an older aircraft carrier. The years before and after 2021 include funding to purchase not only cruisers, attack submarines, and oilers but also amphibious assault ships, amphibious dock landing ships, and ballistic missile submarines. Funding for the littoral combat ship program is scheduled to end in 2019, contributing to the notch in the Navy's acquisition profile (see Figure 9).

Ships. A substantial portion of the Navy's resources under DoD's plans for 2010 would be taken up by the procurement of battle force ships. CBO based its assumptions about ship procurement on the Navy's 2009 shipbuilding plan and on the Secretary of Defense's recommendations for the 2010 defense budget.⁵⁰ CBO assumes that the Navy still plans to expand its fleet from the current 287 ships to 313. On the basis of information provided in the Navy's 2009 plan as modified in the Secretary of Defense's speech, CBO estimates that the Navy's purchases of ships to expand the fleet would average \$24 billion per year between 2011 and 2028; that figure would rise to \$29 billion per year through 2028 if unbudgeted costs were included.

Surface Combatants. The planned increase in the Navy's fleet is primarily in the surface combatant force, which currently consists of 110 cruisers, destroyers, frigates, and littoral combat ships. By 2028, under CBO's projection of DoD's plans for 2010, the fleet would consist of 142 ships—including 55 littoral combat ships, which are smaller and faster than any of the Navy's current surface combatants.

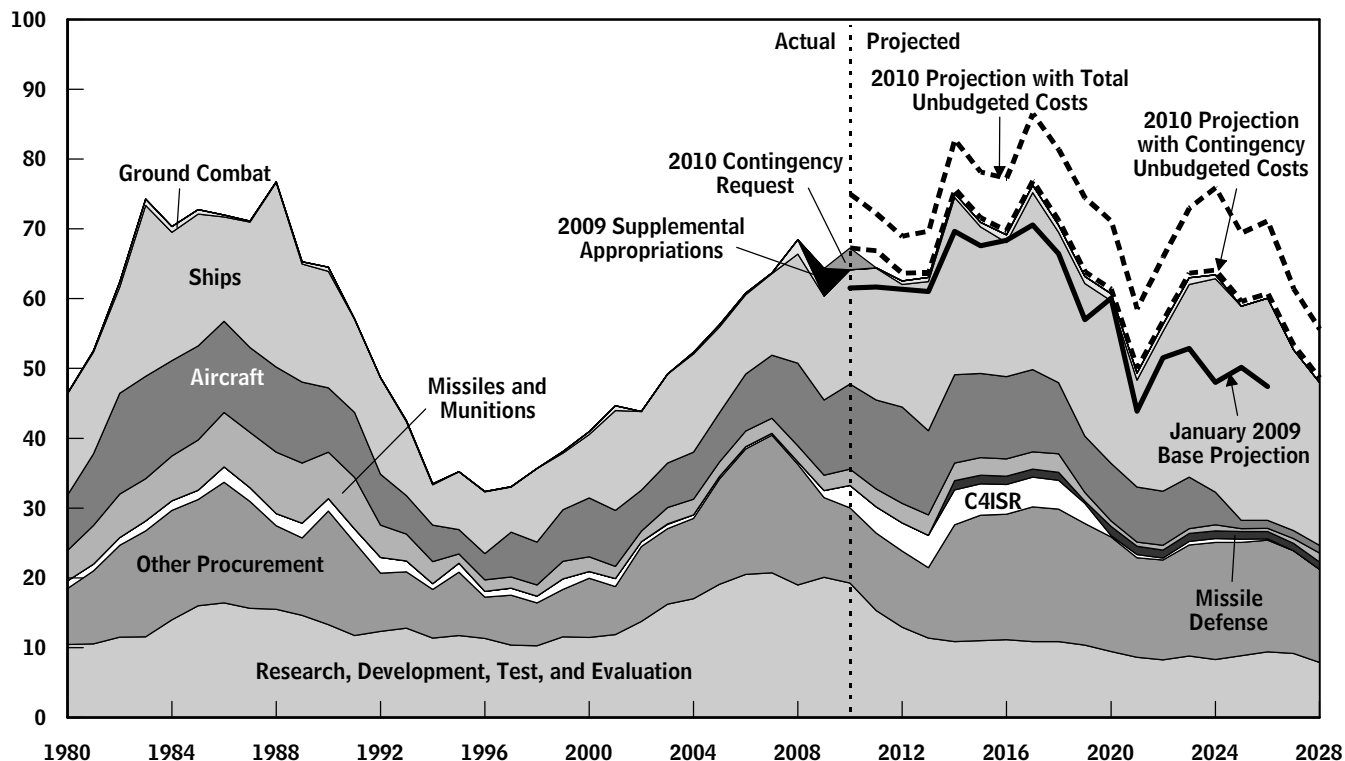
The Navy's plans for the surface combatant force changed substantially between the 2009 FYDP and the 2010

49. CBO has compared the Navy's 2009 shipbuilding plan with a preliminary version of its 2011 plan. See statement of Eric J. Labs, Senior Analyst, Congressional Budget Office, before the Seapower and Expeditionary Forces Subcommittee, House Armed Services Committee, *The Long-Term Outlook for the U.S. Navy's Fleet* (January 20, 2010).

