

There are no simple solutions to the economic challenges facing our country and the affordability issues surrounding the Air Force's modernization and recapitalization requirements. In the final analysis, affordability (like beauty) is in the eye of the beholder.

contemporary issues

Can America Afford to Modernize the Air Force?

In “Can America Afford to Modernize the Air Force?” Colonel George A. Coggins looks at why the Air Force needs to modernize its air and space fleets, explores domestic considerations likely to influence these efforts, and provides a historical perspective on military spending trends and different approaches for determining defense funding levels. He concludes with an assessment of affordability concerns and recommendations. Leaders with a firm understanding of these issues will be better prepared to assess and articulate the potential impacts of funding decisions on national defense. This, in turn, should better posture the Air Force to maximize its contributions to national security as we fight today's wars, while preparing for the future.

The major recommendations presented in this article are as follows.

- **Reassess America's national security policy and the role of the military (and other instruments of national power) in the new security environment.** America's military can do just about anything, but it cannot do everything. Our leaders must apply the first rule of management—balancing commitments with resources. This will require a realistic assessment of the threat environment and global commitments, clearly defining the roles and mission of each instrument of national power, and adequately resourcing these functions. To better synchronize priorities with resources, the US should establish a unified security budget for key players involved in providing national security. This would include the Departments of Defense, State, and Homeland Defense, along with others as deemed appropriate. The Department of Defense may lose some budget authority as part of this

rebalancing process; however, since US national security is based on the skillful application of both hard and soft power, this may be the most efficient and effective use of limited funds.

- **Restore fiscal balance through prudent spending cuts and more effective tax policies.** A strong economy is a prerequisite for a strong military. Unfortunately, the US is on an “unsustainable fiscal path” that will ultimately impact our national security. No politician in his or her right mind wants to propose cutting entitlements or raising taxes, yet this is precisely what must be done to rein in America's out of control budget—and the sooner the better. The longer we wait to address deficit spending and the tsunami wave of Social Security and Medicare bills bearing down on our country, the more drastic future cuts will have to be. Politicians should consider increasing the minimum age for drawing Social Security, repealing the Medicare drug care program, and re-evaluating tax policies (to include reversing prior tax cuts or abolishing the IRS and substituting a national sales tax for personal income taxes).
- **Pursue a long-term strategy for revitalizing the US defense industrial base.** The government should identify those critical skills, technologies, and manufacturing capabilities that are needed to ensure the long-term viability and technological superiority of the US defense industrial base. This will require a sustained effort spanning decades and considerable investment, but the potential benefits are substantial. First, it encourages the development of more scientists and engineers which increases America's intellectual capital. Second, domestic production creates more jobs which contribute to the nation's overall wealth. Finally, and most importantly, it provides an opportunity for America to regain its position as a leading manufacturer among world producers.



Can America Afford to Modernize the Air Force?

George A. Coggins, Colonel, USAF

Introduction

Rising to the 21st century challenge is not a choice. It is our responsibility to bequeath a dominant Air Force to America's joint team that will follow us in service to the nation.¹

—General T. Michael Moseley, Former Chief of Staff of the Air Force

America's edge, according to the 2008 *Air Force Posture Statement*, is based on the synergistic effects of global vigilance, global reach, and global power—our nation's ability to gain and maintain situational awareness, fuse intelligence from multiple sources, and rapidly respond with swift and precise effects to any point on or above the earth.² These capabilities allow the United States (US) Air Force to hold any target in the world at risk, defend our homeland, or deliver humanitarian aid to those in need.

However, the Air Force is at a strategic crossroads. Strained by 17 years of continuous combat operations throughout Southwest Asia, its fleet of air and space vehicles as well as supporting infrastructure are rapidly wearing out or becoming technologically obsolete. Reversing this trend and revitalizing these capabilities will not come cheap. By one account, the Air Force needs at least an additional \$20B annually to pay for critical

modernization requirements including tankers, fighter aircraft, long-range strike assets, and space platforms.³

This phenomenon is not limited to the Air Force. The Army, Navy, and Marines are experiencing similar modernization and recapitalization challenges resulting from the high operating tempo demanded by ongoing operations in Iraq, Afghanistan, and other contingencies around the world. The sheer volume of flying hours, steaming hours, and track and wheel miles in a combat environment is accelerating the wear and tear on most military hardware and burning up the expected service lives of critical assets. Unless these systems are repaired and replaced in sufficient numbers, the United States risks losing its battlefield dominance and command of the global commons—air, sea, space, and cyberspace—as the threat environment becomes increasingly dangerous and America's relative military advantage shrinks.

One could argue the simple solution is to increase defense spending so the Services can repair and modernize their forces. Unfortunately, the United States is on a fiscally unsustainable path resulting from unchecked growth in mandatory programs such as Social Security, Medicare, and the interest on our national debt.⁴ This looming fiscal crisis, coupled with a shrinking US defense industrial base, will make it difficult, if not impossible, for America to modernize the Air Force.

This article examines why the Air Force needs to modernize its air and space fleets, explores domestic



considerations likely to influence these efforts, and provides a historical perspective on military spending trends and different approaches for determining defense funding levels. It concludes with an assessment of affordability concerns and recommendations. Leaders with a firm understanding of these issues will be better prepared to assess and articulate the potential impacts of funding decisions on national defense. This, in turn, should better posture the Air Force to maximize its contributions to national security as we fight today's wars, while preparing for the future.

The Case for Modernizing the United States Air Force

Airpower is like poker. A second-best hand is like none at all—it will cost you dough and win you nothing.

—General George Kenney, First Commander of Strategic Air Command

Today's Air Force is arguably the most dominant air and space force in the history of the world. American aircraft patrol the skies over Iraq and Afghanistan, unchallenged by enemy air forces, while ground forces conduct missions without fear of attack from above. This confidence is well-founded—no US soldier has been killed by an enemy aircraft since April 1953, nearly 56 years ago.⁵

The Air Force's brand of air dominance—total, unquestionable, and suffocating—has been around so long, according to Rebecca Grant, director of the Mitchell Institute for Air Power Studies, that many now view it as a birthright.⁶ Considering almost two decades have passed since American warplanes drove Saddam Hussein's air forces from the skies during Operation Desert Storm, it is easy to see how some people can come to this conclusion. However, this flawed view overlooks the risks posed by an increasingly dangerous threat environment and the effects of an aging air and space fleet.

It's a Dangerous World Out There

Pick up any newspaper or peruse your favorite news Web site and you will see constant reminders of the dangerous world we

live in. Recent headlines include coverage on the terror attacks in downtown Mumbai, pirates hijacking vessels in the Indian Ocean, Iran's recent ballistic missile tests, and Russia's invasion of Georgia. In light of these events, the United States Air Force must be capable of dealing with a number of daunting challenges—fighting terrorism, dealing with the emergence and reemergence of peer competitors, and countering adversaries armed with more advanced, lethal weapon systems.

