# \*\*Career and Technical Education Aff\*\*

[\*\*Career and Technical Education Aff\*\* 1](#_Toc492479129)

[File Notes 2](#_Toc492479130)

[Glossary 3](#_Toc492479131)

[1AC 4](#_Toc492479132)

[1AC – Competitiveness Advantage 5](#_Toc492479133)

[1AC – Cybersecurity Advantage 12](#_Toc492479139)

[1AC – Plan 22](#_Toc492479149)

[1AC – Solvency 23](#_Toc492479150)

[Competitiveness Advantage 28](#_Toc492479155)

[STEM Low Now 29](#_Toc492479156)

[CTE Key to Competitiveness 30](#_Toc492479157)

[Competitiveness Key to Hegemony 34](#_Toc492479161)

[Hegemony Impacts 36](#_Toc492479163)

[A2: Competitiveness Theory Wrong 41](#_Toc492479168)

[Cybersecurity Advantage 43](#_Toc492479170)

[Workforce Gap Now 44](#_Toc492479171)

[CTE Solves Workforce Gap 46](#_Toc492479173)

[Cyber Attacks Coming 47](#_Toc492479174)

[Cyberwar Impact 50](#_Toc492479177)

[A2: CTE Trades Off With STEM 51](#_Toc492479178)

[Solvency 54](#_Toc492479181)

[CTE Solves Unemployment 55](#_Toc492479182)

[Social Innovation Financing Good 56](#_Toc492479183)

[A2: Teacher Shortages 59](#_Toc492479186)

[A2: Liberal Arts Tradeoff 62](#_Toc492479189)

[A2: No One Signs Up 63](#_Toc492479190)

[State Budgets Add-On 64](#_Toc492479191)

[2AC State Budgets Add-On (1/4) 65](#_Toc492479192)

[2AC State Budgets Add-On (2/4) 66](#_Toc492479193)

[2AC State Budgets Add-On (3/4) 67](#_Toc492479194)

[2AC State Budgets Add-On (4/4) 68](#_Toc492479195)

[A2: Aff Can’t Solve 69](#_Toc492479196)

[A2: Pension Crisis False 71](#_Toc492479198)

[A2: Economy Recovering 72](#_Toc492479199)

[A2: No Economy Impact 74](#_Toc492479201)

[A2: States Counterplan Solves 76](#_Toc492479203)

### File Notes

The Career and Technical Education (CTE) Affirmative argues that modifications to the current Perkins Career and Technical Education Act must be enacted in order to maximize the effectiveness of our nation’s CTE programs for high school students. The Perkins Career and Technical Act was first signed into law in 2006 by President Bush. It provides funding to states that they allocate through formulas to secondary and postsecondary educational institutions. The affirmative argues that funding of secondary career and technical education should be increased; first, by increasing the amount of grants distributed to the states; second, by establishing a “CTE Pathways Fund” that would connect high school CTE programs with local businesses and create pipelines to bring students into particular careers; and third, by expanding social innovation financing, which would leverage private sector funds to pay for government investments.

The first advantage is Competitiveness. This advantage argues that America’s economy is becoming less competitive globally because our middle class is declining and there are skill gaps in our workforce. Career and technical education programs would help reduce this skill gap and increase the overall productivity of the economy. Failure to improve the skill set of American workers will hollow out the manufacturing sector and reduce competitiveness, which is crucial to sustain US military and economic hegemony or leadership. Loss of US military dominance will cause instability in the global system, potentially inducing war between great powers like the US and China.

The second advantage is Cybersecurity. This advantage argues that there is a skill gap in the cybersecurity sector; right now, there aren’t enough people in our workforce with the computer skills to ward off cyberattacks from hostile nations and individuals. Career and technical education often helps facilitate STEM (science, technology, engineering, and math) skills, which are essential for effective cyberworkers. Absent filling this skill gap, our grid is vulnerable to cyberattacks, which could be substantial enough to take down the grid. These attacks could lead to accidental escalation or deliberate retaliation by the US military.

There is also an add-on advantage in this file that is meant to answer the States CP (which can’t be run until November). The State Budgets Add-On argues that the plan can help prevent a state budget crisis – currently, states owe more to state employees’ pensions than they will be able to pay, which could create an economic crisis when they aren’t paid. The plan gives the states an influx of cash for CTE, which frees up resources to pay pensions and generates new revenue for the government by improving economic growth. This averts an economic crisis.

### Glossary

Balanced budget requirements: A balanced budget amendment is a constitutional rule requiring that a state cannot spend more than its income. It requires a balance between the projected receipts and expenditures of the government.

Career and Technical Education (CTE): Career Technical Education (CTE) provides students of all ages with the academic and technical skills, knowledge and training necessary to succeed in future careers and to become lifelong learners

Competitiveness: The World Economic Forum, which has been measuring competitiveness among countries since 1979, defines it as “the set of institutions, policies and factors that determine the level of productivity of a country”.

Credit rating: an estimate of the ability of a person or organization to fulfill their financial commitments, based on previous dealings.

Cybersecurity: the state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this.

Diversionary war: an International Relations term that identifies a war instigated by a country's leader in order to distract its population from their own domestic strife.

Hegemony: leadership or dominance, especially by one country or social group over others.

Pension: a regular payment made during a person's retirement from an investment fund to which that person or their employer has contributed during their working life.

Resilience: the capacity to recover quickly from difficulties; toughness.

Social Innovation Financing: to fund government programs not with direct budget appropriations but through third parties that assume the risk if the program doesn’t produce results. The state enters into a contract with an intermediary that matches up philanthropic investors, who provide the money, and agencies, who provide the expertise. If the program achieves certain agreed-upon results — and only if it does — the state reimburses the investors, with a small return.

STEM: STEM is a curriculum based on the idea of educating students in four specific disciplines — science, technology, engineering and mathematics — in an interdisciplinary and applied approach.

Subprime mortgages: a type of mortgage that is normally issued by a lending institution to borrowers with low credit ratings. As a result of the borrower's lower credit rating, a conventional mortgage is not offered because the lender views the borrower as having a larger-than-average risk of defaulting on the loan.

Subsidy: a sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive.

## 1AC

### 1AC – Competitiveness Advantage

**Contention 1 is the Competitiveness Advantage:**

**Skills gaps and a declining middle class threaten American competitiveness – high school career and technical education programs, also known as CTE, are crucial to a productive workforce**

Miner 16 (Andrew Miner is a former intern with the Education Policy team at the Center for American Progress., October 11th, 2016, “Rebuilding the High School to Middle Class Pipeline”, <https://www.americanprogress.org/issues/education/news/2016/10/11/145341/rebuilding-the-high-school-to-middle-class-pipeline/>, nassal)

In December of 2014, **The Washington Post reported on the decline of manufacturing in towns such as Downey, California**—**a once-proud aerospace manufacturing hub.** The Post told the story of **Bob Thompson**, a man who, in 1965, walked to the Rockwell factory in his town and landed a job at the plant. He **was in his early 20s and had never gone to college.** **Thompson worked hard and leveraged his free public education into a lifetime in the middle class and a pension that allowed him to retire.** His story is an archetype of the era’s American dream. Today, however, many **Americans believe achieving that dream is no longer possible. Pessimism about the U.S. economy is especially strong among Americans like Thompson who do not have a college education**. **Considering the bleak trajectory of these Americans in recent decades—with stubbornly high unemployment, stagnant incomes, and a widening income gap relative to their college-educated peers—it is clear that non-college-educated Americans have suffered greatly from the decline of the middle class, in part due to manufacturing’s shrinking share of overall employment.** Meanwhile, **employers face a skills gap that has left them unable to fill middle-income job vacancies.** While the automation and offshoring of routine procedural tasks has caused labor market polarization in the United States, **a Harvard Business School analysis found a major shortfall of labor market supply for so-called middle skills jobs.** **Such jobs cannot easily be automated or exported as they demand technical and behavioral skills, such as communication, problem solving, leadership, and teamwork**. **They also require education beyond traditional high school, but not necessarily a four-year degree**. **Middle skills fields—including computer technology, nursing, advanced manufacturing, cybersecurity, and similar professions—now account for 54 percent of all jobs in the United States, but only 44 percent of American workers are qualified to fill them**. A Georgetown Public Policy Institute study found that **65 percent of the 55 million new job openings through 2020 will require at least some college or an associate’s degree; as many as 5 million of those openings will go unfilled.** **The combination of the decline of the middle class and the growing skills gap raises serious questions about the public school system’s ability to provide economic opportunity and to drive broad economic growth**. **In the face of globalization and advances in technology, rebuilding the high school to middle class pipeline must be a leading policy priority. If the United States is to sustain an inclusive and competitive economy, its students need to complete their high school education fully equipped to earn and thrive in middle skills jobs.** Pathways in Technology Early College High School **Schools such as Pathways in Technology Early College High School**, or P-TECH, **show a promising start.** **P-TECH is a** career and technical education, or **CTE,** public-private partnership. The first P-TECH, located in the Crown Heights neighborhood of Brooklyn, New York, has partnered with IBM, the City University of New York, **and** the New York City Department of Education. P-TECH **seeks to bridge the skills gap while preparing its students for careers in science, technology, engineering, and math, or STEM, fields. The grade 9-14 model allows P-TECH to give its students four to six years to graduate with both a high school diploma and an associate’s degree in a STEM field**; **grades 13 and 14 are available if students need them to complete the postsecondary work.** <<card continues>>

### 1AC – Competitiveness Advantage

<<card continues>> In addition, the program offers all of these opportunities to students at no personal cost. After completing paid internships and mentorships at IBM during their time at P-TECH, students either enter the workforce—and will be “first in line” for positions at IBM with annual starting salaries upwards of $50,000—or complete their educations at four-year colleges. **The original philosophy of P-TECH’s pioneers was to create opportunities for students of color in STEM fields and to give low-income students access to postsecondary education despite ballooning college costs**. At the Crown Heights campus, 96 percent of students are black or Hispanic, and 80 percent qualify for free or reduced-price lunch. In a visit to the school, President Barack Obama praised **P-TECH as “a ticket into the middle class**.” This spring, U.S. Secretary of Education John King also lauded P-TECH while advocating for the renewal of the Perkins Act—the federal law that funds and regulates CTE programs and whose reauthorization is three years overdue. **The P-TECH model is still growing**—by the end of 2016, there will be 60 locations between the United States and Australia. **It is also highly versatile**, with some new programs opening inside existing public high schools and some traditional high schools undergoing full transitions. While program elements can widely vary from one P-TECH to another, all of them include mentoring, an open and inclusive program, and paid internships

#### Expanding CTE programs for high school students to receive credit for apprenticeships in the private sector revitalizes manufacturing and tech innovation

Atlantic Council 17 [The Atlantic Council is a nonpartisan organization that promotes constructive US leadership and engagement in international affairs, Keeping America’s Innovative Edge, April 2017, director of the Atlantic Council’s Foresight, Strategy, and Risks Initiative in the Brent Scowcroft Center on International Security, http://www.atlanticcouncil.org/images/publications/Keeping\_Americas\_Innovative\_Edge\_web\_0404.pdf]

HUMAN CAPITAL EXAMPLE Rethinking Skills and Worker Training **Even the most enlightened immigration scheme for hightech workers is at best a temporary palliative**. Ultimately, **if the United States aspires to have both a strong national economy and broadly shared prosperity, it will have to create skills training systems that fit the twenty-first century’s workplace condition**s. While the US innovation system is second to none in its institutional features—world class research universities and labs, an entrepreneurial culture, strong intellectual property (IP) protection, and a well-developed venture capital industry—the US education system continues to lag in fostering STEM graduates. The US therefore faces an ongoing deficit of highly skilled workers. As emphasized in the National Academy of Sciences Gathering Storm reports cited previously, OECD statistics rank the US thirty-third out of thirty-six advanced economies in its proportion of STEM graduates.**55 To compete in the global knowledge economy, the United States will have to revisit what it means to have a trained workforce**. There is bad news and good news here. The bad has already been discussed—unfortunately, the US does not produce enough skilled workers. But the good news is that **there are many pathways for filling the gap between demand and supply**. These pathways include a host of intermediary institutions that together work to upskill and reskill America’s workforce, including people who want to become entrepreneurs as well as tens of millions more who will continue to earn their living the old-fashioned way, through paid labor. Some of these institutions are decades old but are in need of some tweaking, while others are much younger and are already at the forefront of this battle. ACCELERATORS AND INCUBATORS: One important new factor that has exploded over the past decade is the rise of startup accelerators and incubators. These models are businesses that help entrepreneurs launch tech startups. In a sense they are training institutions: they train people who might otherwise be talented technicians (engineers, scientists, and so forth) to become business owners. They enable fledgling businesses (often just the entrepreneur him/herself) to co-locate in common office spaces; usually provide some initial investment capital; offer mentorship, peer collaboration, and networking opportunities with potential investors; and help with marketing. Incubators tend to provide support over longer periods and often are funded by one venture capital group.56 The accelerator model provides an apt example of how these institutions train entrepreneurs. According to Ian Hathaway, a researcher who conducted a nationwide study of these programs, an accelerator provides “a process of intense, rapid, and immersive education aimed at accelerating the life cycle of young innovative companies, compressing years’ worth of learning-by-doing into just a few months.”57 In a highly selective process, applicants submit business plans to the accelerator’s investors and, if accepted, obtain space in a common work area with other entrepreneurs for a set period of time, usually around three months. Accelerators usually accept 10 percent or fewer of applicants. Investors provide seed money (averaging about $100,000), often in exchange for equity in the startup in the 6-8 percent range. Program entrepreneurs are expected to “graduate” at the end of their stay. Hathaway’s research showed that from 2005 to 2015, 172 accelerators nationwide funded about five thousand startup companies.58 Two of the best known accelerators are Y Combinator, based in Silicon Valley and Boston, and Techstars, which was founded by Brad Feld in Boulder and now has more than a dozen branches in the US and abroad.59 Incubators include 1776, based in Washington, DC (one of 1776’s staff penned a guest contribution for this report, about Washington’s tech scene), and Idealab, based in Pasadena, one of America’s oldest tech incubators.60 <<card continues>>

### 1AC – Competitiveness Advantage

<<card continues>> Over time, these models have evolved to the point where the boundaries between accelerator, incubator, co-working space, and other permutations of the same idea have blurred. A whole series of organizations now cross the lines between these categories. These include Galvanize, a Denver-based company with nine locations nationwide that both incubates startups and trains workers for the digital economy, and 1871, a Chicago-based company that combines high-quality co-working spaces, workshops, training, and a range of other services.61 CODING BOOT CAMPS: So-called coding boot camps also have become important intermediary institutions focused on training and education for today’s digital economy. As their name suggests, the boot camps, a new phenomenon since 2012, provide an intense, immersive training experience for people who want to become software developers. They have become one of the fastest growing post-secondary school vocational training institutions in the country.62 As the world now runs on code, the rationale behind the coding boot camp is to fill the gap between demand for skilled coders and their undersupply. The boot camps take advantage of universities producing too few computer science graduates every year. Given the high salaries on offer around the country for skilled coders (ranging from the high five figures to low six figures), boot camps offer a low investment in terms of time and money, relative to getting a four-year degree, to people of all ages. The term relative applies: boot camps normally offer an intense, full-time, immersive program consisting of very long workweeks.63 There are now hundreds of such camps nationwide, all trying to take advantage of the market demand. Some of these are well established, with deserving reputations for placing their graduates in the private sector at high salary levels. For example, San Francisco’s App Academy offers a twelve-week immersive program that boasts high placement rates and median salaries for their graduates. It also is innovative in that it offers free tuition to its students until they land jobs as coders (after which the company takes 18 percent of the students’ first year salaries).64 Similar stories abound in this space (see the essay written by a staff member of the Hack Reactor coding boot camp). Boot camps have their limits, however, and there are a couple caveats. While those interviewed for this report generally were very enthusiastic about the boot camp training model, they suggested that there are limits. For one thing, if the boot camps do their work well, at some point the supply of coders will match the demand for them, and salary levels will begin to reflect saturation levels. For another, **while the boot camp model can be replicated in other technical fields, in some fields there will never be a substitute for lengthy, indepth education that only universities can provide**. One boot camp executive said **there simply is no way to teach people advanced physics or chemistry over compressed timeframes.** Community Colleges: One important point to make—and one to reinforce over and again—is that **the United States will need to find ways to ensure that the knowledge economy is accessible to tens of millions of everyday workers**. **While the knowledge economy is about startups and coding, it also includes manufacturing and building and many other things**. Hence, **it will require highly skilled workers** (and highly paid ones) **who can work with both their hands and minds in realworld workspaces**. Tomorrow’s factories, for example, might require fewer people overall but those they do employ will need to possess advanced skills. This arena is where the nation’s community colleges can— and have begun to—step in to play a critical role. Community colleges are like universities in that they are old institutions, and also like universities their roles remain critical in the digital age. **Vocational training** at community colleges, specifically apprenticeship programs, **has great potential to bring more people into the innovation machine**. In the United States, **roughly 5 percent of students are in apprenticeship programs,** most of whom are in the construction industry. **In Germany, which is universally regarded as one of the best countries in the world in apprenticeship training, that number is roughly 60 percent**.65 **The German apprenticeship model, also one of the oldest in the world, covers a wide array of fields, from manufacturing and information technology (IT) to banking. Its backbone is the notion of “dual training,” which melds classroom education in vocational schools** (equivalent to community colleges in the United States) **and on-the-job training apprenticeships**. **This stems from a decidedly different approach to education and training, and reflects a much more collaborative relationship between the education establishment, the private sector, industry, and business/civic organizations**. This observation is not an argument for the United States to copy the German system, which even if desirable would be difficult to pull off owing to the scale of the challenge. There are important cultural differences between Germany and the US that are not easily bridged, from a lack of focus on STEM education to attitudes toward vocational training and general education (the US pays a price for the vocation’s lack of stature and, conversely, for its ethos that all people should go to college). Perhaps most importantly, **building a German model in the US would require a level of public-private sector collaboration aimed at identifying trends** in **future skilled-employment needs and then linking its educational system to that trajectory**.

### 1AC – Competitiveness Advantage

**Competitiveness is key to hegemony**

**Colby 14** - Robert M. Gates Senior Fellow at the Center for a New American Security, Policy Advisor to the Secretary of Defense’s Representative for the new Strategic Arms Reduction Treaty, graduated from Harvard, J.D. from Yale, term member of the Council on Foreign Relations, member of the International Institute of Strategic Studies

Elbridge Colby, 7/3/2014, Foreign Policy, “Have we hit peak America?”, http://www.foreignpolicy.com/articles/2014/07/03/have\_we\_hit\_peak\_america, 8/4/2015,

FOR THE FIRST TIME IN 200 YEARS, MOST GROWTH IS OCCURRING IN THE DEVELOPING WORLD, and the speed with which that shift—a function of globalization—has occurred is hard to fathom. Whereas in 1990 just 14 percent of cross-border flows of goods, services, and finances originated in emerging economies, today nearly 40 percent do. As recently as 2000, the gdp of China was one-tenth that of the United States; just 14 years later, the two economies are equal (at least in terms of purchasing power parity).∂ This shift reorders what was, in some sense, a historical anomaly: the transatlantic dominance of the past 150 years. As illustrated by the map below, it wasn’t until the Industrial Revolution took hold in the 19th century that the world’s “economic center of gravity” decisively moved toward Europe and the United States, which have since been the primary engines of growth. Today, however, **the economic center of gravity is headed back toward Asia, and it is doing so with unique historical speed**.∂ **This trend will persist even though emerging economies are hitting roadblocks to growth, such as pervasive corruption in India and demographic challenges and serious distortions in the banking system in China**. For instance, according to the asset-management firm BlackRock and the Organization for Economic Cooperation and Development (oecd), consumption in emerging markets has already eclipsed that in the United States, and spending by the middle classes in Asia-Pacific nations is on track to exceed middle-class spending in North America by a factor of nearly six by 2030.∂ U.S. wealth is not shrinking in absolute terms—and it continues to benefit from economic globalization—but **the United States and its allies are losing might compared with potential rivals**. Although Europe and Japan have been responsible for much of the developed world’s lost relative economic power, **the U.S. economy has also slowed from its traditional rates of expansion over the past several decades. Worsening productivity growth has played a particularly large role in the U.S. slowdown**, dropping to around 0.5 percent annually, which the Financial Times has referred to as a “productivity crisis.” A range of factors are responsible, including a decline in the skill level of the American workforce and a drop in resources allocated to research and development.∂ U.S. REVENUE VS. SPENDING∂ By 2043, federal spending on entitlements and net interest payments will exceed federal revenues, meaning funds for any discretionary programs will be borrowed.∂ Overall, **the U.S. economy has become less competitive**. The McKinsey Global Institute, for instance, has measured the relative attractiveness of the United States across a range of metrics, such as national spending on research and development and foreign direct investment as a percentage of gdp. It found **that U.S. business attractiveness relative to that of competitors fell across 14 of 20 key metrics from 2000 to 2010—and improved in none**. And according to the Harvard Business Review, **U.S. exports’ global market share dropped across the board from 1999 to 2009 and suffered particularly sharp falls in cutting-edge fields** such as aerospace.∂ **This shift in economic growth toward the developing world is going to have strategic consequences. Military power ultimately derives from wealth. It is often noted that the United States spends more on defense than the next 10 countries combined. But growth in military spending correlates with gdp growth, so as other economies grow, those countries will likely spend more on defense, reducing the relative military power of the United States**. Already, **trends in global defense spending show a rapid and marked shift from the United States and its allies toward emerging economies, especially China**. In 2011, the United States and its partners accounted for approximately 80 percent of the military spending by the 15 countries with the largest defense budgets. But, according to a McKinsey study, that share could fall significantly over the next eight years—perhaps to as low as 55 percent.∂ **The resulting deterioration in American military superiority has already begun, as the countries benefiting most rapidly from globalization are using their newfound wealth to build military capacity, especially in high-tech weaponry**. As Robert Work and Shawn Brimley of the Center for a New American Security wrote this year: “[T]he dominance enjoyed by the United States in the late 1990s/early 2000s in the areas of high-end sensors, guided weaponry, battle networking, space and cyberspace systems, and stealth technology has started to erode. Moreover, **this erosion is now occurring at an accelerated rate**.” (Work has since been confirmed as deputy secretary of defense.)∂ China, in particular, is acquiring higher-end capabilities and working to establish “no-go zones” in its near abroad in the hopes of denying U.S. forces the ability to operate in the Western Pacific.<<card continues>>

### 1AC – Competitiveness Advantage

<<card continues>> **China’s declared defense budget grew 12 percent this year—and has grown at least ninefold since 2000—and most experts think its real defense spending is considerably larger**. The International Institute for Strategic Studies has judged that Beijing will spend as much on defense as Washington does by the late 2020s or early 2030s. Meanwhile, **regional powers like Iran—and even nonstate actors like Hezbollah—are becoming more militarily formidable as it becomes easier to obtain precision-guided munitions and thus threaten U.S. power-projection capabilities.**

**Hegemony deters conflict and collapse causes great power war**

Kagan 2-6-17 (Robert, senior fellow with the Project on International Order and Strategy in the Foreign Policy program at Brookings. Author of the world America Made “Backing Into World War III” <http://foreignpolicy.com/2017/02/06/backing-into-world-war-iii-russia-china-trump-obama/>) mba-alb

Think of two significant trend lines in the world today. One is the increasing ambition and activism of the two great revisionist powers, Russia and China. The other is the declining confidence, capacity, and will of the democratic world, and especially of the United States, to maintain the dominant position it has held in the international system since 1945. As those two lines move closer, as the declining will and capacity of the United States and its allies to maintain the present world order meet the increasing desire and capacity of the revisionist powers to change it, we will reach the moment at which the existing order collapses and the world descends into a phase of brutal anarchy, as it has three times in the past two centuries. The cost of that descent, in lives and treasure, in lost freedoms and lost hope, will be staggering. Americans tend to take the fundamental stability of the international order for granted, even while complaining about the burden the United States carries in preserving that stability. History shows that world orders do collapse, however, and when they do it is often unexpected, rapid, and violent. The late 18th century was the high point of the Enlightenment in Europe, before the continent fell suddenly into the abyss of the Napoleonic Wars. In the first decade of the 20th century, the world’s smartest minds predicted an end to great-power conflict as revolutions in communication and transportation knit economies and people closer together. The most devastating war in history came four years later. The apparent calm of the postwar 1920s became the crisis-ridden 1930s and then another world war. Where exactly we are in this classic scenario today, how close the trend lines are to that intersection point is, as always, impossible to know. Are we three years away from a global crisis, or 15? That we are somewhere on that path, however, is unmistakable. And while it is too soon to know what effect Donald Trump’s presidency will have on these trends, early signs suggest that the new administration is more likely to hasten us toward crisis than slow or reverse these trends. The further accommodation of Russia can only embolden Vladimir Putin, and the tough talk with China will likely lead Beijing to test the new administration’s resolve militarily. Whether the president is ready for such a confrontation is entirely unclear. For the moment, he seems not to have thought much about the future ramifications of his rhetoric and his actions. China and Russia are classic revisionist powers. Although both have never enjoyed greater security from foreign powers than they do today — Russia from its traditional enemies to the west, China from its traditional enemy in the east — they are dissatisfied with the current global configuration of power. Both seek to restore the hegemonic dominance they once enjoyed in their respective regions. For China, that means dominance of East Asia, with countries like Japan, South Korea, and the nations of Southeast Asia both acquiescing to Beijing’s will and acting in conformity with China’s strategic, economic, and political preferences. That includes American influence withdrawn to the eastern Pacific, behind the Hawaiian Islands. For Russia, it means hegemonic influence in Central and Eastern Europe and Central Asia, which Moscow has traditionally regarded as either part of its empire or part of its sphere of influence. Both Beijing and Moscow seek to redress what they regard as an unfair distribution of power, influence, and honor in the U.S.-led postwar global order. As autocracies, both feel threatened by the dominant democratic powers in the international system and by the democracies on their borders. Both regard the United States as the principal obstacle to their ambitions, and therefore both seek to weaken the American-led international security order that stands in the way of their achieving what they regard as their rightful destinies. It was good while it lasted Until fairly recently, Russia and China have faced considerable, almost insuperable, obstacles in achieving their objectives. The chief obstacle has been the power and coherence of the international order itself and its principal promoter and defender. The American-led system of political and military alliances, especially in the two critical regions of Europe and East Asia, has presented China and Russia with what Dean Acheson once referred to as “situations of strength” that have required them to pursue their ambitions cautiously and, since the end of the Cold War, to defer serious efforts to disrupt the international system. The system has checked their ambitions in both positive and negative ways. During the era of American primacy, <<card continues>>

### 1AC – Competitiveness Advantage

<<card continues>> China and Russia have participated in and for the most part been beneficiaries of the open international economic system the United States created and helps sustain; so long as that system functions, they have had more to gain by playing in it than by challenging and overturning it. The political and strategic aspects of the order, however, have worked to their detriment. The growth and vibrancy of democratic government in the two decades following the collapse of Soviet communism posed a continual threat to the ability of rulers in Beijing and Moscow to maintain control, and since the end of the Cold War they have regarded every advance of democratic institutions — especially the geographical advance of liberal democracies close to their borders — as an existential threat. That’s for good reason: Autocratic powers since the days of Klemens von Metternich have always feared the contagion of liberalism. The mere existence of democracies on their borders, the global free flow of information they cannot control, the dangerous connection between free market capitalism and political freedom — all pose a threat to rulers who depend on keeping restive forces in their own countries in check. The continual challenge to the legitimacy of their rule posed by the U.S.-supported democratic order has therefore naturally made them hostile both to that order and to the United States. But, until recently, a preponderance of domestic and international forces has dissuaded them from confronting the order directly. Chinese rulers have had to worry about what an unsuccessful confrontation with the United States might do to their legitimacy at home. Even Putin has pushed only against open doors, as in Syria, where the United States responded passively to his probes. He has been more cautious when confronted by even marginal U.S. and European opposition, as in Ukraine. The greatest check on Chinese and Russian ambitions has been the **military and economic power of the United States** and its allies in Europe and Asia. China, although increasingly powerful, has had to contemplate facing the combined military and economic strength of the world’s superpower and some very formidable regional powers linked by alliance or common strategic interest — including Japan, India, and South Korea, as well as smaller but still potent nations like Vietnam and Australia. Russia has had to face the United States and its NATO allies. When united, these U.S.-led alliances present a daunting challenge to a revisionist power that can call on few allies of its own for assistance. Even were the Chinese to score an early victory in a conflict, such as the military subjection of Taiwan or a naval battle in the South or East China Sea, they would have to contend over time with the combined industrial productive capacities of some of the world’s richest and most technologically advanced nations and the likely cutoff of access to foreign markets on which their own economy depends. A weaker Russia, with its depleted population and oil- and gas-dependent economy, would face an even greater challenge. For decades, the strong global position enjoyed by the United States and its allies has discouraged any serious challenge. So long as the United States was perceived as a dependable ally, Chinese and Russian leaders feared that aggressive moves would backfire and possibly bring their regimes down. This is what the political scientist William Wohlforth once described as the inherent [stability of the unipolar order](http://www.mitpressjournals.org/doi/abs/10.1162/016228899560031?journalCode=isec#.WIrP5mQrLdc): As dissatisfied regional powers sought to challenge the status quo, their alarmed neighbors turned to the distant American superpower to contain their ambitions. And it worked. The United States stepped up, and Russia and China largely backed down — or were preempted before acting at all. Faced with these obstacles, the best option for the two revisionist great powers has always been to hope for or, if possible, engineer a weakening of the U.S.-supported world order from within, either by separating the United States from its allies or by raising doubts about the U.S. commitment and thereby encouraging would-be allies and partners to forgo the strategic protection of the liberal world order and seek accommodation with its challengers. The present system has therefore depended not only on American power but on coherence and unity at the heart of the democratic world. The United States has had to play its part as the principal guarantor of the order, especially in the military and strategic realm, but the order’s ideological and economic core — the democracies of Europe and East Asia and the Pacific — has also had to remain relatively healthy and confident.

