

Can Defense Save Us?



CAN DEFENSE SAVE US?

This is never going to happen.

– House Speaker John Boehner in 2011, quoted in Bob Woodward’s “The Price of Politics”

... No enemy in the field has done more to harm the combat readiness of our military than sequestration.

– Defense Secretary James Mattis, June 12, 2017

Congress never loses its capacity to disappoint you.

– John Oliver, Comedian

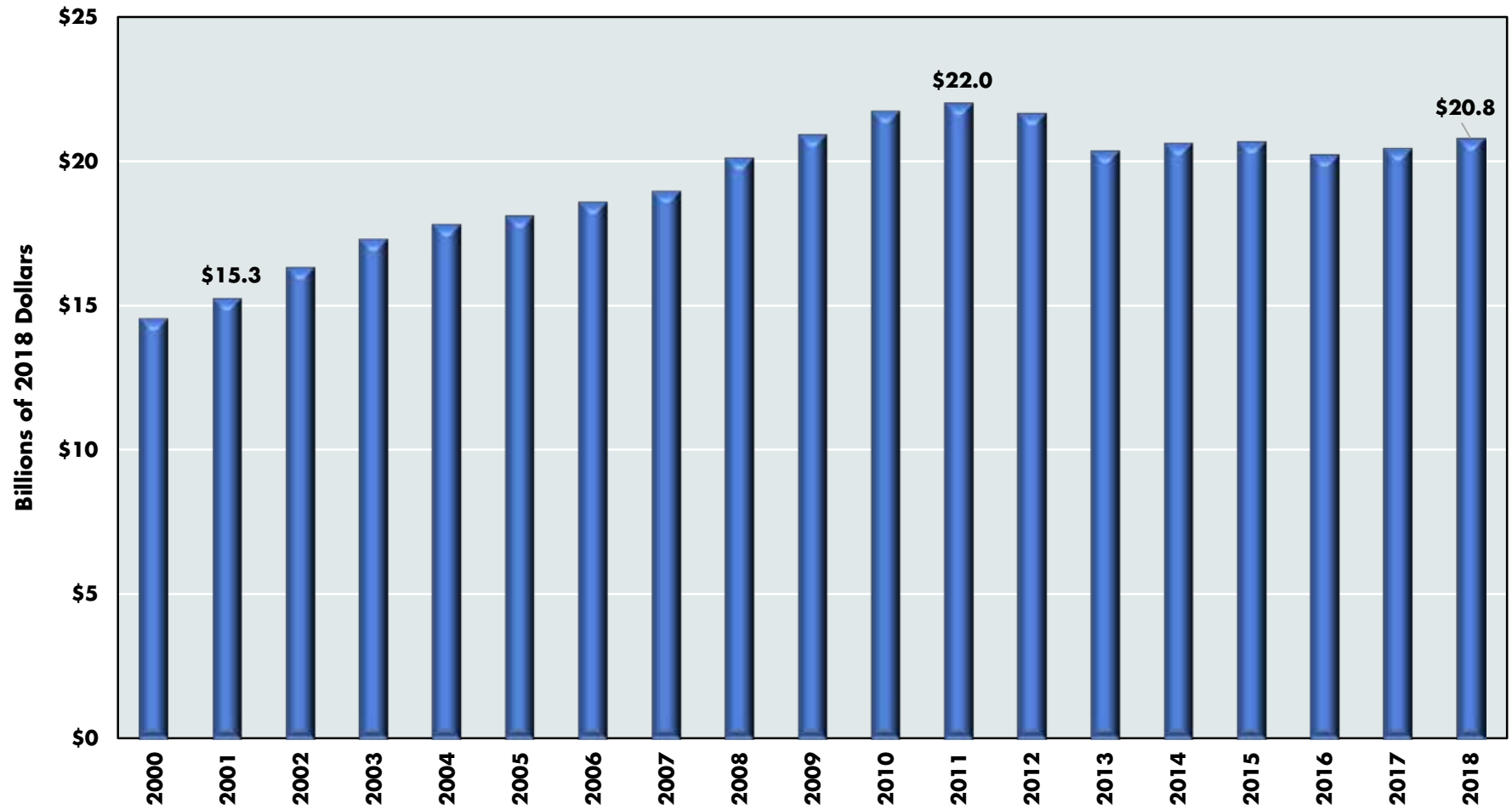
The Hampton Roads economy is often caricatured as a three-legged stool, made up of defense spending, the port and tourism. **However, depicting the region as a unicycle might be a more apt analogy. The port and tourism industries provide balance for the area, but defense spending is the impetus that moves the economy forward or pumps the proverbial brakes on economic activity. Hampton Roads’ reliance on defense spending means that changes in national security policy, force structure or technology can ripple through the regional economy.**

Undoubtedly, changes in Department of Defense (DOD) spending and strategy over the last two decades have led to the ebb and flow of the Hampton Roads economy. In the aftermath of the attacks of Sept. 11, 2001, and the subsequent wars in Afghanistan and Iraq, direct defense expenditures in our region, after adjusting for inflation, increased from an estimated \$15.3 billion in 2001 to \$22 billion in 2011, an approximately 44% increase (Graph 1). For a time at the turn of the century, the regional economy outperformed that of the United States, boosting incomes, housing prices and employment. These rapid increases in DOD spending, however, tapered in the second half of the 2000s and real (inflation-adjusted) DOD spending peaked at \$22 billion in 2011.

Several factors contributed to the slowdown and then outright decline in defense spending in Hampton Roads in the first part of the current decade. In Iraq, U.S. strategy shifted toward a drawdown and eventual (for a time) exit of combat forces in 2011. After peaking at about 100,000 troops in 2011, U.S. forces in Afghanistan rapidly fell to approximately 10,000 in 2015. While these shifts in deployments and strategy were important, the passage of the Budget Control Act of 2011 (BCA) and implementation of the BCA’s discretionary spending caps in fiscal year (FY) 2013 played a much larger role in the slowdown of the regional economy. By 2018, direct defense spending in Hampton Roads was approximately \$20.8 billion, 5.5% below its peak in 2011. As defense spending stagnated, so did regional economic growth.

GRAPH 1

ESTIMATED REAL DIRECT DEPARTMENT OF DEFENSE SPENDING:
HAMPTON ROADS, 2000-2018



Sources: U.S. Department of Defense and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Estimates include federal civilian, military personnel and procurement and are adjusted for inflation to 2018 dollars with the urban consumer price index from the Bureau of Labor Statistics.

Hampton Roads' dependence on defense spending means that the region must come to terms with the uncomfortable prospect that this spending will not continue to increase in perpetuity. First, the current increases in defense spending are not sustainable, given the fiscal imbalance of the federal government and the increasing dissatisfaction of the American public with what George Washington termed "foreign entanglements." Almost 50% of Americans in a recent Pew Research Center survey responded that the U.S. "mostly failed" in Afghanistan and only 45% supported the initial decision to use military force there.¹ Another Pew survey found a similar result for the conflict in Iraq, with over 50% of Americans responding that the U.S. "mostly failed" to achieve its goals in that country.²

Second, technological change may lead to a decline in some defense platforms (carriers) in favor of others (unmanned aircraft). The rise of autonomous airplanes, ships and submarines will likely reduce the number of personnel necessary to field and operate these weapons systems. Even before autonomous military ships and planes enter operations, technological advances are reducing the number of personnel needed to operate equipment. Simply put, fewer soldiers, sailors, airmen and Marines are needed to do the same job.

Lastly, while some argue that sequestration will never occur again, as it would be too painful, we need only point out that similar arguments were made in 2012 and 2013. While the Bipartisan Budget Agreement of 2019 may effectively end the BCA's spending caps, the deteriorating fiscal position of the federal government may revive the BCA in some form in the future. A prolonged recession would also place significant pressure on defense spending and calls to shift resources to more pressing domestic needs. Simply put, the good times may not last forever.

In this chapter, we examine the prospects for economic growth in Hampton Roads and how these prospects are intertwined with future defense spending. Challenges facing the region range from the absence of innovation to longer-term trends in military and fiscal policy. The future defense environment will

also likely be more challenging, as these issues are connected. Undulations in defense spending are not new to Hampton Roads. Thus, we use history as our guide to understand how changes in defense spending may affect economic growth in the region and where we collectively might go from here.

The Bear In The Room: Threats To Defense Spending In Hampton Roads

Future defense spending in Hampton Roads is in danger of looking a bit like the bear markets many investors fear. The notion of a bear market comes from how bears attack, rising on their hind legs and swiping down at their victims. In this section, we examine several threats to defense spending in Hampton Roads that could perpetuate a bear market for the region.

