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**STATEMENT OF
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CONGRESSIONAL RESEARCH SERVICE
BEFORE THE
HOUSE COMMITTEE ON ARMED SERVICES
HEARING ON
RESOURCING THE NATIONAL DEFENSE STRATEGY:
IMPLICATIONS OF LONG-TERM DEFENSE BUDGET TRENDS
NOVEMBER 18, 2009**

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Mr. Chairman, Ranking Member McKeon, Members of the Committee, thank you very much for inviting me to testify this morning on resourcing the national defense strategy. I am Stephen Daggett, Specialist in Defense Policy and Budgets with the Congressional Research Service.

This statement addresses four broad sets of questions:

- First, although the defense budget appears by historical standards to be quite robust, senior leaders of the military services have expressed concern about shortfalls in funding for major programs and the Defense Department has felt a need to make some difficult trade-offs between programs needed to fight the wars we are in, as Secretary Gates has put it, and preparations for future conflicts. The first question in understanding budget issues, therefore, is why funding seems so tight when the budget is so high. The answer appears to be that the cost of much of what the Defense Department does has climbed in recent years at a rate that outpaces the growth in funding. This statement identifies six very broad trends that have driven up the cost of military capabilities, in some cases quite dramatically, over the past ten to twenty years.
- Second, in April, the Defense Department announced some significant changes in defense programs, including the termination of several major weapon programs. How have those program decisions affected trends in the cost of defense?
- Third, what additional trade-offs might the Defense Department face in the future in view of projections of substantial federal budget deficits through the next decade?
- Fourth, the Defense Department is now engaged in a congressionally mandated Quadrennial Defense Review (QDR) due to be reported early next year, and the review may lead to additional changes in major programs. In view of experience with earlier defense policy reviews in 1990 and 1993 and with prior QDRs in 1997, 2001, and 2006, a key question is to what extent the review may lead to long-term changes in policy that will affect defense resources. An example of issues with potentially substantial long-term budget implications is how to cope with anti-access strategies (i.e., asymmetric efforts to defeat U.S. power projection capabilities) that future foes might employ.

Current Defense Budgets In Perspective

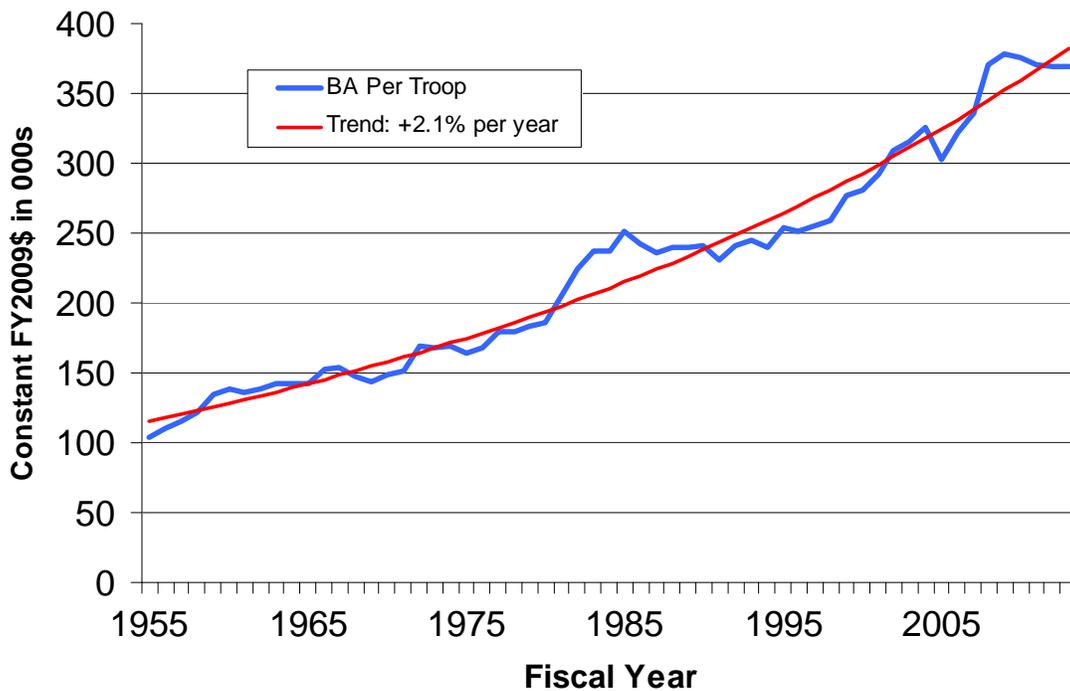
By any of several measures, the level of defense spending in recent years appears relatively substantial. The amount appropriated for the Department of Defense in FY2009, totaled \$667 billion, of which \$521 billion was in the base defense budget and \$146 billion was provided as war-related supplemental or bridge appropriations. For FY2010, House and Senate versions of defense and military construction/VA appropriations bills provide about \$664 billion, of which \$534 billion is in the base budget and \$130 billion is in war-related appropriations. There has recently been some discussion of additional war-related appropriations of as much as \$20 billion for FY2010. See **Table A1**, appended to this statement, for DOD funding from FY1976-FY2014.

By comparison with earlier peaks in spending during the Cold War, this level of defense spending appears quite high. Prior to FY2007, the DOD budget exceeded \$600 billion, measured in FY2010 prices, only in FY1952, at the height of the Korean War. The next highest peak in spending was in FY1985 when DOD funding totaled \$560 billion in FY2010 prices. After adjusting for inflation, defense budgets, including war-related funding, in FY2009 and FY2010 are about 20% larger than the FY1985 peak. This is for a force that is about 1/3 smaller than in FY1985 – there were about 2.2 million active duty personnel in FY1985, and 1.5 million today. For weapons acquisition, that is for weapons procurement plus research, development, test, and evaluation (RDT&E), the total in FY1985 was about \$220 billion. The comparable total in FY2009 is about \$192 billion, 13% less, again, for a force about 1/3 smaller. Acquisition totaled

over \$250 billion in FY2008, including funds in the base budget and relatively large amounts in war-related funding. So the budget appears quite large compared with earlier levels of spending, even though the size of the force is much smaller.

An alternative way of putting the budget into context is to compare current spending to the average trend in defense spending per service member over time. The total DOD budget per active duty troop, this time excluding war costs, has grown by a bit more than 2% per year above inflation on average since the end of the Korean War (see **Figure 1**). In some years, actual budgets were above the trend line, in other years, below it. In FY2009, the overall DOD base budget, not including war costs, is about 8%, or more than \$40 billion, above this historic trend line.

Figure 1: Department of Defense Budget Authority per Active Duty Troop, FY1955-FY2013
(For FY1990-FY1992 and FY2003-FY2013, Not Including War-Related Funding)



Source: CRS based on Department of Defense budget data.

Another way of gauging current spending is simply to note the growth of the defense budget over the past few years. Again considering just the base defense budget, without including war-related funding, there has been a very large increase over the past ten years. By FY2009, the DOD base budget had grown by 48% above inflation since it reached its lowest post-Cold War level in FY1998. That buildup is somewhat larger than the increase at the end of the Carter and beginning of the Reagan Administrations – which was about 40% above inflation from FY1980-FY1985.

By all these standards -- the size of the budget compared to earlier peaks, current spending relative to the long term trend, and the recent growth in spending – the defense budget appears to

be doing quite well. Listening to the military services, to defense industry, and to many defense budget analysts, however, creates a very different impression – that even now the budget is tight, and that if spending does not continue to climb, planners will face tougher and tougher choices in the future. The Chairman of the Joint Chiefs, Admiral Mullen, for example, has argued that the defense budget should be maintained at 4% or so of GDP, an amount anywhere from \$60 to \$110 billion higher than the DOD projects through FY2013, assuming it applies to the base defense budget and not war-costs.

Similarly, the former Secretary and Chief of Staff of the Air Force argued for the past couple of budget cycles that the Air Force alone needed \$20 billion more per year for weapons acquisition.¹ To put that into perspective, in last year's six-year defense plan, acquisition funding – that is, procurement plus R&D -- in the Air Force base budget was scheduled to grow from \$63 billion in FY2009 to \$70 billion in FY2013. So the senior leaders of the Air Force appeared to be saying, in effect, that their budget was 30% short of the amount they thought necessary for equipment.

The Army reportedly is now projecting ongoing budget requirements of \$170 to \$180 billion a year, which is \$30 to \$40 billion per year higher than currently projected base funding.² The Navy has not been so explicit, but last year increased substantially its estimates of the cost of its 30 year shipbuilding plan, and it has warned of a substantial shortfall in fighter aircraft inventories as well.

So why the discrepancy? What explains complaints about shortfalls in funding when, by any historical analysis, defense appears to be prospering? CRS's analysis is that the budget seems tight because the cost of almost everything the Defense Department does – from meeting recruitment goals, to operating new weapons, to acquiring advanced technology – has been accelerating upward at a pace that growing budgets cannot keep up with.

Six factors, in particular, have driven up the cost of defense substantially in recent years: the growing cost of personnel; continued growth in operation and maintenance accounts; accelerating growth in costs of new weapons programs; systematic and apparently worsening estimates of weapons costs with attendant delays and cost growth; new requirements for ground forces; and an expanded range of challenges in the international security environment. The following sections discuss each of these factors.