50. Department of the Navy, *A Report to Congress on Annual Long Range Plans for the Construction of Naval Vessels, Fiscal Year 2009* (February 2008); and Department of Defense, "Defense Budget Recommendation Statement" (as prepared for delivery by Secretary of Defense Robert M. Gates, April 6, 2009), www.defense.gov/speeches/speech.aspx?speechid=1341.

Figure 9.**Resources for Navy and Marine Corps Acquisition**

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure.

The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories.

C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

budget plan. Under the 2009 plan, the Navy would have purchased five more DDG-1000 destroyers in addition to the two purchased in 2007 and would have started a new class of air- and missile-defense cruisers in 2011. In the summer of 2008, however, the Navy announced its plans to truncate the DDG-1000 program—first at two ships, then at three—and to resume production of the DDG-51 Arleigh Burke class of destroyers at a rate of one or two ships per year through 2017. In addition, according to the Secretary of Defense, the Navy will delay the start of the new cruiser program to revisit the requirements and acquisition strategy, but he did not specify when the Navy might begin producing those new cruisers. CBO assumed that the Navy would not purchase the first new cruiser until 2017 but would still purchase 19, as outlined in the 2009 shipbuilding plan.

The Navy is reportedly considering a number of designs for the new cruiser. Those designs include a modified repeat of the DDG-51 destroyer, an air- and missile-defense version of the DDG-1000, and conventional- or nuclear-propelled ships displacing 20,000 tons or more (more than twice the displacement of a DDG-51). CBO assumed for this analysis that the Navy would use the DDG-1000 hull to design its new cruiser. As the service's plans become more defined, CBO will adjust its estimates accordingly.

Under the 2009 shipbuilding plan, the Navy would also start a new destroyer program in 2022, providing for replacement of the DDG-51 class. Between 2022 and 2028, the Navy would purchase 15 ships, designated as the DDG(X), and would continue to acquire them at a rate of three per year at least through 2038. In total, the Navy's current procurement plan for surface combatants

would cost an average of \$7.9 billion a year between 2011 and 2028—\$11.5 billion annually, CBO estimates, if unbudgeted costs were included.

Submarines. The Navy's fiscal year 2009 shipbuilding plan would lead to a smaller submarine force. The Navy's requirement for attack submarines (SSNs) remains at 48 through the projection period; the Navy's plan would meet that requirement through 2022 but not thereafter. That plan also indicates that the Navy would replace its current 14 ballistic missile submarines (SSBNs) of the Ohio class with 12 new submarines starting in 2019. None of the four guided-missile submarines (SSGNs) that are scheduled for retirement would be replaced.

The Navy's short-term goal is to reduce the price of the new Virginia class attack submarine to \$2.5 billion (in 2010 dollars) and to increase procurement to two per year starting in 2011. CBO projects that the Navy's plan for 2010 for sustaining the attack, ballistic missile, and guided-missile submarine forces would cost, on average, more than \$8.6 billion per year between 2011 and 2028, or as much as \$9.3 billion annually if unbudgeted costs were included.

Amphibious and Maritime Prepositioning Ships. The Navy's amphibious lift ships are organized into expeditionary strike groups, each consisting of one amphibious assault ship or helicopter carrier (LHA or LHD), one amphibious transport dock, and one dock landing ship (LSD), together with three surface combatants and an attack submarine. The Navy envisions reducing the number of expeditionary strike groups from the 11 existing today to 9 by 2020. To support that plan, the Navy would purchase a second new America class LHA-6 amphibious assault ship in 2011, which is a delay of one year compared with the 2009 shipbuilding plan. The plan also anticipates seven replacements for Wasp class LHD-1 amphibious assault ships, four of which would be bought by 2028. It calls for 12 replacements for existing LSD-41 and LSD-49 ships, 7 of which would be purchased by 2028.

In addition to the expeditionary strike groups, the Navy's 2009 shipbuilding plan calls for purchasing 11 new maritime prepositioning ships—part of the Maritime Prepositioning Force (Future) squadron—to forward deploy the equipment of one Marine expeditionary brigade. The Navy plans to buy a mix of different ship types to popu-

late the squadron. Three existing ships transferred from the amphibious and existing maritime prepositioning forces would operate with the squadron.