THREAT ALPHA: DEPENDENCE ON MILITARY PERSONNEL AND PROCUREMENT SPENDING

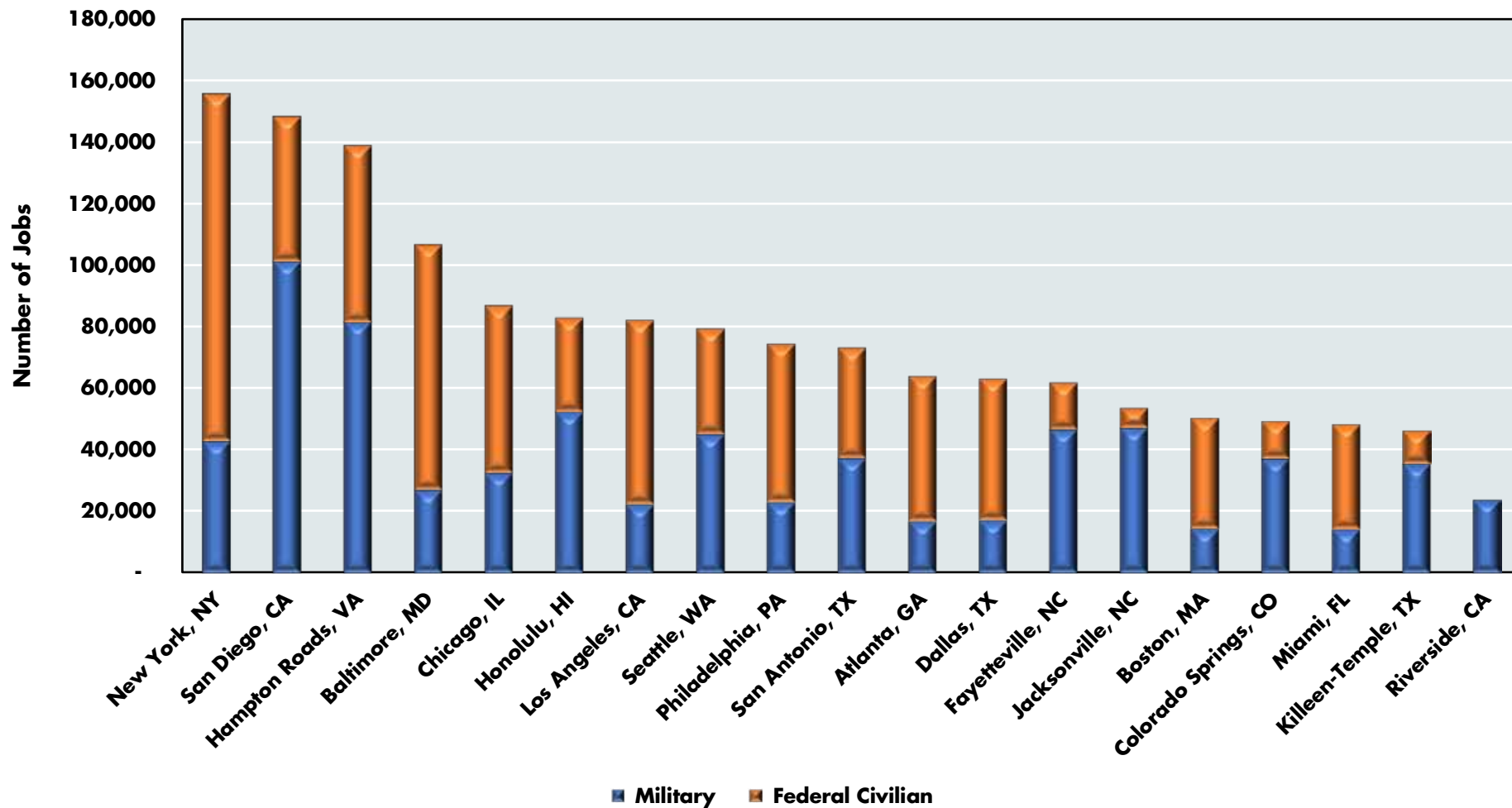
To many outside the region, Hampton Roads is simply a place many sailors call home. However, focusing solely on military personnel masks several important avenues of defense-related federal spending. Graph 2 shows the top 20 metropolitan statistical areas (MSAs) in 2017, based on the number of military and federal civilian personnel, excluding Washington, D.C. Only the San Diego MSA had more military service members residing in it in 2017, while only the New York City MSA had more civilian federal employees. In other words, the 57,000 federal civilian workers complemented the 81,000 military personnel stationed in Hampton Roads, making the region the third-largest combined federal workforce outside of the Washington, D.C., metro area.

¹ <https://www.pewresearch.org/fact-tank/2018/10/05/after-17-years-of-war-in-afghanistan-more-say-u-s-has-failed-than-succeeded-in-achieving-its-goals/>.

² <https://www.pewresearch.org/fact-tank/2018/03/19/iraq-war-continues-to-divide-u-s-public-15-years-after-it-began/>.

GRAPH 2

MILITARY PERSONNEL AND FEDERAL CIVILIAN EMPLOYMENT:
TOP TWENTY METROPOLITAN STATISTICAL AREAS IN TERMS OF EMPLOYMENT, 2017



Source: Bureau of Economic Analysis

Hampton Roads is more than just the home to 3% of the country's military service members and federal civilian employees. Agencies in the federal government also contract with private-sector firms in the region to produce a wide range of goods and services. Graph 3 shows that these procurement contracts come overwhelmingly from the DOD, accounting for about 90% of all federal contracts.

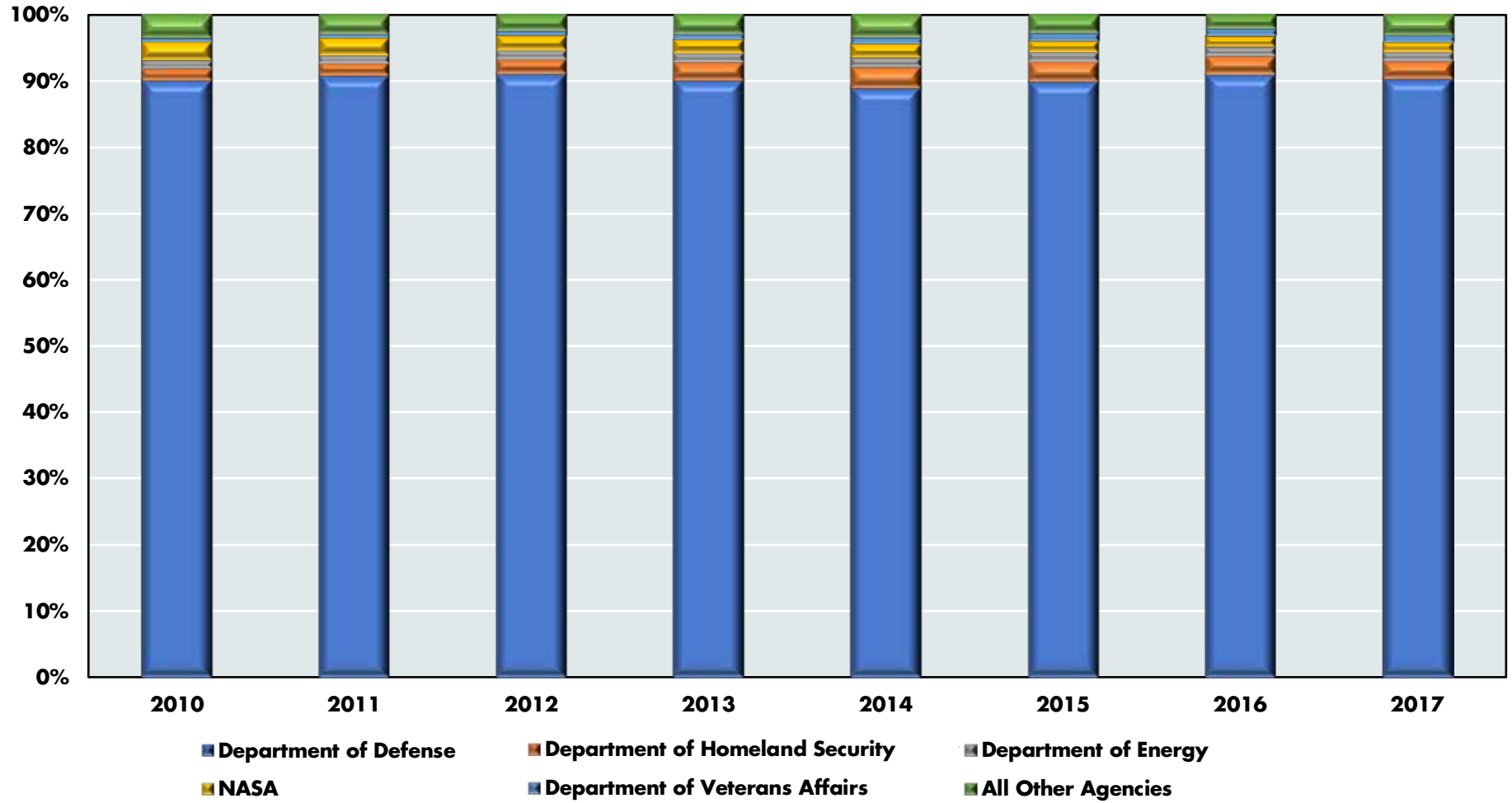
The mix of military personnel and DOD contracts puts Hampton Roads in a unique place among regions with a significant defense presence. Table 1 indicates where Hampton Roads falls in comparison to several other areas known for their relationship with the military. Direct military expenditures accounted for about 17% of 2017 gross domestic product (GDP) in the region. While this may not rank us in the top 10 "military towns" nationally, we must note that many regions on the list are much smaller than ours. **If we just focus on regions with a population of more than 1 million, Hampton Roads had the highest military dependence in 2017.**

In comparison, the San Diego MSA had 8% of its GDP coming directly from defense expenditures, while the Jacksonville, Florida, MSA had only 3%. The composition of defense spending is important. The regions that have a higher dependency on defense spending tend to focus on either military personnel or procurement spending. **In contrast, defense spending in Hampton Roads is split evenly between personnel and procurement contracts with the private sector. While this may appear as a useful way to diversify the local economy within the defense sector, in reality, it threatens the region by making it susceptible to declines in either type of defense spending.**



GRAPH 3

PERCENTAGE OF PROCUREMENT SPENDING BY AGENCY IN HAMPTON ROADS, 2010-2017



Sources: USA Spending and the Dragas Center for Economic Analysis and Policy, Old Dominion University