The Growing Cost of Uniformed Personnel

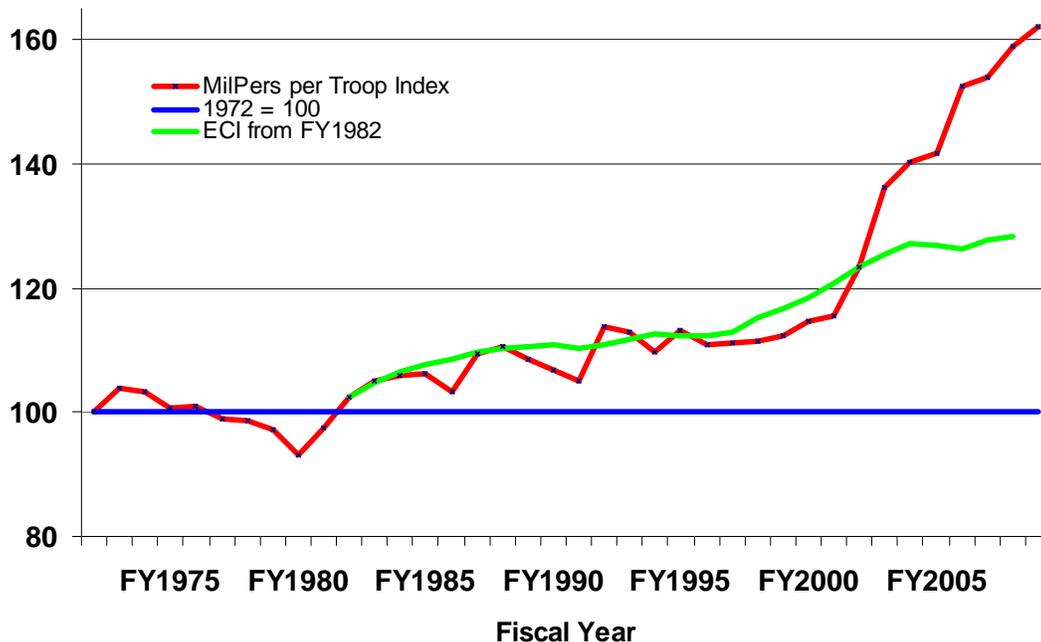
The first factor driving up the price of defense is, simply, the growing cost of uniformed military personnel. Taking the amount provided for active duty military personnel in annual defense appropriations bills, excluding supplemental appropriations, adjusting for inflation using the Consumer Price Index (CPI), and dividing by the number of active duty troops, again excluding war-related increments, an average military service member was about 45% more expensive, after adjusting for inflation, in FY2009 than in FY1998. This does not include the cost of medical care for service members, dependents, and recent retirees, which is financed in the operation and maintenance accounts, and which also has grown substantially. Nor does it include benefits that are not part of the national defense budget, and which are not, therefore, among the cost tradeoffs that planners directly face. These include tax advantages for service personnel and veterans benefits, including VA medical and educational benefits.

¹ Author's notes on a presentation by then-Secretary of the Air Force, Michael Wynne, at an Aviation Week Defense Technology and Requirements Conference, February 13, 2008.

² John T. Bennett, "\$40B Price Tag for Larger Army: U.S. Service Predicts Cost of 1.1 Million-Soldier Force," *Defense News*, December 15, 2008, p. 1.

A long term perspective on the price of military personnel is reflected in **Figure 2**, which shows the cost of an individual active duty service member indexed to the inception of the all volunteer force in 1972. In brief, pay and benefits of military personnel declined in the 1970s because annual pay raises did not keep up with inflation; jumped up in FY1980 and FY1981 with catch up pay raises of 11.7% and then of 14.3% -- that is, more than 25% over a two-year period; climbed very modestly in the remainder of the 1980s and '90s; and then rocketed up dramatically beginning in about FY1999.

Figure 2: Military Pay and Benefits per Active Duty Troop Indexed to FY1972



Source: CRS based on Department of Defense budget data.

The main increases over the past ten years include:

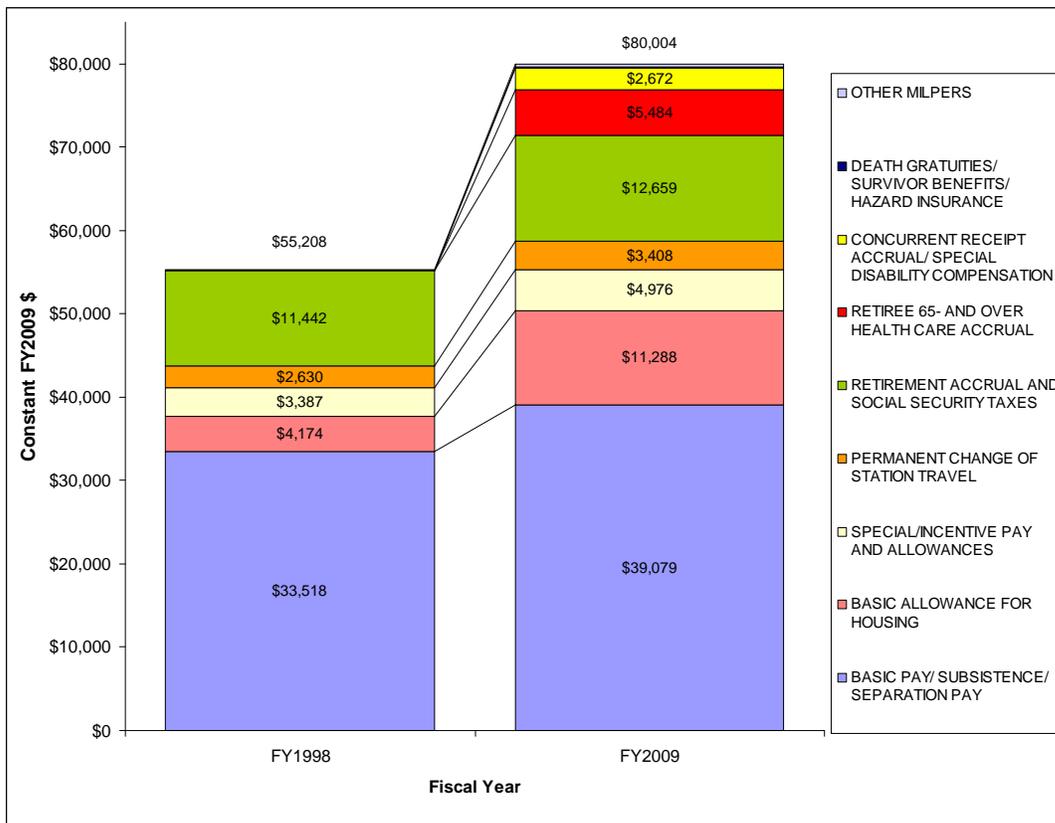
- Congressionally mandated annual pay raises equal to the Employment Cost Index (ECI) plus ½ percent in eight of the last nine years. The ECI is a measure of the average cost of pay and benefits in the civilian economy. Since FY1982, pay raises had fallen behind the growth of the ECI and the “ECI plus ½” formula was designed to catch up over a period of several years.
- Three rounds of “pay table reform,” requested by the Defense Department, which provided additional pay raises, sometimes of as much as 10%, to middle grades in order to improve retention of experienced personnel.
- Substantial increases over several years, requested by the Clinton Administration, in the non-taxable Basic Allowance for Housing (BAH), intended to eliminate differences in out-of-pocket on-base and off-base housing costs.

Those increases, along with changes in subsistence pay for officers, bonuses and special pays, and some other things, are reflected in higher take home paychecks of military personnel. In addition, there have been very large increases in retirement benefits, including

- Tricare-for-Life, enacted by Congress as part of the FY2001 national defense authorization act, and implemented in FY2003, which makes the military Tricare medical insurance system into a second payer for Medicare for 65-and-older military retirees. DOD pays \$10 to \$11 billion a year into the military retirement fund to cover future costs of this new benefit for current uniformed personnel, which is about 10% of the entire military pay and benefits package.
- Concurrent receipt of military retired pay and veterans disability payments for those with disabilities of 50% or more. Another congressional initiative, this is paid for out of the national defense budget function as a mandatory amount of about \$5 billion a year.
- Repeal of the “Redux” retirement plan, which had provided somewhat lower retirement benefits to military personnel who enlisted after 1986 than to earlier enlistees.
- The elimination of social security offsets in pensions of 62 and older survivors of military retirees who chose dependent benefits as part of their retirement.

Figure 3 shows the relative growth per troop in the major elements of both take-home pay and deferred compensation in the military personnel accounts, adjusted for inflation, between FY1998 and FY2009. As noted earlier, with everything included, these elements of compensation grew by 45% above inflation. Even leaving out the cost of Tricare-for-Life and concurrent receipt, military pay and benefits would still have grown by 30% above inflation.

Figure 3: Changes in Military Pay and Benefits per Active Duty Troop, FY1998-FY2009



Source: CRS based on Department of Defense budget data.

The purpose of this analysis is not to address whether military pay and benefits are adequate or more than adequate or less than adequate. A discussion of that question is certainly important, but it goes way beyond the point made here. The only purpose of this analysis is to address the issue of budget tradeoffs. If only a given amount of money is available for defense, the growing cost of personnel necessarily comes at the expense of something else. Others have addressed the issues of pay comparability, the value of deferred compensation, promises of medical care in retirement, and other matters thoroughly. Last year's Quadrennial Review of Military Compensation, for example, reviewed all of the key measures of compensation comparability.³

That said, increased take home pay appears to have eliminated what has been referred to as the military "pay gap," in which military pay lagged behind average increases in compensation in the civilian economy. Usually, the pay gap is measured by comparing cumulative raises in military basic pay with a trend line that starts with pay in FY1982, after the catch up raises of FY1980 and FY1981, and adjusts upward annually by the amount of the Employment Cost Index. Using this measure, there was a significant pay gap by the end of the 1990s, which ECI plus ½ raises have been intended to correct.