The resources needed for new amphibious and maritime prepositioning ships would be \$2.7 billion per year, on average, between 2011 and 2028, CBO projects. Including unbudgeted costs, required resources would average \$3.0 billion per year.

Aircraft Carriers. The Navy's fiscal year 2009 shipbuilding plan projected a future carrier force of at least 11 large-deck ships, all of which eventually would be nuclear powered. The Navy ordered the first of its new class of aircraft carriers, the CVN-21, in 2008. Under the plan to maintain 11 carriers, the Navy would order a new ship every four or five years thereafter, in addition to refueling an existing nuclear-powered Nimitz class carrier about every three years. The Secretary of Defense announced in his speech of April 6, 2009, however, that the Navy would purchase a new carrier every five years rather than alternate between intervals of four and five years. As a result, the Navy's carrier force would fall to 10 ships after 2040 compared with 11 or 12 for most years under the 2009 shipbuilding plan. CBO projects that those efforts would require \$3.3 billion annually, on average, between 2011 and 2028, or \$3.7 billion including unbudgeted costs.

Aircraft. The Department of the Navy's aviation programs include Navy and Marine Corps aircraft and aircraft-related weapon systems. As envisioned in the 2010 budget, carrying out the Navy's procurement plans for modernizing the aircraft of both services would cost about \$12.2 billion. In CBO's projections, implementing those plans would require resources that averaged \$8.1 billion per year between 2011 and 2028, or \$9.9 billion per year accounting for unbudgeted costs. Average annual funding for 2010 through 2023 would be considerably higher—about \$10.6 billion per year—because of simultaneous purchases of several types of both fixed- and rotary-wing aircraft. Over that period, purchases would average about 200 aircraft per year. The completion of production for several types of those aircraft would result in lower average funding, about \$1.2 billion per year, from 2025 through the end of the projection period.

Fighter Aircraft. CBO's projection for Navy fighter aircraft includes three more years of procurement for the F/A-18E/F multirole fighter and the EA-18G electronic

warfare aircraft (for a total of 506 and 85 aircraft, respectively) and a total of 680 F-35 joint strike fighters in two variants: the F-35B short takeoff/vertical landing aircraft for the Marine Corps and the F-35C carrier-based aircraft for the Navy. In addition, as part of the Unmanned Combat Air System Carrier Demonstration (UCASD) program, the Navy is developing technologies that could lead to unmanned combat air vehicles capable of carrier-based strike missions or suppressing enemy air defenses. CBO assumed that those development efforts would be successful and that the Navy will have purchased more than 100 such aircraft by 2028. Those aircraft could augment manned aircraft in carrier wings or could replace F/A-18E/Fs that are expected to reach the end of their service life after 2025. (Alternatively, the Navy could elect to extend the service life of the F/A-18s, replace them with more F-35s, or develop a new manned fighter. CBO's projection does not include resources for those options.)

Other Fixed-Wing Aircraft. In addition to fighters, the Navy plans to procure other types of carrier- and land-based fixed-wing aircraft:

- A new version of the carrier-based E-2 Hawkeye airborne early-warning aircraft;
- A new land-based patrol aircraft, the P-8A Poseidon, which is based on a Boeing 737 airframe and will replace the P-3C Orion; and
- An unmanned broad-area maritime surveillance aircraft that will be a modified version of the Air Force's Global Hawk high-altitude unmanned aerial vehicle.

Marine Corps Rotary-Wing and Tilt-Rotor Aircraft. DoD's plans for 2010 include replacing or upgrading nearly every component of the Marine Corps' tilt-rotor and rotary-wing forces. The MV-22 Osprey tilt-rotor aircraft is replacing the current fleet of CH-46E medium-lift helicopters. The Marine Corps plans to replace its fleet of heavy-lift CH-53E helicopters with an upgraded version (currently called the CH-53K). It also plans to modernize the fleets of UH-1N light-utility helicopters and AH-1W attack helicopters with a mix of new and remanufactured aircraft. Plans for the VH-71 helicopter, which transports the President and is known as Marine One, were canceled in the 2010 budget request, and DoD indicated it would explore options for a follow-on program. CBO's projec-

tion includes resources for a program that would begin delivering replacements for Marine One around 2014.

Ground Combat. The Marine Corps' plans did not appear to change much from the 2009 FYDP to the 2010 budget. CBO assumed that the 2009 plan for procuring new expeditionary fighting vehicles would remain in place for the 2010 budget plan. Those vehicles would replace the amphibious assault vehicles and were reduced by nearly half in the 2008 FYDP. Under that assumption, procurement for the expeditionary fighting vehicle would start in 2012.