**1AC – Cybersecurity Advantage**

**Contention 2 is the Cybersecurity Advantage:**

**The cyber workforce gap makes the US unprepared for a large scale cyber-attack now**

**Kim** 5/19/17 (Anne Kim - Senior Writer at the Washington Monthly. She is also a senior fellow at the Aspen Institute’s initiative on financial security and a senior fellow at the Progressive Policy Institute. Before joining the Monthly, Anne served as senior policy strategist at the nonprofit CFED, as the economic program director at the think tank Third Way, and as legislative director and deputy chief of staff to Rep. Jim Cooper – “Trump Is Ignoring America’s Looming Cybersecurity Threat” – 5/19/17 - [http://washingtonmonthly.com/2017/05/19/trump-is-ignoring-americas-looming-cybersecurity-threats/)/TK](http://washingtonmonthly.com/2017/05/19/trump-is-ignoring-americas-looming-cybersecurity-threats/%29/TK)

¶ The “ransomware” attack that crippled computer systems around the globe last week shows once again just how vulnerable the world’s computer systems are to criminals and hackers.¶ ¶ The so-called “WannaCry” virus — which threatened to delete a victim’s files absent a $300 ransom — exploited a weakness in the Windows operating system that a simple software update could have blocked. Government computer systems were among the hardest hit, including Russia’s Interior Ministry and Britain’s National Health Service, which had to shut down 16 hospitals. Reports are already circulating of a second potential global cyberattack, Adylkuzz, which works by stealing processing power from victims’ computers.¶ ¶ **So far, U.S. government systems seem to have been spared – but how ready are federal agencies to withstand a cyberattack?**¶¶ **The answer: Not as much as they should be.**¶¶ Af**ter the 2015 discovery of a massive breach at the Office of Personnel Management (OPM),** which compromised the personal information of 21.5 million people, President Barack **Obama tasked a 12-member presidential commission with devising a national cybersecurity plan. The commission’s report, issued last December, included a long list of to-dos for the next Administration, citing an urgent need for “ambitious measures to put the federal government’s cybersecurity house in order.”¶** ¶ Testimony by Gregory Wilshusen of the U.S. Government Accountability Office (GAO) earlier this year was far more blunt: **“[S]ystems used by federal agencies are often riddled with security vulnerabilities – both known and unknown**,” said Wilshusen in a statement to the House Committee on Science, Space and Technology. Wilshusen went on to say that 19 of 23 federal agencies reported in 2016 that “information security control deficiencies were either a material weakness or significant deficiency.”¶ ¶ Even **basic cyber-hygiene is majorly failing, said the GAO. Many agencies, for example, don’t update their software consistently**, “sometimes doing so years after the patch becomes available.” The GAO also faulted agencies for relying on outdated software no longer supported by vendors and for failing to ensure that federal contractors protect the information to which they have access. (Edward Snowden, remember, was a contractor.)¶ ¶ **There’s no question of the mayhem that a hacker can cause** – government agencies hold vast amounts of sensitive information, such as citizens’ Social Security numbers and tax returns, not to mention nuclear launch codes. And here’s yet more reason to worry:¶ ¶ ¶ ¶ The biggest perpetrators of cybercrime are foreign countries and the Mob.¶ ¶ Forget teenage hackers out for glory or the “somebody sitting on their bed that weighs 400 pounds,” whom President Donald Trump famously blamed for the pre-election hack of the DNC. **The vast majority of cyberattacks are organized and serious**, which makes the vulnerability of government data all the more concerning.¶ ¶ According to Verizon’s 2017 Data Breach Investigations Report, organized crime accounted for 51 percent of incidents last year, while nearly 1 in 5 (18 percent) were masterminded by “state-affiliated” actors. The WannaCry virus, for example, is reportedly being linked to hackers in North Korea.¶ ¶ The Verizon report also notes that while no industry has been safe from hacking, the overwhelmingly favored target of cyberattackers is government. In 2017 alone, says Verizon, there were 21,239 incidents aimed at government computer systems, 90 percent of which were perpetrated by state-affiliated actors and 64 percent of which were motivated by “espionage.” Of the 239 confirmed data breaches, 41 percent involved the theft of personal data, while another 41 percent involved the compromise of “secrets.”¶ ¶ The government’s most vulnerable agencies are the Departments of State and Defense. ¶ ¶ In 2002, Congress passed the Federal Information Security Modernization Act (FISMA), which requires agencies to develop and implement a cybersecurity plan according to the framework laid out in the statute. Reports are due to Congress every year and must include assessments of how far each agency has progressed toward the goals¶ ¶ According to the 2016 report, among the worst performing agencies are the ones privy to some of the nation’s most sensitive information: the Department of Defense and the Department of State. The Department of Defense, for example, reported 1,888 cyber-incidents last year and scored poorly on a five-point scale for cyber-readiness. Its ability to detect cyber-threats, for instance, was rated “ad hoc” – the lowest possible rating. “DoD’s information security program did not receive an effective rating,” said the report.¶ ¶ The State Department, meanwhile, fared worse, scoring “ad hoc” ratings on all dimensions of its cybersecurity capability. “Without developing and implementing an effective organization-wide information security program, State cannot achieve its core mission,” the report concluded.¶ ¶<<card continues>>

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<<card continues>> **The government doesn’t have enough qualified cybersecurity workers to help defend itself.**¶¶ **A big reason so many federal agencies are falling behind on cybersecurity, says the GAO, is the lack of qualified workers to help them get up to speed. The federal cybersecurity workforce, the GAO reports, is “inadequate, both in numbers and training.”**¶¶ In 2016, President Barack Obama released a Federal Cybersecurity Workforce Strategy, aimed at recruiting, hiring and training needed talent. He also called for $62 million in additional funding for cybersecurity education and a “CyberCorps” national service program for recent graduates in cybersecurity.¶ ¶ Of course this was before the election of Donald Trump.¶ ¶ While on the one hand, **Trump** has recently issued an executive order directing agencies to prioritize cybersecurity, his **2018 proposed budget included $54 billion in budget cuts that would have forced already budget-strapped agencies to further skimp on IT security.¶** ¶ **“You can’t fix that on the cheap**,” said Department of Education Inspector General Kathleen Tighe at a congressional hearing in March. “**Money has to be put in.” ¶ ¶ Given the trajectory of Trump’s presidency so far, however, cybersecurity may be yet one more vital issue that won’t get the money or the attention it deserves – until too late.**

**The risk of a damaging cyber-attack on the grid is coming – that can cause a US military retaliation**

**Knake 4/3**/17 (Robert K. Knake - Whitney Shepardson senior fellow at the Council on Foreign Relations. His work focuses on Internet governance, public-private partnerships, and cyber conflict. Knake served from 2011 to 2015 as director for cybersecurity policy at the National Security Council – “A Cyberattack on the U.S. Power Grid” – 4/3/17 - https://www.cfr.org/report/cyberattack-us-power-grid)/TK

**The U.S. power grid has** long **been considered a logical target for a major cyberattack**. Besides the intrinsic importance of the power grid to a functioning U.S. society, **all sixteen sectors of the U.S. economy deemed to make up the nation’s critical infrastructure rely on electricity**. Disabling or otherwise **interfering with the power grid** in a significant way **could** thus **seriously harm the U**nited **S**tates.¶ Carrying out a cyberattack that successfully disrupts grid operations would be extremely difficult but not impossible. Such an attack would require months of planning, significant resources, and a team with a broad range of expertise. Although cyberattacks by terrorist and criminal organizations cannot be ruled out**, the capabilities necessary to mount a major operation against the U.S. power grid make potential state adversaries the principal threat.**¶ **Attacks on power grids are no longer a theoretical concern**. In 2015, an attacker took down parts of a power grid in Ukraine. Although attribution was not definitive, geopolitical circumstances and forensic evidence suggest Russian involvement. A year later, Russian hackers targeted a transmission level substation, blacking out part of Kiev. In 2014, **Admiral Michael Rogers, director of the National Security Agency, testified before the U.S. Congress that China and a few other countries likely had the capability to shut down the U.S. power grid. Iran, as an emergent cyber actor, could acquire such capability**. Rapid digitization combined with low levels of investment in cybersecurity and a weak regulatory regime suggest that **the U.S. power system is as vulnerable—if not more vulnerable—to a cyberattack as systems in other parts of the world.¶** **An adversary with the capability to exploit vulnerabilities within the U.S. power grid might be motivated to carry out such an attack under a variety of circumstances. An attack on the power grid could be part of a coordinated military action**, intended as a signaling mechanism during a crisis, **or as a punitive measure in response to U.S. actions in some other arena**. In each case, the United States should consider not only the potential damage and disruption caused by a cyberattack but also its broader effects on U.S. actions at the time it occurs. With respect to the former, **a cyberattack could cause power losses in large portions of the U**nited **S**tates **that could last days in most places and up to several weeks in others**. The economic costs would be substantial. As for the latter concern, the U.S. response or non-response could harm U.S. interests. Thus, **the U**nited **S**tates **should take measures to prevent a cyberattack on its power grid and mitigate the potential harm should preventive efforts fail.¶** The Contingency¶ <<card continues>>

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<<card continues>> The U.S. power system has evolved into a highly complex enterprise: 3,300 utilities that work together to deliver power through 200,000 miles of high-voltage transmission lines; 55,000 substations; and 5.5 million miles of distribution lines that bring power to millions of homes and businesses. Any of the system’s principal elements––power generation, transmission, or distribution––could be targeted for a cyberattack. In the Ukraine case, attackers targeted substations that lower transmission voltages for distribution to consumers. Lloyd’s of London, an insurance underwriter, developed a plausible scenario for an attack on the Eastern Interconnection—one of the two major electrical grids in the continental United States—which services roughly half the country. The hypothetical attack targeted power generators to cause a blackout covering fifteen states and the District of Columbia, leaving ninety-three million people without power. Other experts have concluded that an attack on the system for transmitting power from generation to end consumers would have devastating consequences. In one scenario, disruption of just nine transformers could cause widespread outages. Many experts are now also concerned that smart grid technologies, which use the internet to connect to power meters and appliances, could allow an attacker to take over thousands—if not millions—of unprotected devices, preventing power from being delivered to end users.¶ **State actors are the most likely perpetrators of a power grid attack.¶** ¶ Regardless of which part of the power grid is targeted, attackers would need to conduct extensive research, gain initial access to utility business networks (likely through spearphishing), work to move through the business networks to gain access to control systems, and then identify targeted systems and develop the capability to disable them. Such sophisticated actions would require extensive planning by an organization able to recruit and coordinate a team that has a broad set of capabilities and is willing to devote many months, if not years, to the effort. State actors, therefore, are the more likely perpetrators, and given these long lead times, **U.S. adversaries have likely already begun this process in anticipation of conflict.** It is doubtful that a terrorist organization would have both the intent and means to carry out such an attack successfully. **In the future**, however, **criminal groups could pose a real threat. They are growing in sophistication and in some cases rival, if not exceed, the capabilities of nation states.** **Payments for ransomware—malicious software that encrypts data and will not provide a code to unlock it unless a ransom has been paid—by some estimates have topped $300 million. This funding could allow criminal groups to purchase more sophisticated capabilities to carry out the ultimate ransomware attack.¶** **The likelihood that an attack** carried out by a determined and capable adversary **would be thwarted by security measures is low.** While some U.S. utilities might block attempts by an adversary to gain initial access or might be able to detect an adversary in their systems, many might not have the necessary tools in place to detect and respond. Efforts to improve data sharing that could enable detection by one company to block access across the entire industry are in their infancy. In the Lloyd’s scenario, only 10 percent of targeted generators needed to be taken down to cause a widespread blackout.¶ Short of outright conflict with a state adversary, several plausible scenarios in which the U.S. power grid would be subject to cyberattack need to be considered:¶ Discrediting Operations. **Given the importance of electricity to the daily lives of Americans, an adversary may see advantage in disrupting service to undermine public support for a U.S. administration at a politically sensitive time.¶** Distracting Operations. **A state contemplating a diplomatic or military initiative likely to be opposed by the U**nited **S**tates **could carry out a cyberattack against the U.S. power grid that would distract the attention of the U.S. government and disrupt or delay its response.¶** Given the fragility of many industrial control systems, **even reconnaissance activity risks accidentally causing harm.¶** ¶ Retaliatory Operations. In response to U.S. actions considered threatening by another state, such as the imposition of economic sanctions and various forms of political warfare**, a cyberattack on the power grid could be carried out to punish the U**nited **S**tates **or intimidate it from taking further action with the implied threat of further damage.¶ There are many plausible circumstances in which states that possess the capability to conduct cyberattacks on the U.S. power grid––principally Russia and China, and potentially Iran and North Korea––could contemplate such action for the reasons elaborated above**. However, considerable potential exists to miscalculate both the impact of a cyberattack on the U.S. grid and how the U.S. government might respond. **Attacks could easily inflict much greater damage than intended, in good part because the many health and safety systems that depend on electricity could fail as well, resulting in widespread injuries and fatalities**. Given the fragility of many industrial control systems, **even reconnaissance activity risks accidentally causing harm.** **An adversary could also underestimate the ability of the United States to attribute the source of a cyberattack, with important implications for what happens thereafter**. Thus, an adversary’s expectations that it could attack the power grid anonymously and with impunity could be unfounded.¶ Warning Indicators¶ A series of warning indicators would likely foretell a cyberattack on the U.S. power grid. <<card continues>>

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<<card continues>> Potential indicators could include smaller test-run attacks outside the United States on systems that are used in the United States; intelligence collection that indicates an adversary is conducting reconnaissance or is in the planning stages; deterioration in relations leading to escalatory steps such as increased intelligence operations, hostile rhetoric, and recurring threats; and increased probing of electric sector networks and/or the implementation of malware that is detected by more sophisticated utilities.¶ Implications for U.S. interests¶ A large-scale cyberattack on the U.S. power grid could inflict considerable damage. The 2003 Northeast Blackout left fifty million people without power for four days and caused economic losses between $4 billion and $10 billion. The Lloyd’s scenario estimates economic costs of $243 billion and a small rise in death rates as health and safety systems fail. While darker scenarios envision scarcity of water and food, deterioration of sanitation, and a breakdown in security, leading to a societal collapse, it would be possible to mitigate the worst effects of the outage and have power restored to most areas within days. **At this level of damage, the American public would likely demand a forceful response, which could reshape U.S. geopolitical interests for decades.** Traditional **military action**, as opposed to a response in kind, **would be likely.**

**Cyber-attacks on the grid would wipe out the US military – retaliation could include nuclear weapons**

Robert **Tilford 12**, Graduate US Army Airborne School, Ft. Benning, Georgia, “Cyber attackers could shut down the electric grid for the entire east coast” 2012, <http://www.examiner.com/article/cyber-attackers-could-easily-shut-down-the-electric-grid-for-the-entire-east-coa>

\*\*we reject ableist and offensive language

To make matters worse **a cyber attack that can take out a civilian power grid**, for example **could** also **~~cripple~~ (destroy) the U.S. military**.¶ The senator notes that is that **the** same **power grids** **that supply cities and towns**, **stores and gas stations**, cell towers and heart monitors also **power** “**every military base in** our **country**.”¶ “Although bases would be prepared to weather **a** short power outage with backup diesel generators, within hours, not days, fuel supplies would run out”, he said.¶ Which means **military** **command and control centers could go dark**.¶ **Radar systems that detect** **air threats** to our country **would shut Down** completely.¶ “**Communication** **between commanders and their troop**s **would** also **go silent**. And **many** **weapons systems would be left without** either fuel or **electric power**”, **said Senator Grassley**.¶ “So **in a few short hours** or days, **the** **mightiest** **military** **in the world** **would be left scrambling to maintain base functions**”, he said.¶ **We contacted the Pentagon and officials confirmed the threat of a cyber attack is something very real**.¶ **Top national security officials**—including the Chairman of the Joint Chiefs, the Director of the National Security Agency, the Secretary of Defense, and the CIA Director— **have said**, “**preventing a cyber attack** and improving the nation’s electric grids **is** among **the most urgent priorities** of our country” (source: Congressional Record).¶ So how serious is the Pentagon taking all this?¶ Enough to start, or end a war over it, for sure.¶ **A cyber attack** today **against the US could** very well **be seen as an “Act of War” and could be met with a “full scale” US military response.¶ That** could **include the use of “nuclear weapons”,** if authorized by the President.

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**Independently, cyber threats can lead to accidental nuclear conflict and escalation – they alone can destroy societies**

**Van der Meer 16** (Sico van der Meer - Research Fellow at the Clingendael Institute. His research is focussing on non-conventional weapons like Weapons of Mass Destruction and cyber weapons from a strategic policy perspective – “Cyber Warfare and Nuclear Weapons: Game-changing Consequences?” – 12/6/16 -https://www.clingendael.nl/sites/default/files/SWP\_Paper\_Chapter\_Sico\_van\_der\_Meer.pdf)/TK

Most nuclear weapons systems were designed¶ decades ago, when manipulations of computer¶ networks, or cyber attacks, were an almost nonexistent¶ threat. Nowadays, **cyber threats** are everywhere,¶ and one may expect that they **have consequences¶ for the stability of nuclear weapons systems¶** as well. Considering the many unknowns of the still¶ evolving issue of cyber threats, it is hard to measure¶ how serious the risks are, but it cannot be excluded¶ that, over the long term, they may have “gamechanging”¶ effects on the perceived value of nuclear¶ weapons. This contribution briefly discusses two¶ potential consequences of this phenomenon: cyber¶ operations targeting nuclear weapons systems, and¶ cyber operations replacing nuclear weapons. In¶ conclusion, some potential policy options to deal with¶ these consequences are presented.¶ Cyber Operations Targeting Nuclear Weapons¶ **The most obvious cyber threat to nuclear stability is¶ the risk of sabotage of nuclear weapons systems**. **One¶ could think of cyber attackers feeding incorrect¶ information into systems and** – maybe far-fetched but¶ not unthinkable – even **taking control of the weapons.¶ Various parts of nuclear weapons systems could be**¶ **targeted, for example command and control systems,¶ alert systems, launch systems, and target-positioning¶ systems. Scenarios in which alert systems are hacked¶ and show a massive nuclear attack by adversaries may¶ lead to an accidental nuclear conflict,** **especially in**¶ **states with automated warning systems attached to¶ nuclear weapons on so-called hair-trigger alert**. **It is¶ also conceivable that hackers** are able to **manipulate¶ the coordinates of** (pre-programmed) **targets of¶ nuclear missiles, or to spoof GPS-like systems that¶ some missiles use to calculate their positions vis-à-vis¶ their targets.** Currently, there is no evidence that any¶ state or non-state actor is able to successfully perform¶ such manipulations, but **considering the fast¶ developments in the cyber arena, in the near future it¶ might well be possible.**¶ In the worst-thinkable scenarios, **these possibilities¶ may cause the inadvertent use of nuclear weapons,¶ and/or use against unintended targets**. **In less¶ dramatic scenarios, the perceived vulnerabilities of¶ the nuclear weapons systems may affect nuclear¶ stability**. Especially **the deterrent value of nuclear**¶ **weapons may decrease**, if potential adversaries think¶ they have options to manipulate these weapons when¶ being used, and/or when the possessor of the nuclear¶ weapons suspects that adversaries can. It is hard to¶ forecast the effects of such decreasing nuclear¶ deterrence. On the one hand, it may encourage¶ nuclear disarmament because the weapons are more¶ or less perceived as being obsolete and/or dangerous;¶ on the other hand, **it may lower the threshold for¶ using large numbers of nuclear weapons if this is¶ perceived as strengthening the deterrent value to¶ some extent**.¶ Cyber Operations Replacing Nuclear Weapons¶ **Another destabilizing effect of** tools for digital¶ manipulation, **or cyber weapons, is their asymmetric¶ nature**. While currently only nine states (supposedly)¶ possess nuclear weapons, **cyber weapons can be¶ obtained, developed, or used by any state or non-state¶ actor**; they are relatively cheap, risk-free, and easy to¶ operate. This has two consequences.¶ First, **cyber weapons may become a new kind of**¶ **Weapon of Mass Destruction** – or maybe it would be¶ better to call them Mass Weapons of Destruction. It is¶ to be expected that **within a few years – thanks to the¶ rapid, continuing digitalization of the world – cyber¶ attackers could harm entire societies**. Cyber weapons¶ may not be able to cause the same level of deadly¶ destruction as nuclear weapons, but they may be very¶ powerful – **think of serious, combined sabotage of¶ energy and water supplies as well as communication, ¶ transport, and payment systems, and so on**. If this¶ scenario were to become reality, it is conceivable that¶ nuclear weapons would be regarded as outdated,¶ expensive weapons that could be replaced by cheaper¶ cyber weapons with more or less the same deterrent¶ effect.

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**The plan solves – CTE is key to STEM education**

**Wolfe 6/26**/17 (Alexis Wolfe - science policy analyst and writer for FYI and is currently working on expanding FYI’s multimedia portfolio. Prior to joining AIP, she was an Oak Ridge Institute for Science and Education Fellow and NOAA Sea Grant Knauss Marine Policy Fellow at the U.S. Department of Energy, focusing on science communication – “Career and Technical Education Emerging as Vehicle for STEM in Trump Era” – 6/26/17 - https://www.aip.org/fyi/2017/career-and-technical-education-emerging-vehicle-stem-trump-era)/TK

Experiential, work-based **career and technical education programs are receiving attention from policymakers and leaders in the scientific community as an emerging vehicle for STEM education, including through the Perkins reauthorization bill**, a new National Science Board initiative on the skilled technical workforce, and ongoing programs at federal science agencies.¶ **This month, the House passed two bipartisan bills designed to help students and workers obtain technical education and build up the nation’s technically trained workforce.** The first, sponsored by Reps. Bobby Rush (D-IL) and Richard Hudson (R-NC), aims to promote energy and manufacturing education and training programs at the Department of Energy. The second, sponsored by Rep. Glenn Thompson (R-PA), is a major and long-awaited reauthorization of the Carl D. Perkins Career and Technical Education (CTE) Act of 2006.¶ The White House, meanwhile, recently concluded its “Workforce Development Week” with President Trump issuing an executive order that expands the role of private industry in developing apprenticeship programs.¶ CTE programs are also reflected in a recently completed National Academies study on the nation’s skilled technical workforce and a new initiative being spearheaded by the National Science Board.¶ **Unlike most post-secondary federal STEM education programs that focus on four-year or advanced degree seekers, CTE programs use experiential, work-based curricula to prepare students for careers that do not require a bachelor’s degree**. **Many of these occupations are viewed as a critical component of the next generation of the STEM workforce**, comprising jobs such as laboratory managers, nuclear technicians, and manufacturing specialists. As CTE receives a growing level of attention across government, policymakers and **leaders in the scientific community plan to use CTE programs as a vehicle for advancing STEM education.**¶ National Science Board launching ‘skilled technical workforce’ initiative¶ The NSB’s initiative on the “skilled technical workforce” was first proposed in February by board member Victor McCrary, who suggested the formation of a working group to gather information to “pinpoint NSF’s niche” in educating individuals outside of the four-year degree pathway, which he called the “blue collar STEM” workforce.¶ Many board members expressed enthusiasm for the effort at the February meeting, including NSB Chair Maria Zuber, who commented on how the initiative intersects with the Trump administration’s priorities, saying:¶ [The] blue collar STEM discussion will give an opportunity to think about NSF’s role in strengthening STEM-capable, technical, and manufacturing workforces. Our goal is to help ensure that the future STEM-driven economy is as inclusive as possible and that the progress of science is driven by the most diverse community possible. This speaks directly to the administration priorities of job creation in the United States.¶ Some members hesitated to label the initiative as “blue collar,” with Ruth David saying the term “conjures up an image that would be hard to shed.” NSB ultimately chose to adopt the term “skilled technical workforce,” which was the terminology used in the recently published National Academies report on “Building the Skilled Technical Workforce.” The report explores concerns that **the nation may not have an adequate supply of skilled technical workers to achieve its competitiveness and economic growth objectives, including in STEM fields.¶** At the board’s most recent meeting in May, McCrary, who now leads the initiative’s working group, said that their next step will be to organize listening sessions with stakeholders “to obtain a real-world understanding of the opportunities that folks in this arena will face.” The group will then hold a symposium next spring to gather further information about what NSF and NSB could do to help strengthen the skilled technical workforce.¶ **New CTE initiatives would build on existing federal programs¶** Currently, most federal post-secondary STEM education programs concentrate on students seeking four-year degrees, but there are a number of programs that already support CTE by providing hands-on learning experiences with federal laboratories and industrial partners. The Department of Energy’s Community College Internship (CCI) program connects community college students with internship positions at one of 15 national energy laboratories.¶

**1AC – Cybersecurity Advantage**

**Improving technical and STEM education in primary and secondary schools is key to establish a sustainable pipeline of workers into the cyber security field – that resolves the workforce gap**

**Kay et al 12** (David J. Kay - Research Analyst in the Center for Technology and National Security Policy (CTNSP), Institute for National Strategic Studies, at the National Defense University; Terry J. Pudas - Senior Research Fellow in CTNSP; Brett Young - Research Assistant in CTNSP – “Preparing the Pipeline: The U.S. Cyber Workforce for the Future” – August 2012 - [http://ctnsp.dodlive.mil/files/2013/07/DH-072.pdf)/TK](http://ctnsp.dodlive.mil/files/2013/07/DH-072.pdf%29/TK)

It is clear to cyber experts and observers inside and outside government that many of the terms of the discussion, assumptions, and conventional wisdom need to be updated or discarded altogether. This **paradigm shift requires acknowledgment that cyber is now central to our way of life**. Similar to the advent of automobiles and personal computers, the current cyber (or information) revolution puts a versatile device in our hands, pockets, and on our person 24/7. Smart-phones and other advanced computing devices increase productivity in our personal lives, in commerce, and in terms of national security, but these powerful devices also come with significant vulnerabilities. **To enable Americans to succeed in cyberspace while simultaneously protecting them in cyberspace, Americans will have to be educated and trained to use** these **devices effectively and safely at a younger age**, even if they are not going into a cyber field of study or occupation. Americans will encounter cyberspace throughout their everyday lives. Similar to learning to drive and learning to read and write, understanding how to operate safely in cyberspace must be recognized as a new core skill for living in the 21st century.¶ The concept of what constitutes cyber must also be enlarged from a purely technological notion. There is more to cyber than hardware and software. Computers were created by humans to be used as tools by humans and are fixed, developed, protected and maintained by humans. Investing in people is on a par with, if not more important than, the hardware and software involved. Similarly, while **science, technology, engineering, and mathematics (STEM) are the foundation of cyber and other technologies**, they are not the only pertinent fields. Although computers date back to World War II, it was innovations in the design and conceptualization of computer technology and an entrepreneurial spirit that brought personal computers into the mainstream and many households. In today's environment, cyber capabilities require legal and policy expertise in order to sift through the development of international norms, rules of engagement, and conflicting statutory authorities, as well as analytical capabilities to identify adversary threats and patterns of behavior. So while the foundation of cyber is STEM, a better understanding and efFective use of computers require a truly multidisciplinary approach and a strong investment in human capital.¶ This paradigm shift also requires a new way of thinking about hiring and recruiting intellectual capital. Currently, the basis for hiring in most government and many private sector positions is the applicant's level of education. Many jobs have minimum educational requirements, and a new employee's salary and level of entry are determined by several factors, education chief among them. **While a bachelor's degree is generally required for IT positions, a snapshot of these positions' job descriptions and duties and responsibilities reveals that a 4-year degree** (and the types of knowledge, skills, and abilities [KSA] entailed) **may be useful for a position, but should certainly not be a prerequisite. In fact, those** KSAs **can be equally obtained through** a combination of **technical schools**, community colleges, **and on-the-job training and experience.¶** **Applicants should demonstrate competency prior to being hired**, and this competency should not be assumed solely on degrees previously awarded. Job descriptions and position requirements must be updated to reflect more accurately those KSAs required to perform the job and not only academic credentials or the traditional requirements. This simple change could greatly enlarge the pool of qualified applicants for cyber-related positions.¶ While competency tests may require more time and cost than an average interview, the institution of such tests would confer several benefits. Government IT departments would instantly know the ability levels of new staff and could adjust training accordingly - and could fast-track the most promising candidates to take advantage of their capabilities immediately. Potential applicants could hone their skills, knowing roughly what the test requires of them. The difficulty of entrance tests could also be modified based on workforce requirements and the shape of the job market. This market-driven process could work similarly to the military recruiting model.¶ The most prominent pipelines in place to produce information assurance (IA) professionals for the Federal Government workforce are the National Science Foundation's Scholarship for Service (SFS) and DOD Information Assurance Scholarship Program (IASP). The SFS recruits U.S. citizens in I A education tracks at the undergraduate and graduate levels with scholarships, which are repaid through service to the Federal Government. The IASP has two tracks: a recruitment program to bring new talent into DOD, and a retention program aimed at existing DOD employees seeking to bolster their academic credentials. As scholarship programs, they represent a small percentage of Federal agency I A requirements. From 2001 to 2008, 1,001 students received I A scholarships through these programs, and 93 percent subsequently found employment with the Federal Government. From 2011 to 2013, the Federal Government is expected to hire roughly 8,000 new I A professionals.12 Clearly, these programs will only address a small fraction of the government's IA workforce requirements and not solve the personnel demands at state and local levels, as well as industry.¶ Scholarships are expensive solutions, however, and other **pipelines are in the process of being built.** In 2011, **the Defense Advanced Research Projects Agency (DARPA) began Cyber Fast Track, a project designed to award small, short-term contracts to boutique firms and individuals with cyber skills sets needed for the DARPA mission. In the project's research announcement, it notes the strategic mission and seeks solutions to long-term strategic problems such as reducing attack surfaces and vulnerabilities in cyberspace to create greater cost to the adversary.**13 As of December 2011, 13 contracts have been awarded, some of which were of a duration of only 14 weeks and some to firms with as few as five people.14 Cyber Fast Track has so far successfully bridged the gap between the hacker community and the Federal Government. **Similar small and agile concepts, with the potential for bigger payoffs and without the financial or time outlays required by scholarship programs, are solutions that Federal agencies might consider.¶** <<card continues>>