In measuring military pay, however, it is important to note that the amount service members take home every month includes both basic pay and the basic allowance for housing, and might also be considered to include amounts for subsistence, which is provided both as pay and as a direct service. When very large increases in the basic allowance for housing are included, the pay gap, measured as the FY1982 level adjusted for cumulative growth in the ECI, has been made up in recent years.

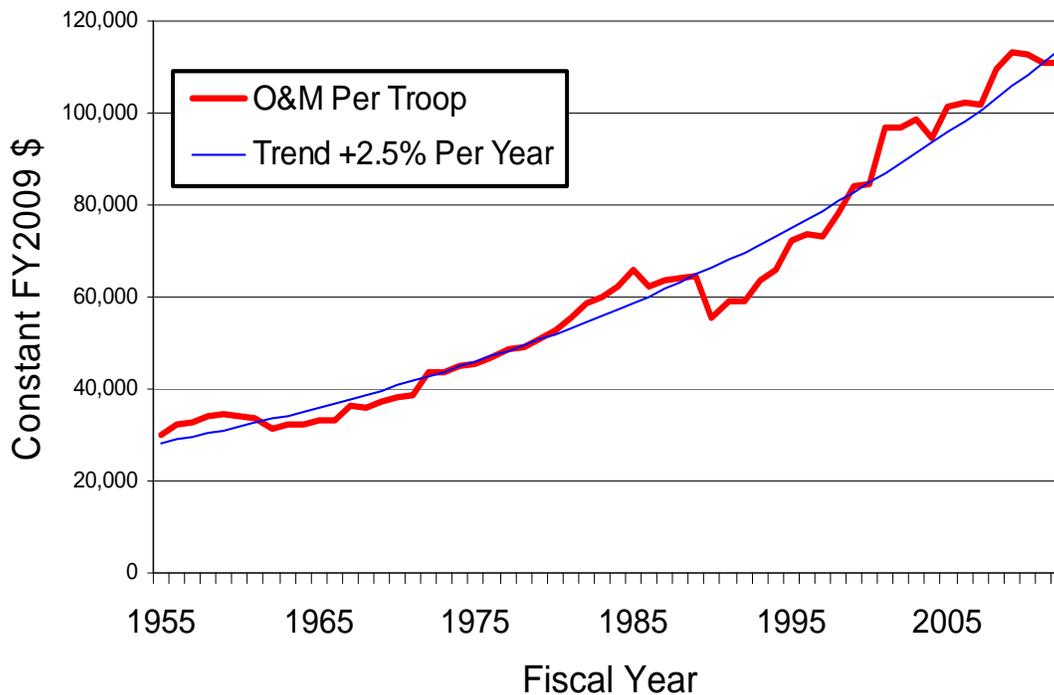
One other issue may be a matter for some further discussion. A frequently asked long-term budget question is whether it might be cheaper to rely more on reserve than on active duty forces. In the past, when Army National Guard (ARNG) combat units were, for the most part, regarded as a strategic reserve that would be called up only in the event of a major war, it was reasonable to calculate that Guard units were cheaper than active duty forces. Personnel and operating costs were typically 25-35% of those of active duty units, and investment costs were less, as well, because Guard units were often equipped with older material cascaded from active duty forces. Now, however, ARNG units are no longer regarded as a strategic reserve, but as an operational reserve available for regular deployment abroad. In that role, Guard units no longer appear much cheaper per day of availability – and might even be more expensive – than active duty forces, since they are available for deployment for only a fraction of the time of active units, and equipment levels must come closer to matching those of active forces.

Continued Growth in Operation and Maintenance (O&M) Costs

A second cost driver has been the continued, steady growth of operation and maintenance budgets. Dividing annual O&M budgets by the number of active duty troops, and adjusting for inflation results in a trend line that grows by somewhere between 2.5% and 3.0% above inflation every year since the end of the Korean conflict (see **Figure 4**).

³ Department of Defense, *Report of the Tenth Quadrennial Review of Military Compensation, Volume 1*, February 2008, on line at http://prhome.defense.gov/docs/Tenth_QRMC_Feb2008_Vol%20I.pdf.

Figure 4: Operation and Maintenance Funding per Active Duty Troop, FY1955-FY2013



Source: CRS based on Department of Defense budget data.

It is a bit difficult to analyze why O&M grows at such a steady pace, because the O&M budget covers all kinds of very different activities – advertising and recruiting; basic and advanced individual and unit training; professional military education; fuel costs; transportation; medical care for service members, their dependents, and some retirees; utility bills; facility maintenance and repair; warehouse and supply operations; purchases of spare and repair parts; day-to-day operation of weapons and equipment; overhauls, including sometimes extensive upgrades, of weapons and equipment; research undertaken by Federally Funded R&D Corporations (FFRDCs); pay and financial management; and management of much of the Defense Department.

There are, however, a few pieces of the picture that collectively explain in very large part why O&M costs keep climbing.

One is that a significant share of the O&M budget goes to pay civilian Department of Defense personnel. In the FY2009 base budget, civilian pay in the O&M accounts was projected to total \$53 billion, about 30% of total O&M funding. While federal civilian pay and benefits have not grown as rapidly as those of uniformed personnel, they have outpaced the growth of inflation – as in most skilled occupations, compensation of federal civilian workers has grown in real terms over time.

Second, the O&M budget includes most of the annual funding for providing medical care to service members, their dependents, and many retirees (it does not include \$5-6 billion a year in military personnel accounts for pay and benefits of uniformed health care providers). DOD officials see growing medical costs, which have climbed much faster than overall inflation, as a critical long-term budget issue.

Third, the O&M budget includes costs of operating and maintaining major weapon systems. Those costs also appear to have increased faster than base inflation, though the reasons are complicated. Military service officials, particularly in the Air Force, have long argued that aging equipment becomes progressively more and more expensive to operate and maintain. CBO found some time ago that this was not a major factor in O&M. On the other hand, though it may not add up in itself to a huge amount of money, it may be one of a large number of individually minor factors that should be considered in concert to explain the larger trend.

Most observers also agree that new weapons are typically more expensive to operate and maintain than earlier generations of similar systems. Why this should be the case is very hard to explain. It is certainly at odds with trends in the civilian sector, in which reliability and maintainability of all kinds of goods have improved dramatically – consider automobiles, household appliances, and, especially, consumer electronics (leaving aside battery replacement). It appears, however, that while military developers promise lower operating costs, in the end they choose to pursue advances in performance instead.

Fourth, and finally, the O&M budget finances operation and repair of military facilities. As the quality of life in the civilian sector improves, defense facilities also, in general, are expected to keep up, which, in turn, also may drive up costs in real terms.

This list is by no means exhaustive, but may help to understand some of the principal factors behind the continued growth of O&M costs. The corollary question, then, is whether this is a problem. Some may say no – that this is the cost of doing business and as long as growth isn't excessive, it is simply a fact of life for which budgets need to be adjusted. On the other hand, continued steady growth in the day-to-day cost of doing business appears to be at odds with experience in many parts of the private sector, in which improved productivity is the norm. The trend in defense O&M prices appears to be more similar to the trend in health care costs – which is almost universally seen to be a problem -- than to the trend in other economic activities.

Most importantly, within limited budgets, higher O&M costs will crowd out other things. The effect of growing O&M costs on trade-offs within the defense budget in the 1990s illustrates the issue. Defense advocates often complain about the dramatic decline of weapons procurement funding in the 1990s. Then-Secretary of Defense William Perry, at the time, agreed, saying that the “procurement holiday” of the early '90s had gone on long enough and needed to be reversed. The Defense Department's target for many years was to get the procurement budget up from the \$45 billion range to at least \$60 billion. While \$60 billion for procurement appears quite constrained by today's standards, achieving even that target proved elusive. The reason was the continuing growth of overall O&M costs. Successive long-term defense plans generally assumed that O&M costs would level off in future years. When they did not, within limited budgets, the Defense Department shifted funds from procurement to cover must pay O&M bills. Year after year, therefore, planned increases in procurement funding were deferred due to the growth in O&M accounts.

As a side note, the problem should not be attributed only to the Clinton Administration. Underestimation of O&M costs, rather, was something the Clinton defense team inherited from the outgoing Bush Administration's defense plan and then was unable to correct. After adjusting for lower than expected trends in inflation, over the FY1994 to FY1999 period, for which we can compare Bush and Clinton defense plans in detail, the total amount the Clinton Administration spent on defense was, in terms of real purchasing power, not much lower than the previous

Administration projected in its final six year defense program.⁴ O&M spending, however, was much higher, and procurement much lower.

Steadily growing O&M costs eroded the budget for weapons modernization through most of the 1990s. The danger, of course, is that the Defense Department will face the same tradeoffs again if budgets in the next decade are as tight as in the '90s.

Intergenerational Cost Growth in Major Weapons Programs

A third cost factor, and one that is a matter of extensive discussion today, is the apparently accelerating pace of intergenerational cost growth in major weapons programs. Intergenerational cost growth is often not carefully distinguished from the separate issue of “cost overruns,” which refers to the growth in costs of programs compared to initial development estimates, but the two factors are really quite distinct. Systematic underestimation of weapons acquisition costs is an independent factor, which is discussed next.