On 11 September 2001, terrorists launched the most deadly attack in American history. These brazen strikes on American soil ushered in a new era for our nation—the Long War on Terror. Seven years and \$700B later, American forces steadfastly defend our homeland and relentlessly hunt down terrorists throughout the world. Terror groups, such as Al Qaeda and Hezbollah, still pose a growing threat to the international community. As a result, the United States and other countries in the world must be equally committed and capable of preventing such attacks.

At the end of the Cold War in the mid-1980s, the United States stood as the sole superpower in the world. No other country could rival its combined military and economic might which led to a decade-long *procurement holiday* for the US military. Yet, as America reduced its military force structure and deferred or cancelled modernization programs, other nations reconstituted and expanded their military capabilities. According to the 2006 *Quadrennial Defense Review* report, the future international security environment will most likely be shaped by an emerging China, resurging Russia, and expanding India.⁷

China is seen as having the greatest potential to compete militarily with the United States and could, over time, field military technologies capable of offsetting traditional US military advantages. This should come as no surprise as China converts its growing economic might into military capabilities. For example, within the last several years, China announced the fielding of one of its most advanced fighters, the J-10, and successfully tested an anti-satellite weapon against an orbiting spacecraft.⁸ Although China's intentions remain veiled, one analyst posits China will have the military capacity to pose a national survival threat to America in less than a generation.⁹

The proliferation of advanced weaponry also presents a growing threat to American air and ground forces. Today, one is just as likely to find Russian SA-20 and Tor-1 systems in Iran as American-made Stingers in the hands of Iraqi insurgents. As potential adversaries acquire relatively inexpensive, yet capable, man-portable air defense systems, double digit surface-to-air missile systems, and fourth generation fighters, they may well be able to array more formidable air defenses thus potentially denying US access to their airspace.

Soviet and Chinese aircraft, notably the MiG-29, MiG-31, and Su-30, also pose a growing threat to American forces and rank among the top-selling fighters in the world. These jets, while not as advanced as the new F-22 or F-35, are capable of engaging and defeating America's legacy air superiority fighter, the F-15C. In 2005, Indian pilots flying Soviet-made Su-30Ks and French-made Mirage 2000s accomplished something unthinkable just a few short years ago—they defeated American pilots in simulated combat engagements as part of a recurring training exercise dubbed Cope India.¹⁰

While the debate rages on whether it was a *square fight* between the US and Indian forces, the implications are obvious. America's monopoly on technological superiority and relative

Article Acronyms

CLS – Contractor Logistics Support
CRS – Congressional Research Service
DoD – Department of Defense
DPEM – Depot Programmed Equipment Maintenance
FHP – Flying Hour Program
GAO – Government Accountability Office
GDP – Gross Domestic Product
GWOT – Global War on Terror
ISR – Intelligence, Surveillance, and Reconnaissance
PPBES – Planning, Programming, Budgeting, and Execution System
PPBS – Planning, Programming, and Budgeting System
SAM – Surface-to-Air Missile
SSA – Social Security Administration
US – United States
USAFCENT – United States Air Forces Central Command

military advantage is shrinking—and not just in the air domain. Commercial satellite imagery is readily available on the open market, hackers infiltrate and exploit computer networks, and terrorists use the Internet to rapidly share tactical lessons learned, such as instructions for incorporating cell-phone detonators into roadside bombs. These threats—and others such as climate change, resource shortages, and pandemics—clearly indicate our world has, indeed, become an increasingly dangerous place.

Growing Old Ungracefully—An Aging, Worn-out Fleet

Most people view the Air Force as the newest, most technologically advanced military in the world. Flashy images of F-22s, Global Hawks, and Predators dominate the press and certainly reinforce this perception. However, they may be surprised to learn these three advanced systems represent less than 5 percent of Air Force aircraft.¹¹ The remaining 95 percent of the fleet includes over 400 Eisenhower-era tankers and nearly 200 bombers and cargo aircraft averaging over 45 years old. This highlights one of the most serious challenges to American air and space dominance—an aging, less capable fleet.

The Air Force is currently operating the oldest fleet in its history. On average, the fleet is over 24 years old with many platforms approaching the half-century mark. See Table 1 for the average age of a representative cross-section of Air Force systems.¹²

Planned acquisitions will not reverse this trend anytime soon. According to one official, the Air Force plans to acquire approximately 60 aircraft per year which equates to a 100 year recapitalization rate based on a 5,700-plus aircraft fleet.¹³ As a result, the average age is soon expected to exceed 30 years with some systems projected to reach the 75- to 80-year mark.¹⁴

Seventeen years of continuous combat operations is also accelerating the wear and tear on Air Force systems and burning through the expected service lives of critical assets. Since Desert Storm, the Air Force has flown over 2.3 million hours annually, but with a force that is 31 percent smaller and 42 percent older.¹⁵ According to Lieutenant General Gary North, commander of Ninth Air Force and US Air Forces Central, “We are flying our planes into extinction.”¹⁶

The case for Air Force modernization goes far beyond its aging air and space fleet. Years of reduced funding for new facilities and the cumulative effect of deferred maintenance are also impacting critical infrastructure capabilities including aircraft depots, space launch facilities, base maintenance, and specialized communications facilities. Other less obvious, but essential infrastructure requirements include upgrades to training ranges, runways, material handling equipment, fuel distribution systems, and adequate housing for our Airmen and their families. Just as most people do not want to go to war in a 50-year-old aircraft, they should not be expected to work or live in similarly outdated, inefficient support facilities.

Aging Fleet = More Costly, Less Reliable Systems

In one respect, air and space vehicles are no different than a personal automobile. As they age, they become less reliable and cost more to operate and maintain. Much like a family automobile purchased in 1980, military systems procured during the Cold War are showing their age as evidenced by more frequent incidents involving structural issues such as cracked wings, struts, and corrosion. For example, the Air Force was forced to ground its entire F-15C fleet in 2007 after an aircraft disintegrated while

conducting routine air-to-air combat training in the skies over Indiana.¹⁷ As recently as October 2008, dozens of A-10 jets were grounded at Davis-Monthan Air Force Base (AFB), Arizona after inspectors found cracks in the wings. These problems are not isolated to fighter and attack aircraft.¹⁸ Similar safety and structural issues have been discovered in cargo, aerial refueling, and intelligence, surveillance, and reconnaissance platforms. One official noted the Air Force’s C-130Es are so broken they can no longer deploy in combat.¹⁹ As of August 2008, over 700 aircraft, or 13 percent of the entire Air Force aircraft fleet was either grounded or operating under flight restrictions.²⁰

Finally, it is also increasingly expensive to operate and maintain aging aircraft. As Figure 1 illustrates, the cost of depot programmed equipment maintenance, contractor logistics support, and the flying-hour program increased by 179 percent over the last 10 years even as the Air Force reduced the size of its fleet by over 9 percent.²¹ So, as you might expect, keeping over 5,000 aircraft airworthy requires massive investments in terms of manpower and money. The Air Force is expected to “spend a billion dollars per week in fiscal 2010 on fuel, spare parts, repairs and technical support—and that doesn’t even include the paychecks for military personnel performing such functions.”²²

Domestic Factors Influencing Air Force Modernization Efforts

*To ask whether the United States can afford higher levels of military spending is stupid. It can, and if necessary, it would. The problem is that there are other important things that the United States wants and can afford too, and a dollar spent on one thing cannot be spent on another.*²³

—Richard Betts, US National Security Specialist

There are significant risks on the horizon that may derail the Air Force’s modernization and recapitalization efforts. Unchecked growth in domestic programs such as Social Security, Medicare, and Medicaid, coupled with decades of deficit spending and the effects of the credit crisis, threaten our nation’s solvency. Even if America’s leaders can reverse these trends, there are many concerns about the US defense industry’s ability to develop the systems and technologies needed for our national defense. We begin by scanning the budgetary landscape.