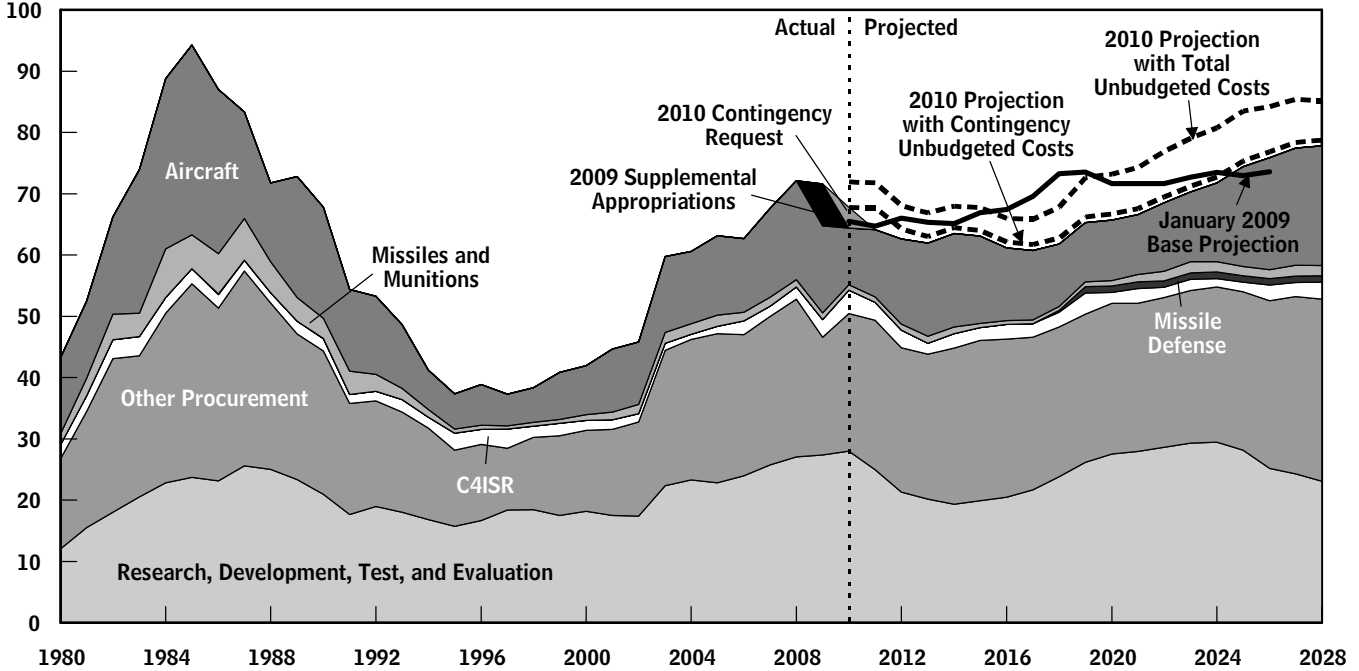
Under the 2009 FYDP, the Marines would begin buying the joint light tactical vehicle in 2013, and CBO assumed that those purchases would also be in the 2010 budget plan. The Marine Corps has used supplemental or emergency appropriations in the past two years to purchase many tactical vehicles, including high-mobility multipurpose wheeled vehicles and mine-resistant ambush-protected vehicles. In addition, by 2011 the service expects to complete its plan to replace about 1,500 heavy-duty logistics vehicles, which it began replacing in 2007. Those vehicles will come in cargo, wrecker, and tractor variants. All of those commitments would require average spending of about \$600 million per year through 2028, without cost growth; that amount is more than twice the average this category has received for the past two decades.

Air Force Acquisition

Under the Administration's plans, funding for RDT&E and for procuring Air Force systems would total roughly \$68 billion in 2010. CBO projects that continuing those plans throughout the 2011–2028 period would require about \$67 billion per year. Year-to-year funding would decline slowly, to about \$61 billion in 2017, and then increase to more than \$78 billion in 2028 (see Figure 10). The dip in funding around 2017 and the subsequent increase are mostly due to purchases of new aircraft models in the 2020s, including a delay in fielding the follow-on bomber program from 2018, as previously planned, to after 2025. If the costs of developing and purchasing Air Force systems grew beyond the service's current estimates to the same extent that they have in the past, carrying out the Administration's plans for that period would require an additional \$6 billion per year, on average, between 2011 and 2028.

Figure 10.
Resources for Air Force Acquisition

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories.

C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

For its projection of procurement funding for the Air Force, CBO tracked five categories of major systems: aircraft; command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems; missiles and munitions; missile defense systems; and unclassified space systems.

Aircraft. Procurement for aircraft systems includes purchases of new aircraft and major modifications to existing aircraft. During the projection period, funding for new aircraft systems is dominated by the F-35A joint strike fighter and the KC-X replacement for the KC-135 airborne tanker. (CBO’s projection assumes that KC-X production will begin in 2012.) Elements of DoD’s acquisition plans for the Air Force’s aircraft that changed significantly in 2010 relative to the previous year’s plans include:

- Cancellation of the CSAR-X combat search-and-rescue rotorcraft program. DoD is currently reevaluat-

ing how to best provide CSAR capabilities. CBO’s projection includes funding to replace current aircraft with a modern version of the Blackhawk helicopter.