**1AC – Cybersecurity Advantage**

<<card continues>> A change in our thinking from the cyber domain as purely technological to a domain with a significant human aspect entails the recognition that **one of the critical elements of cybersecurity is people** - not only a cadre of welltrained individuals ready to respond to security breaches, but also end-users aware of the risks and responsibilities of using government networks. **The fact that individuals are generally considered the greatest cybersecurity vulnerability is another reason why investing in people is just as important as investing in hardware and software and may yield a higher return on investment.¶** Need for a Common Framework and Lexicon across Federal Agencies¶ Since cybersecurity is a relatively new field, there is no common lexicon or framework for understanding and defining cyber workforce job descriptions. A common lexicon is necessary to assess the true state of the cyber workforce and to model its proper growth. When positions and career paths linking these together are better codified, not only will it become easier to retain talent, but the scope of the workforce problem will become clearer as well.¶ Such a framework was proposed by the National Initiative for Cybersecurity Education (NICE) in 201 1.1S The stated aim of the NICE Cybersecurity Workforce Framework is to "put forth a working taxonomy and common lexicon that can be overlaid onto any organization's existing occupational structure."The NICE framework organizes positions within the cyber workforce into seven high-level categories under which it groups workers who share major job functions (testing and evaluation, systems administration, and so forth) and finally lists sample positions beneath each. The major categories and sample positions are shown in table 1.¶ Some overlap does exist between certain categories. Immediate incident response, for example, falls under both protect and defend as well as the investigate categories, and network system design, construction, and maintenance all require systems security analysts since networks must be tested both upon launch and continuously throughout their lifespans to ensure viability. NICE recognizes that the existing framework is a work in progress and seeks to refine it through input from academia, business, and nonprofit organizations. Cyber is a growing field and new positions and fields can be added to the framework as technological change alters the landscape of various cyber disciplines. NICE encourages feedback regarding the usefulness of the framework and any inadequacies or suggested improvements.¶ Cybersecurity at the State, Local, and Tribal Levels¶ There are several important reasons why state and local jurisdictions are on the frontlines of cybersecurity. For one, state and local governments closely interact with their residents and industry in many ways the Federal Government does not. They maintain many databases containing personally identifiable information (PII), operate e-governance initiatives, and work closely with industry, including companies responsible for critical infrastructure - all of which affect the day-to-day lives of their residents. Due to budget constraints, cybersecurity competes for funding with other state and local priorities, thereby exposing critical infrastructure, residents' PII, and other essential services to vulnerabilities. State and local employees who maintain and protect these information systems are an important, though generally overlooked part of the national cyber workforce. Thus, state and local cyber workforces must not be ignored because of their considerable cybersecurity responsibilities and potential vulnerabilities, and because they are "first responder" assets that can be leveraged in a time of crisis.¶ What are the potential financial costs of inaction? The 2006 theft of hardware from the home of a Department of Veterans Affairs (VA) employee exposed the PII of 26.5 million veterans and approximately 2 million Active-duty and Reserve military personnel. As a result, VA spent $7 million to notify affected personnel of the data breach, $100 million to offer 1 year of free credit reporting to affected individuals, and also faced a class-action lawsuit from five veterans' groups.16 The data breach occurred despite repeated warnings from both the GAO and the VAs Inspector General that VA information security management procedures were inadequate.¶ While the VA example deals with a Federal agency, states have also been in the news for inadequate IT security. An audit conducted by Colorado's Office of Cyber- Security found that PII was easily compromised during a red team penetration test. Colorado estimates a $39.5 million budget shortfall for adequate protection of the state's information systems.17 The Office of the State Comptroller of New Jersey found that state agencies had failed to remove PII prior to placing surplus equipment up for auction.18 In 2010, the National Association of State Chief Information Security Officers noted that 79 percent of states saw IT budgets cut or remaining stagnant in the face of rising threats.19¶ One of the primary challenges facing state and local governments is their inability to attract and retain competent individuals. All states, except Vermont, have a legal requirement to balance their budgets. States were hit particularly hard by the 2008 financial crisis, and Federal funding to assist states with budget shortfalls, enacted as part of the 2009 Recovery Act, has expired. Although state finances are improving as the economy begins to recover, states will continue to face historically large shortfalls in the coming years.20 As a result, states that were once able to attract cyber talent with generous benefits packages are no longer able because of fiscal realities. Impending across-the-board budget cuts will affect not only recruitment, but also the retention of skilled employees. Recent trends indicate that states currently only spend about 2 percent of their IT budget on security, even though the accepted industry standard is about 5 percent.¶ Some states are also geographically disadvantaged. Top-level talent often receives offers from the private sector and a wide array of Federal agencies. Individuals with low-density, high-demand skill sets generally choose to pursue top-dollar employment options in Silicon Valley and large metropolitan areas rather than geographically remote areas. As stated, state, local, and tribal governments have difficulty competing with salaries and benefits packages offered by the private sector and Federal Government, especially in the current fiscal climate.¶ State and local agencies face tough choices. Some answers to these choices already exist in the form of Federal measures, such as the National Institute of Standards and Technology SP 800-55 and the DHS Risk Management Process. Despite budgetary challenges, state and local authorities may be best served by following Federal Government initiatives and industry best practices by viewing security holistically and not only as an issue of the security of in-house networks. Contractors and third parties that service and connect to government networks must also be part of any solution. What is needed is a comprehensive framework that can be modified depending on the budgetary outlook for a given fiscal year and the current threat environment. Any new framework must not simply be a "check- the-box" bureaucratic exercise, but must be agile and fully evaluate the risks.21¶ Stronger Cyber Education: Not Only a "Pipeline" But Also an "Ecosystem"¶ Any **discussion of cyber education needs to take place at two levels. The first deals with the "pipeline" - that is, the direct channels that will ensure a trained workforce for U.S. society in the future. The second deals with the "ecosystem" - that is, general cyber education at all levels of schooling that will result in a productive, high-tech workforce for an increasingly cyber-dependent U**nited **S**tates. It was this second level the Comprehensive National Cybersecurity Initiative addressed when it stated that "**It will take a national strategy, similar to the effort to upgrade math and science education in the 1950s, to meet this challenge**."¶ **The demand for professionals with cyber competencies has begun to be addressed by universities. The National Security Agency (NSA) and DHS jointly sponsor the National Centers of Academic Excellence in Information Assurance Education (CAE/IAE), CAE-Research, and community college programs**. As of April 2012, these designations have been applied to 145 colleges and universities in the 50 states and Puerto Rico.22 One outcome of this designation has been a proliferation in quality accredited IA and cybersecurity bachelor's and master's programs nationwide. Students who attend CAE-designated programs are eligible for scholarships and grants through DOD and DHS and upon graduation are immediately ready to enter the workforce for large employers such as the NSA.¶ The CAE program is expanding in 2012 with a new designation. The CAE-Cyber Operations program is intended to be technical and interdisciplinary, firmly grounded in computer engineering, sciences, and electrical engineering, with extensive hands-on application in laboratories. Expansion likely indicates that the NSA and DHS consider the initial CAE program to be a significant success.¶ However, distribution of these programs is uneven: of the 145 higher education institutions receiving CAE designation, only 13 are community colleges with "CAE 2-year" designations, and 5 of those are located in the state of Maryland alone. Community colleges often act as trade schools, offering associate's degree programs narrowly focused on a trade, such as paralegal or nursing degrees. California, with only seven schools designated as CAE/IAE, has 5 percent of the designated schools, but represents 12 percent of the U.S. population. In fact, the majority of universities considered among the best computer science programs nationwide have not pursued the designation, including the California Institute of Technology, Massachusetts Institute of Technology, University of Texas at Austin, University of Wisconsin at Madison, and Cornell University to name a few. Why are some of the best STEM schools in the country not applying for CAE designation? More comprehensive study may be required to determine if the degree programs at these universities involve superior models that should be imitated more widely.¶ Outside of Federal-level initiatives involving higher education, some state education systems have chosen to emphasize cybersecurity at the university level. Previously, Maryland (home to the NSA, U.S. Cyber Command, National Institute for Standards and Technology, Defense Information Systems Agency, and many other Federal agencies and high-tech private- sector firms, such as Lockheed Martin) was mentioned as possessing nearly half of all community colleges in the United States that have received CAE 2-year designations. Maryland also has 13 postsecondary institutions bearing CAE designations, more than any other state. This emphasis has been part of a concerted effort of forward-looking individuals: University System of Maryland Chancellor Dr. William Kirwin convened a task force in November 2010 with representatives from Federal and state government and Maryland universities to examine how the state should approach cybersecurity. <<card continues>>

**1AC – Cybersecurity Advantage**

<<card continues>> This Cyber Security Task Force is charged with identifying degree requirements for careers in cybersecurity and building USM's related capacity.23 These initiatives fall under a broader state plan as Maryland has been identified and emphasized as "CyberMaryland" by Governor Martin O'Malley due to its importance for the Federal Government and "hub" status for industry. Since the task force s launch, the number of CAE-designated institutions has grown from 4 to 13. The emphasis placed by state-level offices in Maryland on cybersecurity education could serve as a model for other states.¶ Broadly speaking, **the U**nited **S**tates **faces a serious challenge in educating the future STEM workforce.** A **multiyear study conducted by the University of California at Los Angeles concluded that STEM graduates take longer to complete their degrees and are more likely to drop out than those in non- STEM fields**.24 Among the causes are that teaching quality in STEM disciplines often sufFers as faculty prioritizes research that contributes to tenure track and grant funding in many institutions. In addition, the lack of mentorship and research opportunities for undergraduates also discourages many. **Proper preparation is** also **cited as a problem: many high school students seeking to enter STEM fields are unprepared** for the scientific and highly technical course material they encounter as freshmen.At the high school level, a shortage of qualified teachers means that students are not exposed to programming or computer science, which means that by the time they reach the undergraduate level, many have already chosen a course of study and mapped out their degree path (and cyber is not part of it).¶ Cyber is a wider discipline than simply the STEM fields, and professionals with backgrounds ranging from the social sciences to business and the arts will be needed in the cyber workforce of the future. Nonetheless, **the Federal Government must consider measures to improve STEM education and work to increase the number of future engineers and mathematicians who matriculate since these and other STEM areas are the foundational fields of cyber.¶** **At the high school** and college **levels, there are** two **ways to prepare students for future employment as part of the cyber workforce**. Students can either focus on cyber-related disciplines as part of their core coursework or focus on cyber-related studies as electives or extracurricular activities. **One example of a program that confers college-level classroom experience on high school students is the Alamo Academies in San Antonio**. Meanwhile, **the U.S. Cyber Challenge competition assesses the cyber aptitude of high school students**, college students, and young adults **through a series of tournaments. Both programs have resulted in direct employment of graduating seniors in IT positions in government and with defense contractors.¶** As a successful example of "preparing the pipeline," it is important to examine the role of industry in driving the initial creation of the Alamo Academies. Following the closure of Kelly Air Force Base in 1997, Lockheed Martin and Boeing accepted a large logistics contract and hired a third of the former installations workforce to execute it. Aware that a large segment of their workforce would begin retiring in the next 10 years, these companies began consulting with nearby San Antonio Community College about how well its curriculum matched their entry-level workforce requirements. Stemming from those discussions, and initial successes, a program was instituted with the Aerospace Academy in 2001. Today, 220 high school juniors and 168 high school seniors are enrolled in the Alamo Academies program.¶ The Alamo Academies consists of programs at five San Antonio and Bexar County schools: San Antonio, St. Philip's, Palo Alto, Northeast Lakeview, and Northwest Vista. All five offer associate's degree programs and certificates and licensure in occupational programs that prepare students for jobs in the local and regional economy. All courses are fully transferable to colleges and universities across the United States. The objective of the Alamo Academies is to accelerate the learning of future cyber workforce members. The program allows high school juniors and seniors to complete collegecredit coursework on local campuses where they take approximately half of their classes at their high school and the remainder at the community college. Students study in one of four degree programs: aerospace academy, IT security academy, manufacturing academy, or the health professional academy.¶ **While other programs similar to the Alamo Academies exist around the U**nited **S**tates, **few exist at the high school level, and it is unique in its level of partnership with industry, local government, public school systems, and community colleges**. High school juniors and seniors must pass college assessment tests in order to enter the program. Students have the flexibility to study at the Alamo Academies in the morning or evening depending on their schedules. These students are also given a chance to practice what they learn on the job via paid summer internships with locally based defense contractors and other major corporations, including Lockheed Martin, Boeing, Toyota, ITM, Kinetic Concepts, Cox Manufacturing, AT&T, and SWBC. Class sizes are limited because technical courses cannot have more than a 12-to-l student/teacher ratio, and the program size is determined by the number of internships offered by local businesses in a given year.¶ Equally important are the financial details of the program. Students' tuition and fees are waived and transportation to the Alamo Academies and textbooks are provided by local school districts. Bus fleets are reimbursed by the state of Texas through support to technology initiatives, and community colleges receive funding via taxes and state education funds that allow them to waive tuition and fees for high school students. School districts receive funding based on how many students attend each school, and as the Alamo Academies's students spend half of their day at their home high schools, the school districts' funding is unaffected.¶ The U.S. Cyber Challenge is composed of several components targeting students of various skill levels and in different venues. The lowest rung operated by U.S. Cyber Challenge is Security Treasure Hunt, an online environment that assesses student skills in different information security areas, including Web vulnerability assessment, digital forensics, cryptographic analysis, and penetration testing.25 U.S. Cyber Challenge is open to the public with the stated objective of identifying individuals with promising skills in information assurance.¶ Part of the Treasure Hunt, Cyber Quests, attracted 800 participants from 400 different schools. The 200 winners (all high school and postsecondary students) were offered slots in weeklong summer cyber camps, held at various colleges and universities around the United States. The camps are designed as "cyber boot camps" where attendees gain in-depth knowledge of penetration testing, forensics, and reverse engineering from university-level faculty. Winners of the end-of-camp "capture the flag" tournament were offered $1,000 scholarships by (ISC)2, a well-known educator and industry credentialing authority.26¶ Another program, Cyber Patriot, began in 2008 as a national high school cyber defense competition organized by the Air Force Association (AFA). Initial competitions were held in 2009 with over 200 teams participating. Similar to the formation of the Alamo Academies, a partnership between industry and academic institutions played a prominent role in the launch of Cyber Patriot. Along with AFA, defense contractor SAIC and the Center for Infrastructure Assurance and Security (CIAS) at the University of Texas at San Antonio worked together to stand up Cyber Patriot. In addition, Northrop Grumman committed the funding for Cyber Patriot to operate nationwide. The 2011 competition features 2,500 teams from all U.S. states.¶ The National Collegiate Cyber Defense Competition (NCCDC) is another university-level event that provides more of a "regular season" for college teams rather than limited "tournament" play. First launched in 2005 by CIAS - also a Cyber Patriot sponsor - the NCCDC that began in April 2011 featured 9 regional finalists from more than 100 teams nationwide. The NCCDC also includes participation from the private sector, including Deloitte LLP (the 2011 title sponsor), as well as Microsoft, McAfee, SAIC, Boeing, Northrop Grumman, Red Lambda, and Zynga.27¶ The DOD Cyber Crime Center Digital Forensics Challenge dates back to 2006. It is an individual competition where competing teams gauge their success based on the number of possible points achieved in each challenge. The focus is on uncovering digital evidence from a network breach. Open to international competitors, the 2010 Grand Champion was a team from South Korea. Prizes are also awarded to the best teams from several different categories, including U.S. Government, military, civilian, graduate, undergraduate, community college, and high school.28¶ NetWare is sponsored by the SANS Institute, an industry-credentialing authority and educator, and is aimed at all skill levels. During this competition, all players begin on the same footing, but only professionals with at least 10 years of experience are expected to perform at the top level. SANS also conducts NetWare Continuous, which is a similar challenge, but during a 4- mo nth league rather than tournament format.29¶ Whom should these competitions target? According to the director of the U.S. Cyber Challenge, these competitions should aim to attract students in non- STEM fields. Many of these students have skills, but due to misconceptions about "technology," they are reluctant to participate. Nevertheless, after joining, many of these students have found success in Cyber Challenge and other competitions. In fact, marketing, communications, arts, and business majors, all of whom are disproportionately underrepresented in cyber and STEM fields, have done quite well in various cyber competitions over the years.¶ <<card continues>>

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<<card continues>> Concluding Thoughts¶ Both **the pipeline and ecosystem need to be improved to increase the size of the cyber workforce and better prepare the U**nited **S**tates **for future security challenges. Should current trends hold in the future, cyber will be even more interwoven into the fabric of everyday life in the U**nited **S**tates. Outside of STEM, a more thorough dialogue is necessary about cyber education at the secondary level. Not only should this education be about how to use computers, but how to navigate and operate safely in cyberspace in order to best take advantage of it. The concept of the "cyber playground" has been raised as an analogy. How do you teach children to play safely on the playground in the absence of adults? Understanding the dangers inherent in Internet use is not widely held, and education at lower levels is rudimentary, merely focusing on using computers. Eventually, **greater understanding of cyberspace and its dangers will need to be integrated into curricula at the secondary level**. And at home, **if awareness of these technologies and their dangers is not present in the minds of the young, network security as a whole is likely to continue to suffer in the future because of poor end-user practices and habits.¶** **Integrating cyber education at a low level into primary and secondary school curricula may have added benefits as well.** **The introduction of computers and the Internet at a young age may lead to more individuals pursuing cyber and STEM-related coursework in elementary through high school. This would likely increase the size and interest of cyber and STEM students in postsecondary educational institutions, thus ensuring a strong ecosystem to supply the pipeline into the U.S. cyber workforce.**¶Recommendations¶ Federal Government hiring rules and authorities far cyber workforce profesnonak**: There exists a need to explore alternative hiring authorities for cyber professionals, including education-based,** skills-based, and experience-based **processes.** Recommend forming a DHS/ DOD/OPM task force to examine core workforce issues and provide short-, mid-, and long-term human capital strategies for government departments and agencies.

### 1AC – Plan

#### Thus, the plan: The United States federal government should substantially increase its funding of secondary career and technical education, including increasing formula grants distributed to states, establishing of a CTE Pathways Trust Fund, and expanding Social Innovation Financing.

### 1AC – Solvency

#### The plan galvanizes private sector support for secondary CTE education through social innovation financing and competitive grants

Hasak 16 [Jonathan Hasak is a Manager of Public Policy and Government Affairs at Year Up, graduate of the Harvard Graduate School of Education and a former Teach for America corps member who taught in the Oakland Unified School District, “A summer surprise: the case for CTE reform,” 7/1/16, <http://thehill.com/blogs/congress-blog/education/286111-a-summer-surprise-the-case-for-cte-reform>]

In less than 16 days, the United States Congress will adjourn for their summer recess. The backlog of legislation waiting for lawmakers during an election year makes it unlikely our nation’s youth should expect legislative action that helps increase their employability skills anytime soon. Yet given the difficult economic reality young graduates face today and declining labor force participation, Congress can help improve career pathways right away for all our youth if they reauthorize the Perkins Career and Technical Education Act. Signed into law by President Bush in 2006, the Perkins Act aspired to provide individuals with the academic and technical skills needed for success in a skills-based economy. Despite the law’s contribution to strengthening career and technical education (CTE) infrastructure, however, young people often enter CTE programs that are not always aligned to employer demand and which continue to suffer from a pejorative perception as second-rate programs for students tracked out of four-year colleges. In order for CTE programs to become a real stepping-stone to opportunity and success and a pathway to help employers address their need for skilled employees, CTE education must be more responsive to our shifting economic landscape. Seamless alignment to skills demanded in the labor market could especially help ensure CTE programs are attracting Opportunity Youth – young people neither in school nor employed – and preparing them for gainful employment and lifelong learning. The good news is that reforming CTE already has bipartisan support. Policy recommendations to expand the pathways from skills development to work are included in Speaker Ryan’s new agenda as well as in Hillary Clinton’s. Moreover, the House Education and Workforce Committee just this past week released a new bill to reauthorize Perkins and strengthen the quality of CTE programs. Given the potential to immediately improve labor market and life outcomes for all our youth, Congress should not wait until after the presidential election to reauthorize Perkins and instead consider the following five reforms. First, empower states. The federal government distributes money through formula grants to high schools and community colleges and does not require states to identify economic priorities when funding CTE programs. As a result, states do not play an active role in helping determine which CTE programs to fund. Increased autonomy would allow states to select and fund high-quality CTE programs that are actually aligned with regional priorities for economic growth. Second, use set-aside money to fund a national CTE Pathways Trust Fund. Too many secondary and postsecondary schools do not provide career pathways to students that increase their employability skills. Through a competitive national innovation grant, Congress can make funds available to school districts, superintendents, and community colleges across the country. Similar to California’s Career Pathways Trust, these grants can be made available for grade nine through fourteen career pathway programs that enhance local career pathways that connects schools with business entities; develops career-relevant pathways aligned to high growth sectors; and provides pathways to postsecondary education aligned with regional economies. Third, use Social Innovation Financing (SIF) to expand student access to CTE programs. Social Innovation Financing is an innovative government approach that leverages private-sector resources to finance government investments. Congress can use unspent SIF money to develop a Pay For Success initiative that increases community college students’ access to quality CTE programs through expansion of work-based job placements and competency platforms that engage in real-world experiences. Fourth, create a national private sector led campaign to invest in CTE infrastructure. <<card continues>>

### 1AC – Solvency

<<card continues>> There is currently no coordinated private sector campaign at the federal level that invests in CTE. As part of Perkins reauthorization, Congress can create a commission that leverages existing collateral of national campaigns such as Grads of Life. This commission could be put in charge with creating a new private sector campaign to secure employer commitments to invest in CTE programs. And finally, empower intermediary organizations to support CTE programs. Inconsistent levels of involvement by the private sector in CTE has led to programs that are not aligned with emerging in-demand occupations in high growth industry sectors. Congress can explicitly clarify through Perkins reauthorization the importance of intermediary organizations to convene cross-sector stakeholders and help mobilize funding and resources to make coordination between CTE programs and the workforce more cohesive. Despite aspirations to climb ladders of opportunity, not all young people have been afforded a quality education or the dignity of work. Congress has an opportunity this summer to immediately help improve career pathways for our nation’s youth. They should use their remaining days in session to reauthorize the Perkins Career and Technical Education Act.

#### Linking high schools to CTE programs administered by the private sector ensures the development of a workforce that overcomes looming productivity and skills gaps

Jackson and Hasak 14 [John H. Jackson is the president and CEO of the Schott Foundation for Public Education, held leadership positions at the National Association for the Advancement of Colored People and has served as an adjunct professor of Race, Gender, and Public Policy at the Georgetown Public Policy Institute, and Jonathan Hasak is a recent graduate of the Harvard Graduate School of Education and Manager of Public Policy and Government Affairs at Year Up, “Look Beyond The Label: Reframing, Reimagining, and Reinvesting in CTE,” *American Educator,* Fall 2014, https://www.aft.org/ae/fall2014/jackson\_hasak]

2. Address the Student-Readiness and Teaching-Training Gaps Despite being held accountable for student academic growth in reading and mathematics under the federal Carl D. Perkins Career and Technical Education Act, CTE teachers have limited time to work on academic concepts, since the majority of instructional time is spent delivering technical skills. To that extent, many certified teachers either have not been properly trained or are simply struggling to teach both technical expertise and academic skills. Link High Schools to CTE Programs: Too many students attend CTE programs without basic academic content knowledge. The need for remediation for students, especially those whose skills will not qualify them for current high-quality CTE because of entrance exams, makes the job extremely difficult for teachers. To balance academic and technical experience in classrooms, one solution is to allow students to take remedial courses at nearby high schools for academic credit. With the majority of classroom time spent delivering technical skills that are relevant for specific jobs, more applied learning and time to support academic concepts such as quantitative reasoning and data collection are needed. By having one teacher who can cover technical content and another who can reteach basic academic skills, students would have a more balanced educational experience and an opportunity to become better professionals who are not dependent on one single technical skill set alone. Attract High-Achieving Students: CTE programs must attract more than just students who prefer to circumvent four-year colleges. Framing these pathways around upward social mobility for all students would be more politically resonant than calls to rectify inequalities in CTE. <<card continues>>

### 1AC – Solvency

<<card continues>> By attracting high-achieving students, CTE programs would diversify the social capital of their student population and acquire more financial resources; ultimately, it would also lead to the mixed grouping of students, which has proven most effective in raising academic performance.14 By signaling its dedication to making its students attractive to prospective employers, turning them into good citizens, and providing an excellent education, these programs would offer a compelling message to any student eager for an employer-recognized credential that would lead to a meaningful job. 3. Involve the Business Community With some 14 million students enrolled in CTE programs in nearly 1,300 public high schools and 1,700 two-year colleges, many of these students are being shortchanged in their career and college preparation. As such, an emerging productivity and skill gap has emerged, with 45 percent of American employers blaming entry-level vacancies on a skills shortage.15 And while President Obama has asked for $1.1 billion in his proposed 2015 budget to reauthorize the Perkins Act,16 employers continue spending more than $400 billion a year in formal and informal employee training.17 Quite simply, most CTE programs have failed to translate the technical expertise of their training systems into jobs for students. The stakeholders most integral to ensuring students’ future employment are business leaders. We must engage the business community and help it see the untapped potential of millions of young men and women. While employers across the country are already collaborating with vocational programs, there is still need for more cross-sector collaboration on a larger scale. But employers must do more than just offer half measures and identify a skills shortage as a critical problem; they should actively help resolve the nation’s skills problem through a more systemic approach. In Michigan, for example, new legislation was recently proposed to give students and families more choice in substituting CTE courses for electives. Admirable as it is, the legislation does not attempt to build or integrate a clear route for students to pursue college or career; rather, it hopes that trading Algebra II for a CTE course will somehow improve career readiness. And even when the federal government announced in February 2014 that it would provide $148 million for a manufacturing innovation institute in Detroit, it is difficult not to see the program stuck in the past when it is technical, not manufacturing, jobs that are growing fastest in Michigan. Help the Business Community Become Active Collaborators: Making the relationship between education and employment more transparent is indispensable in reimagining CTE; efforts to do so should integrate work and learning opportunities for students with clear occupational positions and salaries in mind. Educators can accomplish this by illuminating skills taught in classrooms as foundations for skills needed for employment, therein transcending abstract schooling experiences into something more personal—something that can ignite student curiosity, creativity, and imagination. Convincing business leaders to see themselves not as charitable givers but as active partners in CTE requires helping them see that CTE programs could reduce their costs. As an example, the business community could lobby local and state governments to provide tax incentives for hiring CTE students. In turn, CTE programs would make hiring qualified employees easier since such programs could lead to a pipeline of talent through internships, apprenticeships, and summer jobs. Connecting employers and career opportunities to CTE students would directly target a skills and productivity gap that, if not addressed, will continue to affect economic productivity for students and employers alike. Use Public-Private Partnerships as Tools to Engage Businesses: To constantly update equipment and curricula, and to develop teachers who can incorporate new techniques in their training, we need more public-private partnerships (PPPs). With shrinking government budgets and limited financial resources, PPPs enable the private sector to improve learning outcomes for students by providing education services beyond public finance. Case studies conducted in Latin America have shown that some of the benefits from PPPs for schools are greater efficiency, increased student choice, and wider access to education.18

### 1AC – Solvency

#### Social innovation financing reduces runaway spending and encourages competition

Costa 11 [Kristina Costa, Special Assistant at the Center for American Progress. 10-19-2011 "Financing Tools for Social Innovation," Center for American Progress, <https://www.americanprogress.org/issues/general/news/2011/10/19/10435/innovation-for-the-public-good-financing-tools-for-social-innovation/>] /adres

Last week we examined why strong leadership is essential to public-sector innovation. An agency leader who wants to develop more innovative solutions to social problems can expect resistance on many fronts, both political and logistical. But no obstacle looms larger than the problem of financing. Public-sector innovators have to convince a risk-averse—and financially constrained—political system to take a chance on new ideas. The financing hurdle can be overcome with a little creativity, however. Successful new and emerging social-innovation financing models are an encouraging sign for agency leaders, community advocates, and financiers alike. There are three key principles for successful social-innovation finance. First, innovation requires appropriate levels of financial backing at each stage of the process, with small sums available for promising ideas and larger sums for proven innovations that merit scaling up. Second, money must follow success, rewarding new ideas that work and pulling funding away from less-successful innovations. Finally, it sometimes makes sense for government funds to be supplemented by contributions from private-sector nonprofits—especially for the most experimental ideas. Let’s consider each principle in greater detail. Apply “stage-gate” funding The so-called stage-gate approach ensures the right level of financing is made available to programs at different stages of their evolution. This method was used by the Department of Education’s Investing in Innovation Fund, otherwise known as the i3 Fund. The smallest i3 grants, up to $3 million each, were made available for programs that used an innovative approach to improve education outcomes but lacked sufficient data to merit scale. The largest grants, up to $25 million each, were targeted for innovations that already had proven results and needed support to scale up their efforts and increase their reach. Social Innovation Fund grants, which have been given out by the Corporation for National Community Service since 2010, incorporate an additional innovation. CNCS grants are given to intermediaries who then sub-grant them to others. As a result, government policymakers are insulated somewhat from the political fallout associated with failed ventures. Stage-gate funding has found success in other governments as well. In the United Kingdom, the National Health Service is piloting Regional Innovation Funds. The funds have invested about a third of their total $350 million on the 250 most promising projects, initially granting $15,000-$70,000 to new ideas. The rest of the funds are focused on scaling up the best interventions that boost outcomes and also save public money. These include innovations that help move special-needs children from hospital to home five months sooner, saving the health service more than $2,000 a day. Another innovation that received funding for scaling up was inhalers that whistle when used correctly. That means that the 50 percent of Britons who incorrectly used traditional inhalers are now much less likely to have an asthma attack. Make sure money flows to success The second financing principle of targeting money to things that work needs to be anchored in a commitment to data-driven outcome measurements. If successful programs know they will attract more funding, there is a much greater incentive for innovative approaches to emerge. One example is the work of the United Kingdom’s Greater Manchester region to reduce criminal recidivism. This program brought together 10 local authorities, 10 programs targeting young offenders, two magistrate courts, and a prison to pool their funding and apply it to the approaches that were proven to work best. Instead of funding more than 200 different, small-scale efforts, funds were moved to the 10 programs most successful at reducing reoffending among youth. Think outside the traditional budget box In order to make financing innovative social programs truly effective, agencies should engage the support of other sectors. Both i3 and the Social Innovation Fund require grantees to demonstrate they can access funds from other sources, like foundations. This encourages social innovators to look beyond government for resources and allows a relatively small amount of federal money to leverage far greater amounts of private capital. <<card continues>>

### 1AC – Solvency

<<card continues>> For instance, $50 million in SIF funding will be complemented by at least an additional $150 million in nongovernment funds. New York City’s most untested innovations have often been backed by funding from foundations and private sources. The Fund for Public Schools, for example, has raised around $150 million over the last five years from the private and philanthropic sectors to support initiatives such as the innovation zone that allows schools to try new approaches. If some of these approaches prove unsuccessful, political leaders are insulated from the claim that public money was wasted. Arranging financing for social innovation work is but one crucial part of the puzzle. Next week we’ll consider what makes an agency’s culture most able to innovate.

## Competitiveness Advantage

**STEM Low Now**

**STEM education is low now – millions don’t have access**

**Randazzo 5/10**/17 (Matthew Randazzo - Opinion contributor to US News, chief executive officer of the National Math and Science Initiative – “Students Shouldn't Live in STEM Deserts” – 5/10/17 - https://www.usnews.com/opinion/knowledge-bank/articles/2017-05-10/the-us-must-address-disparities-in-access-to-stem-education)/TK

More than ever, a high-quality math and science education is the foundation for opportunity.¶ **By 2020, almost two-thirds of all jobs will require** post-secondary education or training – education that is supported by the **critical thinking and problem-solving skills learned in math and science. In the same period, almost as many jobs will require basic literacy in science, technology, engineering and math.¶** **Yet, we as a nation continue with a familiar pattern in which access to high-quality STEM learning is unevenly distributed**. **Millions of students across the country live in what we call STEM deserts** – **school communities without access to rigorous and engaging math and science courses.**¶ **Lack of STEM access is a critical** equity **issue in education**, particularly for students in urban and rural communities, where access to high-level math and science courses is often out of reach. Soon, **the impact of students living in STEM deserts will not only be reflected in those students' high school and college competition rates, but will also take a toll on the country's technological superiority, its economy and national security.**

**The US is falling behind in STEM now**

**Desilver 17** (Drew Desilver - Senior Writer, Pew Research Center – “The US is falling behind academically. This is why” – 2/22/17 - https://www.weforum.org/agenda/2017/02/us-students-are-lagging-behind-academically-heres-why)/TK

**How do U.S. students compare with their peers around the world? Recently released data from international math and science assessments indicate that U.S. students continue to rank around the middle of the pack, and behind many other advanced industrial nations.¶** One of the biggest cross-national tests is the Programme for International Student Assessment (PISA), which every three years measures reading ability, math and science literacy and other key skills among 15-year-olds in dozens of developed and developing countries. The most recent PISA results, from 2015, placed the U.S. an unimpressive 38th out of 71 countries in math and 24th in science. Among the 35 members of the Organization for Economic Cooperation and Development, which sponsors the PISA initiative, the U.S. ranked 30th in math and 19th in science.¶ Younger American students fare somewhat better on a similar cross-national assessment, the Trends in International Mathematics and Science Study. That study, known as TIMSS, has tested students in grades four and eight every four years since 1995. In the most recent tests, from 2015, 10 countries (out of 48 total) had statistically higher average fourth-grade math scores than the U.S., while seven countries had higher average science scores. In the eighth-grade tests, seven out of 37 countries had statistically higher average math scores than the U.S., and seven had higher science scores.¶ Image 2 Image: NAEP Data Explorer, National Center for Education Statistics¶ Another long-running testing effort is the National Assessment of Educational Progress, a project of the federal Education Department. In the most recent NAEP results, from 2015, average math scores for fourth- and eighth-graders fell for the first time since 1990. A team from Rutgers University is analyzing the NAEP data to try to identify the reasons for the drop in math scores.¶ The average fourth-grade NAEP math score in 2015 was 240 (on a scale of 0 to 500), the same level as in 2009 and down from 242 in 2013. The average eighth-grade score was 282 in 2015, compared with 285 in 2013; that score was the lowest since 2007. (The NAEP has only tested 12th-graders in math four times since 2005; their 2015 average score of 152 on a 0-to-300 scale was one point lower than in 2013 and 2009.)¶ Looked at another way, the 2015 NAEP rated 40% of fourth-graders, 33% of eighth-graders and 25% of 12th-graders as “proficient” or “advanced” in math. While far fewer fourth- and eighth-graders now rate at “below basic,” the lowest performance level (18% and 29%, respectively, versus 50% and 48% in 1990), improvement in the top levels appears to have stalled out. (Among 12th-graders, 38% scored at the lowest performance level in math, a point lower than in 2005.)¶ NAEP also tests U.S. students on science, though not as regularly, and the limited results available indicate some improvement. Between 2009 and 2015, the average scores of both fourth- and eight-graders improved from 150 to 154 (on a 0-to-300 scale), although for 12th-graders the average score remained at 150. In 2015, 38% of fourth-graders, 34% of eighth-graders and 22% of 12th-graders were rated proficient or better in science; 24% of fourth-graders, 32% of eighth-graders and 40% of 12th-graders were rated “below basic.”¶ These results likely won’t surprise too many people. In a 2015 Pew Research Center report, **only 29% of Americans rated their country’s** K-12 **education in** science, technology, engineering and mathematics (known as **STEM**) **as above average or the best in the world**. Scientists were even more critical: **A companion survey of members of the American Association for the Advancement of Science found that just 16% called U.S. K-12 STEM education the best or above average; 46%, in contrast, said K-12 STEM in the U.S. was below average.**

### CTE Key to Competitiveness

#### CTE is key to global competitiveness

Litow and Suh 15, Litow vice president, corporate citizenship and corporate affairs, and president, IBM international. (Grace Suh, Stanley, October 2015 “TRANSFORMING HIGH SCHOOL AND ADDRESSING THE CHALLENGE OF AMERICA’S COMPETITIVENESS” <https://www.ibm.com/blogs/citizen-ibm/wp-content/uploads/Transforming-High-School-and-Addressing-the-Challenge-of-Americas-Competitiveness.pdf>)//eliben

The education to workforce equation has completely flipped within a generation – with most jobs in the 1970s requiring a high school diploma or less, and today, and into the future, the overwhelming majority of jobs requiring some college and many a college degree, two or four year. The labor market pull for occupational certificates and associate’s degrees is strong – with more than 20 million jobs through 2018 requiring workers with these sub-baccalaureate credentials. A reinvention of education to address both the skills crisis and the youth unemployment challenge, with CTE at its core and P TECH as the linchpin, clearly can provide a pathway to economic mobility and success. In particular, the P-TECH Grades 9-14 School Model serves as a roadmap for how systems can be reformed to produce results that address economic and social needs: Partnerships that align secondary and postsecondary institutions and industry; attainment of industry-recognized postsecondary degrees tied to labor market outcomes; rigorous academic expectations blended with workplace learning; and a commitment to serve all students, giving them the supports and motivation to be competitive in 21st Century STEM careers. Innovations like P-TECH carry multiple benefits. Students who might question the relevance of high school and college to their career dreams will be able to link learning with career; students CONCLUSION 33 worried about the affordability of college can choose paths that accelerate the time to degree and lower the cost of a college credential; students graduating with occupational certificates, associate’s degrees or more will have stronger currency in the labor market; employers that have worked with secondary and postsecondary institutions on curriculum and the skills they need in the workforce will experience lower training and remediation costs; and most important America can be more competitive and on a better path to close its skills gap to draw on more talent here at home. Increase in college and career readiness, increase in the number of students going into the workforce with college degree and career preparation as opposed to only a high school diploma will impact the economy in measurable ways The 40 P-TECH schools that are currently in operation are eliciting exciting, real results. This is the promise and hope of enterprising pathways. But this effort must move from a multiple of schools across a few states into a national movement connecting school to career and addressing in a substantive way the issue of income inequality and economic competitiveness. As pointed out, while much of the education reform agenda has been politicized, resulting in a lack of consensus, this is largely not the case with CTE reform, which has broad, bipartisan support. Our nation can seize this moment to redesign pathways that include career and technical education in ways that engage students, strengthen their learning and skills, and meet the growing demand of our economy.