System	Number	Average Age	Oldest	Newest
A-10A	208	27.3	Apr 79	Mar 84
F-15C	325	25.2	Jun 79	Oct 89
F-16C	1029	18.5	Oct 84	Mar 05
B-1B	66	21.0	Sep 86	Jul 88
B-52H	89	46.7	Jan 60	Oct 62
KC-135R	363	46.8	Jun 58	Dec 64
C-5A	59	36.9	May 70	May 73
C-130E	98	44.3	Jun 61	Feb 74
C-130H	269	21.1	Aug 74	Mar 94
HH-60G	101	18.2	Dec 82	Feb 99
Minuteman II	570	34.0	Apr 70	Dec 78
GPS satellites	31	9.0	Nov 90	Mar 08

Table 1. Inventory and Average Age of Air and Space Systems

The Looming Fiscal Crisis

The United States faces a looming fiscal crisis; however, most Americans and virtually all politicians turn a blind eye to this inconvenient truth. According to David Walker, the Comptroller General of the United States of America, “Today, we’re seeing the calm before the storm from a fiscal standpoint...but, we face a tsunami of spending that will reach our shores within the next several years, and we are not well prepared.”²⁴ The spending he refers to includes the soaring costs of mandatory programs such as Social Security, Medicare, Medicaid, and interest on the national debt. He asserts that, absent any policy changes, these programs will consume an increasing percentage of US tax revenues leading to serious pressures on funding for discretionary programs such as national defense.

Social Security

Certain dates, such as 7 December 1941 and 11 September 2001, mark defining moments in American history. Although few people can recall the significance of 15 October 2007, the actions of a single woman set into motion a series of events that will shape American budgets for the next century. Kathleen Casey-Kirschling became the first *baby boomer* to file for social security benefits. But, she won’t be the only one for long. Experts estimate an additional 20,000 boomers will be eligible to file for social security benefits each day for the next 20 years—which equates to over 125 million new social security recipients during this period.²⁵

According to the Congressional Budget Office, three key shifts in American demographics will greatly influence the long-term solvency of the Social Security program. First, millions of members of the baby boomer generation will reach retirement age in the next few decades, greatly expanding the overall number of retirees. Second, the average life expectancy of Americans is increasing, so they will draw benefits for a longer period of time. Third, fertility rates are expected to remain far below the levels of 1950s and 1960s further reducing the number of available workers to pay into social security.²⁶

The economic impact of these shifts is staggering as this bow wave of retirees begins collecting social security. By 2017, the Social Security Administration (SSA) will begin paying out more in benefits than it collects in taxes and will start drawing down its trust fund assets (surpluses accumulated prior to 2017). By 2040, the trust fund assets will be exhausted and Social Security will lack the resources to pay all promised benefits. According to SSA actuaries, promised benefits exceed expected tax revenues by \$13.4T when extrapolated over the indefinite future.²⁷ Yet, this is just the tip of the financial iceberg. As more boomers retire, they will also strain America’s

government sponsored health-care programs, Medicare and Medicaid.

Medicare and Medicaid

Our nation spends over \$2T a year on medical healthcare, with the US government paying nearly one-third of these costs.²⁸ As a result, Americans are now living longer, healthier lives than at any time in our nation’s history. Peter Orszag, director of the Congressional Budget Office, acknowledges America’s aging population is putting increased demands on our nation’s social programs. However, he attributes spiraling medical costs—not Social Security—as the primary factor behind the growth in entitlement programs.²⁹ Figure 2 clearly supports this claim.³⁰

The combination of higher patient loads, skyrocketing medical costs, and unfunded mandates such as the Medicare drug program has put our nation’s healthcare programs on an unsustainable fiscal path. The 2006 *Medicare Trustees’* report projects a \$71T gap between Medicare’s long-term unfunded obligations and anticipated receipts. This dwarfs Social Security’s \$13.4T deficit and is 14 times larger than the total amount of government debt held by the public.³¹

Medicaid, another federally funded program that provides medical assistance to low-income families and individuals, is experiencing cost growth similar to Medicare. Increased numbers of elderly, low-income citizens are also expected to turn to Medicaid to pay for non-hospital expenses such as long-term health care—yet another unanticipated, and unfunded, consequence of Americans living longer.³²

The Effects of Chronic Deficit Spending or “Hey Buddy, Can You Spare a Dime?”

Somewhere along the last 232 years, our government lost its sense of financial stewardship. Concepts such as balanced budgets and fiscal responsibility fell out of vogue and were replaced by unconstrained government spending and never-ending campaigns for increased tax incentives. As a result, the US deficit for 2008 will be an estimated \$430B to \$480B.³³ When added to