- Increases in the number of medium-altitude unmanned aerial vehicle orbits that can be sustained. Consistent with DoD’s budget request and the Air Force’s long-term plans for unmanned aircraft, the 2010 projection includes substantially increased funding for MQ-9 Reaper aircraft.
- Postponement of a follow-on bomber program pending a review of requirements and available technologies. For its projection, CBO delayed the fielding of a new long-range strike aircraft from 2018, as previously planned, to after 2025.

C4ISR Systems. C4ISR systems consist of satellites, terrestrial systems, and surveillance aircraft. Over 40 percent of projected procurement funding is dedicated to a single

satellite system: the new Global Positioning System satellites. DoD's decision to cancel the Transformational Communications Satellite program was the primary reason for the decrease in total funding for the C4ISR category relative to CBO's previous projection. Increased funding for the MQ-9—an aircraft that contributes to C4ISR capabilities but can also attack ground targets—is included in the aircraft category.

Missiles and Munitions. This category includes systems that range from air-to-air weapons to intercontinental ballistic missiles (ICBMs). CBO's projection includes the cost of upgrades to existing Minuteman III ICBMs and RDT&E for a new ICBM that would be fielded sometime after 2028. Air-to-surface weapons in this category include the joint air-to-surface standoff missile, the joint direct attack munition, and the small-diameter bomb. For this projection, CBO added the new joint dual-role air dominance missile that DoD is beginning to develop for use against both air and surface targets.

Missile Defense Systems. Projected acquisition by the Air Force in this category consists primarily of the Space Tracking and Surveillance System, a constellation of satellites carrying infrared sensors that would help the United States track ballistic missiles and discriminate between warheads and decoys and other debris associated with a ballistic missile's trajectory. Funding for missile defense systems is considerably lower than in CBO's previous projection because of major changes announced by the Secretary of Defense regarding the airborne laser (ABL) program. That program was developing a system to destroy enemy ballistic missiles during their boost phase—the few minutes after launch before a missile's rocket motors burn out—by means of a high-energy chemical laser carried on modified Boeing 747 aircraft. Under previous plans, a successful test of the first ABL against a missile in flight would have been followed by development of a second prototype and, eventually, by the fielding of seven aircraft for operational use. Citing problems with technology and cost as well as doubts about the operational roles envisioned for the ABL, the Secretary announced that plans for the second aircraft would be shelved and that the program would be shifted to a research and development effort.

Space Systems. This category consists mainly of space-launch systems used to put satellites into orbit. (The satellites themselves are included in the categories that best

match their intended function.) About two-thirds of the funding in this category supports the purchase of the Evolved Expendable Launch Vehicle over the next two decades. CBO's projection assumes that the Air Force will purchase 78 of those vehicles through 2028. The remainder of the funding is for boosters, satellites, and related services to support what is known as the “operationally responsive launch concept” for access to space.

Defense Agency Acquisition, Including Missile Defense

In addition to resources for the Departments of the Army, Navy, and Air Force, DoD's budget provides money for specialized agencies that perform advanced research, develop missile defenses, oversee special operations, and manage financial and information systems. For defense agencies other than the Missile Defense Agency (MDA), CBO projects average acquisition costs totaling about \$17 billion over the 2011–2028 period (see Figure 11).

Development of missile defense programs is managed by MDA, but the military departments have responsibility for procuring and fielding missile defense systems. The President's 2010 budget request proposes funding of about \$7.8 billion for RDT&E for missile defense systems and about \$1 billion for procuring terminal-phase and midcourse-phase defense programs (see Figure 12). CBO based its projection on the Administration's policy statements, on detailed plans developed by MDA, and on plans developed by the military services for executing the individual programs for which they are responsible.