TABLE 1

DEPARTMENT OF DEFENSE DEPENDENCE BY METRO AREA, 2017

Name of MSA	Population	Gross Domestic Product (Millions \$)	Defense Dependence	Personnel Share of Defense Spending	Procurement Share of Defense Spending	Defense Dependence Rank	Military Compensation Dependence Rank	Defense Procurement Dependence Rank
Jacksonville, NC	193,893	\$ 8,396	50%	88%	12%	1	1	16
Hinesville, GA	80,400	\$ 3,470	47%	84%	16%	2	2	13
Fayetteville, NC	386,662	\$ 17,263	32%	85%	15%	3	3	24
New London, CT	269,033	\$ 15,754	31%	11%	89%	4	33	1
Clarksville, TN	285,042	\$ 11,027	27%	84%	16%	5	4	29
Lawton, OK	127,349	\$ 5,155	23%	81%	19%	6	5	28
Killeen, TX	443,773	\$ 17,556	21%	87%	13%	7	6	50
Huntsville, AL	455,448	\$ 25,793	20%	4%	96%	8	63	2
Warner Robins, GA	191,779	\$ 7,163	19%	26%	74%	9	23	5
Destin, FL	271,346	\$ 14,404	18%	63%	37%	10	9	14
Amarillo, TX	264,925	\$ 13,695	18%	1%	99%	11	244	3
Sumter, SC	106,847	\$ 3,872	17%	76%	24%	12	7	31
Hampton Roads, VA	1,725,246	\$ 94,855	17%	48%	52%	13	16	8
Colorado Springs, CO	723,878	\$ 32,683	16%	64%	36%	14	10	18
Fort Knox, KY	150,430	\$ 6,275	15%	56%	44%	15	13	15
Tucson, AZ	1,022,769	\$ 39,034	15%	10%	90%	16	46	4
Columbus, GA	303,811	\$ 13,821	15%	80%	20%	17	8	46
Bremerton, WA	266,414	\$ 11,474	14%	63%	37%	18	12	23
Oshkosh, WI	170,414	\$ 10,511	11%	1%	99%	19	303	6
Hanford-Corcoran, CA	150,101	\$ 5,191	11%	82%	18%	20	11	68
San Diego, CA	3,337,685	\$ 231,845	8%	46%	54%	32	32	27
Jacksonville, FL	1,504,980	\$ 76,650	3%	49%	51%	71	47	83

Sources: Bureau of Economic Analysis, USA Spending and the Dragas Center for Economic Analysis and Policy, Old Dominion University

THREAT BRAVO: MAINTAIN, TRAIN AND ASSEMBLE, NOT INNOVATE AND CREATE

The roots of the military in Hampton Roads date back to just after the founding of the U.S. Department of the Navy in 1798. Soon after the end of the American Revolution, the Navy was looking for a shipyard to maintain and expand its fleet. In 1801, the Navy acquired Gosport Shipyard in Portsmouth, which remains in business today as the Norfolk Naval Shipyard. The shipyard contributed to the Navy's fleet by building one of the first six frigates. The private sector also had a hand in shaping the region's naval maritime history. The most notable firm, Newport News Shipbuilding, which would become a division of Huntington Ingalls Industries, opened in 1886. By 1897, it had produced three warships for the Navy.

However, it wasn't until the beginning of the 20th century that Hampton Roads began to experience an influx of military personnel. The Navy needed to increase its manpower and the technical skills to operate its growing fleet. To train the next generation of sailors, it opened a training center in 1908, named St. Helena, in conjunction with the Norfolk Naval Shipyard. Since World War I, the military's presence has expanded in the region to the Peninsula with Langley Air Force Base and Fort Eustis; Sewell's Point, the current home of Naval Station Norfolk; and Virginia Beach with Naval Air Station Oceana, among numerous others. Together, these military facilities have been responsible for operational support and training.

This brief history of the genesis of the military in Hampton Roads provides several insights on defense spending in the region. **The region's historic forte in the defense industry has been to maintain, train and assemble. This strength has carried to the present. The military installations in the area continue to maintain equipment and train a variety of naval occupations, such as sailors, pilots and mechanics. On the other hand, many private-sector firms with DOD procurement contracts focus on support activities, to include maintenance and assembly. Of course, there are notable exceptions, including the shipyards that are building the new Ford-class carriers and Columbia-class submarines,**

and even these yards depend on lengthy, national supply chains.

Graph 4 gives the breakdown of DOD procurement contracts with the private sector in Hampton Roads for 2010 to 2017. The largest categories are in shipbuilding, along with maintenance, repair and rebuilding of equipment, which are often related to ships. Huntington Ingalls Industries (HII) in Newport News is far and away the largest firm in these categories and accounts for the lion's share of procurement contracts in the region. This facility is the nation's sole designer, builder and refueler of nuclear-powered aircraft carriers, and is one of only two shipyards with the ability to design and build nuclear-powered submarines.

This brings us to the challenge for the region. Hampton Roads' competence in maintaining, training and assembling is clearly a useful component of the military industrial complex; nonetheless, it may not lend itself to creating innovation and entrepreneurship, which fosters economic growth. HII is undoubtedly the anchor of defense procurement here, but we must also recognize that it is larger than just its presence in Hampton Roads. In 2018, the gross revenue from all HII operations (with major facilities in Hampton Roads, Pascagoula, Mississippi, and San Diego, California) was about \$7 billion. This means that the supply chain for HII's operations here reaches far outside our region, curbing its local impact. Furthermore, it differs from anchors in other areas, like Microsoft or Amazon in Seattle, because HII does not spur the creation of new firms at the same rate. It is the creation of new firms that a number of researchers increasingly believe produces regional job growth.³

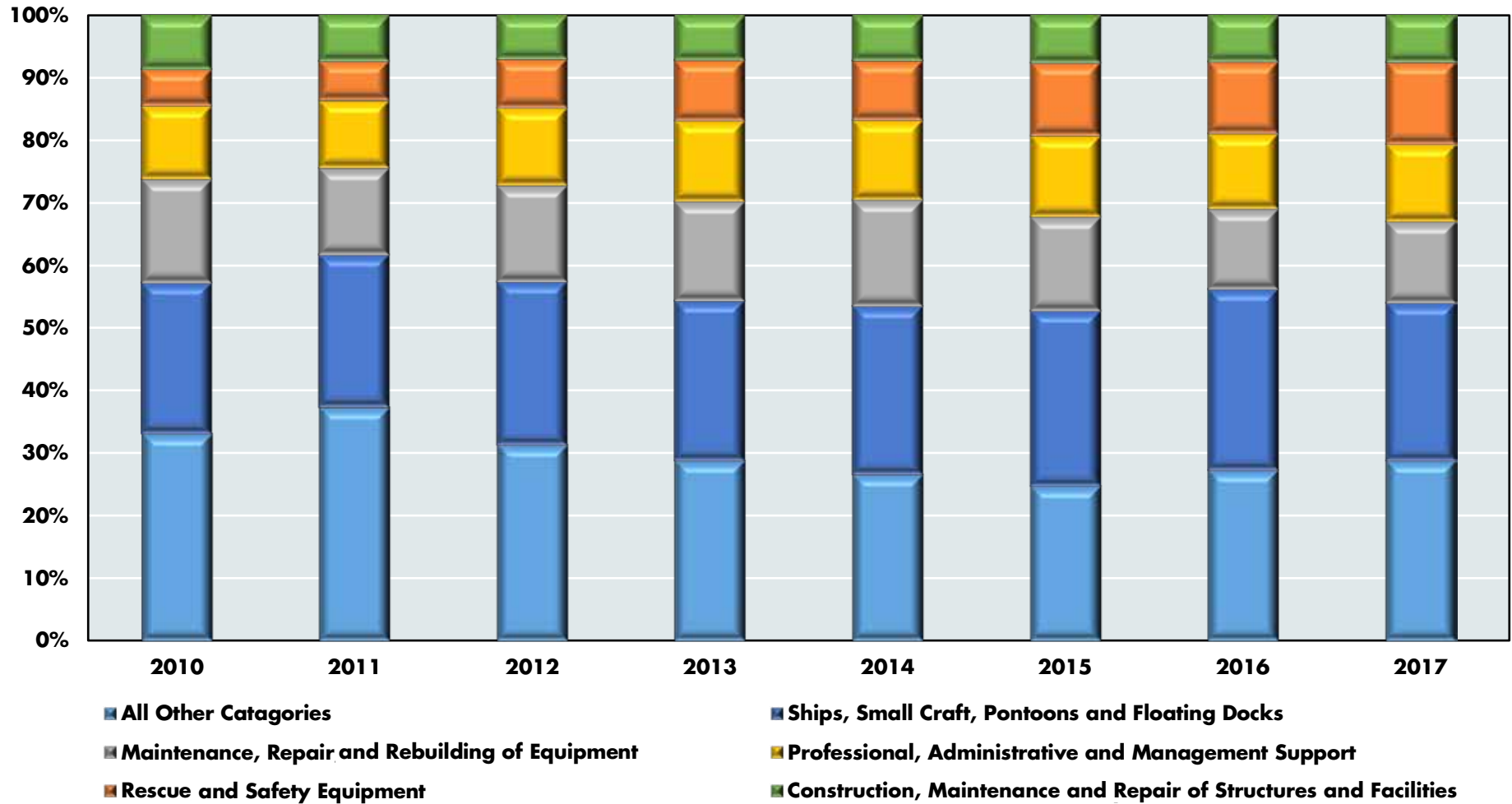
Culture is a key driver in this process. Locales with an energetic startup and innovation culture tend to work from a paradigm where firms collaborate, cooperate and then compete. Firms collaborate on technology and innovation, and cooperate on policy and infrastructure, before the competition begins. Uber and Lyft, for example, exited the Austin, Texas, market together when faced with more stringent background requirements for drivers.⁴

³ See, for example, John Haltiwanger, Ron Jarmin and Javier Miranda, "Who creates jobs? Small versus large versus young," *Review of Economics and Statistics* 95, no. 2 (2013): 347-361.