### CTE Key to Competitiveness

#### CTE programs offer a unique opportunity to bolster economic competitiveness – federal investment is key

Miner 16 (Andrew Miner is a former intern with the Education Policy team at the Center for American Progress., October 11th, 2016, “Rebuilding the High School to Middle Class Pipeline”, <https://www.americanprogress.org/issues/education/news/2016/10/11/145341/rebuilding-the-high-school-to-middle-class-pipeline/>, nassal)

\*early college means before college

Supporting the expansion of CTE partnerships Expanding public-private early college CTE partnerships offers a unique opportunity to satisfy labor market demand, establish inclusive opportunity for students, and bolster the nation’s economic competitiveness. However, in order to adequately support this expansion, Congress, states, and CTE program leaders must take the following steps: increase federal investment; attract new private partners by expanding local flexibility and partners’ standard-setting influence; and invest in the recruitment, preparation, and professional development of CTE and STEM teachers. Increase federal investment Congress should expand federal investment in P-TECH and similar early college CTE partnerships, particularly in areas outside large urban centers. Rural districts face unique challenges and greater costs to implementing P-TECH’s model due to transportation or infrastructure investments needed to bridge rural digital divides. The proposed Strengthening Career and Technical Education for the 21st Century Act, or H.R. 5587, approved 37-0 by the House Education and Workforce Committee with broad bipartisan support, would reauthorize the Perkins Act and is a promising start to satisfy these goals. Attract new private partners States and program leaders must attract new private partners. As evidenced by Germany’s work-based learning model and the praise it has attracted from U.S. businesses, the skills pipeline is not valuable solely to students. By providing employers with greater influence on standards and streamlined performance measures, high-quality CTE partnerships empower businesses to more efficiently identify and hire productive employees. Especially for a program such as PTECH that relies on internships and mentorships to provide students with work-based learning, finding private partners is essential. Unfortunately, that task becomes more difficult as programs expand outside urban areas and must partner with fewer and smaller employers. Here, H.R. 5587 would provide states and localities with standards-setting flexibility to meet local labor market demand while requiring the participation of business and industry representatives in program development. More directly, the bill would require state leadership to create partnerships between local districts, higher education institutions, and employers. In this way, states have the unique opportunity to elevate the voices of small businesses—encouraging and supporting participation by employers who would likely otherwise lack the influence to make their investment worthwhile. Invest in CTE and STEM teachers Congress, states, and districts must invest in STEM and CTE teacher quality by improving teacher recruitment, preparation, and professional development. While this investment will be vital to the success of public-private CTE partnerships, strengthening the teacher pipeline would also help solve nationwide teacher shortages in STEM fields. California, for instance, is experiencing a drastic shortage in both STEM and CTE teachers; a sharp decline in its teacher prep enrollment across the board; and a lack of successful teacher prep programs to train teachers who do enroll. Congress, states, and districts should offer incentives for high-performing students to enroll in teacher prep; competitive compensation to attract highly qualified professionals from other STEM fields; and expanded clinical practice opportunities through STEM and CTE teacher residencies, such as those proposed last fall in the Creating Quality Technical Educators Act. Furthermore, long-term solutions must include policies that address the entire teacher pipeline—including recruitment and teacher preparation. And even after STEM and CTE teachers have been recruited and prepared, they must be supported with professional learning. An American Institutes for Research analysis found a direct relationship between effective professional development of CTE educators and improved student outcomes. Importantly, current CTE educators ranked improving business and industry relationships—the hallmark of partnerships such as P-TECH—among their most essential professional learning topics. Conclusion As stories like Bob Thompson’s—and the 20th century American dream they represent—become less common, the nation is challenged to build a new dream and stories for a new century. Consider Janiel Richards, a young woman who emigrated from Trinidad as a child. Raised in a turbulent New York neighborhood, her parents enrolled her at P-TECH for the ninth grade. This May, at age 18, Janiel graduated and accepted a job at IBM paying $50,000 per year. She hopes to one day attend New York University for her bachelor’s degree and Columbia University for her master’s degree. By expanding CTE partnerships such as P-TECH, Congress, the states, and education leaders can rebuild and fortify the high school to middle class pipeline and create a new, 21st century American dream. This expansion would help satisfy labor market demand by preparing more students for middle skills jobs, establish inclusive opportunity for those who cannot afford postsecondary education, and bolster the United States’ economic competitiveness. The high school to middle class pipeline is essential for widely accessible, enduring economic growth.

### CTE Key to Competitiveness

#### Multiple studies prove – CTE programs increase the likelihood students will acquire jobs with high wages

Dougherty 16 (Shaun M. Dougherty is an Assistant Professor of Education Policy and Leadership at the Neag School of Education and an affiliated faculty member in the Department of Public Policy at the University of Connecticut. He holds a doctoral degree in quantitative policy analysis from Harvard University as well as a master’s degree in educational administration from Gwynedd Mercy University. His work focuses on applied quantitative analysis of education policies and programs, including career and technical education, with an emphasis on understanding how PreK-12 policies and programs impact student outcomes., April 2016, “CAREER AND TECHNICAL EDUCATION IN HIGH SCHOOL: DOES IT IMPROVE STUDENT OUTCOMES?”, <http://edex.s3-us-west-2.amazonaws.com/publication/pdfs/%282016.04.07%29%20Career%20and%20Technical%20Education%20in%20High%20School.pdf>, nassal)

Relatively little is known from existing research about who participates in CTE, and how participation impacts students. There are at least two reasons for this: First, many CTE studies are descriptive, or have methodological limitations that make it difficult to draw causal inferences from them. Second, many earlier studies were conducted in vastly different educational contexts—prior to the recent shifts in the focus and approach of CTE outlined earlier, and the rise of high-stakes accountability systems.13 Still, it’s worth reviewing what those studies reveal about the effects of CTE to contextualize this one. In general, prior research has found that the effects of secondary CTE on career outcomes vary with the type and rigor of the program. Nevertheless, multiple studies have found that CTE has a positive association with wages and employment after high school, especially for young men.14 For example, Hollenbeck and Huang (2014) found that secondary CTE participants earned higher wages during and after participation, and were 10 percentage points more likely to be employed than non-participants a year after exit. Similarly, consistent with prior studies, a 2004 study by the U.S. Department of Education found that high school students who graduate from career academies make 11 percent more per year than their non-career academy peers.15,16 Prior research also suggests that secondary CTE improves academic persistence. For example, several recent studies that rely on an instrumental variable approach find that CTE improves high school completion, and the aforementioned study of “career academies” found they reduce high school dropout rates (although that finding is not supported by a more rigorous randomized control trial, which found no effect on graduation outcomes).17 Research on dual enrollment and early college programs also suggests that students who participate in them are more likely to graduate from high school, enroll in a four-year institution, and earn credits at the postsecondary level, and are less likely to take remedial courses.18 However, the only experimental study to examine the impact of CTE on high school graduation found no evidence of a positive (or negative) effect.19

### CTE Key to Competitiveness

#### CTE exposure is fantastic – one course increases a student’s probability of being employed after high school by 1.5%

Dougherty 16 (Shaun M. Dougherty is an Assistant Professor of Education Policy and Leadership at the Neag School of Education and an affiliated faculty member in the Department of Public Policy at the University of Connecticut. He holds a doctoral degree in quantitative policy analysis from Harvard University as well as a master’s degree in educational administration from Gwynedd Mercy University. His work focuses on applied quantitative analysis of education policies and programs, including career and technical education, with an emphasis on understanding how PreK-12 policies and programs impact student outcomes., April 2016, “CAREER AND TECHNICAL EDUCATION IN HIGH SCHOOL: DOES IT IMPROVE STUDENT OUTCOMES?”, <http://edex.s3-us-west-2.amazonaws.com/publication/pdfs/%282016.04.07%29%20Career%20and%20Technical%20Education%20in%20High%20School.pdf>, nassal)

Greater exposure to CTE is associated with better outcomes for students. The average student takes 4.9 CTE courses during his or her high school career. In general, just one additional CTE course above the average increases a student’s probability of graduating from high school by 3.2 percentage points and of enrolling in a two-year college the year after high school by 0.6 percentage points (Figure 8). Taking only one additional CTE course also increases a student’s probability of being employed the year after high school by 1.5 percentage points and boosts his or her expected quarterly wage by $28 (3 percent higher than without the additional class).45 (See Appendix B, Table B-4.) Although an additional course is an easy way to think about differences in CTE participation, in fact exposure to CTE happens in less continuous terms. Recall that about 30 percent of high school students take between zero and two courses, nearly 40 percent take between three and six, and the remaining roughly 30 percent of students take seven or more (see Section Three, Figure 2). The largest benefits to an additional course accrue to those students in the latter two categories, with more modest benefits for those with only minimal exposure. For instance, students who take seven or more courses see boosts to the probability of graduating from high school by about 10 percentage points (total), compared to each additional course above the mean providing a boost of about 3 percentage points.46 Although the impact of additional CTE coursework varies slightly with particular student characteristics such as gender and income (Appendix B, Tables B-5, B-6, and B-7), the comparative magnitude of concentrating is even greater.

### Competitiveness Key to Hegemony

#### Competitiveness is crucial to stop rising powers from displacing US leadership and causing war

Weisman 4-17-15

(Jonathan, Washington reporter and senior congressional correspondent for the New York Times. “At Global Economic Gathering, U.S. Primacy Is Seen as Ebbing” <https://www.nytimes.com/2015/04/18/business/international/at-global-economic-gathering-concerns-that-us-is-ceding-its-leadership-role.html>) mba-alb

WASHINGTON — As world leaders converge here for their semiannual trek to the capital of what is still the world’s most powerful economy, concern is rising in many quarters that the United States is retreating from global economic leadership just when it is needed most. The spring meetings of the International Monetary Fund and World Bank have filled Washington with motorcades and traffic jams and loaded the schedules of President Obama and Treasury Secretary Jacob J. Lew. But they have also highlighted what some in Washington and around the world see as a United States government so bitterly divided that it is on the verge of ceding the global economic stage it built at the end of World War II and has largely directed ever since. “It’s almost handing over legitimacy to the rising powers,” Arvind Subramanian, the chief economic adviser to the government of India, said of the United States in an interview on Friday. “People can’t be too public about these things, but I would argue this is the single most important issue of these spring meetings.” Other officials attending the meetings this week, speaking on the condition of anonymity, agreed that the role of the United States around the world was at the top of their concerns. Washington’s retreat is not so much by intent, Mr. Subramanian said, but a result of dysfunction and a lack of resources to project economic power the way it once did. Because of tight budgets and competing financial demands, the United States is less able to maintain its economic power, and because of political infighting, it has been unable to formally share it either. Experts say that is giving rise to a more chaotic global shift, especially toward China, which even Obama administration officials worry is extending its economic influence in Asia and elsewhere without following the higher standards for environmental protection, worker rights and business transparency that have become the norms among Western institutions. President Obama, while trying to hold the stage, clearly recognizes the challenge. Pitching his efforts to secure a major trade accord with 11 other Pacific nations, he told reporters on Friday: “The fastest-growing markets, the most populous markers, are going to be in Asia, and if we do not help to shape the rules so that our businesses and our workers can compete in those markets, then China will set up the rules that advantage Chinese workers and Chinese businesses.” In an interview on Friday, Mr. Lew, while conceding the growing unease, hotly contested the notion of any diminution of the American position. “There is always a lot of noise in Washington; I’m not going to pretend this is an exception,” he said. “But the United States’ voice is heard quite clearly in gatherings like this.” Nonetheless, the challenges keep mounting. An overhaul of the I.M.F.’s governance structure, negotiated five years ago in large part by President Obama to give China and other emerging powers more authority commensurate with their growing economic strength, has languished in Congress. That, in part, propelled China to create its own multilateral lending institution in direct competition with the behemoths in Washington. The efforts to secure an ambitious 12-nation Pacific trade agreement, championed by Mr. Obama and recently backed by a handful of key lawmakers, has set off perhaps the biggest fight of his presidency within his own party, with trade unions, environmentalists and liberal activists lining up in opposition to the White House. There is a strong possibility that Mr. Obama could lose the battle. Even the United States’ Export-Import Bank, a lending agency similar to export financing arms in countries around the world, could be killed in June by conservatives in Congress, leaving would-be foreign customers in the cold and many American exporters at a disadvantage to competitors abroad. “I’ve been searching for a word to describe it, and the one I use is ‘withdrawal,’ best I can come up with,” said Edwin M. Truman, a former Obama Treasury official now with the Peterson Institute for International Economics. “We’re withdrawing from the central place we held on the international stage.” In Washington, that concern crosses party lines. “This is really about a crossroads for America and its leadership for the world,” said Representative Dave G. Reichert, Republican of Washington. “We set the tone, we set the path for the global economy by being leaders. And if we don’t, other countries step in.” The costs could be real. Failure to bolster the I.M.F. and other institutions weakens the West’s hand in confrontations like the one with Russia over Ukraine, which has begged for multilateral economic assistance. Senator Lindsey Graham, Republican of South Carolina, pointed to conflicts like the one in Syria, suggesting that fears the I.M.F. and World Bank will be unable to help rebuild the shattered country only opens the door to confrontational actors like Iran. “Sometimes we can only hope it’s China that steps in,” he said. But China’s rising sway in Africa, South Asia, and even Latin America could blunt efforts by the United States and its allies on a range of issues, from stemming violent extremism to slowing climate change. For much of Washington and the world’s economic leaders, China’s creation of the Asian Infrastructure Investment Bank crystallized the choice policy makers face. Earlier this month, Lawrence Summers, who was a top economic adviser for both President Bill Clinton and Mr. Obama, declared that China’s establishment of a new economic institution and Washington’s failure to keep its allies from joining it signaled “the moment the United States lost its role as the underwriter of the global economic system.” For years, China had threatened to establish institutions to rival those dominated by the West, like the I.M.F., World Bank and Asian Development Bank — or even to establish its currency, the renminbi, as a reserve currency to rival the dollar. In 2010, Mr. Obama brokered a deal to raise China’s stake in the I.M.F. to 6 percent from 3.8 percent, still far below the United States’ vetoing share of 16.5 percent but enough to give Beijing a larger say. Congress has blocked the proposed adjustment. Meantime, China’s international lending has soared. Fred P. Hochberg, who heads the Export-Import Bank, said that in the last two years alone, Chinese state-run lenders have lent $670 billion. Ex-Im has lent $590 billion since it was created during the Depression of the 1930s. With nearly $4 trillion in foreign exchange reserves, China has plenty of resources to project its rising economic power. <<card continues>>

### Competitiveness Key to Hegemony

<<card continues>> For example, China’s president, Xi Jinping, plans to offer $46 billion to Pakistan for infrastructure assistance that would open new transportation routes across Asia and challenge the United States as the dominant power in the region. “The United States has lost its way and is rapidly forfeiting claims to global financial, economic, political and moral leadership,” Kevin Rafferty, a former World Bank official, wrote recently in two leading English-language newspapers in Asia. He blamed the White House: “Not for the first time, Obama has shown he can talk eloquently, but does not have a political clue how to get things done.” Other experts and historians, however, say too much can be made of the moment. Walter Russell Mead, a professor of foreign affairs at Bard College, noted that the rise of China as an economic force was inevitable, and that its establishment of a rival lending institution was far different from the international behavior of the Soviet Union and communist Chinese during the Cold War. Then, he said, America’s rivals were trying to destroy and replace the economic order established by the United States and Britain after World War II. Now, emerging powers are emulating it, however imperfectly. Whatever the ultimate consequences, there is plenty of finger-pointing going on. Senator Bob Corker of Tennessee, chairman of the Foreign Relations Committee and a potential ally on international economics, echoed Mr. Rafferty. In an interview, he said he included the I.M.F. quota adjustment in an aid package last year to beleaguered Ukraine, but Mr. Obama, he insisted, did not personally intervene to push it through. He fretted that new legislation granting the president “fast track” trade-promotion authority to complete major trade deals with Asia and Europe would stall without enough White House attention. “I was in Southeast Asia in August, and the countries there know there’s no real capital being expended, and they’re worried,” Mr. Corker said, his voice rising in frustration. “They just cannot pull themselves together to push for something.” Administration officials disputed the charge. “I can tell you I have spent dozens if not hundreds of hours talking to central bankers and finance ministers,” Mr. Lew said. “They understand we are sparing no expense.” The leader of the opposition both to the I.M.F. reforms and the Export-Import Bank has been Representative Jeb Hensarling of Texas, the chairman of the House Financial Services Committee, backed by the Tea Party wing of the Republican Party. The opposition to international trade alliances, on the other hand, is being led loudly by Democrats who had previously been the president’s most stalwart backers, with an assist from ardent conservatives who oppose anything Mr. Obama does. Senator Tim Kaine, Democrat of Virginia and an emerging internationalist advocate, suggested that two decades of war were turning elements of both parties inward. “The network of international rules and institutions is a peculiarly U.S. creation” that has helped foster peace and prosperity for decades, he said. “The U.S. has built this up, not only for our own benefit but for the world. That we are now stepping back from a leadership role is highly, highly problematic.”

### Hegemony Impacts

#### Collapse of heg causes global war and a laundry list of impacts

Derek Chollet et al February 2017

(Derek Chollet- executive vice president and senior advisor for Security and Defense Policy at the German Marshall Fund of the United States. He served in the White House and Departments of State and Defense in the Obama administration, most recently as assistant secretary of defense for International Security Affairs. “Building “Situations of Strength” A National Security Strategy for the United States” <https://www.brookings.edu/wp-content/uploads/2017/02/fp_201702_ofc_report_web.pdf>) mba-alb

We believe that abandoning traditional U.S. support for the international order would be a serious strategic error that would leave the United States weaker and poorer, and the world more dangerous. It would encourage revisionist states to destabilize Europe, East Asia, and the Middle East. It would reduce global economic growth and leave us vulnerable to a new financial crisis. And it would damage efforts to tackle shared challenges like terrorism, nuclear proliferation, and climate change that have very real— and potentially very damaging—impacts here at home. The last time an unraveling of an existing international order occurred was in the 1930s, and the result was depression and world war. Indeed, much of the violence and disorder we see in the world today results from the weakening of the current order. Moreover, the existing order must be assessed relative to the plausible alternatives. The best case outcome in light of an American retreat from the international order is a spheres of influence system whereby China dominates much of East Asia, Russia dominates much of Eastern and Central Europe, and the United States is preeminent in its own hemisphere and possibly Western Europe. Spheres of influence approaches to international order are inherently unstable, largely because the lines of demarcation are contested. It is a configuration prone to great power conflict. And the process of transition from an open global order where small nations have rights to a more imperial model would be particularly fraught.

#### Leadership is falling, challenges are growing – global instability is inevitable without hegemony

Edelman 2-24-17

(Eric, -counselor at the Center for Strategic and Budgetary Assessments and was formerly an undersecretary of defense for policy. “The Military Build Up We Need” <http://www.foreignpolicyi.org/content/military-buildup-we-need>) mba-alb

Foreign policy, Walter Lippmann wrote, entails “bringing into balance, with a comfortable surplus of power in reserve, the nation's commitments and the nation's power." If a statesman fails to balance ends and means, he added, "he will follow a course that leads to disaster." Today, America is hurtling toward such a disaster. Since the end of the Cold War, Washington has possessed uncontested military dominance and enjoyed it at bargain-basement prices. Now, however, America confronts military challenges more numerous and severe than at any time in decades—just at the moment its military resources are showing the effects of prolonged disinvestment in defense. American politicians boast that the nation has the finest fighting force in the history of the world. But the brutal truth today is that the United States is slipping into what Samuel Huntington—building on Lippmann's ideas—termed "strategic insolvency." American military power has become dangerously insufficient relative to the grand strategy—and international order—it must support. That grand strategy might be described as "enlightened liberal dominance." After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras and to perpetuating the more stable unipolar order. They committed to fostering a global environment in which liberal economic and political institutions could flourish and in which international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism would be suppressed. And because they recognized that military force remained the ultima ratio regum, they understood that doing so would require "military strengths beyond challenge," as George W. Bush indelicately put it in 2002. Since the early 1990s, Washington has therefore accounted for 35 to 45 percent of world defense spending. It has maintained peerless global power-projection capabilities. Perhaps most important, U.S. primacy has also been unrivaled in the key strategic regions: Europe, East Asia, and the Middle East. <<card continues>>

### Hegemony Impacts

<<card continues>> From thrashing Saddam Hussein's million-man military in 1991 to deploying two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995-96, Washington has been able to project power superior to anything a regional rival could employ even on its own doorstep. And yet, this dominance has come at a remarkably affordable price—usually between 3 and 4 percent of GDP, as compared with 12 percent at the peak of the Cold War. In a comparatively benign international environment, Washington has had military primacy—and its geopolitical fruits—on the cheap. Today, however, the strategic landscape is darkening and U.S. primacy is eroding. This is due to four interrelated factors. First, great-power military competition is back. China and Russia are seeking regional hegemony and contesting global norms such as nonaggression and freedom of navigation. They are also developing the military punch to underwrite these ambitions—namely, advanced power-projection capabilities meant to bully their neighbors and anti-access/area denial capabilities meant to prevent U.S. forces from coming to those neighbors' defense. Second, the international outlaws are more dangerous than at any time in a quarter-century. North Korea has a growing arsenal of nuclear bombs and is developing intercontinental ballistic missiles with which to deliver them. Iran is a nuclear threshold state that tests ballistic missiles while backing sectarian proxy forces across the Middle East. The Islamic State has displayed far greater military competence than any previous terrorist group and shown that counterterrorism will continue to place significant operational demands on American forces. Third, the rapid spread of precision munitions, stealth, and other technologies that were once the sole preserve of the United States means that we now face more actors who can contest American superiority in dangerous ways. As Secretary of Defense Chuck Hagel noted in 2014, "we are entering an era where American dominance on the seas, in the skies, and in space—not to mention cyberspace—can no longer be taken for granted." Fourth, the number of challenges has multiplied. Rogue states, jihadist extremism, great-power rivalry, instability in Europe, the Middle East, and East Asia: Today's security environment has it all. And as the world has become more menacing, the United States has dramatically cut back its investment in defense. The triple whammy of the Great Recession, Obama-era budget cuts, and the Budget Control Act reduced annual defense spending from $768 billion in 2010 to $595 billion in 2015, a decline of nearly a quarter. Defense spending as a share of GDP fell from 4.7 percent to 3.3 percent, with the Congressional Budget Office projecting that military outlays will fall to 2.6 percent by 2024—the lowest percentage since before World War II. The effects of this budgetary buzzsaw have been severe. Readiness and modernization have suffered, and all the services are at or near post-World War II lows in terms of end-strength. The U.S. military is now significantly smaller than the 1990s-era Base Force, which was designed as "a minimum force that constituted a floor below which the nation should not go if it was to remain a globally engaged superpower." This combination of increasing threats and decreasing capabilities is having profound implications. For one thing, it ensures that U.S. forces will face far harder fights should conflict occur, whether against Iran, North Korea, Russia, or China. American forces might still win—albeit on a longer timeline, and at an appalling cost in lives—but then again, they might not. Reports by the RAND Corporation have cast doubt on whether NATO can actually defend the Baltic states from a Russian assault, and if the United States would prevail in a conflict with China over Taiwan. The prospects are even worse should the United States have to fight or deter in several regions at once. As the shadows cast by U.S. military power grow shorter, American alliances are likely to be undermined, adversaries emboldened, and the stability of the international order imperiled. The United States is rapidly reaching the point of strategic insolvency, with all the resulting dangers. So how should America respond? Great powers facing strategic insolvency have three options. First, they can reduce their commitments. For example, the United States could walk away from guarantees to the Baltic states or Taiwan. But such retrenchment has historically worked best when the overstretched hegemon can transfer its burdens to some friendly power. Today, there is no liberal superpower waiting in the wings. The beneficiaries of an American pullback would be precisely those hostile powers that U.S. strategy seeks to constrain. Retrenchment is a recipe for aggression and instability.

### Hegemony Impacts

#### Retrenchment causes Middle East war, India-Pakistan war, European war, global proliferaton, and collapse of alliances

Efraim Inbar 2016

(Efraim Inbar-Professor in Political Studies at Bar-Ilan University and Director of its renowned Begin-Sadat Center for Strategic Studies “Implications of US Disengagement from the Middle East” <https://besacenter.org/wp-content/uploads/2016/07/MSPS122.pdf>) mba-alb

The gravest consequence of the US policy of disengagement from the region is the increased probability of nuclear proliferation. Powers contending for regional leadership, such as Egypt, Turkey and Saudi Arabia, will not stand idly by in the nuclear arena, particularly as Washington is no longer seen as a reliable security provider. Riyadh has made it eminently clear that it desires a nuclear infrastructure on par with that of Iran,16 and Turkey and Egypt are in the process of enhancing their nuclear programs.17 It will take considerable time for such programs to come to fruition, but the nuclear race is on. The Obama administration’s fecklessness will likely scupper any attempts to convince regional powers to rely on a US nuclear umbrella in a bid to prevent nuclear proliferation. The emergence of a multi-polar nuclear Middle East, which is a plausible consequence of the US nuclear accommodation with Iran, would be a strategic nightmare for the whole world. As noted, the nuclear deal with Iran is not linked to any demand for a change in Tehran’s foreign policy or its military build-up. Iran continues to invest in its missile program and naval capabilities and to pursue interventionist policies with great vigor, boasting the control of four Arab capitals: Baghdad, Beirut, Damascus and Sanaa (Yemen).18 Its imperialist impulses are readily apparent. The February 2016 parliamentary elections produced a Majlis scarcely more moderate than its predecessor, and any change in Iranian policies is highly unlikely.19 An emboldened Tehran, which traditionally acts through proxies rather than through military conquest, might intensify its campaign to subvert Saudi Arabia, possibly by agitating the population in the country’s oil-rich Eastern province where Shiites are a majority. The loss of that province would seriously weaken the Saudi state and might even bring about its disintegration. The visible consequences of the unravelibng of statist structures in Iraq, Libya, Syria, and Yemen do not augur well for the desert kingdom. Tehran could use subversion, terrorist attacks, and intimidation of the Persian Gulf states to evict the thinning US presence completely from the Gulf, which is a stated goal of the Islamic Republic of Iran.20 In the absence of American determination and ability to project force, an Iranian superior power might turn the Gulf monarchies – protected, up to this point, by the US security umbrella – into satellites. Bahrain, home to the headquarters of the US Fifth Fleet, is particularly vulnerable to Iranian subversion, as its majority Shiite population has many grievances toward the ruling Sunni monarchy. The satellization of the Caspian basin, where Iran shares the coast with important energy producers such as Azerbaijan and Turkmenistan, is another plausible scenario. This area and the Persian Gulf form an “energy ellipse” containing a large part of the world’s energy resources. Tehran wants to link its massive energy resources to key regional projects that transport energy via the South Caucasus to European markets. Iranian activism in the south Caucasus and Central Asia has increased following the lifting of sanctions that accompanied the nuclear deal.21 The satellization of the “energy ellipse,” if it occurs, would bestow upon Tehran a central role in the world energy market, enhancing its political clout. Azerbaijan and Turkmenistan are very fearful of growing Iranian influence. It is possible that those countries, which adopted a pro-Western foreign policy orientation after the dissolution of the Soviet Union, might either bow to Tehran’s wishes or decide to return to the Russian orbit, as Moscow appears to be a much more reliable ally than Washington. The Western loss would be considerable. Russia Benefits Russia is fully alive to the potential for a reassertion of its historic role in the region. Though NATO proclaims that the European theater has diminished in strategic importance,22 Moscow seems to have other thoughts. According to Russian defense minister Sergei Shoigu,23 the Mediterranean region, bordering NATO’s southern flank and the Middle East, has been the core of all essential dangers to Russia’s national interests, and continued fallout from the Arab upheavals of the past five years has only increased the region’s importance. Shortly after releasing that statement, Shoigu announced the decision to establish a navy department task force in the Mediterranean “on a permanent basis.”24 The Russian naval facility in Tartus, on the Syrian littoral (leased since 1971), is a vital base for enhanced Russian naval presence in the eastern Mediterranean, and Moscow has gradually improved its fleet size and stepped up patrols in the area. The nearby Hmeymim air facility is also important for the Russian deployment. Russia’s greater military footprint in the eastern Mediterranean is intended to project increased power into the Middle East. Putin has taken the major step of intervening militarily in Syria to assure the survival of the Assad regime and with it, continued access to its naval base. In addition, as a major player in the global energy market, he wants to protect energy prospects that depend on Assad’s survival. Moscow has already signed exploration contracts with Damascus with regard to recent gas discoveries in the Mediterranean basin.25 The preservation of the Assad regime is vital not only for Russia but also for Tehran. Damascus is Iran’s corridor to Hezbollah, its Shiite proxy in Lebanon. Syria has been an ally of Iran since the establishment of the Islamic Republic in 1979 – one of the longest alliances in the Middle East. Moreover, Syria could serve as a launching pad for Iranian destabilization of Jordan, a longstanding US ally. Moscow’s efforts on Assad’s behalf thus directly serve the interests of the Iranian regime. If successful, those efforts will further Tehran’s influence in the region. The confluence of Iranian-Russian interests is also visible outside Syria. Putin is by no means averse to the Iranian goal of pushing the US out of the Persian Gulf. Russia is also a clear beneficiary of the nuclear deal, which frees it from international constraints on exporting arms to Tehran. A further outcome of the US withdrawal may well be Iran joining Russia in supporting Kurdish political ambitions in order to weaken Turkey, its main rival for regional leadership. Kurdish aspirations have long been a thorn in Turkey’s side. While Tehran and Ankara are supporting opposing sides in the Syrian civil war, the Kurds are busy carving out autonomous regions from the moribund state. Kurdish national dreams might, therefore, actually benefit from the power vacuum created by the disruption of Arab statist structures and the US exit from the region. The emergence of an independent Kurdish entity in northern Iraq seems more probable nowadays with Washington seemingly taking no clear position on such a contingency. Another consequence to the US exit can be seen in Egypt. Moscow has been well served by Washington’s reluctance to support the regime of Abdel Fattah Sisi, who came to power following a military coup against Muhammed Morsi of the Muslim Brotherhood. The Russians are selling the Egyptians weapons, negotiating port rights in Alexandria, and supplying them with nuclear reactors. In Iraq, too, there are harbingers of a Russian presence in coordination with Iran as US influence in that state continues to wane. Iraq signed an arms deal with Russia in October 2012, and a joint intelligence center was set up in Baghdad in October 2015. Baghdad is also seeking Russian military support in its anti-terrorist campaign.26 Moscow’s and Washington’s different approaches to the region tell the regional protagonists: “America is feckless, but Russia and Iran are strong.” <<card continues>>