Examples of very large intergenerational leaps in weapons costs abound. The F-35 fighter, which is the new “low-end” fighter for the Air Force, is now projected to have a unit flyaway cost of \$83 million each and a total unit acquisition cost of over \$100 million.⁵ In FY1985, the Defense Department procured 150 F-16s fighters, the previous low-end fighter, at a then-year price of \$16 million apiece, which is about \$30 million in FY2009 prices. In later years, F-16 prices climbed as new models incorporated more and more advanced technology. Still, the leap in costs is striking.

It is not, however, by any means atypical. Below is an illustrative table, prepared by Cecil Black of the Boeing Corporation, which compares numbers of major weapons in selected categories procured in FY1985 with numbers bought in FY2008 (with funding both in the base DOD budget and in war-related appropriations). As noted earlier, in FY1985, acquisition funding (again, procurement plus R&D) totaled about \$220 billion in FY2010 prices. In FY2008, acquisition funding totaled about \$250 billion.

⁴ The bulk of the reduction can be traced to two things – a cut of about 150,000 in active duty troops and reductions in missile defense funding. This discussion is based on CRS Report 95-20, “A Comparison of Clinton Administration and Bush Administration Long-Term Defense Budget Plans for FY1994-99,” Dec. 20, 1994, by Stephen Daggett, and on subsequent unpublished update information. Both are available to congressional offices from the author on request.

⁵ Data from F-35 Selected Acquisition Report, June 2008.

Table 1: Recapitalization Rates: FY1985 versus FY2008
(quantities of weapons procured)

	1985	2008	Δ
Tactical Fighters	338	56	-282
Bombers	34	0	- 34
Other Fixed Wing	211	153	-58
Rotary Wing	354	373	+19
Missiles	87,113	13,471	-73,642
Tracked Combat Vehicles	2,414	1,258	-1,156
Tactical Vehicles	56,551	32,276	-24,275
Satellites (Unclassified)	10	1	-9
Ships	23	7	-16

Source: Cecil Black, Boeing Corporation.

The growing price of weapons does much to explain why the expense of maintaining even a smaller force structure than in the past has climbed so high. At current prices of major weapon systems, the “steady state” cost of replacing platforms as they reach the end of their planned service lives has become very difficult to afford, even with budgets that exceed previous peaks.

Why this is the case – and what to do about – is a matter that is far beyond the scope of this brief survey. In some cases, at least, cost has been driven up by an attempt to build systems to perform multiple missions with high capabilities in every dimension. The DDG-1000, cited only because it has been a focus of debate for the past year, and now has apparently been terminated, may be an informative example.

In brief the DDG-1000 (formerly DDX) destroyer is a 15,000 ton ship. This is about the size of a World War II cruiser, and it is 50 percent larger than the earlier generation DDG-51 destroyer it is intended, in part, to replace. It is so large because it is designed for multiple, diverse missions with advanced capabilities for all of them. It incorporates an advanced Aegis air defense radar and anti-air missile systems; the anti-submarine warfare capabilities of a dedicated ASW frigate; the ability to provide long-range fire support to forces ashore from two guns and from vertically launched missiles; a full flag officer communications capability; the ability to deploy two helicopters or one helicopter and two UAVs for multiple missions, such as mine-sweeping and ASW; and the ability to carry aboard and deploy ashore either a Marine unit or a special forces detachment. It also includes an advanced drive and multiple systems intended to reduce the required number of sailors. In short, it is all things to all requirements writers. The result is a ship that was ultimately projected to cost between \$3.5 and \$4.0 billion each, and that could not, therefore, be afforded in substantial numbers.

The rationale for developing a ship like the DDG-1000 is apparent. A large multi-mission ship has considerable advantages, including an ability to absorb future growth in capabilities. With a smaller force in prospect, it is understandable that the Navy would want some of its newer ships to be as flexible as possible. It was designed not only for blue water operations off shore, but for support of forces ashore from littoral waters. The resulting cost of the ship led the Navy to an internal debate about terminating the program and resuming DDG-51 procurement in its place. In any case, the DDG-1000 is too expensive to be produced in large numbers.

How typical is this of recent development efforts? Secretary Gates, at least, thought it had become the norm. In his article on defense policy in the January/February issue of *Foreign Affairs* he wrote:

When it comes to procurement, for the better part of five decades, the trend has gone toward lower numbers as technology gains have made each system more capable. In recent years, these platforms have grown ever more baroque, have become ever more costly, are taking longer to build, and are being fielded in ever-dwindling quantities. Given that resources are not unlimited, the dynamic of exchanging numbers for capability is perhaps reaching a point of diminishing returns. A given ship or aircraft, no matter how capable or well equipped, can be in only one place at one time.⁶

Underestimation of Program Costs

Systematic underestimation of weapons costs has become such a significant element of defense costs that it can easily be seen as an independent factor driving up the overall price of defense. For the past six years, GAO has done annual overviews of cost trends in major defense acquisition programs based on a review of Department of Defense Selected Acquisition Reports. In the review it reported in March, 2008, GAO provided a very clear summary of what has been happening. **Table 2** is an overview of GAO's findings.

⁶ Robert M. Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs*, January/February 2009.

Table 2: GAO Analysis of Major Defense Acquisition Program Cost Growth
(amounts in constant FY2008 \$)

	2000 portfolio	2005 portfolio	2007 portfolio
Number of programs	75	91	95
Total planned commitments	\$790 Billion	\$1.5 Trillion	\$1.6 Trillion
Commitments outstanding	\$380 Billion	\$887 Billion	\$858 Billion
Portfolio performance			
Change to total RDT&E costs from first estimate	27 percent	33 percent	40 percent
Change in total acquisition cost from first estimate	6 percent	18 percent	26 percent
Estimated total acquisition cost growth	\$42 Billion	\$202 Billion	\$295 Billion
Share of programs with 25 percent or more increase in program acquisition unit cost	37 percent	44 percent	44 percent
Average schedule delay in delivering initial capabilities	16 months	17 months	21 months

Source: Government Accountability Office, *Defense Acquisitions: Assessment of Selected Weapon Programs*, GAO-08-467SP, March 31, 2008.

To summarize the results: GAO compared the average acquisition performance of all the Major Defense Acquisition Programs (MDAPs) on which DOD reported in 2000, 2005, and 2007. There were 75 MDAPs in 2000, 91 in 2005, and 95 in 2007. On average, DOD underestimated R&D costs of MDAP programs in the 2000 program by 27 percent and in 2007 by 40%. It underestimated total acquisition costs of MDAPs in the 2000 program by an average of 6 percent, and it underestimated total acquisition costs of MDAPs in the 2007 plan by an average of 26 percent. In the 2007 program, 44 percent of the programs had cost growth of more than 25%, a thresholds established by the Nunn-McCurdy amendment, which triggers requirements for a thorough program review.

Most significantly, total cost growth in the 2007 programs is now expected to total \$295 billion, which is 18% of the overall \$1.6 trillion value of the major weapons programs in the acquisition plan. Such substantial unplanned cost growth undermines efficiency, further increases costs, and creates a need to restructure acquisition programs across the all the services. Some programs may have to be cancelled and many stretched out to adjust the overall budget to accommodate the resulting gap on funding.

New Requirements for Ground Forces

A fifth factor driving up defense costs is the apparent need to restructure the Army, in particular, and the Marine Corps to some degree, to be able to respond to new missions that have been adopted in response to the attacks of 9/11. The decision to engage first in Afghanistan and then in Iraq led the Army to accelerate plans to restructure its basic organization. Instead of a force

designed for wholesale mobilization for a major war, the Army has become a modular force organized around fully manned and readily deployable Brigade Combat Teams (BCTs) designed for rotational deployment abroad. The Defense Department, with broad support in Congress, has also decided to increase the size of the Army by 65,000 active duty troops, mainly to add six additional brigades, and of the Marine Corps by 27,000. When fully phased in, the addition of 92,000 active duty troops will cost more than \$13 billion a year in increased personnel and operating expenses of the Army and Marine Corps.

The modularization of the Army in itself will cost more than \$50 billion, mainly to fill out equipment requirements for the force.⁷ The conflicts in Iraq and Afghanistan have also led the Army to redefine its requirements for equipment in all its units. To fight the wars in Iraq and Afghanistan the Army has, in effect, established new standards that it sees necessary for force protection equipment, transportation equipment, and communications equipment for almost every unit in the force. And these requirements now extend not only to active duty units but also to National Guard combat units that have become part of the regular rotation base for deployment abroad, and therefore require largely the same equipment as active duty forces.

The cost of reorganizing ground forces to be more flexible and deployable is a significant factor that has driven the overall cost of defense somewhat higher. The Army's case for reorganizing and for adding to the size of the force is based on anticipated requirements for rotating forces abroad. Following the 2004 Quadrennial Defense Review, the goal to be able to deploy 18 or 19 brigade combat teams abroad on a recurring basis. Later, the force generation goal was increased to as many as 23 forward deployed brigades.

If active duty units are available for deployment one year out of every three, then 45 active brigades, as is now planned, would provide 15 deployable brigades a year. Additional brigades would be generated from the Army National Guard, which requires Guard units to be trained and equipped for regular deployments.

A Broader Array of Global Security Challenges

A final, and much less easily quantifiable factor that may affect the defense budget has to do with entirely new security challenges that planners have only begun to characterize. A good starting point in thinking about the range of new challenges is what has come to be called the "Quad Chart" in the Pentagon. One version of the Quad Chart is included as **Figure 6**, (page 20.)