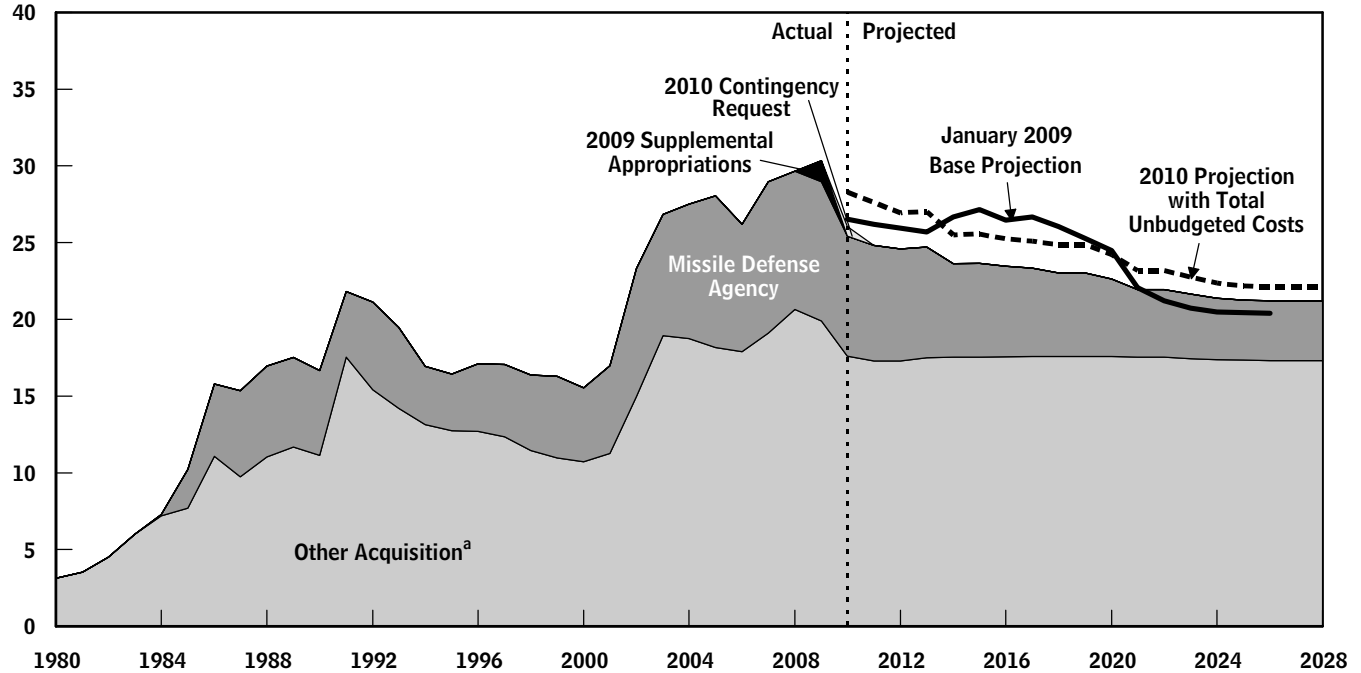
CBO's projection assumes that MDA will focus on research and development of a range of technologies and systems. The results of those efforts will eventually inform decisions about which systems should proceed to procurement and operational deployment. As with existing programs, CBO has included projected procurement costs in the acquisition budgets of the branches of the military that would operate them. For cases in which the service has not been designated, CBO has assigned programs on the basis of the nature of the program.

In the 2010 budget, DoD has made significant changes to a number of missile defense programs, as described in detail in the following sections. Overall, CBO projects that carrying out those plans would cause total acquisi-

Figure 11.

Resources for Defense Agency Acquisition, Including Missile Defense Agency

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Note: Only the 2009 supplemental appropriations and the 2010 contingency request are separately identified in this figure. The supplemental and emergency appropriations for earlier fiscal years are included with the funding categories.

a. Includes research, development, test, and evaluation and procurement by defense agencies other than the Missile Defense Agency.

tion of missile defenses to average about \$8.4 billion annually during the period 2011 through 2028 (excluding unbudgeted costs), about \$4 billion per year lower than CBO’s projection based on the 2009 FYDP. The projected peak in total acquisition—about \$10.1 billion in 2014—is substantially lower and occurs earlier than the \$17 billion peak that CBO projected to occur in 2018 on the basis of the 2009 FYDP. That reduction results from the cancellation of several development programs (removing from the projection both the cost of completing development and of subsequent procurement of operational versions of those systems) and the reduction in the scope of other systems.