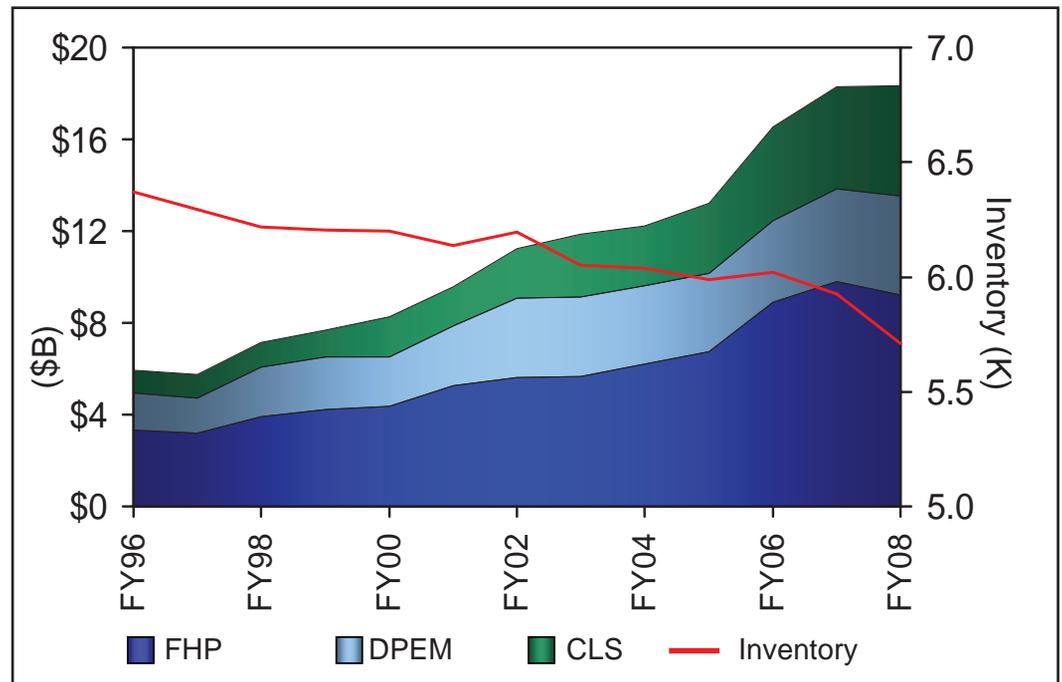


Figure 1. Increased cost of Aircraft Fleet

all prior deficits, the national debt totaled \$10.7T as of 10 December 2008.³⁴ This debt, just like your home mortgage, accrues interest—which, according to the Treasury Department, totaled \$451.2B in 2008.³⁵ To put this in perspective, interest on the US national debt accrues at a rate of roughly \$51M per hour or nearly \$1M per second.

Short periods of deficit spending may be in the best interests of our country such as funding war costs or stimulating economic activity. However, studies indicate chronically large federal deficits reduce national saving, which slows the accumulation of national wealth and degrades economic performance.³⁶ The net result is lower future living standards. Over time, these deficits can also affect financial markets in the form of higher or lower interest rates, stock market values, and exchange rates.³⁷

Since most lawmakers are reluctant to address our nation’s fiscal imbalance by raising taxes or reducing spending, deficits will consume an increasing percentage of the US Gross Domestic Product (GDP). Figure 3 illustrates the projected trajectory of federal deficits.³⁸

Because of mounting costs in mandatory programs—primarily Social Security, Medicare, and interest on the national debt—discretionary programs will come under increased pressure as Congress attempts to find ways to pay our country’s bills.³⁹ An examination of the distribution of federal spending between mandatory and discretionary spending over the last 40 years is revealing. Spending on mandatory programs and net interest on the national debt increased from 33 percent of all federal spending to 62 percent between 1966 and 2006, while spending on discretionary programs dropped from 67 percent to 38 percent over the same time period (see Figure 4).⁴⁰

A further breakdown of federal spending by major program in the same time frame clearly illustrates the explosive growth of spending for Social Security, Medicare, and Medicaid—and a corresponding reduction in defense spending from 43 percent of all federal spending to just 20 percent (see Figure 5).⁴¹

Although US spending patterns fluctuate due to changes in policy, the economy, and the security environment, one trend is clear—defense budgets will continue to come under pressure.

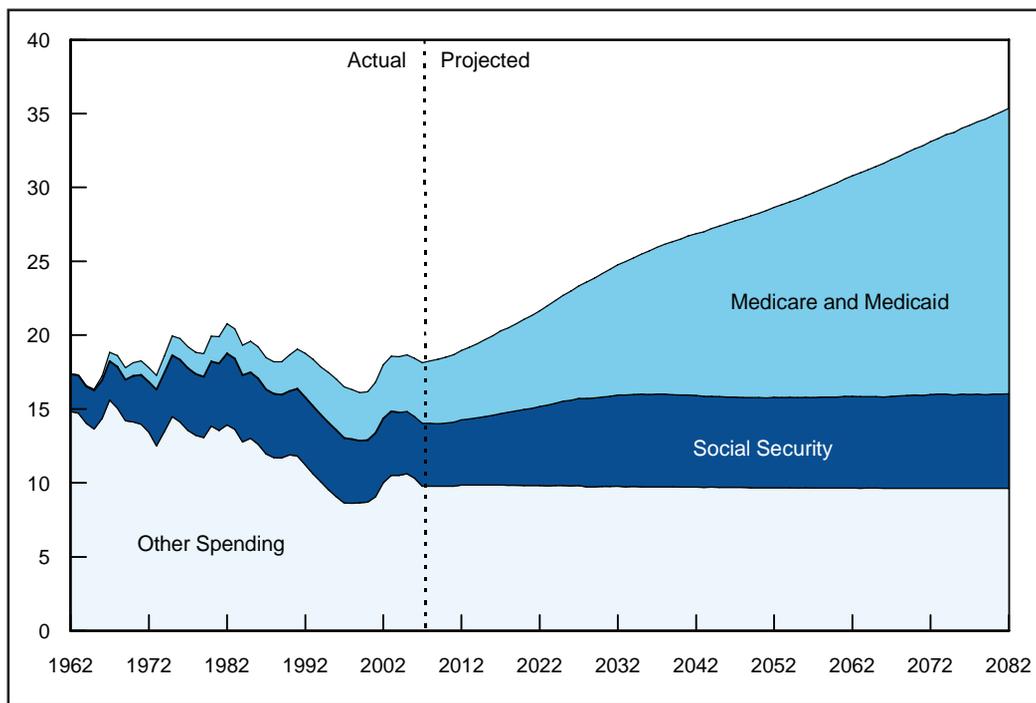


Figure 2. Long-Term Federal Spending Projection

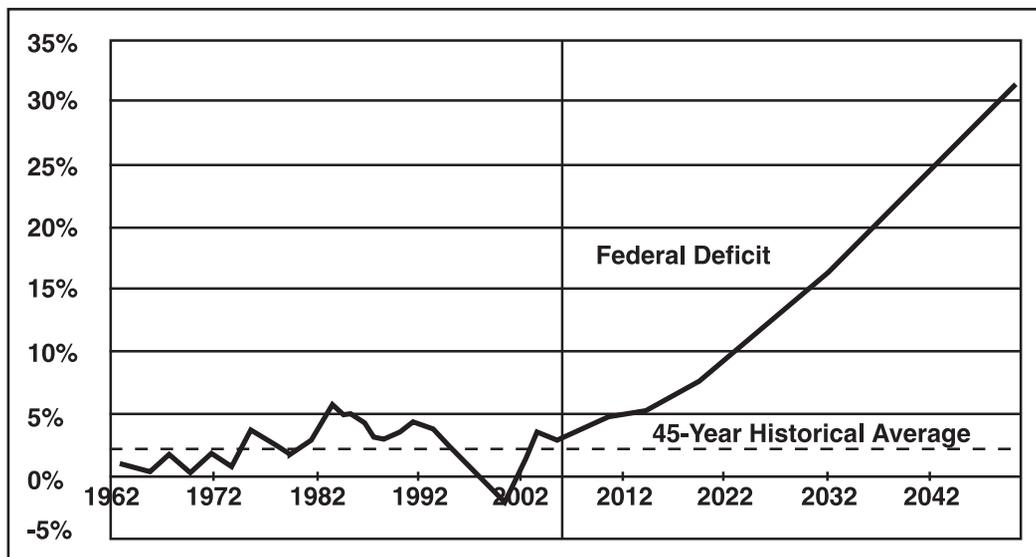


Figure 3. Federal Deficit as a Percentage of GDP

The US Defense Industrial Base

Since World War II, the US defense industrial base has converted America’s economic might and intellectual capital into the advanced systems and technologies used by our military. The defense industry pioneered scientific breakthroughs in the 1950s and 1960s which played a significant role in such innovations as manned spaceflight, computers, and new manufacturing processes. Many of these technologies evolved into the state-of-the-art weapon systems seen today. However, as the US defense industry approaches the second decade of the twenty-first century, its position of dominance and ability to support our national defense is at risk, most notably from challenges related to industry consolidation, increased reliance on foreign made components, and surge capacity. These challenges, if left unaddressed, threaten the *strategic edge* created by this vital industry as well as its long-term viability.⁴²