In brief, the Quad Chart divides security challenges into four categories: Traditional military conflicts between states with conventional military forces; irregular conflict such as insurgencies in Iraq, Afghanistan and elsewhere; catastrophic challenges posed by, for example, state-sponsored or non-state terrorist groups with access to weapons of mass destruction; and, the newest category, disruptive threats from a range of competitors, including peer or near-peer regional or global actors, who would not attempt to compete with traditional U.S. military forces directly, but would instead try to identify and attack U.S. vulnerabilities. The quad chart divides these challenges according to likelihood and vulnerability. The premise is that traditional military threats are unlikely and the United States has such overwhelming capabilities that it is not vulnerable to them. Catastrophic challenges are seen as likely to appear, and vulnerability as high. Irregular threats are likely, but vulnerability low. Disruptive threats are regarded as unlikely, but vulnerability high.

The quad chart has important implications for the allocation of resources. If traditional challenges are unlikely, and U.S. vulnerability is low, the implication is that resources might be

⁷ See CRS Report RL32476, *U.S. Army's Modular Redesign: Issues for Congress*, by Andrew Feickert, updated January 24, 2007.

shifted away from investments in such capabilities in favor of other, higher, priorities. Much of what Secretary Gates has said in recent articles and speeches reflects this perspective. An effort to reduce investments in traditional military capabilities, however, implies a willingness to accept greater risks to U.S. security in some potential areas of conflict. While direct state-on-state conflict may appear less likely than in the past, assessments of the international security environment nonetheless point up the potential for future conflicts over many issues, including access to resources, economic and social dislocations caused by climate change, and remaining unresolved regional disputes. So traditional challenges could reappear in the future, and planners must decide in the present how much to invest as a means of hedging against them.

The apparent need to prepare for a broader array of new challenges than planners had assumed at the end of the Cold War may prove to have a very big effect on budgets – or it may not. It is not clear to what extent the new challenges may shape spending in the future. Some more spending to counter anti-satellite weapons and cyberwarfare may prove necessary – but it is very difficult to anticipate how much money will be required to counter other “disruptive” challenges that remain to be defined.

So far, the main effect of identifying new challenges seems to have been to push budget requirements marginally higher, though there may later be offsetting trade-offs. In the long-term, however, new kinds of challenges may have a much more substantial effect on defense budgets. The upcoming Quadrennial Defense Review (QDR) appears to be focusing much more than in the past on new kinds of challenges.

The Impact of Recent Changes in Defense Plans

In part because of budget constraints, Secretary of Defense Gates announced a number of significant changes in long-term defense plans last April. Some of the changes entailed higher spending, particularly for health care and social services for personnel returning from combat and their families. The Secretary also reaffirmed plans to increase ground force end-strength, with costs being absorbed in the base defense budget rather than in supplemental appropriations. Many of the changes announced in April, however, particularly the termination of several major weapons programs, might very well limit future costs, especially to the extent they mark changes in policies that will affect designs of future weapon systems. In addition, in May, Congress passed a major defense acquisition reform measure, the Weapon Systems Acquisition Reform Act of 2009, P.L. 111-23, which, if implemented effectively, might also limit weapons cost growth.

The changes in major weapons programs that Secretary Gates announced might be particularly significant to the extent they provide an impetus to pursue more efficient production practices for systems that were not eliminated. For tactical fighter aircraft, the Defense Department has narrowed production to two platforms – various versions of the F/A-18 Navy-Marine fighter and of the multi-service F-35 Joint Strike Fighter. In shipbuilding, while there are some uncertainties, the effect of recent decisions may be to allow fairly long and relatively large production runs of DDG-51 destroyers, perhaps with some variants; of the Littoral Combat Ship (LCS); of new ships based on LPD-17 amphibious ship; and of Virginia-class submarines. Even in satellites, the termination of the Transformational Communications Satellite (TSAT) program will entail reliance on improved designs of existing, more proven technologies. To the extent the changes result in regular, predictable, and robust annual production runs of technologically mature systems with stable designs, both acquisition officials in the government and production teams in industry might focus on efficiency measures. Weapon costs might be driven down considerably by such measures as productivity improving investments and production practices; cost saving financial mechanisms including multiyear contracting; and expanded use of competitive sourcing in subcontracting.

Similarly, in the weapons development process, the termination of programs that had experienced significant cost growth and schedule delays – including TSAT, the presidential helicopter, and the Combat Search and Rescue (CSAR) helicopter – may reflect a determination to ensure that development efforts rely on proven technologies before committing to large development and production investments. The Weapons Acquisition Reform Act provides further statutory support for DOD acquisition policies that require achievement of appropriate levels of technological maturity in key elements of development programs before milestone approval for progressively more costly stages of a project. The Act also creates an independent cost analysis directorate. While some of the program terminations remain matters of debate, there appears to be a growing consensus on the general principle that development should proceed on the basis of sufficient knowledge about the availability and cost of key technologies throughout the development process in order to avoid excessive technical risk that has contributed to delays and cost increases in the past.

Trade-Offs in Future Defense Budgets

While progress in these areas may, if pursued consistently in the future, help ameliorate some of the factors that have been driving the cost of defense so high, budget trade-offs remain an issue for the Defense Department, particularly in the years following the current Future Years Defense Plan (FYDP), which runs through FY2015. A key issue for the QDR may be how to balance potential trade-offs between the size of the force, the pace of weapons modernization, and the size of future defense appropriations, particularly in view of currently projected long-term federal budget deficits.

To date, DOD officials have not said much about how the QDR will address intermediate- and longer-term budget issues. Officials had said that, at least for initial planning purposes, the QDR assumed that the base defense budget, not including war-related funding, will be essentially flat for the next five years, with growth sufficient only to cover inflation – i.e., “zero real growth.”⁸ And they acknowledged that this would require at least modest trade-offs between programs. At the end of July, David Ochmanek, a leader of the Pentagon’s QDR integration group, told defense reporters that the QDR had already led to a decision to move about \$60 billion over the FYDP into programs supporting current operations – “the wars we are in” as Secretary Gates has put it – and that the military services were developing lists of cuts in other programs to act as bill payers.

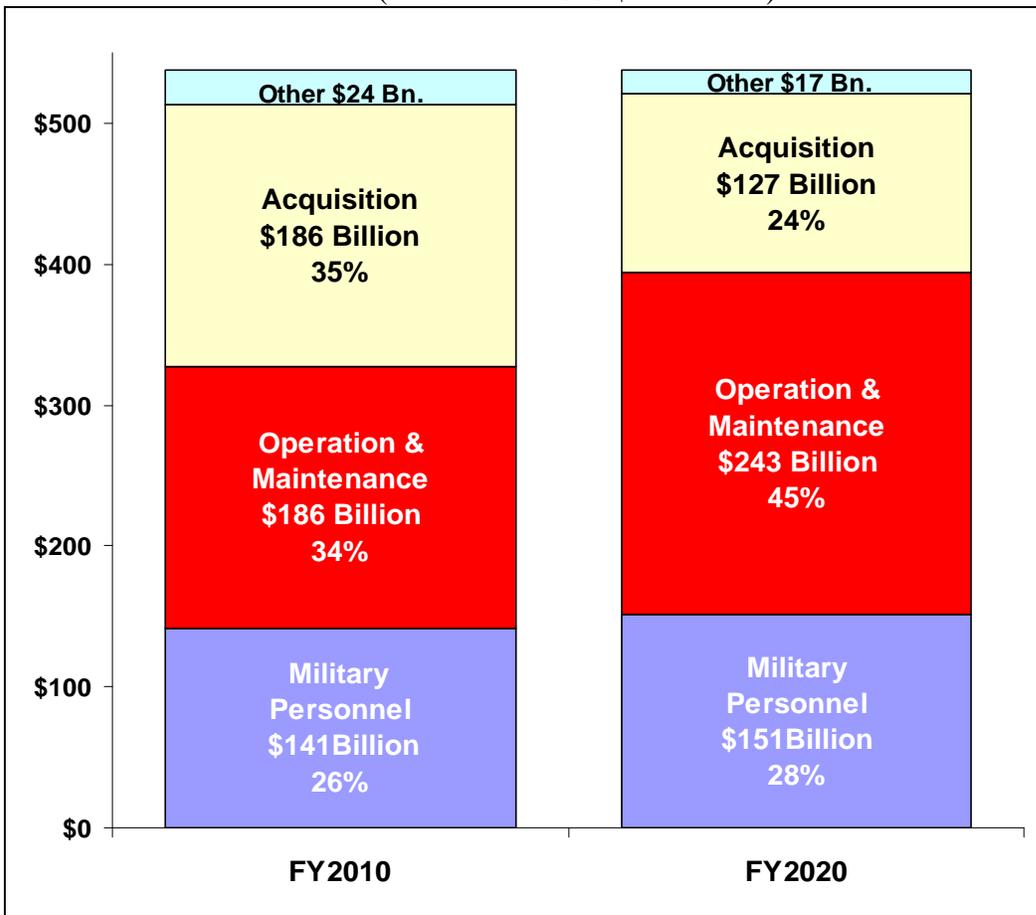
A shift of \$60 billion within the DOD FYDP is by no means unusual. On the contrary, it is well within the range of adjustments that the Defense Department makes in every annual budget cycle. But trade-offs in the years beyond the current FYDP will have to be much more substantial unless spending turns up at least modestly within the next few years. To illustrate that point, a very simple exercise may be useful. Consider, not as a prediction, but only for the sake of analysis, what would happen to the allocation of funds within major categories of the defense budget between FY2010 and FY2020 if (1) the overall level of spending is frozen at the FY2010 level for the next ten years, (2) military personnel funding grows at the historical rate of the Employment Cost Index (ECI), which increased by 0.7% per year above base inflation between

⁸ In questions and answers following a presentation at the Center for Strategic and International Studies (CSIS) on April 29, 2009, Under Secretary of Defense Michèle Flournoy said that QDR budget planning was focused strictly on the FYDP – audio and video recordings are available on line at CSIS, though not a transcript. Also see David Ochmanek, Deputy Assistant Secretary of Defense for Force Planning, Interview with the Defense Writers Group, July 28, 2009, of which a transcript is available on line from Air Force Magazine.