⁴ <https://www.businessinsider.com/r-uber-lyft-spend-big-lose-big-in-texas-vote-on-driver-fingerprinting-2016-5>.

GRAPH 4

BREAKDOWN OF DEPARTMENT OF DEFENSE CONTRACTS BY CATEGORY: HAMPTON ROADS, 2010-2017



Sources: USA Spending and the Dragas Center for Economic Analysis and Policy, Old Dominion University

The culture of defense procurement flips this paradigm on its head. Firms know the level of defense spending and see it as a zero-sum game, where one firm wins, and the others lose. The recent high-profile case involving a former Virginia state delegate shows the worst of this, where the only innovation seems to be the creative lengths firms will go to obtain contracts set aside for small and veteran-, women- and minority-owned businesses.⁵ Even when defense firms cooperate, it is to share the defense pie, not to innovate to make more pies.

THREAT CHARLIE: LONG-TERM TRENDS IN MILITARY AND GOVERNMENT POLICY

There are also long-term trends at play pushing the military to become smaller, nimbler and smarter. In reality, the size of the active-duty force in the United States, shown in Graph 5, has been on a decline for decades. Furthermore, since the end of World War II, the Army, not the Navy, has typically seen a boost in personnel. Long-term trends, including fiscal pressure from rising costs, shrinking budgetary space and a changing threat environment, could influence the size of the defense establishment in Hampton Roads. These challenges do not exist in isolation of each other, but instead, magnify and build off one another.

There have been several major “budget deals” passed by Congress to suppress the full budgetary effect of the spending limits imposed by the Budget Control Act of 2011 (BCA). In the near term, the defense sector may have escaped the worst-case scenario, and the defense budget might see increases in the next several years. While this is good news, it should be tempered with the realization that policy actions like the Tax Cuts and Jobs Act of 2017 and the Bipartisan Budget Acts of 2016, 2018 and 2019 have ballooned the national debt. This precarious fiscal situation is particularly notable because it is taking place during the most prolonged periods of economic expansion in recent history. According to the Congressional Budget Office, the federal government could spend more servicing the debt than supporting national defense by 2025.⁶

⁵ https://pilotonline.com/news/local/crime/article_4e66fea6-4a4d-11e9-8506-c75ccfa08aba.html.
⁶ <https://www.nytimes.com/2018/09/25/business/economy/us-government-debt-interest.html>.

Dodging the BRAC Bullet

Hampton Roads has not been immune to the Department of Defense’s efforts to increase efficiency by closing and realigning military installations. Most notably, the 2005 round of cuts by the Base Realignment and Closure Commission (BRAC) affected several Hampton Roads military installations. Fort Monroe was closed and designated a national monument. On the Peninsula, Fort Eustis and Langley Air Force Base were merged to create Joint Base Langley-Eustis, while in Virginia Beach, Joint Expeditionary Base Little Creek-Fort Story was formed from combining the Navy’s Naval Amphibious Base Little Creek and the Army’s Fort Story.

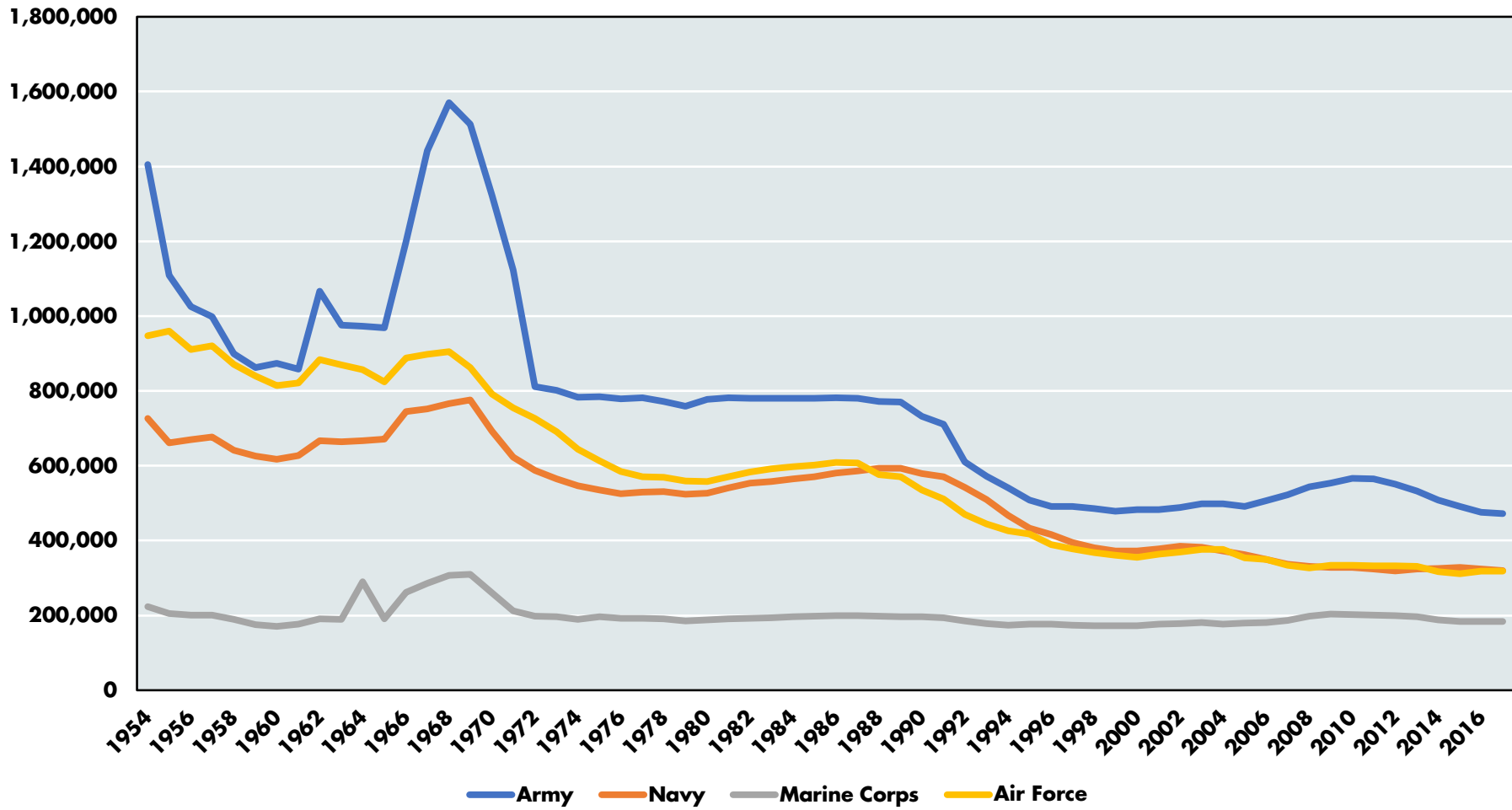
The 2005 BRAC also put in peril Naval Air Station Oceana and its 15,000 personnel in Virginia Beach. The commission voted to close Oceana and move its operations to Jacksonville, Florida, in part because of urban sprawl approaching the base. To preserve the base, local officials created development buffers around it. Hampton Roads dodged a bullet and should continue preparing for future BRAC rounds.

The Department of Defense is also using technology in a variety of ways in the face of rising costs of physical assets and fringe benefits (pension and health care) for DOD employees. For example, the DOD is substituting capital for personnel with the new Ford-class aircraft carrier. The new fleet carrier USS Gerald R. Ford uses about 700 fewer personnel than the previous-generation Nimitz-class carriers. Estimates suggest that the Ford class carriers will save more than \$4 billion in ownership costs compared to the previous Nimitz-class carriers over their 50-year service life.⁷

⁷ <https://www.military.com/equipment/gerald-r-ford-class-aircraft-carrier>.

GRAPH 5

ACTIVE-DUTY MILITARY BY BRANCH OF SERVICE: UNITED STATES, 1954-2017



Sources: Defense Manpower Data Center and Department of Defense

Finally, the threat environment facing the military is evolving quickly in ways that could impact Hampton Roads. For instance, there is an increased reliance on technological solutions to future threats by leveraging automation, drones, special operations and cyber warfare. Furthermore, if the U.S. defense strategy continues to pivot toward Asia, there is an increased chance the region will lose an aircraft carrier group, along with the attendant active-duty military personnel and families, to the West Coast or Hawaii.

We must also recognize that our competitors get a “vote.” Russia has become quite adept at using disinformation campaigns spread through social media. These campaigns, which aim to increase partisanship, highlight the burgeoning role of cybersecurity in future conflicts. China has aggressively moved to promote its interests within the “Nine-Dash Line” in the South China Sea. China also recently slashed its budget for ground forces, reinvesting the funds in its naval and air forces. China’s improvements in anti-ship missile technology and efforts to deny U.S. Navy ships access to ports in the region seek to undermine the value of carriers and other surface assets. Iran’s recent proclamation that it had flown unmanned aerial vehicles (UAVs) over U.S. Navy ships in the Persian Gulf highlights the evolution of threats, from manned aircraft and ships to potentially a swarm of UAVs and malware aimed at critical systems.