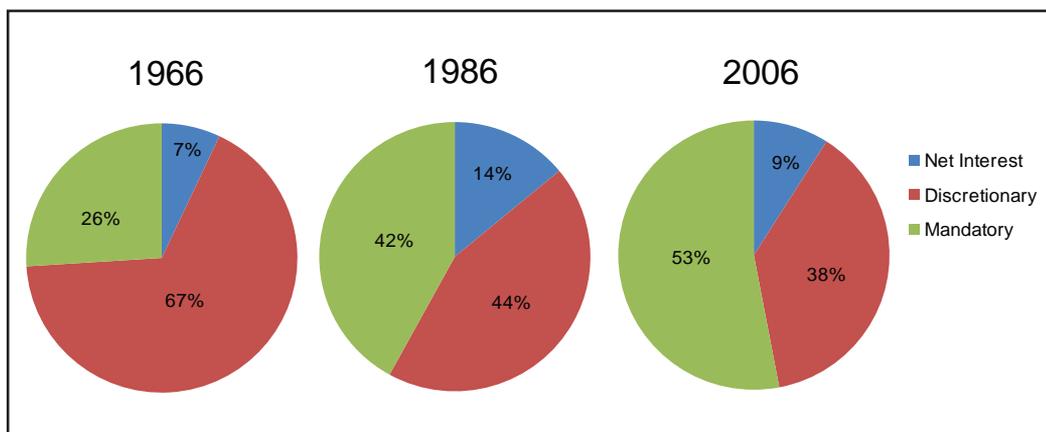


Figure 4. Federal Spending on Mandatory and Discretionary Programs

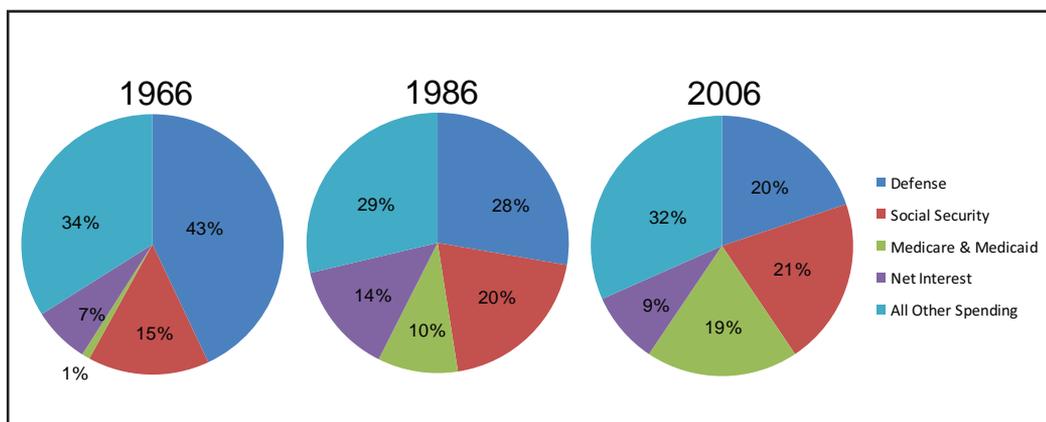


Figure 5. Composition of Federal Spending

The defense industry, like any other business venture, is shaped by the economic conditions within the marketplace—and the end of the Cold War was a seismic event. Between 1985 and 1997, military spending was slashed by nearly a third (in inflation-adjusted dollars) and procurement funding fell from 35 percent to less than 15 percent of overall defense funding.⁴³ This led to a period of intense consolidation and restructuring within the defense industry resulting in significantly fewer, but larger companies. According to one RAND study, the number of prime contractors in the US capable of manufacturing combat aircraft declined from seven to two during the 1990s. Similarly, only 4 of 14 missile manufacturers remained, while space launch vehicle producers fell from 6 to 2.⁴⁴

Although the US government encouraged consolidation in the early 1990s as a way to retain critical industrial capabilities in a shrinking market, some officials expressed concerns over excessive consolidation.⁴⁵

General Colin Powell, chairman of the Joint Chiefs of Staff at that time, warned “The number of producers and suppliers...of many of our critical military items is dwindling drastically, and is shrinking to unacceptably low levels.”⁴⁶ His concerns were well-founded and prescient. A 2008 Government Accountability Office (GAO) report found 16 of 20 defense programs—including the B-2, F-22, and the Space-Based Infrared System-High—had supplier issues including component or technology obsolescence, fewer manufacturing sources, or production challenges.⁴⁷

As the US industrial base contracted, the defense industry became increasingly dependent, and in some cases totally dependent, on foreign sources for key materials and components such as silicon, precision glass for reconnaissance satellites, and advanced fiber optics.⁴⁸ This raises concerns over the availability and trustworthiness of foreign-made products.⁴⁹ As one author points out, if shipments of imported parts to US defense contractors were stopped, the manufacturing lines of the American defense industry would grind to a halt.⁵⁰ Likewise, the US-Chinese Economic and Security Review Commission notes the United States’ supply of *trusted* and *assured* microchips is in jeopardy due to the relocation of critical microelectronics manufacturing capabilities from the United States to other countries. They claim this opens the possibility that malicious software or “other unauthorized design inclusions may appear in unclassified integrated circuits used in military applications.”⁵¹

Finally, the defense industry’s surge capacity—the ability to rapidly ramp up research, development, and production rates—is another point of contention. Historically, America’s ability to mobilize its manpower far outstrips its ability to equip them. For example, it took the US defense industry three years to reach its full capacity to produce aircraft and bombs during World War II and over two years to significantly increase deliveries during the Korean War.⁵² Considering the equipment produced during these periods was relatively unsophisticated when compared to today’s advanced systems, one can only speculate how long it would take for American’s industrial base to ramp up production of F-35 fighters, Stryker vehicles, or aerial refuelers.

National Defense: A Necessary, but Expensive Undertaking

A billion here, a billion there; pretty soon you’re talking real money.

—Senator Everett Dirksen, Illinois Senator, 1950 to 1969

National defense is a necessary, but expensive undertaking. Throughout history, countries have relied on their militaries to protect their people, sovereignty, and territorial integrity—a trend that continues today. Governments must recruit, equip, train, house, and feed military personnel; acquire and maintain weaponry and supporting infrastructure; and invest in emerging and future technologies to maintain an edge over their

adversaries. This section provides a historical perspective on global military spending trends, US defense budget trends, and differing approaches for determining defense funding levels.