FY1981 and FY2005, and (3) DOD operation and maintenance accounts are assumed to grow at the historical rate of 2.7% per year above inflation.⁹

Figure 5 shows the allocation of funds between (1) military personnel, (2) operation and maintenance, (3) acquisition (the sum of procurement plus R&D funding), and (4) other programs in the Department of Defense base budget, not including war-related supplemental funding, in FY2010 compared to FY2020, on those assumptions. The result, as one would expect, is a dramatic reduction in funding for weapons acquisition, which declines, in constant FY2010 prices, from \$186 billion and 35% of the budget in FY2010 to \$127 billion and 24% of the budget in FY2020.¹⁰ In relative terms, that is a cut of 32% in funding to replace equipment and modernize the force between FY2010 and FY2020 in the base defense budget.

**Figure 5. DOD Base Budget with No Real Growth:
FY2010-FY2020**
(constant FY2010 \$ in billions)



⁹ The Employment Cost Index is a Bureau of Labor Statistics measure of the average change of pay and benefits in the overall economy. The annual real growth in DOD O&M accounts is a CRS calculation that measures the change per active duty service member in O&M funding excluding funding of overseas contingency operations.

¹⁰ This analysis is based on a discussion with Mr. Hugh Brady of the Raytheon Corporation of a defense industry 10 year budget projection under the auspices of TechAmerica.

Source: CRS based on the FY2010 Department of Defense budget request, with growth of 0.7% per year in Military Personnel accounts and 2.7% per year in Operation and Maintenance accounts through FY2020.

While, again, this is not intended as a prediction of likely budget trends, it may suggest a need for the Defense Department to discuss intermediate-term budget trade-offs in the QDR. CBO and other budget projections over the next ten years show potential budget deficits as a percentage of GDP that have, in the past, been followed by long-term limits on defense spending.¹¹ The alternatives to a steep reduction in acquisition accounts are (1) a resumption of at least modest real growth in the overall defense budget, (2) cuts in the size of the force, or (3) measures to reduce operating costs. Each 2% increase in the defense budget above inflation would add about \$10 billion in funds available for acquisition accounts. A cut of 100,000 active duty troops would save \$12-15 billion per year in military personnel and in directly related operation and maintenance costs. A smaller force would entail limits on U.S. military capabilities – one choice might be to reduce requirements for ground forces for long-term stability operations.

The need for difficult budget trade-offs could, of course, be ameliorated to some extent by further limiting defense costs. The QDR will certainly address that issue. Business process reform is one of five focus areas in the original QDR guidance that Secretary Gates issued in April, and one of five QDR issue teams is responsible for addressing defense costs. Earlier QDRs also led to efforts to reduce costs by reducing infrastructure, outsource activities, and improving contracting procedures.

How much DOD can save – and how much it should count on saving – is a matter that deserves careful consideration. In the past, the Defense Department has perennially projected that operation and maintenance (O&M) budgets, which, as noted, have grown historically at 2.5 to 3 percent per year above inflation per active duty service member, would level off, freeing up funds for weapons investments. Throughout the 1990s, however, projected savings in O&M did not materialize, in spite of concerted efforts at management reform, and procurement accounts ended up being cut from year to year to finance must-pay-bills in the operating accounts.

In the FY2010-FY2020 budget exercise shown in **Figure 5**, the assumption is that O&M would continue to grow at the historic rate of 2.7% per year above inflation. Given past experience, DOD will have strong incentives in the QDR to assume that reforms will slow that rate of growth. But experience also shows that reforms generally serve to keep O&M cost growth down to historical levels rather than to achieve additional savings. In addition, the FY2010-FY2020 analysis shown above assumes much more limited increases in military pay and benefits than Congress approved in the years between FY1999 and FY2009. The premise is that service members have already won most of the increases in pay and benefits that support groups were seeking, so growth may be more modest in the future. That assumption may not be correct, however, and the analysis may well underestimate personnel costs. Long-term budget trade-offs might be more difficult to the extent personnel costs grow faster.

Will the QDR Lead to More Radical Changes in Budget Plans?

As well as discussing budget trade-offs over the next decade or so, the current QDR may be an occasion for considering more far-reaching, longer-term changes in policy with potentially very substantial effects on budget planning. Perhaps the central issue in debate over earlier QDRs has concerned whether the Defense Department has kept up with the pace of global change and has

¹¹ Congress passed the original Gramm-Rudman-Hollings deficit control act in November 1985 after the federal budget deficit exceeded 6% of GDP in FY1983. Defense spending subsequently declined in real terms every year until FY1999, when the federal budget ran a surplus.

adjusted defense plans accordingly. That issue appears likely to remain a matter of debate over the current QDR.

The current QDR, on which the Defense Department is required to provide a report early next year, is the fourth such review mandated by a provision that Congress originally included in the FY1997 National Defense Authorization Act and later made permanent. QDRs in 1997, 2001, and 2006 were preceded by two earlier, similarly broad reviews – the “Base Force” analysis that the Joint Chiefs carried out under then Chairman Colin Powell in 1990, and the “Bottom-Up Review” conducted at the beginning of the Clinton Administration under Secretary of Defense Les Aspin in 1993.

The Base Force analysis and the Bottom-Up Review (BUR) were intended first of all to establish a rationale for maintaining strong military capabilities as the Cold War came to an end. The BUR, following the Persian Gulf War of 1991, established as a basic planning principle a requirement that U.S. military forces should be able to prevail in two nearly simultaneous regional conflicts – now termed “Major Theater Wars” (MTWs) – comparable to the war with Iraq. Planners did not neglect post-Cold War requirements for capabilities to manage other kinds of operations. Rather, the BUR argued that forces able to prevail in two major wars would also be able to meet less demanding requirements.

By the time Congress enacted the original QDR requirement, however, that premise was being very widely questioned. Ongoing, long-term U.S. military missions in Bosnia and Herzegovina and later in Kosovo, plus enforcement of no-fly zones in Iraq, were straining the Army and Air Force, neither of which was organized to sustain long-term rotational deployments abroad. The Army, in particular, was still organized in a way that required the mobilization of large numbers of reserves and the reassignment of substantial numbers of active duty troops in order to fill out units selected for deployment. The effect was to disrupt Army personnel management across the whole force and to degrade the readiness of many non-deployed units in order to support even a modest rotational deployment of 5,000 troops to the Balkans.

The 1997 QDR reflected efforts to assess and later ameliorate some of these strains. Among other things, it identified so-called low density-high demand units; mandated additions to some of the more highly stressed forces, including military police and civil affairs teams; made offsetting reductions in other units; and undertook systematic studies of the burdens of recent and ongoing contingency operations on military personnel. It also included a substantially new statement of the missions of U.S. military forces that stressed military engagement and other measures to make use of military forces in non-conflict situations to improve ties with foreign nations and prevent regional conflicts.

As one means of encouraging an even more far-reaching policy reassessment, Congress required as part of the 1997 process the appointment of an independent group, called the National Defense Panel (NDP), to provide input to the QDR and then to prepare an alternative assessment. The NDP’s final report emphasized the prospect that future foes would not challenge U.S. conventional military power directly, but would instead use asymmetric means to exploit U.S. weaknesses. The panel warned that critical U.S. capabilities, particularly the ability to project power far around the globe from bases in distant regions and naval forces offshore, would be increasingly at risk because of the diffusion of advanced technologies. The NDP recommended new programs, including converting ballistic missile submarines to launch cruise missiles against targets ashore, and substantial annual investments in experimental technologies to cope with rapidly evolving challenges.