These threats have serious implications for the Hampton Roads economy as it continues to be reliant on personnel and big gray ships. As such, any scenario that reduces shipbuilding or the number of active-duty military personnel will be detrimental to the region. For instance, it is possible that DOD expenditures could shift toward equipment and technology that are not produced in large quantities in Hampton Roads, such as drones (equipment) and information operations and warfare (technology). In terms of personnel, Table 2 shows how the average military and federal civilian worker’s compensation stacks up against other sectors. Federal employees represent the highest-earning group, and notably, federal civilian workers have experienced the largest inflation-adjusted compensation increase from 2013 to 2017. **To make up for the loss of each military service member, the region must generate 2.2 private nonfarm sector, 3.5 retail or 1.2 manufacturing jobs.**

TABLE 2			
ESTIMATED REAL AVERAGE COMPENSATION: SELECTED INDUSTRIES IN HAMPTON ROADS, 2013 AND 2017			
Industry	2013	2017	2013 - 2017 Percent Change
Private Nonfarm	\$ 43,598	\$ 43,686	0.20%
Manufacturing	\$ 79,538	\$ 79,597	0.07%
Retail Trade	\$ 27,900	\$ 27,734	-0.60%
Transportation and Warehousing	\$ 62,515	\$ 51,817	-17.11%
Federal Civilian	\$ 104,031	\$ 116,737	12.21%
Military	\$ 97,461	\$ 96,358	-1.13%
State and Local	\$ 60,470	\$ 66,130	9.36%

Source: Bureau of Economic Analysis, Compensation of Employees by NAICS Industry
 Note: Values are adjusted for inflation to 2018 dollars by the Bureau of Labor Statistics' Urban Consumer Price Index.

Defense Spending Through A Historical Lens

The region's collective reliance on federal government personnel and procurement spending makes it susceptible to boom and bust cycles akin to those of resource-rich states like North Dakota and Texas, whose economies fluctuate based on the price of oil. Graph 6 shows the undulations in government spending on national defense since World War II after adjusting for inflation. It is not hard to see that defense spending is often driven by geopolitics on the world stage. Many of us can name the recent events that have driven the growth and subsequent declines of defense spending, such as the Vietnam War, the so-called peace dividend in the early 1990s and 9/11.

In this section, we'll examine how two recent declines in defense spending impacted the Hampton Roads economy – the thawing of the Cold War in the late 1980s and the Budget Control Act of 2011. These two case studies differ in time period, cause and, importantly, in magnitude. The rising defense spending of the post-9/11 era represents "the good," while together the Budget Control Act of 2011 and the thawing of the Cold War in the late 1980s provide a view of "the bad" and "the ugly" scenarios for Hampton Roads.



GRAPH 6

**REAL FEDERAL GOVERNMENT NATIONAL DEFENSE CONSUMPTION EXPENDITURES,
1947-2018**



Source: Federal Reserve Bank of St. Louis. National defense spending is composed of National Defense Budget Function (050), which includes the Department of Defense along with defense-related activities in several agencies outside the DOD. Data are adjusted for inflation to 2018 dollars using the gross domestic product price deflator from the Bureau of Economic Analysis.

The Bad: The Budget Control Act Of 2011

“Each non-exempt account within a category shall be reduced by a dollar amount calculated by multiplying the enacted level of sequestrable budgetary resources in that account at that time by the uniform percentage necessary to eliminate a breach within that category” (Section 101 of the Budget Control Act of 2011, modifying Section 251(a)(2) of the Balanced Budget and Emergency Deficit Control Act of 1985).

Sequestration is equivalent to a four-letter word to many in Hampton Roads, responsible for the ills that could beset the region again. Sequestration entails removing or “sequestering” funds that have been approved by Congress and signed into law by the president. Sequestration occurs when the president, acting in accordance with the law, withholds appropriated funds to ensure that obligations do not exceed a specified threshold. Imagine if you went to the grocery store with \$100 to purchase items on your list. While at the store, you not only withheld \$20, thus reducing the amount of groceries you bought, but you then put the \$20 in a shoe box, not to be opened until next year. In a way, sequestration withholds discretionary funds which cannot be spent in the fiscal year and thus “expire” and return to the U.S. Treasury.

The most recent episode of sequestration started as a threat to induce a bipartisan deficit reduction strategy in the Budget Control Act (BCA) of 2011. After failed negotiations by the Joint Select Committee on Deficit Reduction – colloquially, the Supercommittee – the BCA spending caps led to the sequestration of funding in discretionary defense and nondefense programs in FY 2013. Further, the BCA of 2011 limited spending growth in subsequent years. Congress has modified the spending caps on several different occasions. However, these adjustments only provided temporary relief and increased uncertainty about future spending.

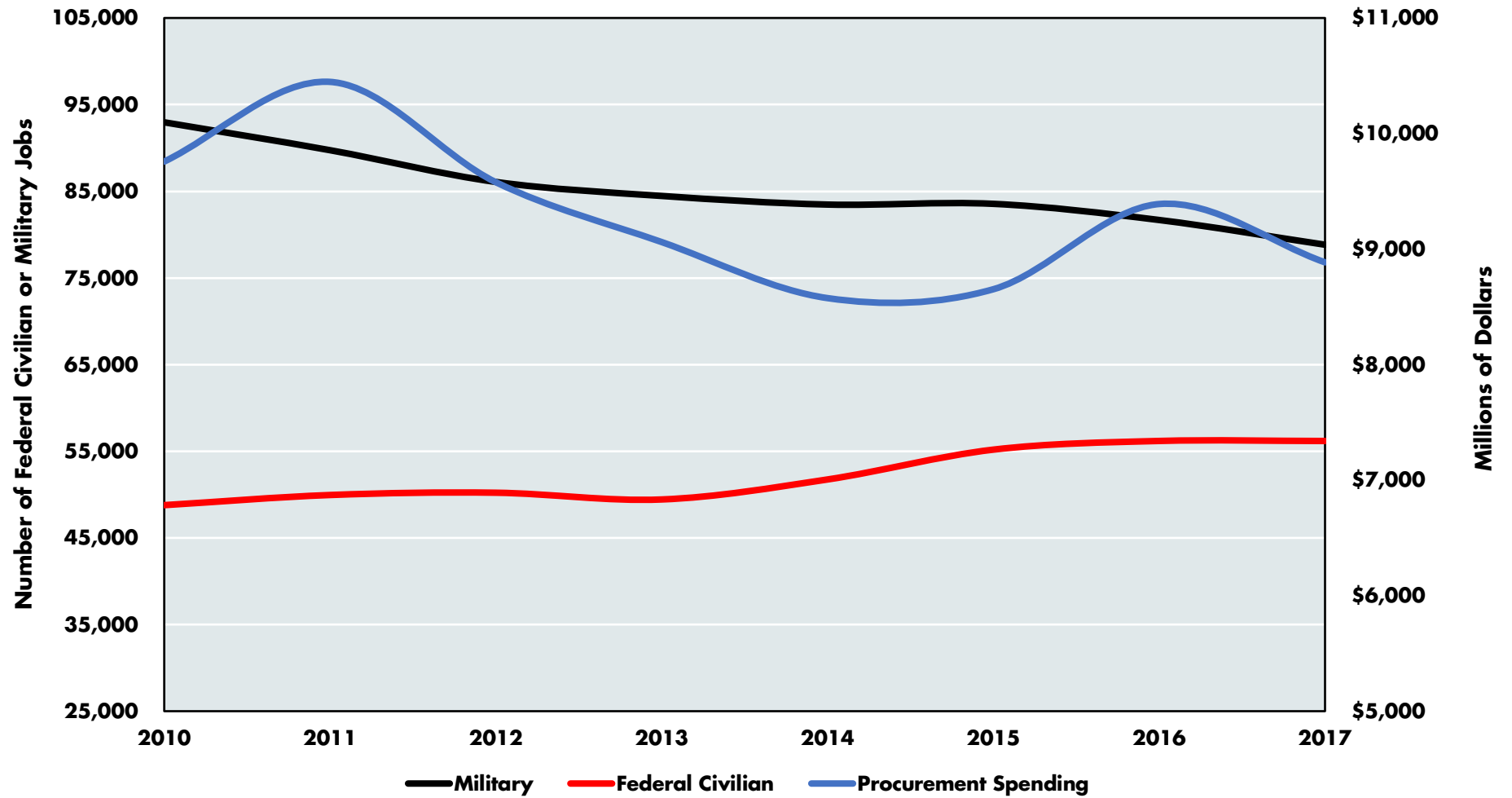
Graph 7 shows how the BCA of 2011 impacted federal personnel and procurement spending in Hampton Roads. The region continued to experience the long-run trend of declining numbers in the military. However, there was an uptick in federal civilian employees that offset some of these losses.

Nonetheless, from 2011 to 2017, federal (military and civilian) employment declined by 3.3%. DOD procurement spending peaked at \$10.4 billion in 2011 and had declined \$1.8 billion to about \$8.6 billion by 2014. By 2017, DOD procurement spending was approximately \$8.9 billion, 15% below the 2011 peak.

Due to the relatively small decline in federal employment from 2011 to 2017, we’ll focus our attention on the \$1.8 billion decline in DOD procurement spending from 2011 to 2014, as this was a “shock” to the regional economy. Table 3 shows a breakdown of the major sectors that acquire DOD procurement contracts in the region. Manufacturing, which includes shipbuilding, repair and maintenance, accounts for over half of all procurement contracts in the region. Several large players in the region dominate this category, like Huntington Ingalls and BAE Systems. Table 3 also shows how defense procurement spending in each industry changed from 2011 to 2014 and 2017. Manufacturing and professional, scientific and technical services (PSTS) experienced the most significant overall declines by 2014. PSTS contacts rebounded by 2017, but unfortunately, manufacturing spending continued to decline.

GRAPH 7

FEDERAL EMPLOYMENT AND REAL PROCUREMENT SPENDING: HAMPTON ROADS, 2010-2017



Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, USA Spending and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Procurement spending is adjusted for inflation to 2018 dollars with the urban consumer price index from the Bureau of Labor Statistics.