Global Military Spending Trends

There's a popular saying, "Freedom isn't free." This maxim certainly applies when it comes to the cost of national security. According to the Center for Arms Control, global military spending totaled \$1.47T in 2008.⁵³ Based on their estimates, the United States is by far the global leader in military spending and accounts for 48 percent of the world's total military spending (see Figure 6 for breakout). Their analysis also indicates the US spends more than the next 45 highest spending countries in the world combined—5.8 times more than China and 10.2 times as much as Russia.

After trending downward after the end of the Cold War, global military spending is once again on an upswing. The Stockholm International Peace Research Institute, an international think tank for arms control, reports world military expenditures increased by a modest 1.5 percent per year (in inflation-adjusted terms) between 1996 and 2000 and jumped to 5.4 percent per year in the post-9/11 years.⁵⁴ At first glance, this gives the impression that other countries have ramped up their military spending and the global arms race is back under way. However, it should be noted that this spike is due largely to increased defense spending by the United States as it prosecutes the Global War on Terror (GWOT).

There are some positive developments associated with this uptick in worldwide military spending, one of which is more business for US defense contractors. Based on recently published statistics from DefenseNews, seven of the ten largest defense companies in the world are US-based companies.⁵⁵

The annual 2007 defense revenues for the American companies totaled \$156.5B, an increase of nearly 6 percent over 2006 levels. The United States also remains the largest arms exporter in the world with a 31 percent share of the global market, followed by Russia (26 percent), Germany (10 percent), France (9 percent), and the United Kingdom (4 percent).⁵⁶ On the other side of the transaction, the world's top five importers and their suppliers are China (Russia), India (Russia), UAE (France), Greece (USA), and South Korea (USA).⁵⁷

US Defense Budget Trends

Historically, Department of Defense (DoD) budgets have risen and fallen based on the threats to our national security, the health of our economy, and policy decisions by American leaders. For example, after the United States emerged victorious from World War II in 1945, it rapidly demobilized its defense workforce from nearly 15 million military and civilian workers to only 2.2 million by 1948. Defense budgets were slashed by 85 percent over the same time frame.⁵⁸ Funding spiked upward and then reversed in the conflicts that followed—Korea, Vietnam, the first Gulf War, and today's GWOT. This cycle seems to repeat itself on a fairly consistent cycle of 18 to 20 years (see Figure 7).⁵⁹

Over the same period, each Service's share of total defense funding remained remarkably constant—approximately one-third each.⁶⁰ Short-term deviations from this allocation occurred periodically based on changes in national defense strategy, such as nuclear deterrence in the 1950s. Increased spending on America's strategic nuclear triad—bombers, ICBMs, and

submarines—resulted in a higher percentage of defense spending going to the Air Force and Navy. However, this funding shift proved to be short-lived and parity returned as Army funding increased during the heavily land- and sea-centric campaigns during the Vietnam era.

Beginning in the 1970s, a number of *defense-wide* agencies and activities were established to centralize certain functions or to serve the national command authority. Some of the better known *Ds* include the Defense Logistics Agency, Defense Intelligence Agency, and Defense Commissary Agency. In some cases, budgets for these agencies were carved from the Services' budgets, whereas new funding was appropriated for others. The net result is that defense-wide agencies' share of the overall defense budget increased from roughly 2 percent in 1948 to 16 percent in 2009. So, what do recent budgets look like?

The Bush Administration's annual budget requests for DoD's base budget (non-war costs) increased from \$302B in fiscal year (FY) 01 to \$515B in FY09—an increase of 71 percent. See Figure 8 for historical baseline and GWOT funding requests.⁶¹ After adjusting for inflation, this represents a real growth rate of 34 percent over an eight-year period. This does not take into account supplemental funding for war costs or natural disaster relief operations. When war costs are included, then budgets more than doubled.

With defense budgets at record highs in dollar terms—exceeding \$500B dollars a year—why can't the Air Force find the money to pay for modernization and recapitalization?

Findings from the Congressional Research Service (CRS) indicate that, despite large increases, the actual buying power across all of the Services is being eroded by four factors.⁶²

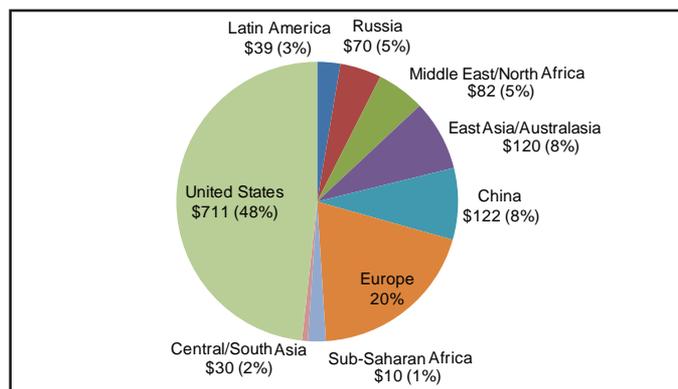


Figure 6. 2008 World Military Spending (In Billions)

Number	Company	2007 Defense Revenue (\$B)
1	Lockheed Martin (US)	38.5
2	Boeing (US)	32.1
3	BAE Systems (UK)	29.8
4	Northrop Grumman (US)	24.6
5	General Dynamics (US)	21.5
6	Raytheon (US)	19.8
7	EADS (Netherlands)	12.2
8	L-3 Communications (US)	11.2
9	Finmeccanica (Italy)	10.6
10	United Technologies	8.8