### Hegemony Impacts

<<card continues>> Regional Losses The rise of a more aggressive Iran – a direct consequence of the US retreat – may bring about greater tacit cooperation among Egypt, Jordan, Saudi Arabia, and Israel. A big question is whether Ankara would join this anti-Iranian alignment. The Turks and the Persians have long been rivals who have nonetheless displayed great caution toward each other in the more recent past. Moreover, Turkey under Erdoğan has been at loggerheads with both Egypt and Israel while simultaneously becoming increasingly dependent upon energy from Iran. Regardless of Ankara’s behavior, a reduced US commitment in the region is likely to influence the destiny of the Hashemite Kingdom of Jordan, a pro-Western country and a beneficiary of US support. Jordan could have more and more difficulty insulating itself from what is happening just beyond its borders in Syria and Iraq. Either Iran or IS, both of which enjoy greater freedom of action following the US retrenchment, may attempt to destabilize Jordan. For Israel, the stability of Jordan as a buffer state is critical. Their joint border is the longest and closest to the Jewish state’s heartland, and the Hashemite dynasty has been both an informal and a formal ally of Jerusalem for decades. While the dissolution of neighboring Arab states has reduced the threat of large-scale conventional military attacks against Israel (with the additional positive effect of reducing somewhat its dependence on US weaponry), Jerusalem cannot be happy with the turn of events. The growing Iranian threat, and the greater appeal of radical Islam in the region, facilitates cooperation between Israel and “moderate” Sunni states such as Egypt, Saudi Arabia, and Jordan, but they are the proverbial weak reeds. It remains true, however, that Sunni forces are losing in Syria, Yemen and Iraq. The rise of Iran and the consequent change in the regional balance of power, together with the growing potential for nuclear proliferation, are detrimental to Israel’s national security. Although Jerusalem is being pushed into a preemptive mode to minimize the repercussions of Obama’s nuclear deal and mitigate its effect on the regional strategic equation, it may well choose to wait until the president is out of office to take significant action. The US retreat from the Middle East, and the manner of that retreat, weaken Israel’s deterrence. The perception that Washington will come to Israel’s aid in case of need has been a longstanding and important component of Jerusalem’s ability to project a deterrent threat. The new perception of the US administration as a vacillating ally damages that deterrent capability. In addition, Washington’s attempt to compensate its Arab allies for the Iranian nuclear deal by providing them with the latest state-of-the-art weapons erodes Israel’s qualitative advantage. As a result, the US exit from the Middle East ironically increases Israel’s leeway to do as it sees fit. It is burdened with less of an obligation to weigh the consequences of its own actions on US interests and personnel in the region. Moreover, if the next American administration employs the logic of “offshore balancing,” whereby one country uses favored regional powers to check the rise of potentially hostile powers, Washington’s dependence on Jerusalem is likely to increase, as Israel is the strongest and friendliest military power in a highly volatile region.27 Lastly, Washington’s disengagement from the Middle East appears to close the book on the longstanding US support for liberty and for democratic movements around the world. It undermines the relatively small and weak pro-democratic forces in the Arab world, which need greater US involvement and support for their causes. The prospect of regime change in Iran has faded as challengers to the mullahs see little hope of getting substantial assistance from Washington. Similarly, in Turkey, where a struggle is taking place over the identity and soul of the nation, pro-democratic, pro-Western forces are discouraged by Washington’s regional policies. The International Consequences US weakness in the Middle East will inevitably have ripple effects in other parts of the globe. Its credibility is now subject to question, and allies elsewhere may determine that it would be wise to hedge their bets and look elsewhere for support. The decision to exit the Middle East, while leaving intact a large part of the Iranian nuclear infrastructure, has created incentives for nuclear proliferation in other regions of the world. Credible US guarantees backed by a military presence were once an effective way of encouraging states to make the strategic calculation in favor of nuclear restraint.28 Such credibility has been eroded. Washington’s reluctance to confront Tehran on the nuclear issue sends the message that nuclear aspirants need not fear direct US intervention, despite stated commitments to counter-proliferation. In addition, states that are ready to sell sensitive technologies are now less deterred by Washington from doing so. One can already see increased cooperation between North Korea and Iran.29 The difficulties the International Atomic Energy Agency (IAEA) has had in inspecting Tehran’s nuclear facilities, and the ridiculously ineffective verification clauses accepted by the Obama administration in the JCPOA, do not augur well for the future of the Non-Proliferation Treaty (NPT). While the NPT is not a panacea for preventing global nuclear proliferation, it was a useful tool insofar as it restrained modest nuclear aspirations. Russian assertiveness, in parallel with US hesitation, has also increased the threat perception in countries such as Poland, which might decide that its security would be enhanced by nuclear weapons. A similar rationale could lead Australia, facing increased Chinese clout, to consider a nuclear program. Japan, South Korea, and Taiwan share similar apprehensions about US determination and power and might also conclude that nuclear weapons have become a necessity.30 The US exit from the Middle East further exacerbates European weakness. The European Union – an aging political entity that lacks military force and consistently displays questionable political will – is hardly a strategic player. It now faces a significant demographic challenge as migrants from the Middle East and North Africa pour into its borders. <<card continues>>

### Hegemony Impacts

<<card continues>> Capitalizing on EU weakness and US indifference, Turkey is pushing immigrants into Europe even as it is being paid by the EU not to do so. Europe’s record on absorbing immigrants from Muslim countries is already problematic, and the continent will need to address this new problem seriously if it is to maintain its identity. The recent terror attacks in Brussels and Paris vividly demonstrate these dual concerns: jihadists, posing as refugees, can murder scores of European citizens and manage to evade domestic security services by hiding in the midst of their Muslim compatriots, hosted by these very same European countries. Meanwhile, parts of Europe are within range of Iranian missiles, an arms program that was not even addressed by the US-brokered JCPOA. Europe may, therefore, be in even greater danger from events in the Middle East that are partly the result of the US abandonment of the region. The emergence of a nuclear Iran will likely also have a negative effect on the stability of the Indian subcontinent. Tehran’s neighbors will inevitably have to adjust their nuclear posture in response to a new nuclear player. Sunni Islamabad may be eyeing Shiite Iran with even greater suspicion,31 while any change in Pakistan’s nuclear posture is apt to prompt a response by India, potentially increasing tensions between them. Nuclear arsenals at the disposal of the two states have not induced greater caution on the Pakistani side. Furthermore, upheaval in the Persian Gulf, threatened as it is by Tehran’s aspirations, could disrupt oil supplies to both nations and harm their economies. The Indian subcontinent, which consists of India, Bangladesh, Nepal, and Pakistan, benefits from remittances from a large diaspora in the Gulf region, and therefore might be particularly vulnerable. Washington’s behavior in the Middle East is also increasing its difficulties in the Muslim world at large. Obama started his presidency by visiting Turkey and Egypt in a clear effort to improve US relations with Muslimmajority states. Despite that effort, the president’s subsequent policies have resulted in a widespread perception in the Muslim world that his administration has sided with the Shiites rather than with the huge Sunni majority. The nuclear deal with Iran, a Shiite power, was opposed by most Sunni states in the Middle East.32 Moreover, the limited US military effort against IS – a barbaric radical organization, albeit Sunni – has helped consolidate the Bashar al-Assad regime in Syria, a key component of the perceived Shiite axis. While the Sunni-Shiite religious divide does not necessarily resonate the same way across all Muslim realms, US policy undoubtedly leaves important Sunni states such as Indonesia and Malaysia uneasy.33 In more general terms, a weaker US strengthens anti-US and antidemocratic forces around the globe. Apprehensions in Central Asia have already been mentioned, and Russia under Putin has become more assertive in Eastern Europe and might try to exert greater influence in the Caucasus and Central Asia. But it is with regard to China that the greatest potential for a major realignment exists, due largely to perceived US exhaustion. Beijing may become even less cooperative, primarily in its immediate region. North Korea is, after all, a Chinese satellite, and Pyongyang could adopt a more destabilizing posture toward South Korea. North Korea and China could become more aggressive in the sale of missile and nuclear advanced technologies. Beijing’s creation of artificial islands on disputed South China Sea reefs – the actual dredging and pumping of sand, ongoing since 2014 – represents its latest attempt to extend Chinese territory and exert pressure on the five other countries that claim parts of the sea. So far, Washington has displayed great reluctance to confront Beijing.34 US allies in Asia could decide that their interests are better served by a realignment of relationships. Taking into consideration the rise of China, they might calculate using traditional balance of power thinking and opt to be on the stronger side. The image now projected by the US is that of a country in decline that can no longer be assumed to be a reliable ally. China may benefit by comparison.

### A2: Competitiveness Theory Wrong

#### Competitiveness exists, our challengers rely on it, and ideology’s key

Lodge 9, (George C., “Ideology and national competitiveness,” Journal of Management Issues, December 22)

First, there is such a thing as a competitive nation; Second, in this clay and age, ideology is perhaps a nation's most important competitive advantage; and Third, a communitarian ideology is and will be more competitive than an individualistic one that ideology gives high priority to competitiveness; if it is flexible, capable of adapting and adjusting to the exigencies of the real world; and if institutions such as government and business are efficiently aligned with it. This argument rests on conceptions of the roles and relationships of government and business which are quite contrary to the beliefs of traditional economists, such as those who currently advise the President of the United States. For them, there is no such thing as a competitive nation; nations do not compete. Firms compete against firms with governments standing on the sidelines, blowing the whistle now and then, but never acting as players, certainly not as a coach. And for the traditionalists, everyone is better off if this competition occurs in a world characterized by free trade, free markets, and flee enterprise; firms benefiting from what the economists call the comparative advantage of their home base; comparative advantage meaning essentially that with which God has endowed the nation. Textbooks repeat the famous example of David Ricardo. Portugal, endowed with sunshine, was supposed to grow grapes and make wine. Britain, endowed by God with nobody knows quite what, was supposed to make sheep, which in turn made wool, which was to be converted into textiles. And, so said Ricardo, in the best of all possible worlds, it was Portuguese wine for British textiles. Needless to say, Ricardo was English, not Portuguese. And, at the time in which he wrote, textiles was the high value-added, high-income, high-profit, high-wage industry, comparable to semiconductors and computers today (Scott, 1984). Many of America's competitors have shown this theory to be wrong. You can live on a rock in the fog and be fiercely competitive if as a nation you have the will, the purpose, the discipline, the consensus, the coherence, and the theory. And how do you measure a nation's competitiveness? You look at its share of world markets, its share of world gross national product, and its ability to earn--not borrow--a rising standard of living for its people. Since a rising living standard means higher wages and less pollution, competitiveness requires that a country move up the ladder of technology, gaining share in the high value-added sectors of tomorrow. This is the story of Korea, Japan, and Singapore, among other countries. Japan in the early 1960s had essentially no computer industry. Traditional theory would have said that Japan should buy computers from the United States and make the most of its cheap labor force. Japan said no; that is the way to stagnation. We will protect our home market and concentrate our resources to achieve competitiveness, with government and business acting in concert to promote the national goal of global competitiveness. The same theory and practice was of course applied to many other sectors-machine tools, robotics, semiconductors--and it is being applied today to biotechnology, superconductivity, advanced materials, telecommunications, and more. The fact is, as my colleague Bruce Scott has demonstrated, that nations have strategies; and competitive nations have strategies that make them competitive. These strategies are characterized by high savings and high investment with low capital costs in selected industries, which are chosen by government and business as targets for national endeavor. The strategies are backed by a strong consensus among the people and between managers and managed, and they are complimented by trade policies which provide encouragement to the designated winners but do not protect uncompetitive losers (Scott, 1984: Chapters 1-3; Thurow, 1992). The strategies of uncompetitive nations like the United States are very nearly the opposite: low savings, high consumption, low investment, incoherent goals, laissez-faire theory, adversarial relations, industry fragmentation, high capital costs, and deteriorating education with incoherent purposes. In the case of the United States, competitiveness has been taken for granted; the nation's purpose was aimed at numerous goals, foreign and domestic. The foreign ones have been largely met: Japan and Germany have been restored, to say the least, and the USSR has crumbled. The domestic ones are contradictory: low taxes, environmental purity, education, welfare, high living standards, less crime, and SO on. So there are economic winners in the world today who derive their comparative advantage from a particular brand of ideology which I call communitarian, and the United States owes much of its difficulty to the lingering effects of an eroding individualism (Lodge, 1980). The challenge for the United States is to continue its transition from individualism to communitarianism and to arrive at a synthesis which enables it to make the most of itself (Lodge, 1990). IDEOLOGY: A FRAMEWORK FOR UNDERSTANDING Intensifying global competition has been shaping the formation of nations. Especially in the West, global competition has been forcing internal changes upon government, business, and labor. To provide a framework for understanding these strains, let me suggest a hypothesis: Each nation has an ideology, perhaps several. These are a set of beliefs and assumptions about values that the nation holds in order to justify and make legitimate the actions and purpose of its institutions. A nation is successful when its ideology is coherent and adaptable, enabling it to define and attain its goals, and when there is the least distance between the prevailing ideology and the actual practice of the country's institutions. What is ideology? <<card continues>>

### A2: Competitiveness Theory Wrong

<<card continues>> How can its analysis broaden the understanding of decision makers? THE CONCEPT OF IDEOLOGY Ideology is the collection of ideas that a community uses to make values explicit in the real world. The term "values" in this definition refers to timeless, universal, noncontroversial notions that virtually every community everywhere has always cherished: survival, for example, or justice, economy, self-fulfillment or self-respect. As I use the term, values are held by communities rather than by individual persons. The phrase "real world" is the collection of phenomena, facts, events, insights, institutions, and forces that affect the community from within and from without: the surrounding reality, the actual environment. Ideology connects the two: values and real world (see Figure I). Ideology gives values institutional vitality, makes them live in a particular place at a particular time. In ancient Egypt, for example, the values "justice" and "self-fulfillment" involved most inhabitants in lugging stones to glorify the god-king, motivation coming importantly from a whip across the laborer's back. Ideologically, the community was organized around the ideas of a theocratic hierarchy, an imposed consensus kept in place by force, and an extensive set of duties with a few rights of membership. A variety of contextual phenomena, including strong policemen and the need to keep the gods happy in order to obtain rain, sustained the ideology for some thousands of years. [FIGURE 1 OMITTED] This definition of "ideology" elaborates on, but nevertheless follows that of the French philosopher, Antoine Destutt de Tracy, who invented the word in 1801 to describe the study of those ideas that have a formative effect on society. This definition is quite different from that of Karl Marx and others for whom ideology was a set of beliefs used by the ruling class to obscure reality, with the sole purpose of perpetuating domination by that class. By my definition, the concept of ideology, may be a weapon of propaganda, but it is also an analytic tool for the study of societies in the tradition of Max Weber, who used the concept to trace the effects of religion on the rise of individualism, and of Karl Mannheim, who developed it as a method of social research. Ideology is a dynamic structure, a bridge by which these timeless values are connected to the surrounding reality in various cultures at different points in space and time. In the 1980s, Japan was relatively more successful economically than the USSR and the United States because its ideology conformed better with reality and thus supported the actions of government, business, and labor as they competed in the world. Japan's ideology arose, as did that of the United States and the USSR, from its efforts to connect certain values to its surrounding reality. A collection of small infertile islands with a population of some 120 million people, Japan is virtually totally dependent on what has often been a hostile world for the vital natural resources upon which its survival depends. Naturally, the ideology of Japan, the framework of ideas it uses to make values explicit and to justify its institutions, is different from that which took root in nineteenth century America, where a sparse population was trying to tame a wilderness and develop abundant resources. Thus, in Japan, attitudes about the role of government, the role of business, the relationship between the two, the role of trade unions, the means to self-fulfillment and self respect for the individual in the family, in the village, in the firm, and in the nation are all different from corresponding attitudes in the United States. If a community is to function effectively, its ideology requires scrutiny from time to time so that beliefs and practice can be made more coherent with one another. The relationship between ideology and practice generally follows a fairly standard pattern over a period of time. During a certain interval, institutional practice conforms to the prevailing ideology. Then changes in the real world induce or compel the institutions to behave differently. At that point, practice begins to depart from ideology. After another interval, institutional practice differs markedly from what ideology declares: the old hymns may be sung but they are not practiced. Ideological schizophrenia sets in: the new practice may evoke a new ideology to justify it, but loyalty to the old ideology discourages it being articulated. There is a gap between institutional practice and ideology--a legitimacy gap (see Figure II). As it widens, two forms of pressure are increasingly brought to bear on leaders. Some of the community seek to haul the institutions back into line with the traditional ideology. Others argue for a new ideology to justify the institution's actual practice. The feature of ideology that bo0th excites and exasperates those who study it is that frequently an old ideology tends to linger on, uninspected, while institutions depart from it in many pragmatic ways. People do not practice what they preach, and they find it difficult to preach what they practice--at least immediately.

## Cybersecurity Advantage

### Workforce Gap Now

#### New studies show a cyber security workforce deficit is coming now

Kuranda 17 (Sarah Kuranda - Senior Editor at CRN covering security. She previously covered all things channel, including VARs, solution providers, managed services and distribution. She has previous reporting experience at the Cape Cod Times, the New England Center for Investigative Reporting and TNT Magazine. She graduated from Boston University with a degree in Journalism – “Study: Cybersecurity Skills Gap To Widen To A Massive 1.8 Million Worker Shortfall By 2022” – 2/24/17 - http://www.crn.com/news/security/300083904/study-cybersecurity-skills-gap-to-widen-to-a-massive-1-8-million-worker-shortfall-by-2022.htm)/TK

¶ The cybersecurity skills gap – widely recognized as one of the biggest challenges facing the IT security industry – is only going to continue to widen in the years to come, a recent report found.¶ ¶ The deficit of cybersecurity professionals is now expected to grow to more than 1.8 million workers globally by 2022, according to the Global Information Security Workforce Study, sponsored by the Center for Cyber Safety and Education and surveying over 19,000 cybersecurity professionals. That is a 20 percent increase over what the same study predicted two years ago. ¶ ¶ The study also noted that the security industry seems to have a challenge recruiting millennial workers in particular, with only 12 percent of the workforce under 35.¶ ¶ ¶ Many security solution providers cite the security talent shortage as one of the greatest challenges facing their businesses today. Global Managing Director of Accenture Security Kelly Bissell said there simply isn't enough talent to go around in the security industry.¶ ¶ "The war for talent is on," Bissell said.¶ ¶ That war for talent is leading to real-world implications when it comes to security effectiveness, the study found. It said the skills deficit is already starting to impact businesses, with 46 percent of companies saying that it is already causing a "significant impact" on customers and leading to increased security breaches.¶ ¶ However, Bissell said the gap is so large that it is no longer enough for companies like Accenture to recruit personnel from the competition. He said Accenture has doubled down on its investment in training and security boot camps to develop the next generation of security practitioners in the marketplace.¶ ¶ The talent shortage is particular hard on the SMB side of the market, the study found. It said only 23 percent of security professionals work for companies with fewer than 500 employees, although SMB companies make up the majority of the business market.

### Workforce Gap Now

#### The cyber workforce needs to be expanded – else, the US’s advantage in cyber space will decline

Kay et al 12 (David J. Kay - Research Analyst in the Center for Technology and National Security Policy (CTNSP), Institute for National Strategic Studies, at the National Defense University; Terry J. Pudas - Senior Research Fellow in CTNSP; Brett Young - Research Assistant in CTNSP – “Preparing the Pipeline: The U.S. Cyber Workforce for the Future” – August 2012 - http://ctnsp.dodlive.mil/files/2013/07/DH-072.pdf)/TK

Scope of the Problem: Existing Pipelines¶ Within government, industry, and academia, it is universally acknowledged that the cyber workforce needs to be expanded. The 2009 White House Cyberspace Policy Review emphasized both expanding and training the workforce and improving cyber education in order to build greater domestic capacity in the digital age. The Center for Strategic and International Studies Commission on Cybersecurity for the 44th Presidency lists building an expanded workforce as one of its 10 key recommendations and released a November 2010 report entitled A Human Capital Crisis in Cybersecurity. U.S. Strategic Command has identified the Department of Defense (DOD) cyber workforce as undersized and unprepared to meet current and future expected threats.6 According to Congressman Jim Langevin (D-RI), cochair of the Congressional Cybersecurity Caucus, the "growth in demand continues to far outnumber the personnel capable of protecting our networks."7¶ The University System of Maryland (USM) Cyber Security Task Force lists "expanding the pipeline for cyber careers" as an actionable recommendation in its 2011 report.8 Clearly, awareness exists that the current cyber workforce is inadequate.¶ Before discussing the growth of the cyber workforce, we must develop and agree upon a clearer definition as to who is a member of the cyber workforce. Currently, no specific occupational series identifies Federal cybersecurity positions. In fact, the Government Accountability Office (GAO) lists 17 different occupational series commonly used to label such workers, and this does not even include the uniformed military9 As a result, Federal agencies often release highly conflicting information when asked about the size of their cybersecurity workforce: DOD reported 66,000 cybersecurity full-time equivalents (FTEs) in the Office of Management and Budget fiscal year 2010 Federal Information Security Management Act (FISMA) report; 87,846 FTEs in a 2010 agency FISMA report; 88,159 in a 2011 GAO data call; and 18,955 in a 2010 Office of Personnel Management (OPM) study10 DOD, Department of Homeland Security (DHS), and other Federal agencies have taken steps to define the roles and responsibilities of the government's cyber workforce, but there is no current and universally agreed upon framework.¶ Even as the current cyber workforce must grow quantitatively and qualitatively, the gap between requirements and capacity will no doubt continue to increase exponentially. Within DOD, nearly every combat, logistical, and administrative capability is now digitized and relies on global networks, millions of lines of computer code, and a staifof highly trained information technology (IT) professionals to keep them running and secure. Unmanned aerial systems (UAS) are emblematic of this trend. A UAS is essentially a flying platform composed of varying computerized capabilities, controlled remotely via computer, and usually communicates with a wide range of networked intelligence systems throughout the globe.¶ As the government's cyber workforce requirements grow, it must also compete with the private sector, both at home and abroad, where demand and incentives (salary, benefits) for talented individuals are highly competitive. Recent years have seen high-profile network intrusions across different commercial sectors, including defense (Lockheed Martin), social media and email (Facebook and Google), finance (Royal Bank of Scotland), IT security (RSA) and entertainment (Sony). To protect and expand their online presence and automated operations, firms not traditionally associated with IT are investing significant resources in their own cyber workforces, further dampening the global competition for cybersecurity professionals. Smaller firms, nonprofits, and any organization with an online presence are forced to make significant cybersecurity investments due to cyber criminals on the lookout for easy prey¶ In the near term, attracting talented individuals to expand the cyber workforce will need to be done in an environment of budget austerity. Regardless of the end result of the Federal budget debate, spending will likely be cut across most, if not all, agencies. State and local governments and industry are also facing similar difficulties due to the negative fiscal climate and slow economy. In Congress and on the election trail, there are also influential voices that advocate pushing more responsibilities (and the responsibility for their funding) back on state and local jurisdictions. This should further drive awareness that the push for a more robust cyber workforce will take place in an environment of limited resources, stiff competition, and growing demands.¶ While there is a debate on how much the overall U.S. cyber workforce must grow, there is wide agreement that - in the face of this growing demand and upcoming retirements - it must grow in both quantity and quality. Due to ageing trends, growth of the overall U.S. workforce is expected to decline from 1.2 percent to 0.8 percent from 2006-2016, and the fastest-growing segment of the workforce is age 55 and older, a segment of the population that tends to be less proficient with technology. In addition, 4-year degrees conferred in computer and information sciences peaked in 2004, and have dropped 30 percent since then.11 However, other computer-related disciplines and educational/certificate programs have been reported to be on the rise, such as those associated with the computer gaming industry and others that require a great deal of familiarity with computer skills. This makes it difficult to judge the true size of the potential pool of people from which to recruit cybersecurity professionals.¶ U.S. cyber capabilities and competitiveness strongly underpin the Nations economic vitality and technological advantage, which in turn underwrite national security and enable the American high standard of living. The United States has been at the forefront of past technological revolutions - industrial, nuclear, space - and a failure to stay at the forefront of the cyber (or information) age could be a serious threat to the American way of life. Despite the growing dependence on cyber and related capabilities, the U.S. scientific and technological base is struggling, and without serious action, there are concerns that it might not be able to sustain a competitive advantage.¶ Paradigm Shift: Existing Pipelines and New Ways of Hiring¶

### CTE Solves Workforce Gap

#### CTE is key to resolve the skills gap in the workforce

Arnett 16 (Autumn A. Arnett - editor of Education Dive, an online publication that provides news, trends, jobs listings and resources for educators and administrators in higher education and K12. She has contributed to a number of publications, most recently Diverse: Issues In Higher Education, HBCU Digest and The Atlantic – “Career and Technical Education a key part of revitalized ed outlook” – 4/7/16 - http://www.educationdive.com/news/career-and-technical-education-a-key-part-of-revitalized-ed-outlook/417048/)/TK

It is no secret that there is a gap between the skills employers want and those recent graduates entering the workforce possess. According to a recent survey by the Business Roundtable, 95% of American CEOs believe their companies suffer from a skills shortage.¶ Business Roundtable Vice President for Education and Workforce Dane Linn believes the reality is the nation’s educational system “is failing to keep pace with the demands of the global economy,” despite acknowledged improvements, and said “the long-term negative impacts of this skills gap on workers, families, businesses, governments and the economy are potentially far-reaching.”¶ Career and Technical Education (CTE) provides “an opportunity to bridge that gap, by providing real world, hands-on exposure to fields to students while they are still in school and can choose a pathway to a growing career,” said Linn.¶ As the nation continues to discuss the implementation of the Every Student Succeeds Act (ESSA), CTE is beginning to emerge as a key component of American education.¶ Sean Lynch, legislative and public affairs manager for the Association for Career and Technical Education, said ESSA “puts this really unprecedented level of support into CTE” that has pushed educators to consider CTE as “part of a well-rounded education,” reframing the conversation towards considering CTE as more than just optional vocational training.¶ “Historically, CTE has been seen as the dumping ground for students who are not attending college,” Linn said. “Today’s CTE programs differ from their predecessor in at least three distinct ways: they help bridge the skills gap by focusing on skills instead of content alone; they provide exposure to careers at an earlier age; and they cover more fields than one would think — from STEM jobs, to finance, to architecture and manufacturing.”¶ Some of this translates to higher collaboration with both K-12 districts and higher education systems to strengthen the existing educational system. Lynch and Linn said the conversation needs to shift to ways CTE can supplement, not supplant educational goals in states and districts.

### Cyber Attacks Coming

#### The risk of a damaging cyber attack on the grid is coming – that can cause a US military retaliation

Knake 4/3/17 (Robert K. Knake - Whitney Shepardson senior fellow at the Council on Foreign Relations. His work focuses on Internet governance, public-private partnerships, and cyber conflict. Knake served from 2011 to 2015 as director for cybersecurity policy at the National Security Council – “A Cyberattack on the U.S. Power Grid” – 4/3/17 - https://www.cfr.org/report/cyberattack-us-power-grid)/TK

The U.S. power grid has long been considered a logical target for a major cyberattack. Besides the intrinsic importance of the power grid to a functioning U.S. society, all sixteen sectors of the U.S. economy deemed to make up the nation’s critical infrastructure rely on electricity. Disabling or otherwise interfering with the power grid in a significant way could thus seriously harm the United States.¶ Carrying out a cyberattack that successfully disrupts grid operations would be extremely difficult but not impossible. Such an attack would require months of planning, significant resources, and a team with a broad range of expertise. Although cyberattacks by terrorist and criminal organizations cannot be ruled out, the capabilities necessary to mount a major operation against the U.S. power grid make potential state adversaries the principal threat.¶ Attacks on power grids are no longer a theoretical concern. In 2015, an attacker took down parts of a power grid in Ukraine. Although attribution was not definitive, geopolitical circumstances and forensic evidence suggest Russian involvement. A year later, Russian hackers targeted a transmission level substation, blacking out part of Kiev. In 2014, Admiral Michael Rogers, director of the National Security Agency, testified before the U.S. Congress that China and a few other countries likely had the capability to shut down the U.S. power grid. Iran, as an emergent cyber actor, could acquire such capability. Rapid digitization combined with low levels of investment in cybersecurity and a weak regulatory regime suggest that the U.S. power system is as vulnerable—if not more vulnerable—to a cyberattack as systems in other parts of the world.¶ An adversary with the capability to exploit vulnerabilities within the U.S. power grid might be motivated to carry out such an attack under a variety of circumstances. An attack on the power grid could be part of a coordinated military action, intended as a signaling mechanism during a crisis, or as a punitive measure in response to U.S. actions in some other arena. In each case, the United States should consider not only the potential damage and disruption caused by a cyberattack but also its broader effects on U.S. actions at the time it occurs. With respect to the former, a cyberattack could cause power losses in large portions of the United States that could last days in most places and up to several weeks in others. The economic costs would be substantial. As for the latter concern, the U.S. response or non-response could harm U.S. interests. Thus, the United States should take measures to prevent a cyberattack on its power grid and mitigate the potential harm should preventive efforts fail.¶ The Contingency¶ The U.S. power system has evolved into a highly complex enterprise: 3,300 utilities that work together to deliver power through 200,000 miles of high-voltage transmission lines; 55,000 substations; and 5.5 million miles of distribution lines that bring power to millions of homes and businesses. Any of the system’s principal elements––power generation, transmission, or distribution––could be targeted for a cyberattack. In the Ukraine case, attackers targeted substations that lower transmission voltages for distribution to consumers. Lloyd’s of London, an insurance underwriter, developed a plausible scenario for an attack on the Eastern Interconnection—one of the two major electrical grids in the continental United States—which services roughly half the country. The hypothetical attack targeted power generators to cause a blackout covering fifteen states and the District of Columbia, leaving ninety-three million people without power. Other experts have concluded that an attack on the system for transmitting power from generation to end consumers would have devastating consequences. In one scenario, disruption of just nine transformers could cause widespread outages. Many experts are now also concerned that smart grid technologies, which use the internet to connect to power meters and appliances, could allow an attacker to take over thousands—if not millions—of unprotected devices, preventing power from being delivered to end users.¶ State actors are the most likely perpetrators of a power grid attack.¶ ¶ Regardless of which part of the power grid is targeted, attackers would need to conduct extensive research, gain initial access to utility business networks (likely through spearphishing), work to move through the business networks to gain access to control systems, and then identify targeted systems and develop the capability to disable them. Such sophisticated actions would require extensive planning by an organization able to recruit and coordinate a team that has a broad set of capabilities and is willing to devote many months, if not years, to the effort. State actors, therefore, are the more likely perpetrators, and given these long lead times, U.S. adversaries have likely already begun this process in anticipation of conflict. It is doubtful that a terrorist organization would have both the intent and means to carry out such an attack successfully. In the future, however, criminal groups could pose a real threat. They are growing in sophistication and in some cases rival, if not exceed, the capabilities of nation states. <<card continues>>

### Cyber Attacks Coming

<<card continues>> Payments for ransomware—malicious software that encrypts data and will not provide a code to unlock it unless a ransom has been paid—by some estimates have topped $300 million. This funding could allow criminal groups to purchase more sophisticated capabilities to carry out the ultimate ransomware attack.¶ The likelihood that an attack carried out by a determined and capable adversary would be thwarted by security measures is low. While some U.S. utilities might block attempts by an adversary to gain initial access or might be able to detect an adversary in their systems, many might not have the necessary tools in place to detect and respond. Efforts to improve data sharing that could enable detection by one company to block access across the entire industry are in their infancy. In the Lloyd’s scenario, only 10 percent of targeted generators needed to be taken down to cause a widespread blackout.¶ Short of outright conflict with a state adversary, several plausible scenarios in which the U.S. power grid would be subject to cyberattack need to be considered:¶ Discrediting Operations. Given the importance of electricity to the daily lives of Americans, an adversary may see advantage in disrupting service to undermine public support for a U.S. administration at a politically sensitive time.¶ Distracting Operations. A state contemplating a diplomatic or military initiative likely to be opposed by the United States could carry out a cyberattack against the U.S. power grid that would distract the attention of the U.S. government and disrupt or delay its response.¶ Given the fragility of many industrial control systems, even reconnaissance activity risks accidentally causing harm.¶ ¶ Retaliatory Operations. In response to U.S. actions considered threatening by another state, such as the imposition of economic sanctions and various forms of political warfare, a cyberattack on the power grid could be carried out to punish the United States or intimidate it from taking further action with the implied threat of further damage.¶ There are many plausible circumstances in which states that possess the capability to conduct cyberattacks on the U.S. power grid––principally Russia and China, and potentially Iran and North Korea––could contemplate such action for the reasons elaborated above. However, considerable potential exists to miscalculate both the impact of a cyberattack on the U.S. grid and how the U.S. government might respond. Attacks could easily inflict much greater damage than intended, in good part because the many health and safety systems that depend on electricity could fail as well, resulting in widespread injuries and fatalities. Given the fragility of many industrial control systems, even reconnaissance activity risks accidentally causing harm. An adversary could also underestimate the ability of the United States to attribute the source of a cyberattack, with important implications for what happens thereafter. Thus, an adversary’s expectations that it could attack the power grid anonymously and with impunity could be unfounded.¶ Warning Indicators¶ A series of warning indicators would likely foretell a cyberattack on the U.S. power grid. Potential indicators could include smaller test-run attacks outside the United States on systems that are used in the United States; intelligence collection that indicates an adversary is conducting reconnaissance or is in the planning stages; deterioration in relations leading to escalatory steps such as increased intelligence operations, hostile rhetoric, and recurring threats; and increased probing of electric sector networks and/or the implementation of malware that is detected by more sophisticated utilities.¶ Implications for U.S. interests¶ A large-scale cyberattack on the U.S. power grid could inflict considerable damage. The 2003 Northeast Blackout left fifty million people without power for four days and caused economic losses between $4 billion and $10 billion. The Lloyd’s scenario estimates economic costs of $243 billion and a small rise in death rates as health and safety systems fail. While darker scenarios envision scarcity of water and food, deterioration of sanitation, and a breakdown in security, leading to a societal collapse, it would be possible to mitigate the worst effects of the outage and have power restored to most areas within days. At this level of damage, the American public would likely demand a forceful response, which could reshape U.S. geopolitical interests for decades. Traditional military action, as opposed to a response in kind, would be likely.