TABLE 3

DEFENSE PROCUREMENT SPENDING IN HAMPTON ROADS BY INDUSTRY (IN BILLIONS OF \$), SELECTED YEARS

Industry	2011	2014	2017	Change from 2011 to 2014	Change from 2011 to 2017
Construction	\$621.7	\$513.2	\$558.9	-\$108.5	-\$62.8
Manufacturing	\$5,839.6	\$5,227.6	\$4,588.2	-\$612.0	-\$1,251.5
Wholesale Trade	\$831.6	\$541.2	\$970.3	-\$290.4	\$138.7
Transportation and Warehousing	\$359.4	\$427.4	\$328.7	\$67.9	-\$30.7
Information	\$166.5	\$114.3	\$122.9	-\$52.2	-\$43.6
Professional, Scientific and Technical Services	\$1,790.8	\$1,213.4	\$1,773.3	-\$577.4	-\$17.5
Administrative, Support and Waste Management	\$223.5	\$182.2	\$235.8	-\$41.4	\$12.3
Health Care and Social Assistance	\$131.5	\$147.3	\$129.3	\$15.9	-\$2.2
All Other Industries	\$482.4	\$208.5	\$177.6	-\$273.8	-\$304.7
Total - All Industries	\$10,447.0	\$8,575.1	\$8,884.9	-\$1,871.9	-\$1,562.1

Sources: USA Spending and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are adjusted for inflation to 2018 dollars with the urban consumer price index from the Bureau of Labor Statistics.

The Economic Impact Of The BCA On The Economy Of Hampton Roads

The total economic impact of defense spending on the Hampton Roads economy is made up of the primary and secondary economic impacts. To visualize how the economy reacts to a change in procurement contracts it is helpful to imagine a pebble dropped into a pool of water. The impact represents the initial round of economic activity – output, earnings and employment from DOD procurement funds flowing to firms in the region.

However, the initial round of economic activity moves through the economy like the ripples of water created by the pebble. These ripples represent the interconnectedness of the local economy. They are often broken down into indirect and induced impacts. The indirect economic impact is made up of economic activity by suppliers to firms that have won DOD procurement contracts, while the induced impact comes from income and employment in industries directly and indirectly affected by the direct procurement contracts.

Due to these spillovers, the economic impact of procurement spending in the region can be much larger than the direct impact on a firm that wins a contract. Attempts to quantify the total impact of a change in economic activity often use an economic multiplier. For example, if a firm wins a \$100,000 DOD contract (direct impact) that generates \$30,000 in indirect economic impacts and \$20,000 in induced economic impacts, then the economic impact multiplier effect is $(\$100,000 + \$30,000 + \$20,000) / \$100,000 = 1.5$.

There are two important considerations when thinking about economic multipliers. First, the size of the multiplier inherently depends on how much of the economic activity continues to recycle within the region. If, for example, shipbuilding and repair firms source most of their materials from outside the region (a “leakage”), then the actual multiplier effect will necessarily be smaller. Second is the multiplier effect, where spending spillovers to a variety of other sectors are beneficial to the region when the direct impact is positive;

however, by the same token, it is painful when there is a reduction in direct economic activity.

To estimate the impact from DOD procurement spending on employment and output in the Hampton Roads economy, we use the defense procurement spending data in Table 3 and JobsEQ software developed by Chmura Economics and Analytics. The JobsEQ software uses regional input-output tables to measure the connectedness of economic activity in the region.

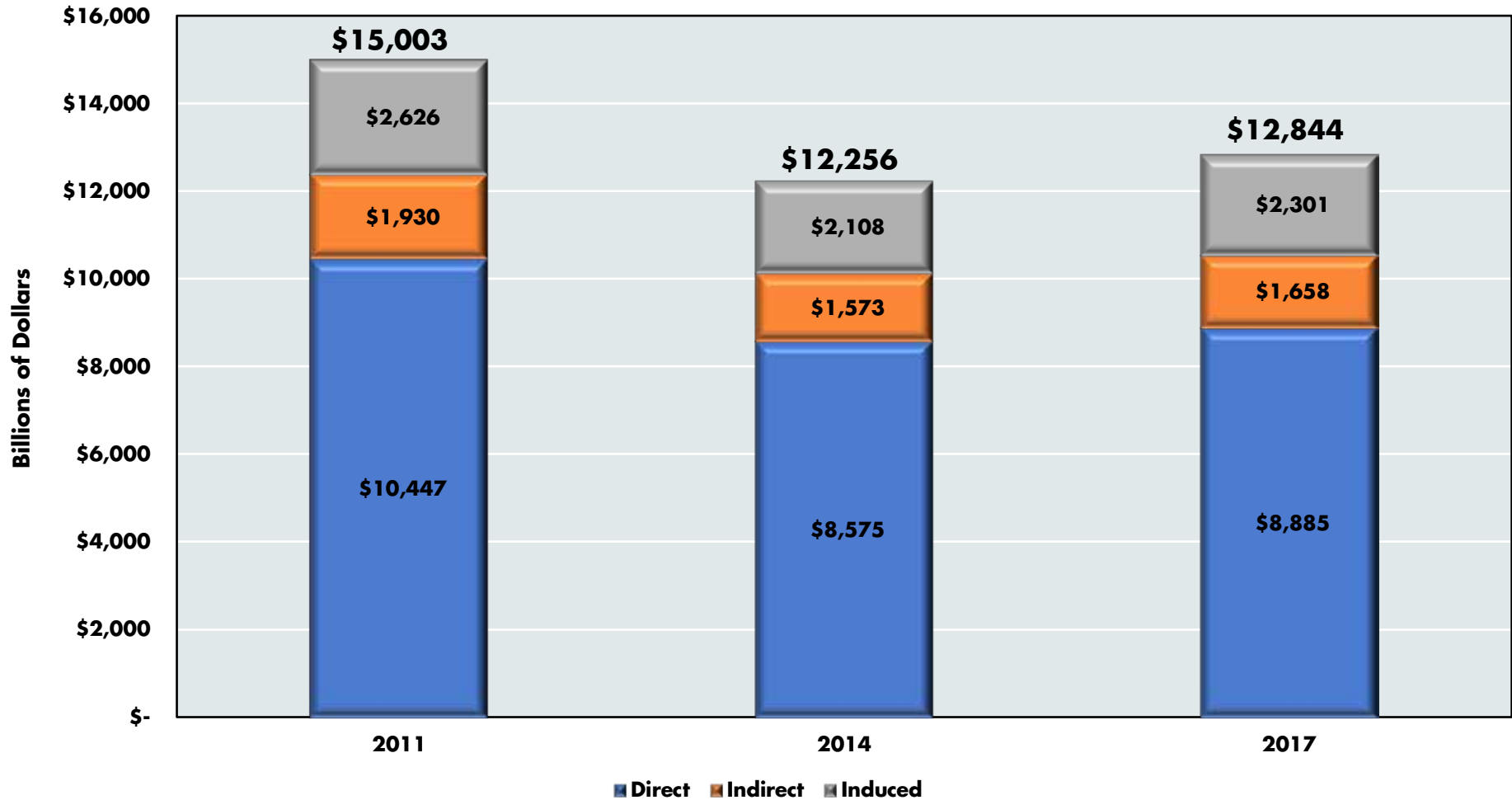
Graph 8 displays the total economic impact of DOD spending on output in Hampton Roads, while Graph 9 shows the impact on employment. To measure the impact of the BCA of 2011, we look at defense spending levels in 2011 before the imposed reduction in defense spending, and compare it to 2014 and 2017.

In 2011, the \$10.4 billion in direct DOD procurement spending created a total output of \$15 billion. This level plummeted in 2014. Direct defense spending dropped to \$8.6 billion, resulting in an overall decline in economic activity in the region of \$2.7 billion. To put this into context, this represented an almost 3% drop in Hampton Roads’ \$95 billion economy at the time.

As one might expect, the \$10.4 billion in DOD procurement spending in 2011 created a significant number of jobs. In 2011, DOD procurement spending in Hampton Roads directly created over 43,000 jobs and rippled throughout the economy to create another 28,000 jobs. By 2014, however, the estimated impact of DOD procurement spending on employment fell from almost 72,000 total jobs in 2011 to slightly more than 58,000 jobs. The decline in DOD procurement spending undoubtedly contributed to the region’s overall economic malaise during the first half of this decade. The good news is that the most recent data highlight recovery in the number of jobs attributable to DOD procurement spending, with almost 64,000 jobs attributable to this spending in 2017. With the recent increases in DOD spending and budgets in FY 2018 to FY 2020, it is likely that employment associated with DOD procurement spending in Hampton Roads will increase into 2020, if not 2021.