Table 2. Top 10 Defense Companies in 2007

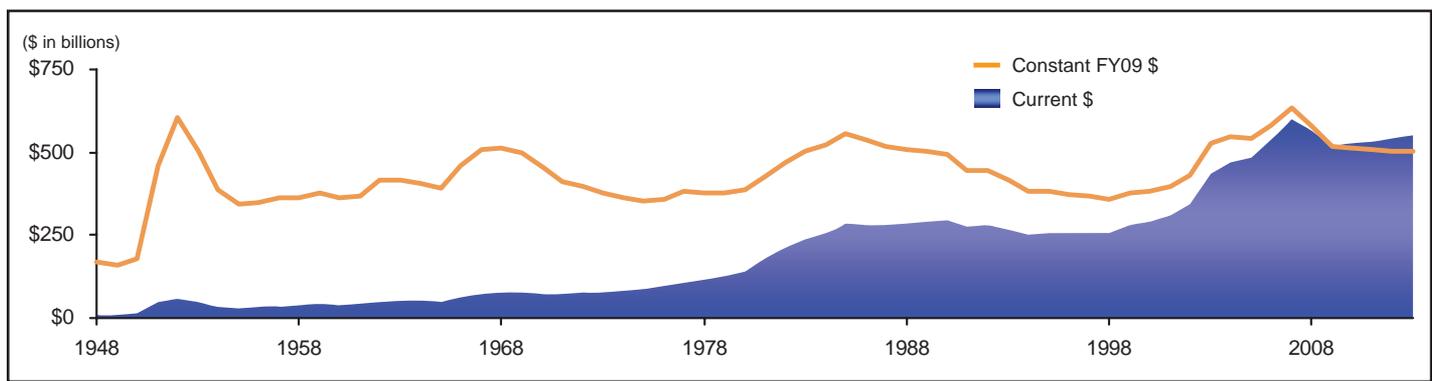


Figure 7. US Defense Budgets: 1948 - 2013

- Dramatically higher military personnel costs. The CRS calculates uniformed personnel now cost 40 percent more, after adjusting for inflation, than in FY99 because substantial increases in pay and benefits, including higher pay and housing allowances; TRICARE for Life; concurrent receipt; and large increases in bonuses.
- Operating costs continuing to grow above base inflation. Military operation and maintenance budgets, which pay for everything from flying training to weapons repair, is increasing approximately 2.5 percent above inflation. As a result, funds are moved from modernization and personnel accounts to pay for current operations.
- Increased cost growth in major weapons programs. Stealthy platforms, multi-mission ships, and advanced space systems are becoming more expensive, and at a faster rate, than earlier systems. Unless budgets increase more rapidly than costs, trade-offs between investment, personnel, and operating funds must be made.
- Poor cost estimates. The accelerating costs associated with new major weapons programs are exacerbated by poor cost estimates. This leads to major revisions in production schedules in an attempt to hold down cost growth.

Having personally served in the Air Force Financial Management career field for over 20 years, I have observed real-world examples of each of these factors. Cost growth in all areas—military and civilian payrolls, fuel for our air and ground fleets, utilities for our bases, and contract costs increases—forces hard trade-offs between investing in the future and paying today’s bills. Unfortunately, the *urgency of now* usually takes priority, resulting in modernization and recapitalization being pushed further down the road.

Different Approaches for Determining Defense Funding Levels

Since it is impossible to simultaneously maximize national security and domestic spending, our nation’s leaders are presented with the classic guns versus butter dilemma.⁶³ According to this basic economic concept, each tax dollar spent on national defense (guns) is one less dollar available for domestic programs (butter). As a result, elected officials are faced with a conundrum when they attempt to balance defense and domestic spending—too much butter puts our national defense at risk, whereas too little butter for their constituents jeopardizes the politician’s reelection. In their search for balance, American leaders have considered a number of approaches for determining

defense funding levels—the remainder method, quantitative/net assessment analysis, and most recently, pegging defense spending to a set percentage of GDP.

According to Richard Betts’ article, “A Disciplined Defense: How to Retain Strategic Solvency,” Presidents Truman and Eisenhower “calculated military spending using the ‘remainder method’: they started with the total tax revenues, subtracted out domestic spending, and gave whatever was left over to defense.”⁶⁴ While this is a fairly straightforward approach, it is also quite arbitrary since it fails to take into account the security environment, potential adversaries, or overarching national security strategy. As one might expect, the funding was insufficient to properly arm and sustain America’s military—a lesson we would learn during the Korean War.

After the Korean War, the focus shifted to a much more quantitative, net assessment-based approach. Secretary of Defense Robert S. McNamara and his group of whiz kids introduced the arcane world of operations research and advanced modeling in an attempt to quantify defense funding needs. McNamara instituted the Planning, Programming, and Budgeting System, a forerunner to today’s Planning, Programming, Budgeting, and Execution System. This system provided a more formalized approach for linking defense plans to resourcing activities and has been used by DoD for the last 40 years. However, time marches on and defense officials began pondering a third approach about two years ago.

Because of concerns over current and future defense funding levels, several senior military officials and prominent think tanks began advocating proposals linking defense budgets to a specific percentage of the GDP (usually a minimum of 4 percent). In *Foreign Affairs* magazine, Senator John McCain wrote, “America could afford to spend 4 cents of every dollar, or more on national defense.” Others jumped on the bandwagon, including the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and even the Air Force Chief of Staff. The argument was simple and the evidence was compelling—US defense spending, as a percentage of GDP, had fallen to historically low levels and our national defense was increasingly at risk (see Figure 9).⁶⁶

Unfortunately, this proposal is too simplistic and lacks rigor. First, America’s GDP has expanded rapidly over the past several decades and is now 6 times larger than in the 1950s (in inflation adjusted terms).⁶⁷ If, as one writer notes, the United States devoted 37 percent of its GDP to defense now, as it did during World War II, defense spending in today’s dollars would approach \$5T per

year.⁶⁸ Likewise, if America fell into a prolonged recession, it is unlikely defense officials will agree to lower budgets for an undetermined period. Ultimately, this proposal's most damning flaw—common to each of the approaches reviewed—is that it focuses on the amount of funding defense should receive and not the more critical question, “How much is enough?”⁶⁹

Conclusions and Recommendations

Let every nation know, whether it wishes us well or ill, that we shall pay any price, bear any burden, meet any hardship, support any friend, oppose any foe to assure the survival and the success of liberty.

—John F. Kennedy,
Presidential Inaugural
Address, 20 January 1960

The year was 1958. Nikita Khrushchev was the Soviet Union premier, Sputnik 2 orbited earth, and US bombers loaded with nuclear weapons trained in the skies above America. As the Cold War heated up, the US Subcommittee on Economic Policies for National Security was commissioned to answer the question, “How much can America afford to spend on national defense?” After engaging the brightest minds in our country, the esteemed panel responded with a simple answer: “America can afford what it has to afford.”⁷⁰

This answer is just as relevant today as it was 50 years ago. Our country will spend whatever is deemed necessary for our national defense. At this juncture in time, American policymakers and their funding priorities are being shaped by immediate challenges—the cost of ongoing operations in Iraq and Afghanistan, the housing market meltdown, and the paralyzing effects of a global credit crisis. In this environment, the Air Force is unlikely to secure the prerequisite Congressional funding support for an aggressive modernization program.

Modernizing the Air Force is not an affordability issue. Our lawmakers have proven to be

immensely successful with spending significantly more money than they receive from taxpayers as evidenced by the \$700B bailout plan and looming financial crises posed by Social Security, Medicare, and the national debt. It is a matter of national priorities. The time has come for America's leaders and citizens to address “our nation's growing fiscal imbalance and changing security environment.”⁷¹ This is no simple task, but unless American leaders address structural domestic issues—specifically, unchecked entitlement growth and a shrinking US defense industrial base—our nation's ability to effectively