### Cyber Attacks Coming

#### A risk of a cyber attack on the grid is increasing now

Schlesinger and Day 4/1/17 (Jennifer Schlesinger - producer for CNBC special programming; Andrea Day - covers Crime & Punishment for CNBC – “Hackers next target could be the US electric grid” – 4/1/17 - http://www.cnbc.com/2017/04/01/hackers-next-target-could-be-the-us-electric-grid.html)/TK

You've heard about hackers trying to steal credit card numbers and wipe out bank accounts. But there's another group that many cybersecurity experts say especially worry them.¶ These criminals are targeting critical infrastructure, like power grids — and what makes them dangerous is that some are backed by governments and big money.¶ "Turning off water, turning off electricity. Those are all realistic attacks now," said Liam O' Murchu a director with cybersecurity company Symantec, the manufacturer of Norton security products.¶ Symantec is currently tracking more than 100 government backed groups, more than ten times the number from five years ago.¶ Using a computer to cause a power outage may seem farfetched, but experts believe it's already happened. Most recently, in December, parts of Ukraine's capital city Kiev lost power because of what was believed to be a cyberattack.¶ And that wasn't the first time. In December 2015, 225,000 customers in Ukraine lost power, likely as the result of malware being placed on the computer network of a power supply company, according to the Department of Homeland Security. The Ukrainian government has blamed Russia for the 2015 attack.¶ Experts worry critical infrastructure attacks could also happen in the United States. The U.S. electric grid is worth more than $1 trillion and supplies power to 334 million people every year, according to the North American Energy Reliability Corporation.¶ "Sometimes [these groups are] launching real-time attacks and sometimes just setting up so they have a back door, they have a foothold that they can use in future when they need it," O'Murchu said.¶ 'Act of war or act of God'¶ U.S. utility companies have taken notice.¶ "Whether it's an act of war or an act of God that is impacting the grid, we have ways to be resilient to make sure that we can keep the electricity flowing," said Scott Aaronson an executive director of security and business continuity with the Edison Electric Institute, which represents the investor owned electric companies in the U.S.¶ To restore power in Kiev, the city needed to go back to a manual system of supplying power.¶ "[Ukraine was] still able to operate the grid simply in a manual state without that digital overlay, without automated controls. That's something that we in the United States have some capability to do. But actually are looking to expand upon," Aaronson said.¶ In addition to learning from the incidents in Ukraine, U.S. electric companies share information with other grid operators and governments officials.¶ "In order to beat back the sophistication of a near peer nation state we need to have the sophistication of the U.S. government behind us," Aaronson explained¶ The electric industry also runs exercises to simulate attacks.¶ "One [test] known as GridEx, that happens every two years, is the biggest of its kind. But individual companies practice all the time to respond to and recover from all manner of incidents," said Aaronson.¶ The Government Accountability Office found over 2 dozen government effort to increase reliability, including protecting from cyberattacks, but says more needs to be done.¶ "We're talking about a government and the resources and the money and the expertise that a government can wield go, going up against private companies. So there's real mismatch there in the power of attack and the power of defense," O'Murchu said.

### Cyberwar Impact

#### Cyber war has the potential to escalate to nuclear use through retaliatory measures

Clarke and Andreason 13 (Richard A. Clarke - the chairman of Good Harbor Security Risk Management, was special adviser to the president for cybersecurity in the George W. Bush administration; Steve Andreason - consultant to the Nuclear Threat Initiative, was the National Security Council’s staff director for defense policy and arms control from 1993 to 2001 – “Cyberwar’s threat does not justify a new policy of nuclear deterrence” – 6/14/13 - https://www.washingtonpost.com/opinions/cyberwars-threat-does-not-justify-a-new-policy-of-nuclear-deterrence/2013/06/14/91c01bb6-d50e-11e2-a73e-826d299ff459\_story.html)/TK

President Obama is expected to unveil a new nuclear policy initiative this week in Berlin. Whether he can make good on his first-term commitments to end outdated Cold War nuclear policies may depend on a firm presidential directive to the Pentagon rejecting any new missions for nuclear weapons — in particular, their use in response to cyberattacks.¶ The Pentagon’s Defense Science Board concluded this year that China and Russia could develop capabilities to launch an “existential cyber attack” against the United States — that is, an attack causing sufficient damage that our government would lose control of the country. “While the manifestation of a nuclear and cyber attack are very different,” the board concluded, “in the end, the existential impact to the United States is the same.”¶ Because it will be impossible to fully defend our systems against existential cyberthreats, the board argued, the United States must be prepared to threaten the use of nuclear weapons to deter cyberattacks. In other words: I’ll see your cyberwar and raise you a nuclear response.¶ Some would argue that Obama made clear in his 2010 Nuclear Posture Reviewthat the United States has adopted the objective of making deterrence of nuclear attacks the “sole purpose” of our nuclear weapons. Well, the board effectively reviewed the fine print and concluded that the Nuclear Posture Review was “essentially silent” on the relationship between U.S. nuclear weapons and cyberthreats, so connecting the two “is not precluded in the stated policy.”¶ As the board noted, cyberattacks can occur very quickly and without warning, requiring rapid decision-making by those responsible for protecting our country. Integrating the nuclear threat into the equation means making clear to any potential adversary that the United States is prepared to use nuclear weapons very early in response to a major cyberattack — and is maintaining nuclear forces on “prompt launch” status to do so.¶ Russia and China would certainly take note — and presumably follow suit. Moreover, if the United States, Russia and China adopted policies threatening an early nuclear response to cyber­attacks, more countries would surely take the same approach.¶ It’s hard to see how this cyber-nuclear action-reaction dynamic would improve U.S. or global security. It’s more likely to lead to a new focus by Pentagon planners on generating an expanding list of cyber-related targets and the operational deployment of nuclear forces to strike those targets in minutes.¶ Against that backdrop, maintaining momentum toward reducing the role of nuclear weapons in the United States’ national security strategy (and that of other nations) — a general policy course pursued by the past five presidents — would become far more difficult. Further reductions in nuclear forces and changes in “hair-trigger” postures, designed to lessen the risk of an accidental or unauthorized nuclear launch, would also probably stall.¶ Fortunately, Obama has both the authority and the opportunity to make clear that he meant what he said when he laid out his nuclear policy in Prague in 2009. For decades, presidential decision directives have made clear the purpose of nuclear weapons in U.S. national security strategy and provided broad guidance for military planners who prepare the operations and targeting plans for our nuclear forces. An update to existing presidential guidance is one of the homework items tasked by the 2010 Nuclear Posture Review.

### A2: CTE Trades Off With STEM

#### CTE is integral to STEM education

NSF 14 - National Science Foudnation(“CTE Pathways to STEM Occupations”;May 12th;http://successfulstemeducation.org/resources/cte-pathways-stem-occupations)//pk

U.S. employers are scrambling to fill jobs that are key to competing in the global economy. Many of these jobs—in computing, energy, manufacturing, and other fields—demand sophisticated STEM skills and knowledge, pay well, and require some higher education, but do not require a bachelor’s degree. Some call these “middle-skill” jobs. Yet in The Hidden STEM Economy, Jonathan Rothwell suggests a more robust term, “high-STEM,” for all occupations that require a “high level of knowledge” in any one STEM field. Whether you call these jobs middle-skill or high-STEM, the reality is the same. As the number of new jobs that demand advanced STEM skills grows, there is a shortage of skilled workers. For the U.S. to remain competitive, business as usual will not work. The educational community and employers need to join forces to prepare an ample high-STEM workforce. Two undervalued key players—secondary career and technical education (CTE) and community colleges—will be instrumental in this effort. “Workers in STEM fields play a direct role in driving economic growth. Yet, because of how the STEM economy has been defined, policymakers have mainly focused on supporting workers with at least a bachelor’s degree, overlooking a strong potential workforce of those with less than a BA.” The Hidden STEM Economy KEY ISSUES AND PROMISING PROGRAMS This brief, the ninth in a series, explores issues and promising practices in paving CTE pathways to high-STEM occupations—a key piece of the STEM college and career readiness puzzle. Other briefs focus on related parts of the puzzle, such as the role that math and science standards play in students’ college and career readiness, providing rich STEM learning in preschool and out-of-school time programs, and strategies to ensure all students enjoy a successful STEM education.7 Secondary Career and Technical Education Secondary CTE can make STEM learning more meaningful and engaging through applied, student-centered approaches. These applied learning approaches help youth acquire key employability skills such as critical thinking, problem solving, collaboration, communication, and creativity.8 When secondary CTE infuses applied STEM learning into rigorous programs of study, aligns with post-secondary programs, awards credentials, and offers dual enrollment programs that provide college credits, it propels youth toward college and career goals. Despite these strengths, CTE has received scant respect in the K–12 arena. In 2014, this is changing. Policymakers’ interest and student enrollment in secondary CTE are both on the rise. Yet recent reports highlight potential obstacles to programs’ ability to expand and enhance secondary CTE: The primary federal source of CTE funding, Perkins, is failing to keep pace with the demand to expand CTE and create new CTE programs of study relevant to STEM occupations. The recent FY 14 Omnibus Bill restored $53 million of the FY 13 sequestration cuts, but did nothing to restore FY 11 cuts ($140 million). With level or declining funding, this reflects a pattern of “erosion” in Perkins funds.9 Findings from a survey of 850 secondary CTE educators offer a glimpse into current needs. Since 2008, program enrollment increased for 60% of respondents, while the budgets of 73% remained flat or decreased. Respondents’ top priority for funds is not expanding programs, but attending to areas hit with deep budget cuts: equipment, professional development, technology, and curriculum. Nearly 60% reported they integrate academic learning into CTE, yet 70% said this integration is one-way; academic courses do not connect to CTE.10 As noted on page 3, numerous reports point to the urgent need to build bridges between secondary and post-secondary CTE—through rigorous programs of study that integrate secondary and postsecondary curricula and shared standards (e.g., Common Career Technical Core), for example—to ensure a strong coherent continuum of STEM learning. Without such bridges, as the authors of one report note, “…many students earn college credit in high school that has limited value in the postsecondary space beyond a single institution of higher education.” 11 Reports also underscore the need to improve professional development12 and assessment approaches13 to ensure youth are ready for post-secondary STEM learning. Although these obstacles are formidable, a recent policy analysis conducted by the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) and the Association for Career and Technical Education (ACTE) indicates that all but three states took legislative action to improve secondary CTE in 2013, and over 30 states invested new resources in secondary CTE. Eleven of the 30 states “addressed STEM in some way.”14 In addition to state support, partnerships between STEM employers and community colleges offer a powerful mechanism to strengthen secondary CTE. <<card continues>>

### A2: CTE Trades Off With STEM

<<card continues>> Connections with STEM employers help secondary CTE teachers and programs keep abreast of changing workforce skill needs, enable students to explore careers, provide students with mentors and role models—as well as internships and externships—and deepen understanding of high-STEM occupations. Collaboration with community colleges helps create an aligned progression of learning that ensures students stay on track to meet their goals and fosters a skilled high-STEM workforce.

#### CTE is key to effective STEM

Needam 14’ (Needam, “CTE Pathways to STEM Occupations”, 5/12/14, Successful STEM Education, <http://successfulstemeducation.org/resources/cte-pathways-stem-occupations//GHS-AK>)

U.S. employers are scrambling to fill jobs that are key to competing in the global economy. Many of these jobs—in computing, energy, manufacturing, and other fields—demand sophisticated STEM skills and knowledge, pay well, and require some higher education, but do not require a bachelor’s degree. Some call these “middle-skill” jobs. Yet in The Hidden STEM Economy, Jonathan Rothwell suggests a more robust term, “high-STEM,” for all occupations that require a “high level of knowledge” in any one STEM field. Whether you call these jobs middle-skill or high-STEM, the reality is the same. As the number of new jobs that demand advanced STEM skills grows, there is a shortage of skilled workers. For the U.S. to remain competitive, business as usual will not work. The educational community and employers need to join forces to prepare an ample high-STEM workforce. 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Yet, because of how the STEM economy has been defined, policymakers have mainly focused on supporting workers with at least a bachelor’s degree, overlooking a strong potential workforce of those with less than a BA.” The Hidden STEM Economy Striking Statistics: The High-STEM Workforce—Status, Growth, and Gaps Over 50% of STEM jobs do not require a bachelor’s degree, and almost 50% of students who receive four-year STEM degrees begin their learning at community colleges.1 At all levels of educational attainment, people employed in STEM jobs earn 11% higher wages compared with their same-degree counterparts in other jobs.2 U.S. Department of Labor projections show that 15 of the 20 fastest growing occupations require significant science or mathematics training to compete successfully for a job.3 Educational institutions “are not on track to keep pace with” the growing need for Computer System Analysts, Web Developers, and several key Big Data occupations—all of which require extensive skills and knowledge, but not necessarily a BA.4 In a National Association of Manufacturers survey, 67% of respondents reported that they do not have enough skilled employees—technicians, machinists, craft workers—and 56% reported this gap would grow through 2016.5 Only 22% of the $4.3 billion in government funding spent on STEM education goes to “sub-bachelor’s degree” education or training.6 KEY ISSUES AND PROMISING PROGRAMS This brief, the ninth in a series, explores issues and promising practices in paving CTE pathways to high-STEM occupations—a key piece of the STEM college and career readiness puzzle. 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Collaboration with community colleges helps create an aligned progression of learning that ensures students stay on track to meet their goals and fosters a skilled high-STEM workforce.

### A2: CTE Trades Off With STEM

#### CTE is applicable to multiple sectors – like cybersecurity

Conroy No Date - ICT & Media – Creative Arts & IT Faculty at Sydney TAFE (Gemma, “FAST TRACK YOUR STUDIES WITH VOCATIONAL TRAINING OFFERED ONLINE AND AT TAFE, COLLEGES AND UNIVERSITIES – AND GET A COMPETITIVE EDGE”, No Date, Careers with STEM, https://careerswithstem.com/vocational-training//GHS-AK)

“The vocational pathway is very broad and we encourage students to consider how they can use their skills in different areas,” she says. “Vocational students get picked up by the industry quickly because they’re job-ready.” To get students up to speed with the fast-growing tech industry, TAFE offers a range of opportunities in addition to their standard programs. These include short courses and master classes with industry leaders, 24-hour cyber security challenges and the opportunity to compete in global competitions like WorldSkills. Recently, Sydney TAFE ran the Limelight Project, an eight-week collaborative venture where IT students worked with other faculties to create an online shop. “We encourage teamwork and skill-sharing with students from other backgrounds, like business and marketing,” Karen says. Unlike a degree pathway, vocational training allows students to start at any time and work at their own pace. It can also fast-track your career without the need to spend years studying for additional qualifications. Jonathan Romer, a computer systems engineering student in the advanced diploma program at RMIT University in Melbourne, says one of the best things about vocational training is that industry leaders help design programs to equip graduates with the skills to meet the demands of the field. “Vocational training is designed to prepare you for entry-level employment as quickly as possible,” he says. “You gain a competitive edge because you get hands-on experience with new and innovative technology.”

## Solvency

### CTE Solves Unemployment

#### Support for career and technical education exists now – expanding programs allows students to make a successful transition from secondary school into the workforce

Schwartz 14, (Robert B. Schwartz is professor emeritus in the Harvard Graduate School of Education at Harvard University and coleads the Pathways to Prosperity Network. He previously served as president of Achieve and was the director of the education grant-making program of the Pew Charitable Trusts., “Combining Rigorous Academics with Career Training”, nassal)

In February 2011, I, along with two colleagues, economist Ronald Ferguson and journalist William Symonds, released a report, Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century, which was published by Harvard University’s Graduate School of Education.1 When we first began meeting to discuss the study that led to this report, we were mindful of the fact that 20 years earlier a commission established by the William T. Grant Foundation had issued a powerful report called The Forgotten Half: Non-College Youth in America.2 As the title suggests, this 1988 report argued that public resources and support were disproportionately focused on young people headed for higher education, and that without a much more robust investment in preparing non-college-bound youth for successful transition into the workforce, these young people would be at significant social and economic risk. The jumping-off question for our study was: Is there still a “forgotten half” today, and if so, how do we make more progress in serving that population in the next 20 years than we’ve made in the last 20? On the face of it, it seemed unlikely that we would find a persisting “forgotten half” of young people in 2011. For one thing, the term “non-college-bound” has essentially disappeared from our vocabulary. Over the last 20 years, there has been growing public agreement that all young people need to be prepared for further education as well as careers. When high school students are asked today what they are going to do after high school, over 90 percent say they are going on to college or university. More important, over 70 percent of high school graduates do in fact go on to enroll in a higher education institution. But when we ask what proportion of young Americans have earned a college or university degree by their mid-20s, the answer is less encouraging: only 32 percent have graduated from a four-year institution, and another 10 percent from a two-year college.3 We estimate that roughly another 10 percent have acquired a recognized one-year occupational certificate from a postsecondary education or training institution.4 This brings us to just over half the population with a meaningful postsecondary credential by their mid-20s. It may be an exaggeration to characterize the other half of the age cohort as “forgotten,” but in an economy in which the gap between those with postsecondary credentials and skills and those without is widening, the one young person in five who drops out of high school is especially vulnerable, but so are those who start some form of higher education but never finish. Our conclusion, looking at our high school and higher education dropout data, was that, if anything, the case for investing in developing a set of rigorous career and technical education pathways alongside the strictly academic pathway is even stronger today than it was 20 years ago. This conclusion was buttressed by two sources of data. First, job projections from the Georgetown University Center on Education and the Workforce suggest that over the next decade, nearly a third of jobs will be “middle skill”—i.e., requiring some education or training beyond high school but not necessarily a four-year degree.5 This projection challenges the widespread belief that our labor market is becoming increasingly bifurcated into high-skill and low-skill occupations, and that the only good jobs in our economy will require a four-year college degree. The second source of data we found compelling comes from two recent studies from the Organization for Economic Cooperation and Development, Learning for Jobs and Jobs for Youth.6 These two studies provide strong evidence that countries with the best-developed vocational education system0073—especially the countries with the strongest youth apprenticeship programs—manage to equip a much larger fraction of their young people with skills and credentials to make a successful transition from secondary school into the workforce, thereby significantly reducing the proportion of young people at risk of sustained unemployment at the point of entry into the labor market.

### Social Innovation Financing Good

#### CTE is uniquely suited for social innovation financing- generates long term savings for governments and spills over to enhance educational quality and fill workforce demand

Overholser and Klein 15 [George Overholser, and Steven G. Klein, Third Sector Capital Partners, "The potential role of social innovation financing in career and technical education." US Department of Education Office of Career, Technical, and Adult Education, October 2015, pp. 16-18] //adres

APPLYING SOCIAL INNOVATION FUNDING TO CAREER AND TECHNICAL EDUCATION There are several reasons why career and technical education (CTE) may be particularly well-suited for PFS-SIB financing. First, CTE efforts are often associated with educational and workforce outcomes that generate cash savings for governments. CTE programs tend to have concrete outcomes that, at least in principle, are readily measurable and quantifiable. These include direct benefits, such as increases in participants’ rate of employment, hours worked, and wages earned, as well as indirect results, such as increases in taxes paid. Measurable savings in terms of federal, state, and local government benefits and subsidies that are avoided (e.g., unemployment benefits, Temporary Assistance for Needy Families [TANF] payments, Social Security Disability Insurance [SSDI] payments, health care subsidies, Supplemental Nutrition Assistance Program [SNAP] benefits) also may accrue. Importantly, CTE outcomes often are able to generate financial returns within a reasonable time frame. Many SIF projects seek to pay back investors over a three- to seven-year time frame based on the accomplishment of agreed-upon outcomes. Effective CTE programs generally would be able to demonstrate ROI within that time frame, in part because services are intended to assist individuals in transitioning into advanced education or training, and/or into gainful employment. These outcomes typically are realized within the year following students’ exit completion of the program. Second, because there are hundreds of testable innovations and providers serving millions of students, CTE is well-suited for an outcomes-driven reward system. Because SIB funders insist upon a rigorous and statistically stable measurement of outcomes, PFS thrives where the law of large numbers2 can be used to apply actuarial techniques for measuring impact. CTE, with its many types of programs and educational institutions, and its substantial base of students for whom outcomes can be tracked, is particularly well-suited to a measurement-based system that encourages the identification of superior innovations and providers, and allows them to be differentially rewarded. Third, CTE is well-positioned to take advantage of available data for key outcomes. Several large-scale databases, including the National Student Clearinghouse, state unemployment insurance databases, statewide longitudinal data systems, the Wage Record Interchange System , 3 and the Federal Employment Data Exchange System, 4 can be used to match postsecondary and employment outcomes with secondary school student-level records to assess outcomes in an inexpensive and ongoing way. Metrics such as high school or college graduation rates, postsecondary enrollment rates, entry to college without need for remediation, employment rates, and earnings are all critical CTE outcomes that may be verified by these databases. Evidence of changing workplace skill demands, and in particular the expansion of middle-skills jobs,5 may provide a compelling narrative for PFS-SIB investment in CTE.6 Low rates of student persistence and completion of postsecondary education, coupled with projections of worker shortages in skilled jobs, may offer an opportunity for using CTE to expand the pool of trained workers. CAREER AND TECHNICAL EDUCATION FINANCING OPTIONS At the high school level, SIF could create greater incentives for CTE programs to focus on aligning secondary school and postsecondary course work within broadly defined career pathways that expose youths to a range of professions. It could be used to confirm the value of rigorous standards-based academic instruction that is anchored within industry-recognized technical content, or to reward CTE programs that allow students to earn college credit while still enrolled in high school, thereby accelerating the path to employment. Such programs of study7 may offer the broadest approach for applying private-sector financing to public education programs. If the inclusion of CTE instruction in programs of study can be shown through rigorous evaluation to bring about a measurable educational benefit to students, then there may be value in using PFS-SIB offerings to expand student access to CTE programs. <<card continues>>

### Social Innovation Financing Good

<<card continues>> This could entail, for example, investing in a state or regional program, preferably in an industry area in which large, in-demand, high-wage openings are projected. Student performances would be tracked over time, with payments tied to successful student transitions from high school into college, or net differences in unemployment rates relative to a control group of students. In lieu of investing in CTE as a stand-alone program, investments could be made in programs that seek to harness CTE as an instructional design strategy for the delivery of academic content. This could include investing in career academies, which operate as schools-within-schools offering college-prep studies organized around an industry specialty, such as health or computer technologies. Other interventions, such as the Linked Learning initiative, which connects rigorous academics with real-world experiences in a range of fields, also could be incentivized and tested using PFS-SIB. Options also exist for financing occupationally focused training. For example, a PFS-SIB could be developed to expand community college students’ access to quality CTE programming by expanding work-based job placements or providing for competencybased learning that engages students in real-world applications. New approaches for recruiting students, such as offering credit for prior learning, also could be used to expand the pool of students. Providing student supports, such as dedicated career counselors, or social supports, such as day care for children or transportation allowances, also may prove effective.

### Social Innovation Financing Good

#### Partnering private sector investors with federal support solves short and long term social goals – the plan is fiscally responsible and opens access to private sector talent without being politically risky

Overholser and Klein 15 [George Overholser, and Steven G. Klein, Third Sector Capital Partners, "The potential role of social innovation financing in career and technical education." US Department of Education Office of Career, Technical, and Adult Education, October 2015, pp. 10-13] //adres

SIB funders provide upfront working capital. Lead contractor uses working capital to hire service providers. Evaluator determines if services have produced targeted outcomes. If targets are met, government agency pays success fees. Success fees are used to repay SIB lenders. ROLE OF SOCIAL INNOVATION FINANCE IN CTE 3 ADVANTAGES OF SOCIAL INNOVATION FINANCING Performance funding offers a number of unique benefits that make it particularly well suited for financing public services or interventions that offer a positive return on investment (ROI) but might not otherwise be launched due to a lack of resources. Potential benefits fall into three broad categories. PERFORMANCE ADVANTAGES • Incentive to innovate. Because PFS arrangements are structured around outcomes rather than pre-specified inputs, the government can be more flexible in paying for a wide array of innovative programs that would not otherwise be eligible for reimbursement. As they compete for PFS payments, service providers have an incentive to develop new ways to address social problems, which they might not attempt if they were being held responsible for a prescribed set of grant activities. • Impetus to improve administrative data systems. PFS contracting works hand-in-glove with databases that are already generated as a byproduct of administering government functions. By creating formal contractual linkages between financial payments and rigorous measures of outcomes, PFS creates an economically compelling reason to develop more reliable and inexpensive sources of ongoing administrative data. Placing emphasis on data collection and use also can drive providers to make greater use of data, as well as improve the quality of the information they report. • Access to private talent. SIB transaction coordinators and funders become deeply involved in PFS public and private partnerships, and bring expertise in due diligence, project structuring, project management, impact evaluation, computer science, communications, and financial reporting. These functions may be lacking in federal, state, and local government agencies, which are hampered by reduced staffing levels due, in part, to diminishing levels of government funding. Importantly, these private stakeholders have financial stakes that are aligned with the goal of generating superior social outcomes for families and communities in need. ROLE OF SOCIAL INNOVATION FINANCE IN CTE 4 FISCAL ADVANTAGES • Improved allocation of social spending resources. By paying only for programs that work, the PFS model uses taxpayer dollars more efficiently, typically in three ways. First, it uses the money to create new spending streams that are rigorously justified by its cost-benefit relationship. Second, the mix of expenditures is shifted within existing spending streams away from programs that are not effective and toward those that bring about the greatest levels of impact per dollar spent. Third, the PFS model discontinues spending on programs with no discernable level of impact (in which case PFS payments are not made). The sum total of these efficiencies must be weighed carefully against expenses associated with building PFS project structures, including the social science costs of measuring ongoing impact and the financing costs of paying interest for SIB loans. • Transfer of financial risk. By transferring the financial risk of program underperformance to private SIB funders, PFS-SIB helps to increase government willingness to test social innovations. Similarly, because SIB loans are “forgiven” if social outcomes are not met, PFS-SIB arrangements insulate vital service providers from financial risk. • Access to private capital. Many government agencies, be they at the federal, state, or local level, simply do not have near-term funding available to provide the working capital needed to launch innovative initiatives. The PFS-SIB approach taps into private sources, making it possible for government officials to launch initiatives that offer promising economic and societal returns that would otherwise not be realized. POLITICAL ADVANTAGES • Projects are both fiscally conservative and socially progressive. PFS has natural, broad appeal in that it both increases the degree of accountability associated with government spending and focuses investment toward the improvement of social outcomes. • Projects outlast typical political time frames. The multiyear time frames associated with most PFS initiatives often outlast the terms of elected government officials, making it possible to tackle social problems and implementation challenges that require long periods of focus to overcome. The presence of private SIB funders is often critical to the continuity and completion of these multiyear projects.