GRAPH 8

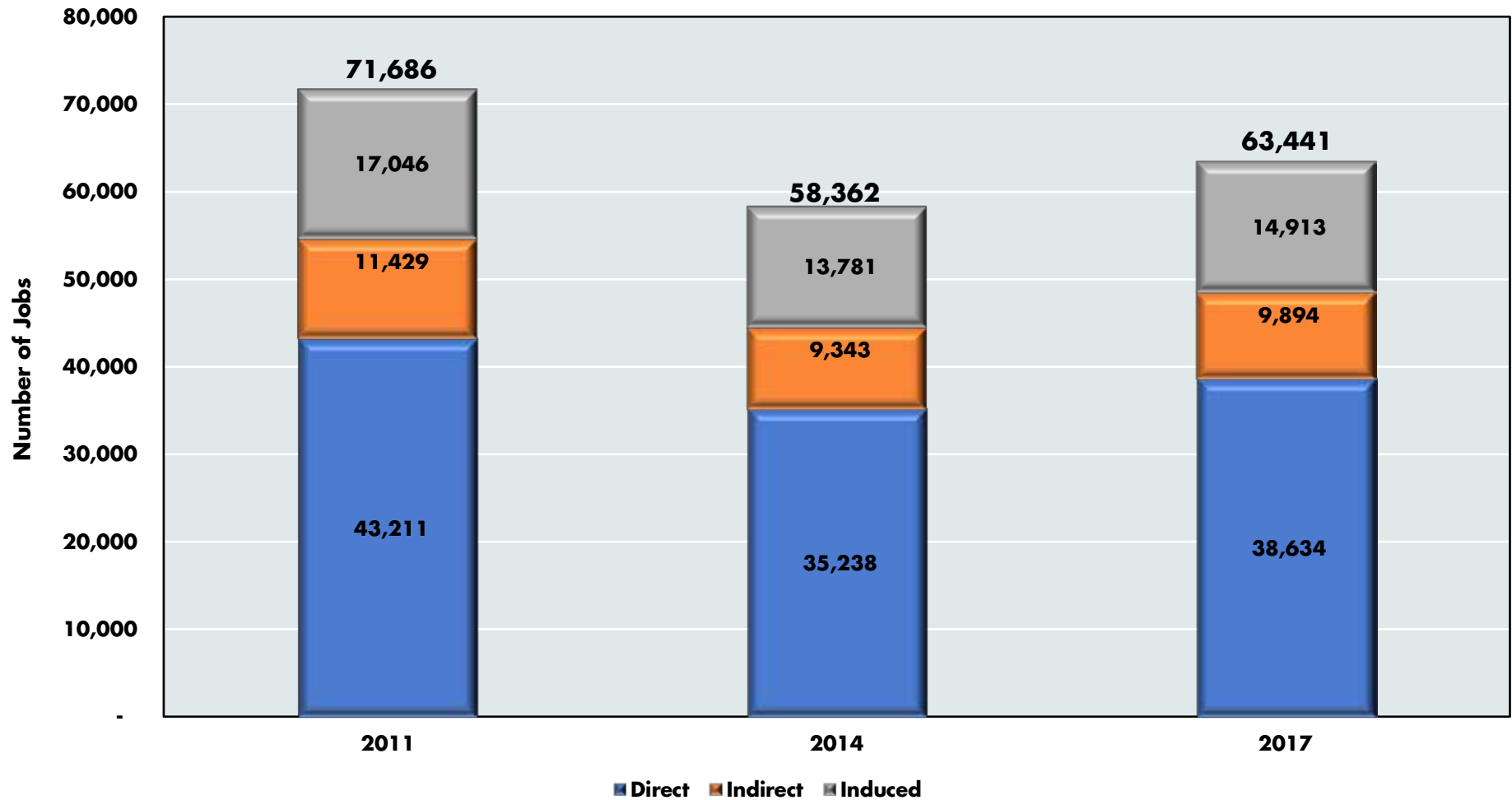
ESTIMATED ECONOMIC IMPACT OF DEFENSE PROCUREMENT SPENDING ON OUTPUT IN HAMPTON ROADS



Sources: USA Spending, JobsEQ and the Dragas Center for Economic Analysis and Policy, Old Dominion University

GRAPH 9

ESTIMATED ECONOMIC IMPACT OF DEFENSE PROCUREMENT SPENDING ON EMPLOYMENT IN HAMPTON ROADS



Sources: USA Spending, JobsEQ and the Dragas Center for Economic Analysis and Policy, Old Dominion University

The Ugly: The Cold War Thaws And Defense Spending Falls

Following more than a decade of relative stability after the Vietnam War and the changing geopolitical landscape associated with the thawing Cold War, Congress had an initial goal to reduce military spending by at least 25% between FY 1987 and FY 1997.⁸

Graph 10 shows how the overall decline in military spending corresponded to federal employment (military and federal civilian) and DOD procurement spending in Hampton Roads from 1983 to 2000. Both federal personnel and procurement spending peaked in the late 1980s at \$5.4 billion, 140,000 service members and more than 53,000 federal civilian employees. The thawing of the Cold War and reduction in defense spending came down particularly hard on Hampton Roads. **From 1988 to 1998, procurement spending dropped by 45%, while military and federal civilian personnel fell by 25% and 15%, respectively. While sequestration was bad, it pales in comparison to the drawdown from the Cold War. Winter indeed came to Hampton Roads, to paraphrase a popular television series.**

To measure how this drawdown in defense spending affected Hampton Roads, it is important to understand the “counterfactual,” or “but for the drawdown, how would the economy have performed over time?”

Economist Ben Zou,⁹ in the *Journal of Labor Economics*, measured how the drawdown in personnel and expenditures over this period affected economic activity. Zou used a statistical technique to elicit the counterfactual for areas with substantial defense spending. We use Zou’s methodology to examine the actual growth rate and the growth rate that would have taken place without

the defense drawdown for civilian employment and income in Hampton Roads. We present these results in Graphs 11 and 12.

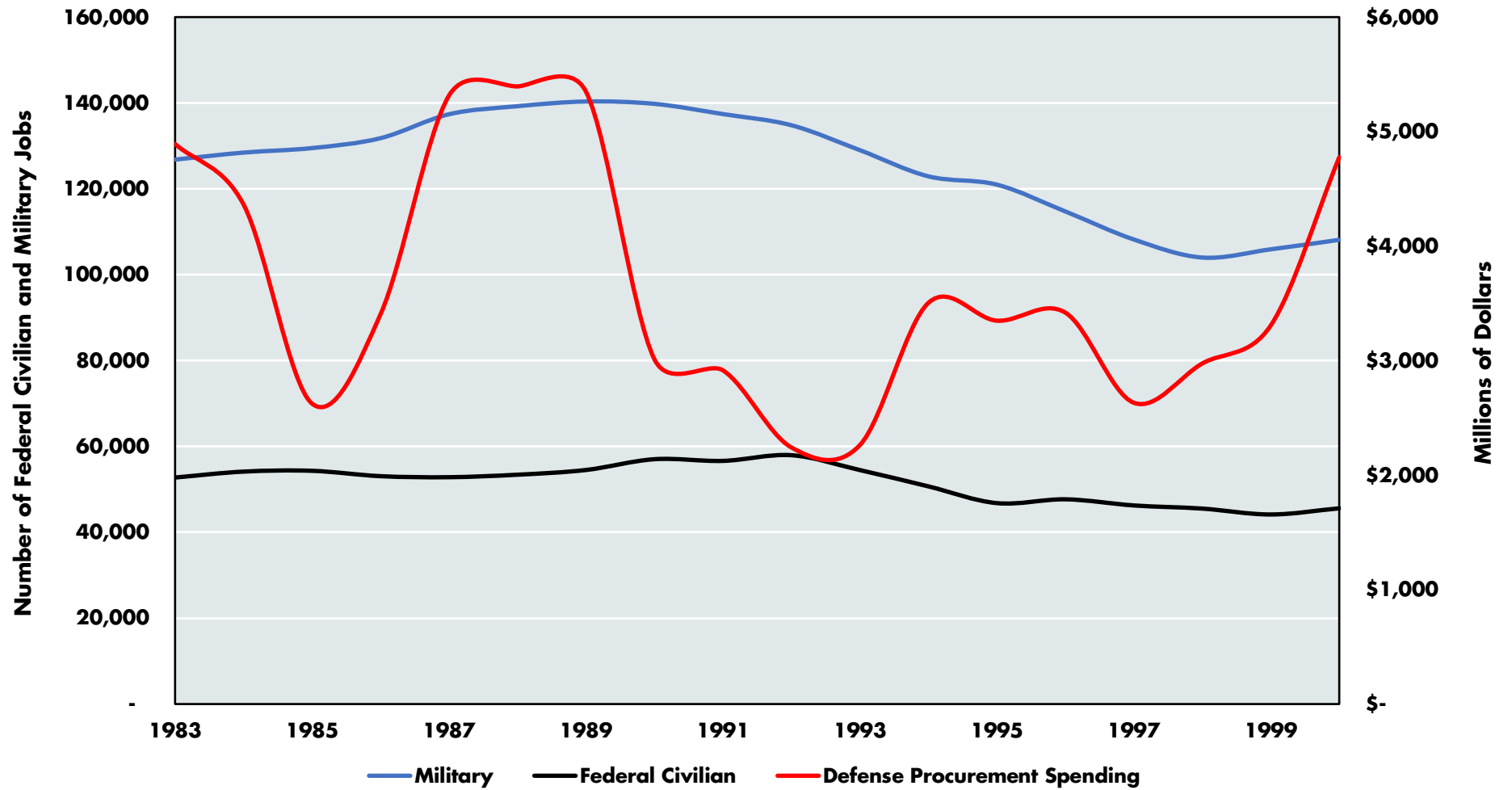


⁸ Albert H. Schroetel, 1993, “Military Personnel: End Strength, Separations, Transition Programs and Downsizing Strategy,” *Adjusting to the Drawdown Report of the Defense Conversion Commission*, Washington, D.C.

⁹ Ben Zou, 2018, “The Local Economic Impacts of Military Personnel,” *Journal of Labor Economics*, 36(3), pp. 589-621.