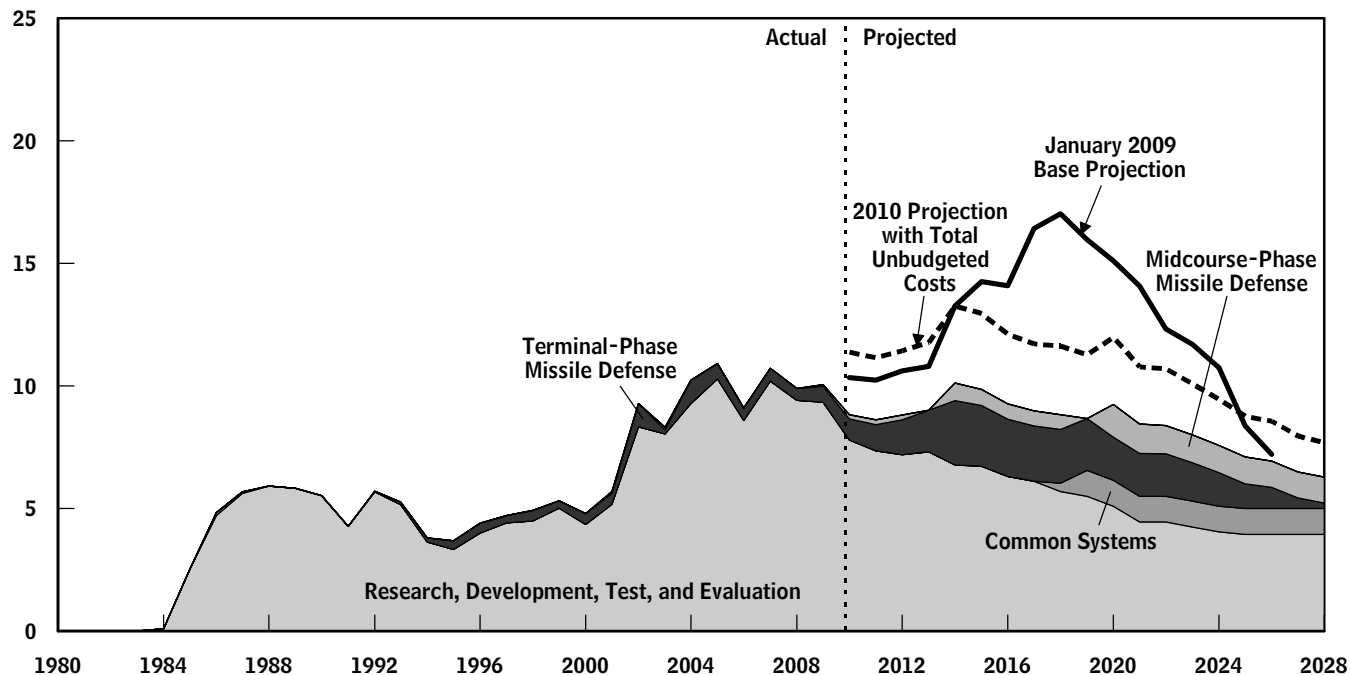
Midcourse-Phase Defenses. The Ground-Based Midcourse Defense (GMD) system comprises ground-based interceptors (GBIs), sensors, and fire-control systems to intercept and destroy ballistic missiles during their midcourse phase of flight.⁵¹ Earlier plans based on the 2009

FYDP had called for procuring a total of 44 GBIs and placing them at either Fort Greely, Alaska, or Vandenberg Air Force Base, California. CBO had assumed that additional GBIs would be procured for tests and for use as spares. In the 2010 budget, however, MDA curtailed its plans, which now call for a total of 30 GBIs at those two sites. Some 14 additional GBIs would be procured and used to replace GBIs that are already emplaced; those 14 older GBIs would be refurbished and then used for testing purposes or as operational spares.

51. Ballistic missile defense programs are categorized by the portion of the incoming missile’s trajectory that they target. Boost-phase defenses attempt to destroy hostile missiles before their warheads separate from their booster rockets. Midcourse-phase defenses attempt to destroy warheads after they separate from their boosters but before they reenter Earth’s atmosphere. Terminal-phase defenses attempt to destroy warheads after they have reentered Earth’s atmosphere and are relatively close to their intended targets.

Figure 12.**Resources for Missile Defense Acquisition**

(Billions of 2010 dollars)



Source: Congressional Budget Office.

Note: The data include research, development, test, and evaluation and procurement of missile defense systems by the Missile Defense Agency and the Departments of the Army, Navy, and Air Force.

MDA's plans in the 2010 budget, as originally proposed, called for extending GMD coverage to protect U.S. allies and deployed forces against attacks from Iran. That coverage would be achieved by deploying additional interceptors in Poland, a high-resolution tracking radar in the Czech Republic, and a forward-based radar at a European location that has not been specified. As part of that plan, MDA is developing a new two-stage version of the current interceptor (the existing interceptor has three stages), and 10 of those new interceptors would be placed at the European site. Then, in September 2009, the Administration announced that it was replacing plans for a GMD-based system in Europe with one that uses the Standard Missile-3 (SM-3) interceptor, which is currently used in the Aegis ballistic missile defense system. However, the new plans still call for developing the two-stage version of the GBI "as a back-up."⁵²

52. Robert M. Gates, "A Better Missile Defense for a Safer Europe," *New York Times*, September 20, 2009.

For this projection, CBO has incorporated the Administration's new plan based on the SM-3 and has assumed that developing the two-stage GBI will continue and that 10 of those interceptors will be procured. The European Midcourse Radar, which had been slated for installation in the Czech Republic, and the cost of missile silos in Poland have been removed from this projection. However, CBO has assumed that the movable forward-based radar (at a location yet to be determined) and the supporting communications infrastructure that had been part of the initial GMD-based plan for the defense of Europe will still be pursued under the Administration's new plan.