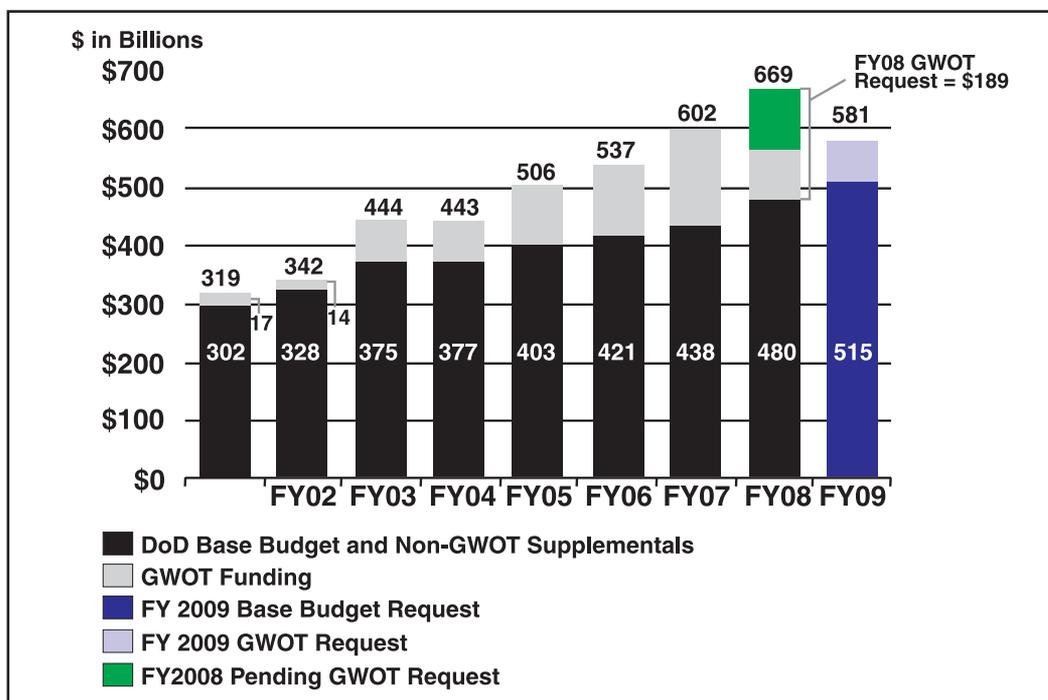


Figure 8. Historical DoD Budget and GWOT Funding

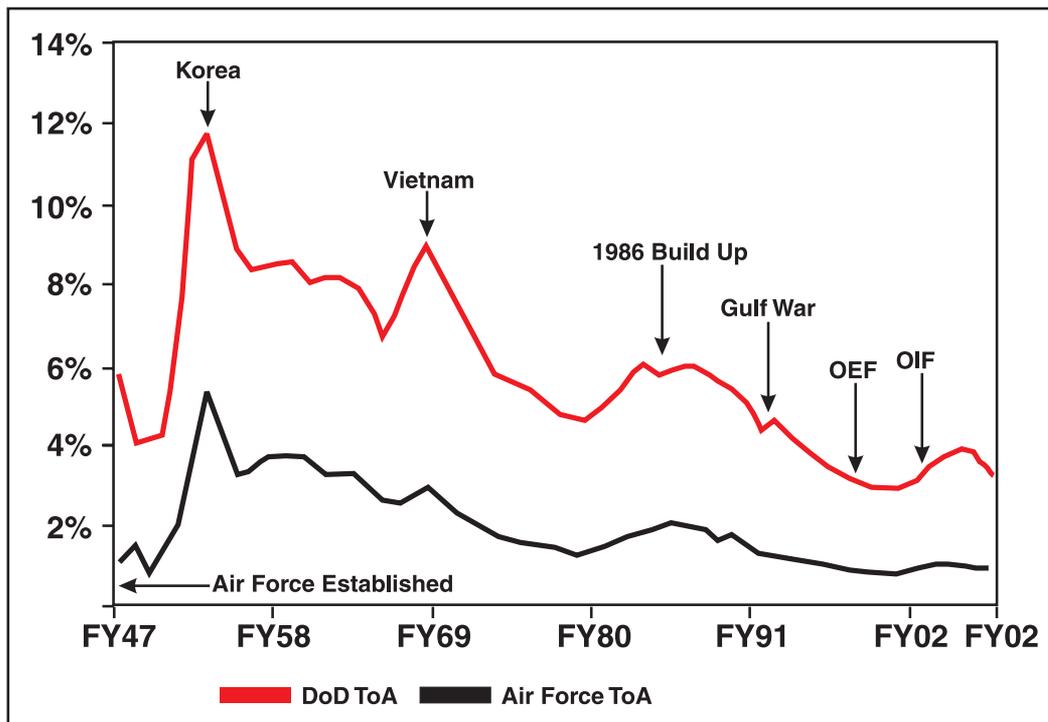


Figure 9. DoD and Air Force Budgets as Percent of GDP

counter future threats is at risk. Based on the insights gained during this research effort, the following recommendations are provided as a guide to help put our nation on a more fiscally sustainable path—one, that if pursued, will ensure that the United States has sufficient monetary resources and industrial capacity to support Air Force modernization and recapitalization efforts.

Recommendation Number 1. Reassess America's national security policy and the role of the military (and other instruments of national power) in the new security environment. America's military can do just about anything, but it cannot do everything. Our leaders must apply the first rule of management—balancing commitments with resources. This will require a realistic assessment of the threat environment and global commitments, clearly defining the roles and mission of each instrument of national power, and adequately resourcing these functions. To better synchronize priorities with resources, I recommend establishing a unified security budget for key players involved in providing national security. This would include the Departments of Defense, State, and Homeland Defense, along with others, as deemed appropriate. The Department of Defense may lose some budget authority as part of this rebalancing process; however, since our national security is based on the skillful application of both hard and soft power, this may be the most efficient and effective use of limited funds.

Recommendation Number 2. Restore fiscal balance through prudent spending cuts and more effective tax policies. A strong economy is a prerequisite for a strong military. Unfortunately, our country and economy is on an “unsustainable fiscal path” that will ultimately impact our national security according to David Walker, the former Comptroller General of the United States.⁷² No politician in his or her right mind wants to propose cutting entitlements or raising taxes, yet this is precisely what must be done to rein in America's out of control budget—and the sooner the better. The longer we wait to address deficit spending and the tsunami wave of Social Security and Medicare bills bearing down on our country, the more drastic future cuts will have to be. Politicians should consider increasing the minimum age for drawing Social Security, repealing the Medicare drug care program, and reevaluating tax policies (to include reversing prior tax cuts or abolishing the IRS and substituting a national sales tax for personal income taxes).

Recommendation Number 3. Pursue a long-term strategy for revitalizing the US defense industrial base. The government should identify those critical skills, technologies, and manufacturing capabilities that are needed to ensure the long-term viability and technological superiority of our nation's defense industrial base. This will require a sustained effort spanning decades and considerable investment, but the potential benefits to our nation are substantial. First, it encourages the development of more scientists and engineers which increases America's intellectual capital. Second, domestic production creates more jobs which contribute to the nation's overall wealth. Finally, and most importantly, it provides an opportunity for America to regain its position as a leading manufacturer among world producers.

There are no simple solutions to the economic challenges facing our country and the affordability issues surrounding the Air Force's modernization and recapitalization requirements. In the final analysis, affordability (like beauty) is in the eye of the

beholder. If, and when, our country's leaders feel our nation's air and space dominance is significantly threatened, they will spend whatever is needed. Let's just hope they are not too late.

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