### A2: Teacher Shortages

#### The plan creates an effective model of recruitment and retaining teachers

Thomas Wilkin and Godfrey Nwoke 11 - \*Assistant Professor in the Department of Career and Technology Teacher Education at New York City College of Technology of the City University of New York\*\* Professor and Chair of the Department of Career and Technology Teacher Education at New York City College of Technology of the City University of New York. (“Career and Technical Education Teacher Shortage: A Successful Model for Recruitment and Retention”;Spring;http://scholar.lib.vt.edu/ejournals/JSTE/v48n1/wilkin.html)//pk

Abstract The role of Career and Technical Education (CTE) as a major source of skilled workers for the American economy and a vital component of American education is well established. Several recent studies show that when CTE programs combine rigorous academic standards and industry-based technical content, the result is higher academic achievement and better economic outcomes for an increasing number of high school students. In spite of the documented successes and achievements of CTE high schools, studies show that many high school programs are faced with serious challenges, not the least of which is the difficulty in attracting qualified CTE subject teachers. This article examined one highly successful CTE teacher recruitment effort in New York that involves the city department of education, the teachers union, and a public university. The article focuses on the key elements of the teacher training program as a model for effective CTE teacher recruitment and retention. Background Career and Technical Education (CTE) has been a mainstay in the American education system for the past century. Looking forward, it is clear that the journey ahead will be very different from the one already traveled. For CTE to continue to be a relevant and major contributor to the successful lives and careers of students, many challenges must be addressed and overcome. Primary among these challenges is the need to provide highly qualified and highly competent CTE teachers who are able to prepare students to be successful in their careers and in their lives. In an effort to highlight and address this challenge, the Association for Career and Technical Education (ACTE) dedicated the January 2010 issue of its official publication, Techniques (Volume 85, No. 1), to the problem of CTE teacher recruitment and retention. The purpose of this paper is to examine one highly successful long-term CTE teacher preparation effort in the New York City Public School system. We will first briefly examine CTE from a national perspective, noting recent trends in the field. Secondly, we will report on the status of CTE education within the New York City Public School system. We will then focus on the Success Via Apprenticeship Program (SVA), a unique and valuable cooperative endeavor between the New York City Department of Education, the United Federation of Teachers (UFT), and the City University of New York (CUNY). We will conclude with recommendations for the future. National Trends in CTE From a national perspective, Kazis (2005) in “Remaking Career and Technical Education for the 21st Century” draws several broad conclusions about CTE in the United States. Kazis notes that, while shrinking, CTE remains a significant component of the U.S. high school experience and appears to help less motivated and at-risk students stay in school and graduate. He further notes that the overall rigor of technical education in high school has improved, but there is more to do and many obstacles to overcome. Kazis’s (2005) article which was supported by the Bill and Melinda Gates Foundation and the Ford Foundation refers to a consistent message that runs through seven short essays which comprise the work. The message is: CTE at the high school level must either change or die. Change may mean shrinkage in absolute size. It will certainly mean shifts in the kind and range of programs offered students and in the expectations placed on students, faculty, and administrators. The future may be different in urban and suburban regions, where the economic bases and the educational resources available for CTE can be quite different. The future is also likely to vary with the differential ability of state and regional CTE systems to meet rising expectations for quality and performance (p. 3). The author notes in conclusion, that the greatest influence on CTE will come from the politics of education reform in the states and nationally, as well at the kinds of pressure and support the stakeholders for CTE and other reform movements bring to bear on public opinion and on the educational establishment. In a related article, Medrich (2005) notes that for CTE to remain valued, certain steps must be taken. The steps include combining career-focused education with a strong academic core; removing less compelling program concentrations and eliminating weak course offerings. In addition, focus must be placed on the fundamentals, such as, creating an engaging curriculum; developing instructional strategies that are appropriate to the subject matter; providing support for students less prepared for rigorous coursework; and designing quality assessments. The overall national focus centers on improving the quality of CTE by employing new and creative approaches to the content and process of career and technical education. CTE Teacher Shortage The shortage of CTE teachers in the United States is a significant problem. Documented shortages exist in various states across the country. The state of Michigan, in a July 22, 2009 letter from Governor Jennifer Granholm, issued an exemption to retiree earnings in areas of critical shortages for 2009-2010 which includes numerous CTE position designations. In Virginia, the State Dept. of Education has designated Career and Technical Education a critical teacher shortage area since 2003. Other states that have identified CTE as a critical teacher shortage area include South Dakota, Iowa, and New York. Pytel, (2008) in the article “Shortage of Vocational Workers” notes the coming shortage of skilled vocational workers and comments on efforts by Des Moines (Iowa) Area Community College to address this need. On the website “Technology Education in Connecticut” (Kane, 2009) reports that the CTE teacher shortage undermines career and technical education and could potentially impact economic growth. In the policy brief, “Teacher Shortage Undermines CTE” (Connely, 2009) notes that there has been an increase of almost six million students in CTE courses in just seven years, yet many existing teacher education programs have been eliminated. The number of CTE teacher education programs fell from 432 to 385 (from 1990 to 2000)—a decrease of 11%. Also, there is a growing number of teacher retirements affecting the supply of CTE teachers. In 2009, the National Commission on Teaching and America’s Future estimated that “during the next four years, we could lose a third of our most accomplished educators to retirement.” Several states, including Oregon, Alabama, New York, and California, to name but a few, are already engaged in unique and creative ways to address this critical shortage. Kiker and Emeagwali (2010) profiled programs designed to address the problem in several states including Kentucky, Missouri, Nebraska, North Dakota, Oklahoma, South Carolina, Texas, Utah, Washington, and Wyoming. Reese (2010) reviewed the different pathways that states have used to meet their needs for qualified CTE teachers. Reese noted that both traditional CTE teacher preparation programs and alternative programs that recruit industry career changers can prepare future teachers to the highest quality by employing experienced teachers as mentors and models of excellence. New York State has been active in addressing the CTE teacher shortage in a variety of ways since the mid-1980s. Currently, there are three pathways to obtaining CTE teacher certification in the State of New York. The first pathway requires successful completion of an approved CTE teacher preparation program. There are only three such approved programs in New York State public universities, namely, New York City College of Technology of the City University of New York in Brooklyn; the State University of New York at Oswego; and Buffalo State College of the State University of New York in Buffalo. The second pathway which is an alternative route to certification is known as Transitional A for career changers. <<card continues>>

### A2: Teacher Shortages

<<card continues>> The Transitional A certificate authorizes a school district to hire an individual with at least four years of experience in the trade to begin teaching while completing the requirements for the initial teaching certificate. The initial certificate requirements including a few college courses, a certification test, and mentoring all of which must be completed within three years. The third pathway to CTE teacher certification is through Individual Evaluation. In this pathway, a prospective CTE teacher who meets the minimum certification requirements including trade experience, college course work, and the certification test, submits his or her credentials to the State Education Department for evaluation and certification. In addition to the pathways already mentioned, individuals may also apply and receive New York State certification as CTE teachers if they are from a U.S state that has Interstate Reciprocity with New York, have non-U.S. credentials; or possess the National Board Certification. New York City’s CTE Teacher Recruitment and Retention Model: The SVA Program For over two decades, New York City has been successful with recruiting and retaining CTE teachers through a unique program known as the Success Via Apprenticeship (SVA) Program. The SVA program, originally called the Substitute Vocational Assistant Program, was established in 1984 as a collaborative project of the New York City Department of Education, the United Federation of Teachers (UFT) which is the teachers’ union, and the City University of New York (CUNY). The program was designed to prepare highly motivated graduates of CTE high schools to become CTE teachers. It is a comprehensive five and one half year experience that includes three components, namely, a salaried teaching internship, college level academic study, and relevant work experience in industry. The program specifically seeks out candidates from minority populations, including young women, who are pursuing careers in non-traditional trade and industrial occupations such as electrical installation, automotive maintenance, and heating, ventilation, and air conditioning (HVAC) maintenance. Participant Eligibility and Selection Prospective participants of the SVA program must be recent graduates of a New York City CTE or comprehensive high school. An applicant must be recommended and nominated by his or her trade teacher and selected by a selection committee of the school headed by the assistant principal for CTE. Priority is given to applicants who come from minority groups in terms of race, ethnicity, or gender (males or females pursuing non-traditional careers). Each applicant must have an outstanding academic record and be eligible for admission to the City University of New York (CUNY) either by virtue of Regents test scores, Scholastic Aptitude Test (SAT) scores, or passing CUNY’s basic skills tests of reading, writing, and mathematics. At the beginning of each recruitment cycle which is usually in early spring, application forms are sent to CTE schools soliciting applications especially in those subject areas of current or foreseeable teacher shortage. Selection of applicants in each high school is done by a committee including trade teachers, building administrators, and representatives of the teachers’ union. Selected applicants are required to apply to CUNY and pass the CUNY basic skills tests in reading, writing, and mathematics unless they have received satisfactory scores in the Regents examinations or the SAT. Applicants who meet testing requirements are scheduled for an interview by SVA program administrators. During the interview, an important eligibility criterion is that the applicant must demonstrate interest in becoming a teacher of his or her CTE trade subject. Program Components The SVA program is composed of a Teaching Internship, Industrial Work Experience, and Post-Secondary Academic Study. In the teaching internship component of the program, participants spend five months in a CTE high school during each year of program enrollment. While in the school, the SVA is assigned to a mentor teacher under whom the intern learns about unit and lesson planning, lesson presentation, classroom management, and school dynamics. Right from the first year, the intern is given ample opportunity to plan and teach lessons under the guidance and supervision of the mentor. Each intern is required to teach for one full semester under supervision during the third or fourth year to fulfill the student teaching requirement for State certification. Career and technical education subject teachers seeking the initial teaching certificate in New York State must have a minimum of four years of full-time work experience. In order to meet this requirement through the work experience component of the SVA, participants are placed with employers in business and industry in work environments that match each participant’s career or trade area. Over the years, program administrators have developed a network of employers in business, industry, and government agencies as job sites for placement of participants. These include automotive service shops, electrical contractors, electronics and computer service companies, hospitals, and museums, among many others. Each participant completes seven months of work experience in his or her trade during each year of program. The work experience is supervised by on-the job trainers and closely monitored by a program administrator who makes regular visits to the job site to evaluate the participants’ progress. In the post-secondary academic study also known as the college component; participants are enrolled in teacher education courses at New York City College of Technology. Each participant is required to complete 44 credits of coursework during the five and one half years in the program (a total of 62 credits is required for State certification). The curriculum consists of courses in liberal arts and sciences, professional courses in career and technical education, and student teaching. Program Uniqueness Program administrator involvement and monthly meetings are among the unique aspects of the program. Program administrators handle the recruitment, interviews, placement, and supervision of participants in school and job sites. They conduct regular school site and job site visits and evaluations of all participants. In addition, program partners, administrators and participants meet during mandatory monthly meetings. Administrators deliver reports on various components of the program including school sites, work sites, etc. The college representative also reports on general college and academic matters affecting participants. At each meeting, a selected group of participants make presentations on topics of interest to them. The required dress code for all participants is business attire. Elements of Program Success The SVA program has been very successful in recruiting, preparing, and retaining young CTE teachers in the New York City public high schools. This success is attributable to four key factors, namely, compensation, contractual commitment, administrator involvement, and high performance expectations. The high schools from which participants graduate play a crucial role in identifying students who have the interest and potential to succeed as CTE educators. By working with the schools, SVA program administrators not only know subject areas where there are potential shortages, they are also able to project need and identify potential replacements. While enrolled in the program, participants are paid 90% of the contractual salary rate for a starting teacher (currently $45, 000 per year). The salary rate is very competitive and, in some cases, far exceeds what a recent college graduate earns in certain jobs and, certainly, the annual salary of a high school graduate. As employees of New York City Department of Education, program participants are also eligible for many of the benefits that a certified teacher is entitled to under the teachers’ union contract, including pension, health, dental, and optical insurance, as well as annual leave benefits. Successful program completion also means a higher salary step at initial full-time employment as a certified teacher. The SVA program pays participants’ college tuition and fees for course work leading to the New York State initial teaching certificate. Many participants take advantage of this educational opportunity and complete the Bachelor of Science in Education (B.S. Ed.) degree within the five years of participating in the SVA program. In return for all the benefits of participating in the SVA program, each participant is required to sign a letter of commitment to work for five years as a CTE teacher in New York City public schools. If a participant who successfully completes fails to meet the contractual obligation to work in New York City, the Department of Education has the recourse to seek reimbursement of all tuition and fees paid on behalf of the participant. <<card continues>>

### A2: Teacher Shortages

<<card continues>> The SVA program has very high standards of performance and conduct in all three components. Participants must receive excellent evaluations by school site mentors, college supervisors, and work site supervisors to maintain their status in and successfully complete the program. In the college component, for example, participants are held to the same academic standards as other degree-seeking students of the teacher preparation program. They must maintain a minimum grade point average of 2.50 in college courses or risk being dismissed from the program. Participants who receive poor evaluations in any of the three components of the program are brought before a personnel committee which handles all disciplinary problems and is comprised of program administrators and representatives of the teachers’ union. If a participant is found to be not meeting program standards of performance or conduct, he or she is placed on probation and given an opportunity to improve within one academic semester. If there is no improvement after one semester, the participant is dismissed from the program. Regarding evaluation of the overall program, the most recent data indicates that the program has been highly successful. In the last five years, 36 SVA Interns have graduated from the program. Thirty-four (94.4%) were offered and accepted regular teaching positions. Of the 34 that accepted teaching positions, 33 (94%) are currently teaching. SVA Program Limitations Although there are many obvious benefits to the program, some limitations do exist. The most significant limitation to the program’s operation is cost. Considered as a whole, the overall salary and associated employee benefits cost to the program are substantial. Related administrative costs are also incurred on an annual basis. The other primary limitation of the program involves order of magnitude. The number of program completers is relatively small (due to cost constraints) which means that the need for certified CTE teachers in the overall New York public school system is met in a small, incremental manner. Future Directions Successful efforts like the SVA Program can have a major positive impact on the current and future recruitment and retention of qualified CTE teachers. In the future, cooperative efforts between industry and education can yield positive results while at the same time address the cost issues associated with programs such as these. There can be creative approaches to encourage students to pursue careers in teaching CTE subjects. One suggestion could be to attract students with associate degrees in technical areas by offering tuition assistance for the education courses required for certification. A concerted effort could be organized on a state by state basis to actively recruit students pursuing technical associate degrees and provide full or partial tuition assistance support as they pursue their teaching certification. Also, much can be done in the way of simplifying the bureaucracy surrounding the CTE certification process. There are untapped pools of technical talent in industry and the military. If the process to certification were streamlined and made more user friendly, there could be a significant increase in talented and productive CTE teachers.

#### No data show a national teacher shortage

Walsh 16’ - president of the National Council on Teacher Quality (Kate, “The national teacher shortage is a myth. Here’s what’s really happening”, 12//02/16, The Washington Post, https://www.washingtonpost.com/opinions/the-national-teacher-shortage-is-a-myth-heres-whats-really-happening/2016/12/02/58fac7d0-b4e5-11e6-a677-b608fbb3aaf6\_story.html?utm\_term=.879293c84e71//GHS-AK)

With almost no real data — because neither states nor the federal government collects the information that would be needed to pronounce the onset of a true teacher shortage — we witness the press, school districts, state school boards and even Congress conclude that we are in the throes of a full-blown national crisis. At the root of this crisis is a New York Times news article published two summers ago reporting on six school districts that were having a tough time filling positions (though all but two ultimately started the year just fine). Whoosh! Overnight the teacher shortage became real. Nobody thought it important to consider that teacher preparation programs had for years been graduating twice as many teachers as are needed. According to findings from the American Institutes for Research, over the past 30 years, programs graduated between 175,000 and 300,000 teachers each year, yet consistently school districts have hired only between 60,000 to 140,000 newly minted teachers. Instead, school districts have been far more likely to hire people who already have some teaching experience. Federal data from 1999 to 2012 show that only about 30 percent of districts’ new hires were straight out of a teacher prep program.

### A2: Liberal Arts Tradeoff

#### Liberal Arts degrees are in low demand

Schawbel 14’ - managing partner of Millennial Branding, a Gen Y research and management consulting firm (Dan, “Liberal Arts Majors Are Screwed”, Business Insider, 5/20/14, <http://www.businessinsider.com/liberal-arts-majors-are-screwed-2014-5//GHS-AK>)

In this economy, it might not pay to choose liberal arts as your college major. A new study by my company and Beyond.com called "The Multi-Generational Job Search," found that only 2% of employers are actively recruiting liberal arts degree holders. Compare that to the 27% that are recruiting engineering and computer information systems majors and 18% that are recruiting business majors. What's more, 49% of all generations responded that they believe there are "no jobs" out there for those with a liberal arts degree. If you're currently a liberal arts major, this means that you may want to switch to a major with more job prospects or at least take some technical and business courses as electives. This way, you can round out your degree and present yourself as someone who understands business but with a liberal arts background. We also found that employers are hiring for "cultural fit" over any other qualifications. Companies are interested in your personality over your grades and extracurricular activities. Due to the amount of resumes employers receive, they have become more picky with who they select. Also, they know that if an employee is a good cultural fit, they will stay longer and be more successful overall at their job. Cultural fit has a lot to do with soft skills, which now carry more weight than hard skills. According to the survey, the top three attributes that companies are currently looking for are a positive attitude (84%), communication skills (83%), and an ability to work as a team (74%). Even though liberal arts majors have some of the best soft skills, based on the courses they take, employers perceive them as less valuable. Employers view a liberal arts degree as too general for placement. If you're currently graduating this means that you need to start pitching your liberal arts degree as helping you obtain the soft skills that employers are looking for. You should also take courses, read business books, get a mentor, and network as much as possible. Since you're clearly at a disadvantage, you have to make up for it with hard work. If you haven't had any work experience or lack direction, then you should immediately start doing work, with either an internship or freelance project. You need to rule out the professionals and jobs that you're not interested in and start building a business foundation that you can leverage into a job later. I see a lot of graduates that aren't prepared for the working world, and it's both their fault and their schools. Our study shows that 73% of hiring managers felt that colleges are only "somewhat preparing" students for the working world. Since you can't rely on your college, you need to rely on yourself. By being proactive, you can develop the necessary skills and identify the right people that can lead you to a job. If you haven't graduated, it's time to rethink your major because if you don't, it's going to be harder to get a job, pay off your debt and move out of your parents' house. Things aren't changing anytime soon, so don't expect the economy to get better and liberal arts degrees to be more in demand. You need to focus on a major and classes that are going to translate into better jobs so that you can afford to live and be independent.

#### Too many liberal arts majors – trust me!

Pethokoukis 12’ - columnist and blogger at the American Enterprise Institute. Previously, he was the Washington columnist for Reuters Breakingviews, the opinion and commentary wing of Thomson Reuters (James, “Harvard, we have a problem: Too many liberal arts majors”, American Enterprise Institute, 3/07/12, <http://www.aei.org/publication/harvard-we-have-a-problem-too-many-liberal-arts-majors//GHS-AK>)

— In 2009, the United States graduated 37,994 students with bachelor’s degrees in computer and information science. That’s not bad, but we graduated more students with computer-science degrees 25 years ago! — Few disciplines have changed as much in recent years as microbiology, but in 2009 we graduated just 2,480 students with bachelor’s degrees in microbiology—about the same number as 25 years ago. Who will solve the problem of antibiotic resistance? If students aren’t studying science, technology, engineering, and math, what are they studying? — In 2009, the United States graduated 89,140 students in the visual and performing arts, more than in computer science, math, and chemical engineering combined and more than double the number of visual-and-performing-arts graduates in 1985. — Moreover, more than half of all humanities graduates end up in jobs that don’t require college degrees, and those graduates don’t get a big income boost from having gone to college. And as Computerworld magazine notes, the science and engineering bit of the U.S. workforce has stalled: Hey, I love liberal arts majors. I have a double history-poli sci major from Northwestern University. But do we want to subsidize the sort of higher education, as Tabarrok writes, “less likely to create the kinds of innovations that drive economic growth?” And rather than pushing students to attend a four-year, brick-and-mortar college in pursuit of the BA, how about business-backed training and apprenticeship programs leading to a high-skill technical degree just like in Germany and some other northern European nations? In Germany, 97% of students graduate from high school, but only a third of these students go on to college, Tabarrok notes. In the United States, we graduate fewer students from high school, but nearly two-thirds of those we graduate go to college. More education for all. But not college for all.

### A2: No One Signs Up

#### CTE enrollment growing --- kids are interested

Michael Hansen 16 – (“Is quick expansion of career and technical education a viable policy?”;April 19th ;https://www.brookings.edu/blog/brown-center-chalkboard/2016/04/19/is-quick-expansion-of-career-and-technical-education-a-viable-policy/)//pk

First, there’s an ongoing national teacher shortage in career and technical education. According to the National Association of State Directors of Career Technical Education Consortium, the last few years have seen a rapid increase of student enrollments in these courses (surging by more than 65 percent in the last decade). At the same time, the supply of teachers specialized in career and technical education is shrinking due to fewer education schools offering this certification compounded by baby-boomer retirees.

#### CTE provides excellent motivation for unmotivated students

Auger 15’ – writes blog on CTE (Jasmine, “CTE & Dropout Prevention: Motivating Students with Career-Focused Learning”, Discover, 9/28/15, http://blog.edmentum.com/cte-dropout-prevention-motivating-students-career-focused-learning//GHS-AK)

Annually, over 1.2 million students drop out of high school in the United States. That means nearly one in three students fail to graduate with a diploma. For some students, dropping out is the result of low engagement—and these are the students that often thrive in a career and technical education (CTE) program. CTE can play a critical role in helping students persevere in their high school career and preparing them for postsecondary education by offering relevant learning experiences that address the question of “Why do I need to learn this?” Here, we’ve compiled four ways that CTE can keep students in school and lower dropout rates low: CTE empowers students to explore various career paths By 2017, an estimated 2.5 million jobs are expected to be added to the workforce, and students need to be knowledgeable regarding all of their different career possibilities. CTE helps students discover their interests and passions, and it empowers them to find a pathway that will lead them to success in high school, college, and the workforce. The National Association of State Directors of Career Technical Education Consortium (NASDCTEc) identifies a total of 16 Career Clusters in their National Career Clusters® Framework. Each cluster is a representation of Career Pathways that are related by skill or product. Within each cluster, there are 79 different career pathways that correspond to a collection of courses and training to prepare students for those careers. These pathways include such diverse careers as Environmental Service Systems, Logistics Planning & Management Services, and Security & Protective Services. CTE engages students in learning Many students lose interest in their education because the curriculum doesn’t seem to have any real-world application. An annual Gallup survey measuring student engagement shows that eight in 10 fifth graders report being engaged, but that number falls to four in 10 once they reach high school. CTE provides students who are in need of an alternative learning environment with the opportunity to relate their curriculum to real-world situations, creating a more engaging and meaningful experience. To illustrate this point, take a minute to consider what school is like for fifth grade students—besides lunch and recess, think of how hands-on the classroom activities typically are. Students are making, molding, creating, and doing! But for most students, once they reach high school this dynamic shifts. Instead of consistently participating and performing tasks, they’re being lectured to and asked to take notes. According to the Gates’ Foundation-backed report The Silent Epidemic, 81 percent of dropouts say relevant, real-world learning opportunities would have kept them in high school. CTE offers students personalized learning opportunities In recent years, personalized learning has represented a significant shift in education program design. CTE seamlessly aligns with this shift by allowing students to customize their learning experiences. With CTE, students can choose areas of study that pique their interest and have the chance to create their own learning paths. They have the opportunity to approach CTE programs through a variety of different avenues, including internships, job shadowing, and service learning. Giving students the power to take charge of their educational futures in this manner enables them to be more committed and engaged in their learning. CTE builds positive community relationships In the 2006 High School Survey of Student Engagement, 24 percent of students who considered dropping out of high school cited the reason: “No adults in the school cared about me.” CTE programs offer students opportunities to have mentors who know them, look out for them, and push them to succeed. They often have the option to join career and technical student organizations (CTSOs), which engage students in co-curricular activities related to their CTE programs. When involved with CTSOs, students work regularly with an adult supervisor to prepare for local and national competitions, take on student leadership roles in the organization, and develop project management skills, such as communication and public speaking. Chances to form close relationships with mentors and peers can also arise through career exploration opportunities like job shadows, internships, and volunteer experiences that CTE programs regularly provide. Regardless of where these relationships are formed, they are exactly the types of connections that are essential to keeping students in school.

## State Budgets Add-On

### 2AC State Budgets Add-On (1/4)

#### A. Depleted state budgets slow economic growth and ensure a pension crisis

Donlan 17 [Thomas G. Donlan, editor at Barron’s, “There’s a Hole in State Pensions,” Feb 11, 2017, <http://www.barrons.com/articles/theres-a-hole-in-state-pensions-1486794298>]

Turn away from the lurid deficit spectacles in Washington to examine the declining state of the states. In the eighth year of economic recovery, 23 states are still deep in the financial holes they dug for themselves. Economic growth and tax-revenue growth are slowing. Revenue growth from sales taxes—which are most sensitive to changing economic conditions—have slowed the most, according to the National Association of State Budget Officers. The executive director of that organization explains and complains that online sales across state lines—more popular every year—are often not taxed. Every state has a different tax system, a different tax base, and a different political inclination toward taxes and spending. But slow growth in tax revenue in general has placed many under serious fiscal pressure. In a report on states’ fiscal health issued on Feb. 2, the Pew Charitable Trusts said that after adjusting for inflation, 23 states still have lower tax revenue than they did before the most recent recession, and 18 states have lower employment than they did in 2007. Only 19 states have the kind of fiscal cushion—rainy-day funds and general fund surpluses—that they had in 2007. Analysts at Pew and other watchdog groups are warning that the states are clearly not ready for another recession. MultiState Associates, a consulting firm, estimates 31 state legislatures will have revenue shortfalls to deal with before their next budgets go into effect. The Cavalry Isn’t Coming The states may wish to call Washington for help, but Congress and the White House are busy with their own fiscal quandaries. Newly empowered Republicans want to cut taxes, increase defense and infrastructure spending, and repeal Obamacare to replace it with something better—just to mention a few expensive proposals that nearly all Republicans agree on. All this and more, despite a $559 billion deficit projected for fiscal 2017. There’s no room for helping out the states, and plenty of reasons to say the states are getting more than enough help already. The federal government provides nearly a third of the states’ total revenues, but the federal hand is far more important than direct grants, which totaled $589 billion in 2014. The same year, the federal government paid out $1.1 trillion in retirement benefits and $895 billion in other benefits, chiefly medical, for individuals located in the 50 states. The U.S. government paid its own military and civilian employees $305 billion, and it paid $356 billion on federal contracts. Nearly all of that federal spending is subject to income tax in states that have income taxes, and the recipients use federal money to buy things, generating revenue for states that have sales taxes. Pension Panic Beyond the unfortunate short-term dependence of many states on money that falls from the federal heavens, there are the unfortunate longer-term policies of their own that have put many states in fiscal trouble. Chief among these is the growing crisis in state and municipal pension funds. Importantly, the condition of state and local pensions is worse than officially reported. Pension boards, their advisors, and their actuaries have been using unrealistic estimates of their investment returns that are left over from the years of higher inflation that ended in the 1990s. The National Association of State Retirement Administrators surveyed 132 big government pension plans last year and found the average estimate of future annual investment returns—the discount rate—to be 7.6%. Hard-nosed reformers say they should be using a Treasury rate around 3%, but only seven of the funds in the survey were using discount rates below 7%. The difference is powerful: The funds pretend their investments are strong and that they are a mere $1 trillion short of what they will need to pay benefits that workers have already earned. Cutting the 7.6% investment estimate back to 3% turns the $1 trillion deficit into a $3 trillion hole. Officials around the country are loath to acknowledge the mismatch, and government plans aren’t covered by federal pension law that would make them fess up. Pension officials can use whatever discount rate suits their needs. Excuses abound: Governments don’t go out of business; they have taxing power; they can hold on for a long time before wolves chew their way through the door. This is the Micawber theory of management. Wilkins Micawber, a colorful character in Charles Dickens’ David Copperfield, is a grandiose optimist always flirting with poverty, whose financial maxim is “Something will turn up.” Like the author’s father, he spends some time in debtors’ prison. But, being a charming Dickensian character, something does turn up for him eventually. Actuaries should not be so sanguine, but many know about getting by going along. They want to keep their jobs. The Montana pension systems spoke loudly in 2009 when they were looking for new actuaries. The invitation to actuaries said that a firm arguing for tougher standards “may be disqualified from further consideration.”

### 2AC State Budgets Add-On (2/4)

#### B. Massive injections of federal CTE funding are critical to sustainable state economies --- frees money to shore up pensions through directly subsidizing large swaths of secondary schools

CCD 17, [Published by the American Association of Community Colleges, 6-23-2017, "Governors support CTE, job-training funding – Community College Daily," Community College Daily, http://www.ccdaily.com/2017/05/governors-support-cte-job-training-funding/]

The National Governors Association (NGA) doesn’t often wade into debates over federal appropriations, especially over specific programs. But the issue of workforce development is so critical to state economies that NGA on Thursday encouraged congressional appropriators not to cut funding for career and technical education and job training programs. President Donald Trump’s proposed budget for the next fiscal year would significantly decrease funding for programs under the Workforce Innovation and Opportunity Act (WIOA) and the Perkins Career and Technical Education Act. WIOA was recently reauthorized, and Congress is currently working to revamp the Perkins Act. NGA also noted recent federal legislative work on pre-school and K-12 programs. “With this legislation, members of the House and Senate delivered unprecedented opportunities for state and local innovation, opportunities that, ultimately, will only be realized if federal funding for education and workforce programs is sustainable,” NGA said a letter to House and Senate appropriation leaders. Governors have leveraged federal job-training funds to recover from recessions, grow small businesses and attract industries to their states, NGA said. Without appropriate WIOA funding, coupled with state resources, “state economies will be at risk,” it said. The association also supported Perkins programs, noting that they help to reduce remediation, encourage innovation in schools and provide students with hands-on, career-related learning opportunities. “The federal funding stream for Perkins must remain strong to ensure students are prepared for a 21st century economy,” NGA said.

### 2AC State Budgets Add-On (3/4)

#### C. Pension crisis collapses the US economy

Reeves 3/24 [Jeff Reeves is a stock analyst and executive editor of InvestorPlace.com. His commentary has also appeared on CNBC, Fox Business, USA Today, and the Wall Street Journal network, “Your pension could be at the center of America's next financial crisis,” March 24, 2017, http://thehill.com/blogs/pundits-blog/finance/325564-the-pension-crisis-will-be-americas-next-financial-crisis]

I’m not a fan of the “greed is good” mentality of Wall Street investment firms. But the next financial crisis that rocks America won’t be driven by bankers behaving badly. It will in fact be driven by pension funds that cannot pay out what they promised to retirees. According to one pension advocacy organization, nearly 1 million working and retired Americans are covered by pension plans at the risk of collapse. The looming pension crisis is not limited by geography or economic focus. These including former public employees, such as members of South Carolina’s government pension plan, which covers roughly 550,000 people — one out of nine state residents — and is a staggering $24.1 billion in the red. These include former blue collar workers such as roughly 100,000 coal miners who face serious cuts in pension payments and health coverage thanks to a nearly $6 billion shortfall in the plan for the United Mine Workers of America. And when the bill comes due, we will all be in very big trouble. It’s bad enough to consider the philosophical fallout here, with reneging on the promise of a pension and thus causing even more distrust of bankers and retirement planners. But I’m speaking about a cold, numbers-based perspective that causes a drag on many parts of the American economy. Consider the following. Pensioners have no flexibility According to a Bureau of Labor Statistics report from 2015, the average household income of someone older than age 75 is $34,097 and their average expenses exceed that slightly, at $34,382. It is not an exaggeration, then, to say that even a modest reduction in retirement income makes the typical budget of a 75-year-old unsustainable — even when the average budget is far from luxurious at current levels. This inflexibility is a hard financial reality of someone who is no longer able to work and is reliant on means other than labor to make ends meet. Social Security is in a tight spot So who will step up to support these former pensioners? Perhaps the government, via Social Security, except that program itself is in crisis and will see its trust fund go to zero just 17 years from now, in 2034, based on the current structure of the program. If millions of pensions go bust and retirees have no other savings to fall back on, it will be nigh impossible to cut benefits or reduce the drag on this program. But won’t a pension collapse mean we desperately need Social Security, even in an imperfect form, well beyond 2034?