GRAPH 10

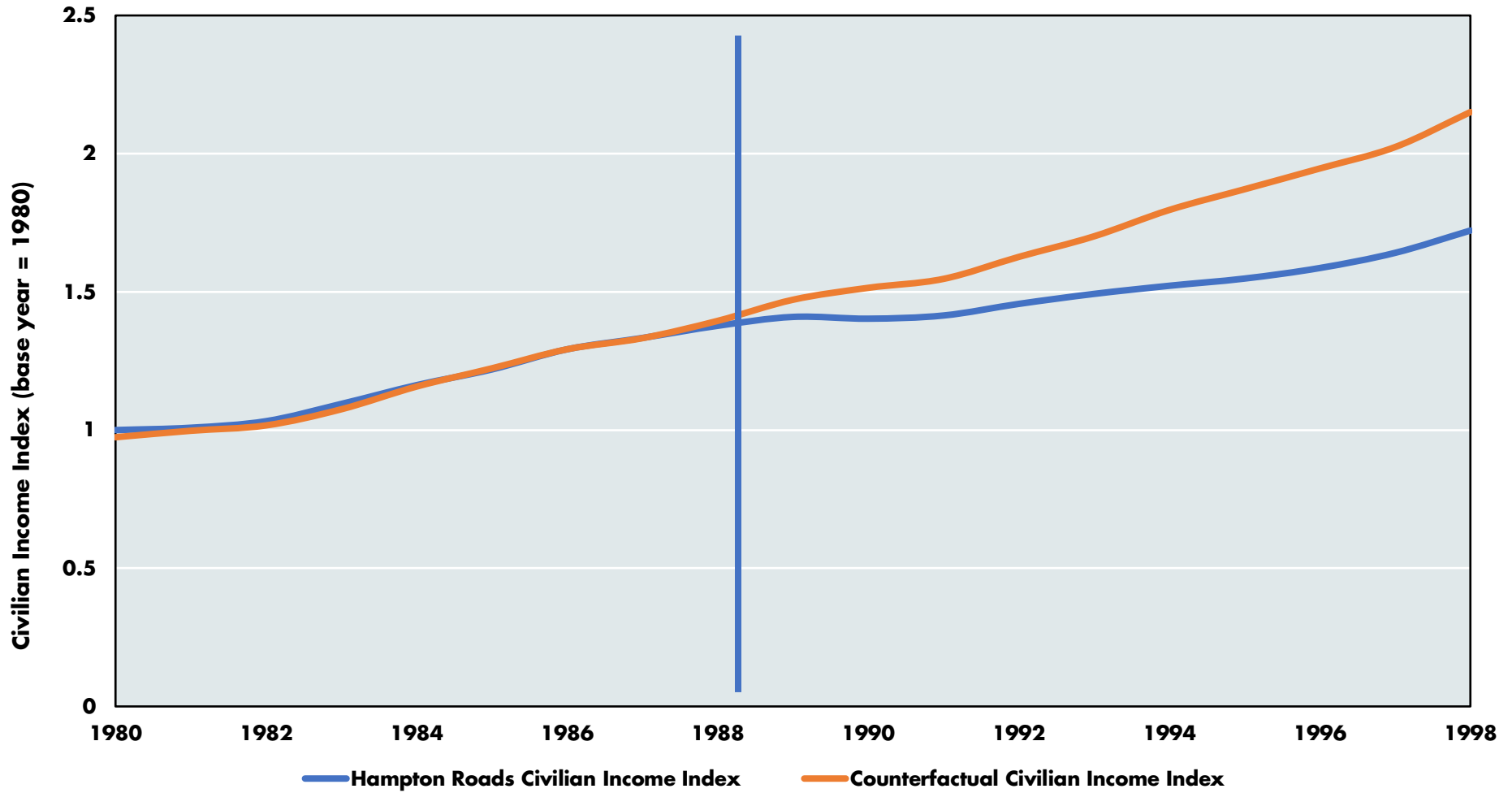
FEDERAL EMPLOYMENT AND REAL PROCUREMENT SPENDING: HAMPTON ROADS, 1983-2000



Sources: Bureau of Economic Analysis and U.S. Census Bureau. Procurement spending is adjusted for inflation to 2000 dollars, with the urban consumer price index from the Bureau of Labor Statistics.

GRAPH 11

GROWTH IN CIVILIAN INCOME AND THE COUNTERFACTUAL: HAMPTON ROADS, 1980-1998



Source: Dragas Center for Economic Analysis and Policy, Old Dominion University

GRAPH 12

GROWTH IN CIVILIAN EMPLOYMENT AND THE COUNTERFACTUAL: HAMPTON ROADS, 1980-1998



Source: Dragas Center for Economic Analysis and Policy, Old Dominion University

The first thing to note in these graphs is that both civilian employment and income increased over this period. However, the gap between the actual outcome (blue line) and the counterfactual (orange line) after 1988 shows the effect of the decline in spending on defense. **In general, despite rising civilian income and employment, Hampton Roads should have grown at a much higher rate than it did. To add some perspective, the region's civilian income grew over 4% less and civilian employment grew over 5% less each year than they would have without the military spending cutback.**

The post-Cold War case study also again illustrates why context is critical. As William Mezger, a senior economist at the Virginia Employment Commission during this time period, put it: "Probably one of the reasons the defense cutbacks have hurt, but haven't hurt as much as they did after World War II or the Korean War or even after Vietnam, when there was a period when the economy was stagnant for a couple of years, has been the expansion in the overall economy."¹⁰ **Hampton Roads didn't just dodge a bullet, it dodged the mother of all economic bombs, because the drawdown took place during a period of widespread economic growth. We may not be so lucky next time.**

¹⁰ T. Evanoff, (Jan. 8, 1996), "Federal Job Reduction Little Noticed in the Area," *The Virginian-Pilot, Business Weekly*, p. 4.

Where Does This Leave Us? Where Do We Go From Here?

There are a variety of threats to defense spending in Hampton Roads, and as our historical case studies have shown, declines in federal procurement spending and personnel can have problematic implications for the region. Is it time to bring two other "four-letter words" into the conversation: diversification and collaboration? There has been a reluctance to utter these words, in fear that the DOD might view any such efforts as a withdrawal of support for the military installations in the region. Others have argued that it's time for conversation and action. Where do we go from here?

First, it is helpful to recognize that long-term structural threats often require long-term structural solutions. The risks we have outlined suggest that with or without action, the region could lose either personnel or procurement contracts, or both. The worst-case scenario would be to lose an installation in a future BRAC round. In this light, the region needs to continue to be forward-looking to protect our current military assets and become a net winner in inevitable future BRAC rounds. Work in this area is already taking place on a variety of fronts. For instance, the military is in the business of moving large numbers of people and equipment. The widening of I-64 through the Peninsula and the planned Hampton Roads Bridge-Tunnel expansion alleviate DOD congestion concerns. These projects have the bonus of making the region more attractive to businesses and residents.

However, sea level rise remains the elephant in the room concerning long-term structural issues facing the region and its military assets. It is a significant threat that could make assets at the region's naval bases "float away" to other areas. There is unlikely to be one panacea to insulate the region from rising seas. Instead, local governments should continue to explore creative ways to invest in resilient infrastructure, such as so-called green bonds. Hampton Roads came out of the latest hurricane season relatively unscathed compared to metropolitan

areas in neighboring states, but it is only a matter of time before a devastating hurricane makes its way to our shores, and preparation is vital.

Another piece to the puzzle to make the region more attractive to the military is its appeal to military personnel and families. We have some stiff competition in this department from the likes of San Diego. While we cannot compete directly in terms of climate, we can invest in K-12 education, promote policies to enable the hiring of military spouses and provide job training and placement for transitioning service members. Furthermore, the exiting military cohort is a prime source of workers in high-tech industries such as cybersecurity and data analytics.

Second, the region should promote policies that encourage innovation and entrepreneurial activities. Research shows that innovative firms act as the engine of economic growth in an area.¹¹ This would represent a cultural change for our region. Hampton Roads missed out on the entrepreneurial waves that swept across many areas of the country in the early and late 1990s. We missed out, in part, because defense spending was strong, and the region continued to flourish even if it was not creating the new technologies implemented by the military. However, for the region to grow its firms, it needs to move past the model of winning government contracts by simply “buying low” in wholesale markets and “selling high” to the military.

Promoting innovation and an entrepreneurial spirit among Hampton Roads residents again is a long-term play. We suggest two strategies to promote an entrepreneurial culture and economic growth. First, to promote technology-oriented startups, and not miss the next wave of entrepreneurship, the region should continue to develop innovation districts. There are several innovation districts spread throughout the region, like the Peninsula Technology Incubator in Hampton, Ignition in Williamsburg and Innovation Research Park at Old Dominion University. These organizations help fuel the growth of startups by providing resources, expertise and mentorship, as well as inspiring a culture of entrepreneurship.

¹¹ For example, see Ryan Decker, John Haltiwanger, Ron Jarmin and Javier Miranda (2014), “The role of entrepreneurship in US job creation and economic dynamism,” *Journal of Economic Perspectives*, 28(3), 3-24.

The second strategy, often referred to as “economic gardening,” is designed to grow existing firms. While attracting mega firms like Amazon might produce front-page headlines, the overall payoff from luring a large firm to relocate can be quite low. Gardening, on the other hand, focuses on the needs of existing firms, whether it involves additional financial capital or technical expertise to expand their business. Our local colleges and universities also can play an essential role in research and development, as well as provide appropriate business services to budding companies.

A crucial aspect of this for Hampton Roads is the notion of dual-use products and services. The region already has experience and expertise in procuring government contracts. However, firms would also benefit by looking for outlets for their products in the private sector. For example, a firm working on the next generation of marine propulsion equipment might have developed its technology initially for the military, yet it could also be valuable in private-sector applications. The military-to-civilian transition is important also for private firms and business lines and for spurring innovation.

All economic parties come to an end. While Hampton Roads cannot control poor fiscal choices at the federal level, it can recognize, plan and prepare for the eventual fallout. There are, as we have stated in previous reports, no magic bullets or short-term elixirs to fix these structural issues. If the road ahead is full of potholes, sometimes it is best to slow down and evaluate whether there is a better path. Undoubtedly, Hampton Roads will continue to play a keynote role in national defense in years to come. Now, however, is the time to broaden our horizons and make the cultural and economic changes needed to spur long-term growth.