The NDP report is in many ways representative of the discussion, in Congress and elsewhere, about the apparent limitations of successive QDRs. Even though the 1997 QDR, by most accounts, reflected considerable progress in addressing new challenges, the NDP report was quite

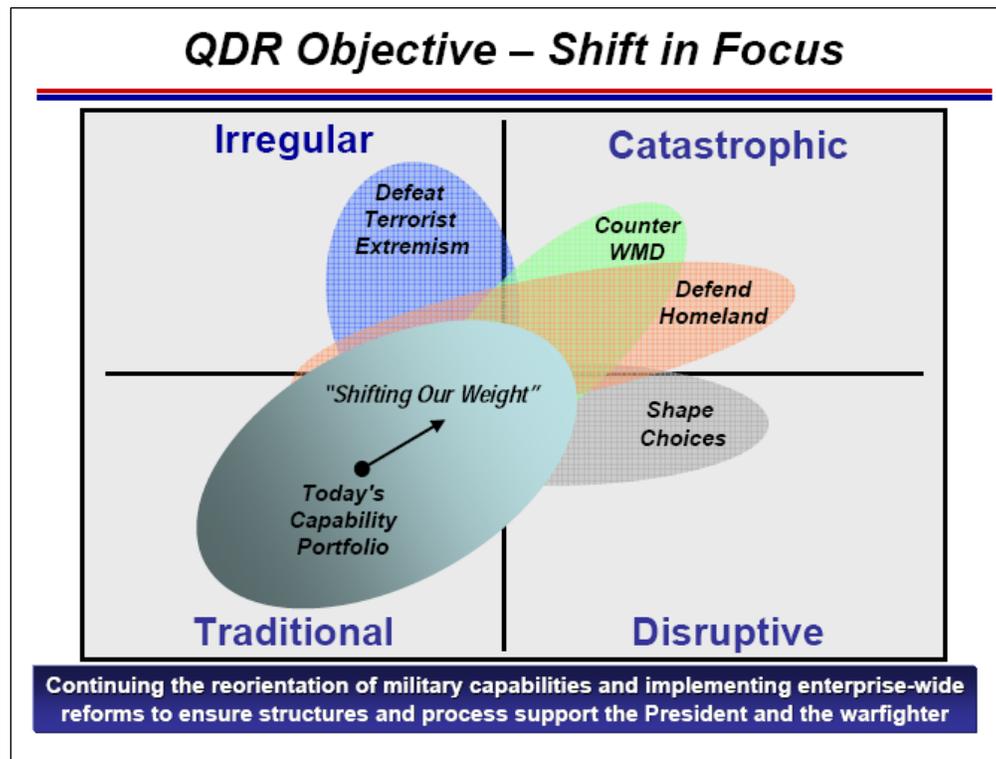
critical of the Defense Department for not adjusting rapidly enough to accelerating changes in the international security environment. Critical as it was, the NDP also received a respectful hearing from senior leaders – the authors of the QDR – inside the Pentagon.

In general, successive QDRs can be seen as progressive steps away from force planning that remained wed to weapons and organizations inherited from the Cold War and toward a much fuller appreciation of the extraordinarily broad array of challenges facing the United States in first half of the 21st Century. The 1997 QDR was succeeded by the 2001 QDR, which emphasized the need to build a full range of capabilities to cope with often unpredictable dangers. It added to the two-war requirement a mandate to protect the homeland from potentially catastrophic attacks and to maintain an effective deterrent presence in four critical regions of the globe.¹²

The 2006 QDR, the first composed after the attacks of September 11, 2001, included the “new challenges” framework that has since shaped much of the discussion of defense planning. **Figure 6**, taken directly from the a DOD briefing on the 2006 QDR, illustrates the premise – which Secretary Gates has pursued since then more assiduously – that investments should be shifted from means of engaging in traditional, conventional force-on-force conflicts, in which the United States still appears to have a significant margin of superiority, and toward irregular, disruptive (i.e., asymmetric attacks on U.S. vulnerabilities), and catastrophic (WMD attacks on the homeland) challenges.

¹² The 2001 QDR articulated what it called the 1-4-2-1 force planning construct, which called for forces to (1) protect the homeland, (4) deter aggression in Europe, Northeast Asia, the East Asian littoral, and Southwest Asia and the Middle East, (2) simultaneously halt attacks in two regions, and (1) win decisively in one major conflict.

Figure 6. 2006 QDR Four Challenges Framework for Setting Priorities



Source: Department of Defense, Briefing Slides on the 2006 Quadrennial Review, February 3, 2006.

Based on briefings by senior DOD officials, the current QDR appears likely to pursue the discussion changes in the international security environment, with implications for force planning, somewhat further yet. Secretary Gates and other officials have, for example, stressed that distinctions between traditional, irregular, and disruptive challenges are eroding. Groups like Hezbollah and Hamas have employed quite sophisticated short-range missiles, including anti-ship missiles, supplied by sponsoring nations. Insurgents in Iraq and Afghanistan have used modern shaped-charge munitions in IEDs to attack armored vehicles. Analysts describe the result as “hybrid warfare,” in which non-state groups, considered to operate at the lower end of the conflict spectrum, employ quite advanced technology, a merger of irregular warfare with advanced means of warfare.

Officials also emphasize that even relatively sophisticated future enemies, including peer- or near-peer competitors, will almost certainly employ whatever means they believe will be effective in a conflict with the United States and its allies, including irregular and disruptive asymmetric attacks and even assaults on the U.S. homeland. A focus of the current QDR appears to be on what officials term “high end asymmetric” threats, meaning challenges that a technologically sophisticated and relatively wealthy opponent might pose in an effort to prevail without having to defeat the U.S. on its own terms. High-end asymmetric warfare was another focus of the April QDR guidance, and it is the subject of one of the QDR’s issue teams.

In focusing on high-end asymmetric challenges, part of what defense officials are thinking may be reflected in recent discussions by Under Secretary of Defense for Policy Michèle Flournoy,

who has stressed the need to safeguard what she and others call “the global commons,” meaning air, sea, space, and cyberspace means of transport, intelligence, and communications.¹³ Threats to the global commons could involve the use of some new technologies, including anti-satellite devices (not just weapons but jammers) and cyber-attacks. They could also involve aggressive, wide-scale use by possible future foes of new versions of older technologies. In attacking sea lanes, for example, enemies could use high-speed small boats packed with high explosives (perhaps with suicide pilots); advanced, very quiet diesel-electric submarines with highly capable munitions; smart sea mines that can be deployed in large numbers, hidden, maneuvered, and activated when needed; short- to intermediate-range ballistic missiles with highly accurate and perhaps even maneuverable warheads to attack ships as well as fixed sites; and long-range, stealthy anti-ship cruise missiles. Some of these technologies, particularly ballistic and cruise missiles, could also be used to attack U.S. forward bases in regions of conflict.

Taken as a whole, discussions of security challenges in successive QDRs appear to represent considerable progress over time. The issue, however, is whether the progress has been rapid enough, and, more importantly, whether it has led to sufficiently rapid changes in policy. One goal Congress had in requiring quadrennial defense reviews was to push the discussion of post-Cold War force requirements further. QDRs may have helped to some degree in doing so, simply by requiring senior DOD leaders to think systematically about long-term issues. At the same time, it would be hard to say that QDRs have fully anticipated the evolving nature of future threats. On the contrary, they seem in many cases to have lagged behind emerging threats.

Moreover, changes in military force posture appear to have been even slower to mature. It took the Army until 2001, just on the verge of subsequent conflicts in Afghanistan and Iraq, to begin implementing a new force posture based on more deployable, modular brigades that were sufficiently manned in peacetime to be deployed without disrupting personnel movements over the whole of the force. In general, earlier QDRs appear to constitute snapshots of progress in ongoing discussions of strategy rather than radical departures from earlier views – an evolutionary process driven by the pressing need to adjust to unexpected events, rather than anything revolutionary.

Anti-Access Strategies as an Example of Major Asymmetric Challenges

This raises what may be the key issue for Congress in assessing the current QDR. Will this QDR be another in a line of modest adjustments to global changes, or will it more fully anticipate the impact on U.S. security of fast-moving global trends? A goal of DOD’s current leadership appears to be, not merely to identify the range of challenges facing the nation, but also to establish priorities in addressing them. But will this include not only identifying areas that may warrant greater investment, but also capabilities that may be becoming obsolete?

One common criticism of the “capabilities based” analysis of the 2001 and 2006 QDRs, even as they helped to broaden awareness of the range of threats, is that the analytical framework did not help much in allocating resources away from some areas and into others. Leaving aside whether such criticism is fair, the current Administration has emphasized the need to analyze specific threats in order to establish priorities. The question that follows is, how boldly will the current QDR address the potential need for major changes in forces in view of its assessment of new challenges?

¹³ Michèle Flournoy and Shawn Brimley, “The Contested Commons,” *Proceedings of the U.S. Naval Institute*, Vol 135, No. 7, July 2009.

To give one example of the kinds of more radical changes in force posture that the QDR might address, consider the long-standing debate over anti-access/area denial strategies. The issue has been debated at least since the National Defense Panel discussed it in 1997. A “Red Team” established as part of the 2006 QDR, and headed by Andrew Marshall, director of the Office of Net Assessment, also discussed it and recommended some far-reaching changes in force structure, including a cut of up to one-third in the number of short-range tactical fighter aircraft and an increase in funding for longer-range strike systems. Now a similar “Red Team” has been established for the current QDR, also co-chaired by Marshall, and it includes prominent advocates of changes in forces to cope with anti-access/area denial strategies. They include Andrew Krepinevich, who served on earlier panels as well, and who has long highlighted the issue, and retired Marine Lieutenant General Paul Van Riper, who, in a major war game, called “Millennium Challenge 2002,” directed a “Red Force” group that exploited with great effect creative means of disrupting U.S. forces in a Persian Gulf-type scenario.

It is important to note that the Defense Department has not ducked the issue. The National Defense Panel and later internal Red Teams were not suppressed or dismissed – on the contrary, the Defense Department has appeared to welcome the involvement of some forceful critics of some of its policies. After he read Krepinevich’s recent book, *7 Deadly Scenarios*, Secretary Gates reportedly directed the QDR team to incorporate Krepinevich’s examples into its set of planning exercises.¹⁴

That said, there appears to be a considerable gulf between the urgency that Krepinevich and others attach to the issue and views of senior DOD officials. In a recent article in *Foreign Affairs*, Krepinevich characterized current U.S. means of projecting and sustaining power around the globe – a capability now unique to the United States and also extremely expensive to maintain – as a “wasting asset.” “Several events in recent years have demonstrated that traditional means and methods of projecting power and accessing the global commons are growing increasingly obsolete,” he wrote. Citing General Van Riper’s success in Millennium Challenge, which, he says, led to the early loss of half the U.S. ships deployed in a model conflict with Iran in the Persian Gulf, Krepinevich concluded:

Van Riper's success should have served as a warning: projecting power into an area of vital interest to the United States using traditional forces and operational concepts will become increasingly difficult. Indeed, these means and methods are at great risk of experiencing significant, perhaps even precipitous, declines in value....