### 2AC State Budgets Add-On (4/4)

#### D. The impact is diversionary war

Foster 12/19 [Dennis M., professor of international studies and political science at the Virginia Military Institute, 12/19/16, “Would President Trump go to war to divert attention from problems at home?,” <http://inhomelandsecurity.com/would-president-trump-go-to-war-to-divert-attention-from-problems-at-home>]

If the U.S. economy tanks, should we expect Donald Trump to engage in a diversionary war? Since the age of Machiavelli, analysts have expected world leaders to launch international conflicts to deflect popular attention away from problems at home. By stirring up feelings of patriotism, leaders might escape the political costs of scandal, unpopularity — or a poorly performing economy. One often-cited example of diversionary war in modern times is Argentina’s 1982 invasion of the Falklands, which several (though not all) political scientists attribute to the junta’s desire to divert the people’s attention from a disastrous economy. In a 2014 article, Jonathan Keller and I argued that whether U.S. presidents engage in diversionary conflicts depends in part on their psychological traits — how they frame the world, process information and develop plans of action. Certain traits predispose leaders to more belligerent behavior. Do words translate into foreign policy action? One way to identify these traits is content analyses of leaders’ rhetoric. The more leaders use certain types of verbal constructs, the more likely they are to possess traits that lead them to use military force. For one, conceptually simplistic leaders view the world in “black and white” terms; they develop unsophisticated solutions to problems and are largely insensitive to risks. Similarly, distrustful leaders tend to exaggerate threats and rely on aggression to deal with threats. Distrustful leaders typically favor military action and are confident in their ability to wield it effectively. Thus, when faced with politically damaging problems that are hard to solve — such as a faltering economy — leaders who are both distrustful and simplistic are less likely to put together complex, direct responses. Instead, they develop simplistic but risky “solutions” that divert popular attention from the problem, utilizing the tools with which they are most comfortable and confident (military force). Based on our analysis of the rhetoric of previous U.S. presidents, we found that presidents whose language appeared more simplistic and distrustful, such as Harry Truman, Dwight Eisenhower and George W. Bush, were more likely to use force abroad in times of rising inflation and unemployment. By contrast, John F. Kennedy and Bill Clinton, whose rhetoric pegged them as more complex and trusting, were less likely to do so. What about Donald Trump? Since Donald Trump’s election, many commentators have expressed concern about how he will react to new challenges and whether he might make quick recourse to military action. For example, the Guardian’s George Monbiot has argued that political realities will stymie Trump’s agenda, especially his promises regarding the economy. Then, rather than risk disappointing his base, Trump might try to rally public opinion to his side via military action. I sampled Trump’s campaign rhetoric, analyzing 71,446 words across 24 events from January 2015 to December 2016. Using a program for measuring leadership traits in rhetoric, I estimated what Trump’s words may tell us about his level of distrust and conceptual complexity. The graph below shows Trump’s level of distrust compared to previous presidents. As a candidate, Trump also scored second-lowest among presidents in conceptual complexity. Compared to earlier presidents, he used more words and phrases that indicate less willingness to see multiple dimensions or ambiguities in the decision-making environment. These include words and phrases like “absolutely,” “greatest” and “without a doubt.” A possible implication for military action I took these data on Trump and plugged them into the statistical model that we developed to predict major uses of force by the United States from 1953 to 2000. For a president of average distrust and conceptual complexity, an economic downturn only weakly predicts an increase in the use of force. But the model would predict that a president with Trump’s numbers would respond to even a minor economic downturn with an increase in the use of force. For example, were the misery index (aggregate inflation and unemployment) equal to 12 — about where it stood in October 2011 — the model predicts a president with Trump’s psychological traits would initiate more than one major conflict per quarter. Of course, predictions from such a model come with a lot of uncertainty. By necessity, any measures of a president’s traits are imperfect. And we do not know whether there will be an economic downturn. Moreover, campaigning is not governing, and the responsibilities of the Oval Office might moderate Donald Trump. The psychologist Philip Tetlock has found that presidents often become more conceptually complex once they enter office. Nevertheless, this analysis suggests some cause for concern about the international ramifications of an economic downturn with a President Trump in the White House.

### A2: Aff Can’t Solve

#### Congress must fund CTE to improve career outcomes for participants and avoid state budget crises- governor state letter proves

Wermund 5/26 [Benjamin Wermund, education reporter for POLITICO Pro, 5-26-2017, "Governors call on Congress to fund career and technical education," POLITICO, http://www.politico.com/tipsheets/morning-education/2017/05/26/governors-call-on-congress-to-fund-career-and-technical-education-220533

GOVERNORS CALL ON CONGRESS TO FUND CAREER AND TECH ED: The National Governors Association is taking a rare step into the federal appropriations fray, writing a letter to congressional budget writers urging them to fund career and technical education and other programs that President Donald Trump has proposed cutting. “State economies are built on a foundation of education and workforce training,” the letter says. “Governors’ message to Congress is clear: There must be careful consideration as to how to appropriately invest in these types of programs (and many others). Otherwise, cuts and changes not carefully considered could lead to a deterioration of state budgets.” — President Donald Trump’s budget proposal calls for a 15-percent cut to grants meant to help states fund career and technical education. Career and technical advocates say the cuts fly in the face of the Trump administration’s repeated calls to expand options to help students prepare for jobs, rather than just pursue traditional four-year college degrees. The administration has said they’re an example of the “tough trade-offs” they had to make in a defense-heavy budget and that career and technical education is still a priority for the administration. — “Collectively, governors rarely wade into federal budgetary and appropriations debates, especially regarding investments in specific federal programs,” a spokeswoman for the group said. “This letter represents a departure for the nation’s governors due to the importance of these programs to their state economies.” The letter is not a direct response to Trump’s budget proposal, released earlier this week, a spokeswoman for the NGA said. The group started drafting the letter after Trump released his skinny budget earlier this year, she said. — An Office of Budget and Management official told Morning Education that career and technical education, “in its current form, has shown limited evidence of improving post-secondary education or career outcomes for participants. The official pointed to findings from the 2014 Final Report to Congress on the National Assessment of Career and Technical Education that found only about 20 percent of students who participate in CTE in high school are so-called “concentrators,” or students who earned at least three credits in the same field and were more likely to graduate high school than other students. “Improving and reforming the program to ensure all CTE students have meaningful experiences that lead to attainment of career-ready skills will be a key focus of the Administration's Perkins reauthorization proposal,” the official said.

### A2: Aff Can’t Solve

#### CTE fills state coffers through a staggering multiplier effect

Ogul 17 – writer for Orlando Sentinel (David, “How to improve a state economy through technical education”, 2/17/17, Orlando Sentinel, <http://www.orlandosentinel.com/brandpublishing/forstudentsnotprofit/os-how-to-improve-a-state-economy-20170217-story.html//GHS-AK>)

For every dollar Wisconsin taxpayers invest in their technical college system, they get back more than $12. In the state of Washington, every dollar spent on secondary career and technical education (CTE) yields taxpayers a $9 return on investment. And in Utah, Salt Lake Community College is rewarding taxpayers to the tune of $4.30 for every dollar invested into its CTE programs. Those numbers, from a 2016 Association for Career and Technical Education factsheet, suggest that from Orlando to Oregon and Los Angeles to Long Island, CTE is making a difference not only in people’s professional and personal lives but also in growing the economy by boosting state GDP and adding to the tax coffers. “Today’s career and technical education prepares students with the academic, technical and employability skills necessary for personal success in the 21st century economy, which in turn leads to the economic success of our country,” said Alisha Hyslop, director of public policy for the Alexandria, Va.-based association, which is dedicated to advancing CTE nationwide. “Through partnerships with local business and industry, postsecondary CTE programs prepare students directly for the careers that are available in their local communities and regions while at the same time laying a foundation of skills for lifelong learning that will allow students to enter pathways to the careers of tomorrow.” In fact, according to a 2013 report from Washington, D.C.-based think tank the Brookings Institution, a significant portion of skilled technicians building the STEM (science, technology, engineering and math) economy come from high schools, technical schools and state colleges. “Skilled technicians produce, install and repair the products and production machines patented by professional researchers, allowing firms to reach their markets, reduce product defects, create process innovations and enhance productivity,” according to the report, “The Hidden STEM Economy,” which notes that high-skilled jobs in manufacturing and construction that do not require a college degree make up an increasingly large share of total employment. With the manufacturing industry alone likely facing the need for 3.4 million workers — and an expected shortage of 2 million manufacturing workers in the U.S. over the next decade — CTE programs and community colleges will play an even more vital role in helping American businesses close the industry’s skills gap, according to a 2015 report co-authored by professional services firm Deloitte and industry group the Manufacturing Institute. Oklahoma is among the states taking such statistics to heart. Its career and technology education system, CareerTech, is focused on developing what it calls a world-class workforce through a comprehensive program that includes 29 technology center districts and 15 skills centers that work with nearly 7,100 business and industry partners. Graduates of Moore Norman Technology Center, located in the city of Norman, have alone grown Oklahoma’s economy by more than $450 million in just four years, according to the Association for Career and Technical Education. “While many high-skill, high-wage jobs do not require a bachelor’s degree, an increasing number call for at least some postsecondary training,” according to the 2014 U.S. Department of Education-commissioned “National Assessment of Career and Technical Education, Final Report to Congress,” an independent look into CTE in the United States. “CTE coursework at the postsecondary level offers students more specialized instruction — academic as well as technical — that culminates in the award of a certificate or degree that will help them secure employment or pursue further education.” Locally, Orange Technical College is impacting the workforce with some 60 career track programs that are putting people to work. The secret to its success? Developing and revising its coursework based on discussions with workforce advisory councils filled with business and industry representatives. Jack Williams, senior vice president at Harvard Jolly Architecture, is among OTC’s biggest supporters. “Our employees who came from Orange Technical College have been very focused, they’ve been very knowledgeable, and, more importantly, had a fairly broad understanding and training in the programs we use,” Williams said. “We have been very fortunate and very pleased with their performance.”

### A2: Pension Crisis False

#### Pensions are the new subprime mortgages --- investors are already downgrading state credit ratings

Booth 17 [Danielle DiMartino Booth, President of MoneyStrong, former Federal Reserve insider, March 24, 2017, “Pension Crisis Too Big for Markets to Ignore,” Bloomberg, <https://www.bloomberg.com/view/articles/2017-03-24/pension-crisis-too-big-for-markets-to-ignore>]

In late 2006, Aaron Krowne, a computer scientist and mathematician, started a website that documented the real-time destruction of the subprime mortgage lending industry. The Mortgage Lender Implode-O-Meter caught on like wildfire with financial market voyeurs, regularly reaching 100,000 visitors. West Coast lenders, some may recall, were the first to fall in what eventually totaled 388 casualties. A year earlier, to much less fanfare, Jack Dean launched another website in anticipation of the different kind of wave washing up on the California coastline. Called the Pension Tsunami, the website was originally conceived to provide Golden State taxpayers with a one-stop resource to track news stories on the state’s mammoth and numerous underfunded public pensions. Dean came about his inspiration honestly: “I started tracking this issue in 2004 after the Orange County Board of Supervisors gave a retroactive pension formula increase of 62 percent to county employees,” he said. “I was stunned. It’s the main reason Orange County has a $4.5 billion underfunded liability today.” As the years have passed, though, the site has become a font of information for states and municipalities nationwide as well as corporate pensions. In all, over 40,000 headlines have been posted to the website to date. On a recent Friday, Dean posted multiple stories on the California Public Employees’ Retirement System, the country’s largest pension program, as well as a budget cliff facing San Francisco, six Los Angeles public safety officers who collected over $1 million apiece last year in pensions, and eight cities that could face bankruptcy when the next recession hits. But the day’s headlines also included the latest on the fiasco unfolding in Dallas, an update on Houston’s less awful situation and features on states that have become the site's other usual suspects -- Connecticut, Illinois and New Jersey. And that was a slow news day. The question is why haven’t the headlines presaged pension implosions? As was the case with the subprime crisis, the writing appears to be on the wall. And yet calamity has yet to strike. How so? Call it the triumvirate of conspirators – the actuaries, accountants and their accomplices in office. Throw in the law of big numbers, very big numbers, and you get to a disaster in a seemingly permanent state of making. Unfunded pension obligations have risen to $1.9 trillion from $292 billion since 2007 Credit rating firms have begun downgrading states and municipalities whose pensions risk overwhelming their budgets. New Jersey and the cities of Chicago, Houston and Dallas are some of the issuers in the crosshairs. Morgan Stanley says municipal bond issuance is down this year in part because of borrowers are wary of running up new debts to effectively service pensions. Federal Reserve data show that in 1952, the average public pension had 96 percent of its portfolio invested in bonds and cash equivalents. Assets matched future liabilities. But a loosening of state laws in the 1980s opened the door to riskier investments. In 1992, fixed income and cash had fallen to an average of 47 percent of holdings. By 2016, these safe investments had declined to 27 percent. It’s no coincidence that pensions’ flight from safety has coincided with the drop in interest rates. That said, unlike their private peers, public pensions discount their liabilities using the rate of returns they assume their overall portfolio will generate. In fiscal 2016, which ended June 30th, the average return for public pensions was somewhere in the neighborhood of 1.5 percent. Corporations’ accounting rules dictate the use of more realistic bond yields to discount their pensions’ future liabilities. Put differently, companies have been forced to set aside something closer to what it will really cost to service their obligations as opposed to the fantasy figures allowed among public pensions. So why not just flip the switch and require truth and honesty in public pension math? Too many cities and potentially states would buckle under the weight of more realistic assumed rates of return. By some estimates, unfunded liabilities would triple to upwards of $6 trillion if the prevailing yields on Treasuries were used. That would translate into much steeper funding requirements at a time when budgets are already severely constrained. Pockets of the country would face essential public service budgets being slashed to dangerous levels. What’s a pension to do? Increasingly, the answer is swing for the fences. Forget the fact that just under half of pension assets are in the second-most overvalued stock market in history. Even as Fed officials publicly fret about commercial real estate valuations, pensions have socked away eight percent of their portfolios into this less than liquid asset class. Even further out on the risk and liquidity spectrum is the 10 percent that pensions have allocated to private equity and limited partnerships. For the better part of a decade, New Albion Partners Chief Market Strategist Brian Reynolds has tracked pensions’ allocations to these so-called alternative investments, and the total is approaching $350 billion. The working assumption is that the Pension Tsunami will never make land fall, but the next time you take comfort in the sanctity of pensions given they have yet to self-destruct, ask yourself instead how they are hedged in the event of a correction. Will it be their bond, stock, real estate or private equity holdings that shield their portfolios? Or will it be none of the above?

### A2: Economy Recovering

#### Recession now because of declining productivity --- declining state budgets trigger downward spiral

Fernald et al. 17 [John G. Fernald, Federal Reserve Bank of San Francisco, Robert E. Hall, Stanford University, James H. Stock, Harvard University, Mark W. Watson, Princeton University, “The disappointing recovery of output after 2009,” Brookings, BPEA Conference Drafts, March 23–24, 2017]

Why has output grown so slowly in the post-2009 recovery, given the normal or betterthan-normal recovery in the labor market? The U.S. unemployment rate has recovered at least as fast as in previous cyclical expansions—see Figure 1, left panel, where the dashed lines show changes in the unemployment rate following the troughs of recent recessions. In contrast, the right panel shows that the growth of output after 2009 has fallen far short. Output per person— the black line, in logs—fell sharply in the recession and has not reverted to any linear trend line extending its pre-recession trajectory. The red line removes the effects of the deep recession in a simple way using Okun’s Law, as described later in this paper. Because the economy had approximately returned to full employment by mid-2016, we have normalized the lines so that the red line intersects the black line at the end of the sample. The picture is striking: Cyclically adjusted output per person rose only slowly after 2007 and then plateaued. We argue for taking this red line seriously as the counterfactual path of output in the absence of the recession. What appears to be a slow recovery of output is a reflection of something quite different: The U.S. economy suffered a deep recession superimposed on a sharply slowing trend. To reach this conclusion, we first use Solow-style growth accounting to tease out the various components underlying the flattening of the red line. The answer is slow growth in total factor productivity growth (TFP), and falling labor force participation. The decline in participation was large enough that cyclically adjusted hours worked per person fell sharply. When put together, slowly rising TFP and falling participation imply flat cyclically adjusted output per person. Second, we examine TFP and participation in detail to understand whether their path has been influenced by the post-2007 experience of recession and slow recovery. Our answer is no. These factors reflect powerful adverse forces largely—if not entirely—unrelated to the financial crisis and recession. 2 The forces of declining productivity and shrinking labor force were in play before the recession. For example, Jorgenson, Ho, and Stiroh (2008) and Oliner, Sichel, and Stiroh (2007) noted that TFP growth had slowed by 2008 from its exceptional pace from the mid-1990s to the mid-2000s. And the Congressional Budget Office (2006) and Aaronson and others (2006) forecasted declines in participation as the baby boom retired and the surge of women into the labor force during the 1960s, 1970s, and 1980s plateaued. Although many forecasters cut their forecasts for longer-term (cyclically adjusted) growth prior to the recession, the magnitude of the slowdown in actual output growth surprised forecasters over and over. Figure 2 shows the median forecast paths of the unemployment rate and of GDP from the Survey of Professional Forecasters, for forecasts made annually in 2010 through 2015, using data through the end of the previous year. These forecasts consistently exceeded actual growth. Early in the recovery, forecasts of the decline in the unemployment rate were borne out but, starting in 2013, they understated the improvement. These forecasts are representative of other real-time forecasts by the Congressional Budget Office, the Federal Open Market Committee (Lansing and Pyle, 2015), and the Council of Economic Advisers. Some commentators have attributed the growth disappointments to weak investment and an absence of normal capital deepening in this recovery. In our view, the apparent absence of normal capital deepening largely reflects the adjustment of the capital stock to a slower underlying trend rate of output growth. Indeed, by mid-2016, when the economy had effectively recovered, the capital-output ratio was close to its pre-recession trend line. Our account leaves little room for explanations of slow growth in which demand shortfalls have persistent effects. It does leave room for demand factors that delayed the recovery. Two quantitatively important factors are the unusually slow growth of federal government purchases during 2012 through 2014, which we associate in part with the sequester; and the delay in the usual rebound of state and local government purchases, which we associate with the aftermath of the housing market collapse and the financial crisis. Absent such delays, 3 output growth would have been faster earlier: the black line in Figure 1 would have intersected the red line sooner. But, looking back over the entire recovery, we conclude that the seeds of the disappointing growth in output were sown prior to the recession in the form of a declining participation rate and slow TFP growth. Indeed, the scaling back of consumption and investment plans in response to the slowdown in TFP growth could induce its own recessionary pressures beyond those from the financial crisis alone. Blanchard, Lorenzoni, and L’Huillier (2017) show that these contributions could be large, especially with interest rates at the zero lower bound.

### A2: Economy Recovering

#### Pensions internal link overcomes resilience and defense

Weyzig 14 [Francis, policy advisor on tax justice and economic inequality at Oxfam Novib (Netherlands) and former policy advisor financial stability at the Dutch central bank, et al., February 2014, “The Price of Doing Too Little Too Late: The impact of the carbon bubble on the EU financial system,” http://reinhardbuetikofer.eu/wp-content/uploads/2014/03/GND-Carbon-Bubble-web1.pdf]

In a fragile economic environment, many financial institutions are less able to absorb shocks. This increases the likelihood of knock-on effects through the propagation of shocks and feedback effects at the macro level. Although by itself the carbon bubble is unlikely to be a source of systemic risk, in the case of continued economic fragility in the Eurozone, a carbon bubble shock would come on top of other causes of financial instability and could be the trigger for harmful feedback loops. In such an environment a further reduction of consumer confidence and demand, for instance as a result of further lowering of pensions, would be dangerous, as would be a further squeeze of credit to small and medium enterprises by banks that have been hit by the deflation of the carbon bubble. Furthermore, this report assesses only the potential losses on exposures to fossil fuel firms and commodities. The total impact of a carbon bubble shock would be larger through the impact on other sectors and investments.

### A2: No Economy Impact

#### Diversionary war is true- empirics and political bias prove

Brian Crisher and Mark Souva 3-30-16

(Brian Crisher- assistant professor at the University of West Florida. Has a Phd in political science. Mark Souva- international studies professor at Florida State University “Domestic Political Problems and the Uneven Contenders Paradox” <https://academic.oup.com/fpa/article-abstract/2625522/Domestic-Political-Problems-and-the-Uneven>) mba-aln

In this research, we advance our understanding of diversionary uses of force by incorporating Jackson and Morelli’s (2007) concept of political bias. This concept helps us understand both how domestic political problems may be associated with external uses of force and to know where to look for testing the relationship between domestic problems and diversionary uses of force. Other rationalist research focuses on the concept of competence to understand the relationship between domestic political problems and external uses of force (Smith 1996). The concept of strategic conflict avoidance comes out of this work. As we noted previously, however, a significant body of recent research is in tension with the strategic conflict avoidance concept as it finds some support for diversionary uses of force. From the rationalist perspective, a central question to ask is who engages a state with diversionary incentives? Why should a strong state avoid a weak state with domestic problems? A focus on political bias provides an answer to this question and helps reconcile the empirical research. Drawing on the work of Jackson and Morelli (2007), we contend that the central causal mechanism motivating diversionary uses of force is political bias. Domestic political problems lower a leader’s cost for conflict, relative to the median member of the public. Yet because domestic problems are observable to all, some potential targets will work to avoid a likely diverter. Not all targets have the same incentive to avoid. A weak target wants to avoid the potential backlash of finding a strong state suffering domestically; this is strategic conflict avoidance. Conversely, a strong target has little to fear from conflict with a weak attacker; indeed, a strong state could face domestic backlash for backing down to a weak aggressor. This leads us to expect that as the target’s strength, relative to that of the initiator, decreases we are less likely to observe diversionary behavior. In other words, diversionary behavior is most likely to occur between weak and strong states. Our empirical analysis of hostile and fatal MIDs between 1946 and 2000 fails to falsify our hypotheses. In addition, our findings remain when we examine territorial disputes. Absent the argument that we advance here, these findings would be a puzzle.

### A2: No Economy Impact

#### Leaders think diversionary war is inexpensive and fast

Carter 2-1-17

(Erin Baggott, Assistant Professor at the School of International Relations at the University of Southern California “Elite Welfare Shocks and Diversionary Foreign Policy: Evidence from China” <http://www.erinbcarter.org/documents/Diversion.pdf>) mba-alb

To explore how economic shocks to elite welfare affect foreign policy in autocracies, this paper develops a theory in which autocrats draw support from both elites and the public. Indeed, the two can be substitutes. The dual bases of the autocrat’s support enlarge his strategy set in ways that are particularly salient for foreign policy. When elite support flags, he may bolster public support to discourage leadership challenges. Popular support deters leadership challenges through the threat of revolution. Because a challenger would face public opposition if she replaced a popular leader, the expected payoff of her challenge is lower. Therefore, popular affection for the regime—or the appearance thereof—deters potential challengers. Although contemporary scholars generally regard autocrats as having to satisfy both their elites and the population,5 Machiavelli observed that the two are substitutes: one of the most efficacious remedies that a prince can have against conspiracies is not to be hated and despised by the people, for he who conspires against a prince always expects to please them by his removal; but when the conspirator can only look forward to offending them, he will not have the courage to take such a course, for the difficulties that confront a conspirator are infinite.6 To generate popular affection, I argue, autocrats may employ diversionary foreign policy. Diversion occurs when an unpopular leaders initiates an international dispute to generate a rally around the flag effect that boosts his popularity. Of course, executives enjoy a range of policy options to resolve political crises. For instance, autocrats might simply increase direct transfers to elites in response to negative economic shocks. However, this is expensive and risky because of public frustration with corruption. Alternatively, the autocrat might generate countervailing public support through public goods provision. However, public goods are expensive to construct and difficult to provide immediately. In contrast, diversionary foreign policy is relatively inexpensive and readily implemented. And if the autocrat can signal to his diversionary target that the apparent aggression served only to placate domestic concerns, then diversion entails few international costs as well. The theory generates several observable implications. Because the autocrat intends to generate public support, he will initiate newsworthy conflict rather than that which is unobservable. Because diversion aims to make leadership challenges costlier, it will be accompanied by propaganda designed to foster the impression of popular affection for the autocrat. And because the autocrat seeks to avoid international retaliation, he will subsequently adopt cooperative policies to placate his diversionary target.

### A2: States Counterplan Solves

#### States increasing funding on their own would run afoul of balanced-budget requirements and further downgrade their creditworthiness --- only increasing federal block grant spending can solve fiscal shortfalls

Gamage 10 [David Gamage, Assistant Professor, University of California, Berkeley, School of Law (Boalt Hall), “Preventing State Budget Crises: Managing the Fiscal Volatility Problem,” California Law Review, 98 Calif. L. Rev. 749, June, 2010, lexis]

Politicians generally benefit both from cutting taxes and from increasing spending on popular programs. When politicians are not required to pay for current expenditures with current taxes, they face strong incentives to run up ever-greater deficits. n60 Absent some form of balanced budget constraint, nothing prevents lawmakers from using deficits to finance structural imbalances between taxes and spending, rather than limiting deficit use to [\*762] coping with downturns. n61 Although accrued debt must eventually be paid off, politicians can leave this task to the future, when they will presumably no longer hold office. n62 It was precisely this problem that caused states to adopt balanced-budget requirements in the nineteenth century. n63 States accrued ever-increasing levels of debt in order to finance infrastructure projects without raising taxes. After the national economy tanked in the late 1830s, states found they had stretched themselves past their limits. n64 Throughout the 1840s, state after state defaulted on its debts. n65 State governments responded to these debt crises by enacting balanced-budget requirements into state law. n66 Whether as a direct result of these new formal balanced-budget requirements, or due to the debt crises fostering an informal norm of budget balancing, the states have largely refrained from deficit spending since the 1840s. Underscoring the importance of state balanced-budget constraints, the incentives for deficit spending might be even stronger today than in the nineteenth century. n67 The political landscape is currently divided between one party that seeks to shrink the size of government, and another party that seeks to increase (or at least maintain) the current level of government spending. Conservatives may be tempted to pass tax cuts during upturns, even when they realize the fiscal situation is unsustainable. Through this strategy, known as "starving the beast," a conservative government can make it harder for subsequent liberal governments to increase spending. n68 Moreover, by campaigning for tax cuts without specifying which spending programs will eventually need to be curtailed in order to pay for the tax cuts, conservatives can take advantage of voter myopia as to the connection between taxes and [\*763] spending. n69 As liberals face the opposite incentives - to campaign for deficit-financed spending increases in order to prevent future conservative governments from reducing taxes - deficits would likely grow to dangerous levels in the absence of balanced-budget constraints. n70 In essence, each side can benefit from playing chicken. Instead of working together proactively on a sound fiscal policy, conservatives can push for tax cuts and liberals for spending increases, until all the slack in the budget has been used up. Each side hopes the other will give in first - before the state succumbs to bankruptcy - with conservatives hoping that liberals will eventually agree to cut spending, and liberals hoping that conservatives will eventually consent to tax hikes. n71 But if both sides delay compromise for too long, the end result may be tragedy. 2. How States Respond to Balanced-Budget Constraints It is often noted that the written balanced-budget requirements within many state constitutions lack effective enforcement mechanisms. n72 Even to the extent states are legally required to match expenditures with revenues, states can use a variety of "budgetary gimmicks" to create the appearance of balance without actually adjusting either taxes or spending. For instance, during the 2001-2003 downturn, states played accounting games, raided pension funds, sold state assets, securitized future revenue streams, and engaged in concealed borrowing. n73 Taken to the extreme, state governments could simply fake their accounting statements to avoid making painful adjustments during downturns. [\*764] Despite this, states make only limited use of budgetary gimmicks. n74 During the recession of the early 1990s, for example, budgetary gimmicks were estimated to have accounted for only 19% of state responses to fiscal volatility; the remaining 81% was split between tax hikes and spending cuts. n75 Similarly, during the 2001-2003 downturn, these gimmicks were estimated to have accounted for only 24% of state responses to fiscal volatility. n76 Typically, states rely heavily on budgetary gimmicks and rainy-day funds during the first year of a downturn, but then turn to more painful coping measures during subsequent years, once these easy methods have been exhausted. n77 Why don't states make greater use of budgetary gimmicks, or simply ignore their balanced-budget requirements all together? The literature posits two distinct answers to this question. First, states may fear the disciplining power of capital markets. As Richard Briffault argues: The states lack the fiscal and monetary tools and the tax base of the federal government. States can neither print money nor close their borders to prevent residents and businesses from fleeing to other jurisdictions to avoid high levels of state taxation. In order to borrow, a state must demonstrate to potential lenders its capacity to repay its debts. If it persistently ran a significant deficit, its creditworthiness would be undermined. It would have to pay a substantial penalty in terms of higher interest rates or, ultimately, risk loss of access to capital markets. States are like households or businesses. <<card continues>

### A2: States Counterplan Solves

<<card continues>> They balance their budgets not necessarily because their constitutions require it - after all, households and businesses are not subject to constitutional requirements - but because the marketplace demands it. n78 Second, states may be constrained by norms against running deficits. According to a survey by the National Association of State Budget Officers: "The most important factor contributing to balanced budgets is not an enforcement mechanism or a provision specifying how a shortfall will be made up. Rather it is the tradition of balancing budgets, the mindset this tradition creates, and the importance placed on balanced budgets that result in states complying with their requirements." n79 [\*765] Whether the cause is fear of capital markets, adherence to antideficit norms, or a combination of these two factors, the fact remains that "most states balance their budgets most of the time whether or not they are required by their constitutions to do so." n80 Although states use budgetary gimmicks as a partial response to fiscal volatility, states deal with the majority of volatility through a combination of tax and spending adjustments. Ultimately, what matters is not whether a state has a balanced budget requirement written into its constitution, but the extent to which a state's political community operates under a norm of budget balancing, and the extent to which financial markets punish departures from this norm. From here on out, this Article uses the term "balanced-budget constraints" to refer to budget-balancing norms and financial market discipline, in addition to the effects of the states' formal balanced-budget requirements. n81 C. The Inadequacy of First-Best Solutions The bulk of this Article analyzes second-best means for dealing with fiscal volatility. Assuming that states cannot solve their fiscal volatility problems directly, they should respond to the volatility so as to minimize its harmful effects. Yet before proceeding to discuss second-best coping mechanisms, it is worth spending a little more time evaluating potential first-best solutions. n82 [\*766] As this Article has discussed, the most direct means for resolving fiscal volatility - relaxing state balanced-budget constraints - is probably undesirable due to the nature of the political process. n83 But if balanced-budget constraints prevent states from accruing deficits during downturns, might states adopt the opposite policy instead? In theory, states could solve their fiscal volatility problems by saving the surplus revenues generated during upturns and using these saved revenues to finance spending during downturns. Most states do indeed save some of their surplus revenues in "rainy-day funds." n84 Yet states fall far short from adequately financing these funds. n85 For example, although states invested far more heavily in rainy-day funds during the 1990s than during any previous boom, these funds still covered less than one-sixth of the revenue shortfalls during the subsequent bust. n86 The reason states fail to adequately finance their rainy-day funds is the same reason states let deficits grow to dangerous levels in the absence of balanced-budget constraints. Like the decision to forgo deficit spending, investing in rainy-day funds constitutes a "political gift[] from one period's policymakers to some unknown successors." n87 Politicians can advance both their personal electoral prospects and their partisan agendas by using surplus revenues for cutting taxes or increasing spending, rather than saving the revenues in rainy day funds. n88 There is some scholarly discussion of mechanisms for forcing states to save more of their surplus revenues during economic booms. n89 At the most extreme level, we might imagine an administrative agency requiring surplus revenues to be invested in rainy day funds, or else raising state borrowing limits during busts and lowering them again during periods of growth. Unfortunately, although measures of this sort could be helpful on the margin, even the proponents of these measures do not claim they can fully solve state fiscal volatility problems. n90 [\*767] Moreover, even if politicians could be forced to adequately finance rainy day funds, they lack the information required to do so. State-level budget forecasts have done a poor job of predicting future revenues: "too often decisionmakers "overreact' and assume that the future will be like the immediate past." n91 Budget analysts tend to be overly optimistic during booms and overly pessimistic during busts. n92 Analysts have poor information about "when business-cycle turning points will occur ... [and] about how much the economy will expand or contract. In practice, it is hard to distinguish cyclical upswings from long-term growth." n93 Although reformers should certainly press states to make greater use of rainy-day funds, and there is room for more debate on how to improve the operation of these funds, first-best measures of this sort have little chance of ever resolving the fiscal volatility dilemma. n94 As alternative first-best solutions, states could look to the private sector or to the federal government to provide revenue insurance, with the states paying higher premiums during economic booms and receiving payouts during busts. Looking first to the feasibility of private-sector insurance, similar problems arise as with borrowing and rainy-day funds. State governments cannot purchase insurance policies during downturns because doing so would be equivalent to borrowing. As with direct borrowing, purchasing insurance that paid out immediately, but with premiums not due until some later period of economic recovery, would both tie the hands of future governments and create potential for abuse. During economic booms, state governments could certainly purchase insurance policies, just as they could contribute to rainy-day funds. Yet governments lack the incentive to make these purchases during strong economic periods. Unless our forecasting technologies improve dramatically, it is unrealistic to expect state governments operating during strong economic [\*768] conditions to prepare adequately for later downturns. Looking finally to federal government policies, the federal government could mitigate state-level fiscal volatility problems by providing increased countercyclical budget support. n95 Since the federal government can freely accrue deficits during downturns while state governments cannot, it arguably makes sense for the federal government to provide additional block grants to states during busts, or to increase financing for countercyclical spending programs like Medicaid. But with the notable exception of the Obama administration's recent stimulus package, the trend in federal government policy has been to provide less countercyclical budget support over time. n96 Moreover, as the next Section will argue, the federal government might eventually adopt some sort of balanced budget constraint itself, thereby reducing its potential to provide countercyclical support.