In the 2010 budget, MDA has canceled the kinetic energy interceptor (KEI), which had been intended to fill both midcourse- and boost-phase roles in the ballistic missile defense system. In its projection based on the 2009 FYDP, CBO had assumed that MDA would begin in 2014 to use the KEI to replace existing interceptors in

the GMD system; those replacements are not included in this projection.

Another aspect of the previous Administration's plans, which the current Administration has not yet indicated it would change, called for MDA to use RDT&E funds to pay for deploying the GMD system. In keeping with those plans, CBO has included the costs of the GMD system in RDT&E.

The Navy's procurement of missiles for the Aegis sea-based ballistic missile defense is included in the midcourse-phase missile defense category. The Aegis combines the ability of the SPY-1 radar and associated fire control system to detect and track ballistic missiles of all ranges with the ability of the Standard Missile to engage enemy missiles from short through intermediate ranges in their midcourse phase of flight. DoD's plans include developing a new, larger version—the SM-3 Block IIA—to increase the system's effectiveness against long-range ballistic missiles, among other threats. The United States and Japan have entered into a cooperative agreement to support the development of the SM-3 Block IIA; the U.S. contribution would be funded from the Missile Defense Agency's RDT&E accounts. CBO has assumed that the Navy will procure enough of the new SM-3s to equip 25 percent of the available vertical launch system tubes on the Navy's fleet of Aegis-equipped ships.

MDA is developing the Space Tracking and Surveillance System, which would ultimately be procured and fielded by the Air Force. MDA launched two demonstration satellites in 2009. DoD's plans originally envisioned an operational constellation with as many as 27 satellites; subsequently, the 2008 budget documentation called for a smaller constellation of 6 to 9 satellites. MDA is now planning a reassessment that focuses on affordability and a shorter development cycle and incorporates information from the demonstration launches. CBO has assumed that MDA will develop an operational constellation with 6 satellites (the low end of the 2008 plan), launching one satellite per year beginning in 2020.

Boost-Phase Defenses. In 2004, MDA procured one aircraft that is now used to test the integration of the air vehicle with the airborne laser and targeting systems in preparation for a "shoot-down" test that was scheduled for 2009. (The shoot-down test did not occur but is currently scheduled for 2010.) Earlier plans had called for

procuring a second developmental ABL aircraft and, after development was complete, a fleet of seven operational aircraft. In the 2010 budget, the ABL program has been downscaled to a research-only effort, and plans for any further aircraft have been canceled. For its 2010 projection, CBO has assumed that MDA will continue experiments using the existing ABL aircraft at a constant level of effort throughout the projection period.

In its projection based on the 2009 FYDP, CBO had assumed that a boost-phase version of KEI would be fully developed and fielded. CBO's current projection does not include those costs, however, because MDA has canceled the KEI program.

In the 2010 budget, MDA also canceled the Space Test Bed program. In previous budgets, MDA had established the Space Test Bed to explore concepts for and to conduct research to support potential deployment of boost-phase intercept defenses in space. In the 2009 budget, MDA had planned to spend about \$300 million for that research, and CBO's projection of DoD's plans based on the 2009 FYDP incorporated the assumption that an operational space-based interceptor system would be developed and fielded. Those costs are not included in this projection.

Terminal-Phase Defenses. CBO's projection of the cost of missile defenses also includes funding for systems that are designed to hit incoming warheads during the terminal phase of their flight. That group of missile defense systems includes the Patriot Advanced Capability-3 short-range system, the Medium Extended Air Defense System, and the Terminal High-Altitude Area Defense system, all of which are mobile ground-based systems. MDA also has begun developing a sea-based terminal system. According to CBO's projection of DoD's plans for 2010, average annual funding for terminal-phase defense systems would amount to \$2.0 billion through 2028.

The Patriot missile system is already in operation for the Army, but it will be replaced eventually by the Medium Extended Air Defense System, the product of a joint venture involving the U.S. government and the governments of Italy and Germany. Although MDA is still developing the Terminal High-Altitude Area Defense system, CBO's projections incorporate the assumption that when the system's operational deployment proceeds beyond 2013, its funding will move from MDA to the Army. The Army

activated the first high-altitude unit at Fort Bliss, Texas, in May 2008.

The sea-based program would add a terminal-phase capability to the existing Aegis ballistic missile defense system; that sea-based program is divided into a near-term and a far-term capability. The near-term capability uses

upgrades to existing software and a modified version of the SM-2 Block IV interceptor. MDA is currently analyzing missile requirements for the far term that could result in the development of a new interceptor. CBO has assumed for its projection that a new interceptor would be developed and that the Navy would begin procuring those missiles in 2014.