In the real world, Iran and other states can buy high-speed, sea-skimming ASCMS [anti-ship cruise missiles] in quantity. In confined waters near shore, U.S. warships would have little warning time to defend against these weapons. The same can be said of high-speed suicide boats packed with explosives, which can hide among commercial vessels. Widely available modern sea mines are far more difficult to detect than were those plaguing the U.S. fleet during the 1991 Gulf War. Quiet diesel submarines operating in noisy waters, such as the Strait of Hormuz, are very difficult to detect. Iran's possession of all of these weapons and vessels suggests that the Persian Gulf – the jugular of the world's oil supply – could become a no-go zone for the U.S. Navy.¹⁵

China, too, he says, is concentrating on anti-access/area denial capabilities as well as the ability to disrupt U.S. freedom of action in space and cyberspace.

¹⁴ Andrew F. Krepinevich, *7 Deadly Scenarios* (New York: Bantam Books, 2009). Christopher J. Castelli, “QDR Shakes Up Planning Scenarios for Future Military Missions,” *Inside the Pentagon*, May 28, 2009.

¹⁵ Andrew F. Krepinevich, “The Pentagon's Wasting Assets,” *Foreign Affairs*, July/August, 2009, Vol. 88, Issue 4.

In contrast, Under Secretary Flournoy and co-author Shawn Brimley, acknowledge similar challenges, but come to a starkly different conclusion about the immediacy of the threat:

... barriers to entry for both state and non-state actors to develop and field capabilities that can pose challenges to U.S. and allied freedom of action will lower substantially over time. The proliferation of knowledge and technology will allow an increasing number of state and non-state actors to deploy anti-access capabilities and high-end asymmetric technologies that can put allied infrastructure at risk and hamper U.S. power projection.

[.....]

While these trends are already apparent today, their enumeration should not be interpreted to mean that U.S. dominance in, for example, space-based capabilities or in blue-water naval power projection is being eroded at a precipitous pace. Far from it – America's military will remain without peer for some time in the ability to project and sustain substantial military power from the air and sea over large distances.

These trends are, however, harbingers of a future strategic environment in which America's role as an arbiter or guarantor of stability within the global commons will become increasingly complicated and contested.

What evidence the Defense Department has to support the conclusion that power projection capabilities are not “being eroded at a precipitous pace,” is a matter of critical importance. This judgment appears to be at odds, to some degree at least, with the conclusions of the 2006 QDR Red Team, as well as with the views of Krepinevich and other well-regarded independent analysts. A measure of the value of the QDR may be how directly and effectively it addresses this and similar issues that raise questions about the pace at which the Defense Department is adjusting to changes in the international security environment.

The amount of new investment that may be needed to cope with asymmetric threats may very well be substantial. If area denial strategies are effective in forcing shorter-range U.S. forces away from regions of conflict, for example, investments in longer-range air- or even space-based strike systems might be needed, particularly for use in the early stages of a conflict. The task of striking against mobile ballistic and cruise missile launchers remains challenging, and much larger investments in intelligence, surveillance, and reconnaissance systems for the mission, as well as in long-range and loitering strike systems, might be required. One alternative may be a substantial increase in submarines and submarine launched weapons. Defenses against ballistic and cruise missiles might also be required in very large numbers. Cost exchange ratios may not favor existing sea- or land-based missile defense systems, and new investments in air-launched anti-missile systems may be needed.¹⁶

Other asymmetric threats could also require expensive measures in response. Defense against anti-satellite systems might require not only measures to protect current generations of large satellites, but, as many have proposed, the development of smaller satellites for key missions that could be launched in substantial numbers in the run up to a conflict. This might also require large investments in launch systems.

The Cold War was punctuated by occasional, unexpected international crises, but, in retrospect defense planning was characterized by a remarkable degree of stability. The post-Cold War era, in contrast, appears to be defined both by a succession of unpredictable challenges and by the accelerating pace of global change. Experience with earlier QDRs suggests that the Defense Department may sometimes be slow to adjust to new challenges, and that institutional inertia may make senior leaders reluctant to pursue far-reaching changes in policy. The central issue for this

¹⁶ There has been some discussion of using upgrades of Sparrow or AMRAAM air-to-air missiles for missile defense.

and future QDRs may be how effective they are in turning investments that will determine U.S. military capabilities twenty years and more in the future, in the right direction.

Table A-1. DOD Base Budget and Supplemental Funding, FY1976-FY2014
Updated Through the Mid-Session Review of the Budget, August 2009
 (budget authority in billions of current year and constant FY2010 dollars)

	DOD Base Discretionary (Current Year \$)	DOD Supplemental s/ Bridge Funds (Current Year \$)	DOD Total Discretionary (Current Year \$)	DOD Base Discretionary (Constant FY2010 \$)	DOD Supplemental s/ Bridge Funds (Constant FY2010 \$)	DOD Total Discretionary (Constant FY2010 \$)
FY1976	93.8	1.9	95.7	355.2	7.3	362.5
FY1977	106.6	1.5	108.1	376.9	5.3	382.3
FY1978	111.7	3.0	114.7	365.2	9.8	375.0
FY1979	120.4	3.6	124.1	363.9	11.0	374.9
FY1980	135.0	6.4	141.3	364.3	17.2	381.5
FY1981	169.4	7.2	176.6	406.4	17.3	423.7
FY1982	211.7	0.5	212.2	466.7	1.0	467.7
FY1983	238.2	0.7	238.9	500.4	1.4	501.8
FY1984	258.1	0.5	258.6	523.7	1.0	524.7
FY1985	287.1	0.0	287.1	560.0	0.1	560.1
FY1986	281.1	0.8	282.0	538.0	1.6	539.6
FY1987	279.3	0.7	280.1	521.4	1.4	522.8
FY1988	284.3	–	284.3	512.3	–	512.3
FY1989	291.4	–	291.4	505.7	–	505.7
FY1990	291.7	2.0	293.8	492.1	3.4	495.6
FY1991	276.1	43.6	319.7	449.1	70.9	520.0

	DOD Base Discretionary (Current Year \$)	DOD Supplemental s/ Bridge Funds (Current Year \$)	DOD Total Discretionary (Current Year \$)	DOD Base Discretionary (Constant FY2010 \$)	DOD Supplemental s/ Bridge Funds (Constant FY2010 \$)	DOD Total Discretionary (Constant FY2010 \$)
FY199 2	276.7	9.6	286.3	438.6	15.2	453.8
FY199 3	259.3	3.1	262.3	407.5	4.8	412.3
FY199 4	249.1	1.3	250.4	383.7	1.9	385.7
FY199 5	249.7	2.7	252.4	376.1	4.0	380.1
FY199 6	252.7	1.0	253.7	372.0	1.5	373.5
FY199 7	252.1	1.9	254.0	362.3	2.8	365.0
FY199 8	257.0	2.8	259.8	359.3	4.0	363.2
FY199 9	265.6	9.1	274.7	361.4	12.4	373.8
FY200 0	278.7	8.6	287.3	369.8	11.3	381.1
FY200 1	296.9	19.4	316.3	382.0	24.9	406.9
FY200 2	328.2	16.2	344.4	410.7	20.3	431.0
FY200 3	374.9	62.6	437.5	453.7	75.7	529.5
FY200 4	398.1	69.5	467.6	467.1	81.6	548.7
FY200 5	377.0	101.9	478.9	425.4	115.0	540.4
FY200 6	410.5	124.0	534.5	448.1	135.4	583.4
FY200 7	429.6	171.3	600.9	456.9	182.2	639.1
FY200 8	478.8	187.1	666.0	495.7	193.7	689.4
FY200 9	520.9	145.8	666.7	530.7	148.5	679.2
FY201 0	533.8	130.0	663.8	533.8	130.0	663.8
FY201 1	541.8	50.0	591.8	528.7	48.8	577.5

	DOD Base Discretionary (Current Year \$)	DOD Supplemental s/ Bridge Funds (Current Year \$)	DOD Total Discretionary (Current Year \$)	DOD Base Discretionary (Constant FY2010 \$)	DOD Supplemental s/ Bridge Funds (Constant FY2010 \$)	DOD Total Discretionary (Constant FY2010 \$)
FY2012	550.7	50.0	600.7	524.5	47.6	572.1
FY2013	561.1	50.0	611.1	521.3	46.5	567.7
FY2014	574.5	50.0	624.5	520.6	45.3	565.9

Sources: Totals for FY1976-FY2008, Office of Management and Budget, *Budget of the United States Government, FY2010 Historical Tables*, May 2009; totals for FY2009-FY2014, Office of Management and Budget, *Mid-Session Review: Budget of the U.S. Government, Fiscal Year 2010*, August 2009; Supplementals from FY1976-FY1980 from Department of Defense Comptroller, Annual FAD Table 809; Supplementals from FY1981-FY1999 from Congressional Budget Office; Supplementals and Bridge Funds from FY2000 on, Congressional Research Service based on House Appropriations Committee tables on appropriations bills.