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14. ABSTRACT
America requires three items to succeed in mobilizing. First, it needs organizers who understand each industry's unique situations and adequately communicate those industries' requirements to pivot and support mobilization. Second, Congress needs to pass legislation that enhances the carrots and provides a stick to avoid the delay of mobilization. Finally, America needs an exact requirement for production needs; misunderstanding the type and volume of goods created inefficiencies in both World War I and World War II.

15. SUBJECT TERMS
Mobilization; Defense Industrial Base; Wartime Production; Industrial Capability

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MASTER OF MILITARY STUDIES

TITLE: Mobilizing the Defense Industrial Base in Great Power Conflict

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

AUTHOR: Major Joshua Paluch

AY 2020-21

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Date: 29 April 2021

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Executive Summary

Title: Mobilizing the Defense Industrial Base in Great Power Conflict

Author: Major Joshua Paluch, United States Air Force

Thesis: To succeed in the mobilization of the American defense industrial base, Congress and military planners should look to the historical mobilization of WWI and WWII to identify legislative shortfalls, enact organizational structure efficiencies, and recognize how to manage industrial capability.

Discussion: America prides itself as a pillar of democracy and its capitalist market. The World Wars and the military mobilization requirements that accompanied them challenged the free market as government priorities started to clash with industry. In World War I, the steel industry challenged the government's claim to control steel costs as demand skyrocketed. Eventually, the government set limits on steel production costs, claiming that it needed to protect its interest and private citizens' and allies' interests by limiting material increases due to a spike in demand. In World War II, the Ford Motor company resisted government contracts following the tradition of isolation. This approach proved successful in the short term, but when the government eliminated personal automobiles' production to mobilize the entire industry for wartime production, Ford converted its factories. This event raised the question again about the American Government's ability to takeover industry to support mobilization. On several occasions during the World Wars, it did just that. Usually only in limited industries and always for a limited time. Ultimately, in its role to protect American citizens, the government does that with whatever means it can access. Through legislation, these un-American concepts only become enforceable when America finds itself involved in an emergency, but it always tries to use several avenues to ensure industry volunteers support the government's efforts.

Conclusion: America requires three items to succeed in mobilizing. First, it needs organizers who understand each industry's unique situations and adequately communicate those industries' requirements to pivot and support mobilization. Second, Congress needs to pass legislation that enhances the carrots and provides a stick to avoid the delay of mobilization. Finally, America needs requirements for production needs; misunderstanding the type and volume of goods created inefficiencies in World War I and World War II.

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

Thank you for taking the time to read my thesis. I chose the topic of industrial mobilization when articles started moving across my news feed discussing the preparedness of the defense industrial base for major power competition. As an aircraft maintenance officer, the industrial base directly impacts my team's ability to generate airpower, and even in the relatively low levels of conflict in the Middle East, there are continual parts problems. Combining these articles with the strategy document set by the Air Force Chief of Staff, General C.Q. Brown, "accelerate change or lose," only amplified the concern I felt if America calls upon its military against a peer adversary.

I need to thank several people for helping me research, write, and edit this thesis. First to my advisors Dr. Lon Strauss and Lt Col Brian McLean. These individuals helped to refocus my efforts after an initial draft that fell well short of the mark. I appreciated the personal attention and am much happier with the current version of this thesis. Next are my classmates from Conference Group 4. While school requirements with this paper added onto our weekends, the constant stream of messages supporting and distracting helped me complete the thesis while maintaining a moderate sanity level, especially while geographically separated from my family. Finally, thank you to my family; my kids Amelia and Archer continue to be constant joy sources even in a virtual environment. The end of school gets closer every day, and I cannot wait to live with you again! I say it often to my wife, Sara Jo, but it is never enough; thank you for all you do. Moving two small children by yourself into a new city during COVID all so that I could attend school demanded nothing less than everything you have, and I know you would do it again to help our family. I hope that one day I can effectively express my gratitude.

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INTRODUCTION

In 2015 the United States National Military Strategy announced the return of great power competition with the re-emergence of Russia as a world power and the increase of Chinese power. After 13 years of counterinsurgency conflict in Iraq and Afghanistan, the United States military shifted its focus to high-intensity conflict training and exercises. In 2020, and again in 2021, the National Defense Industrial Association, in response to an executive order-driven report on the defense industrial base's status, gave the United States industrial base a "C" letter grade. A grade like this raises concerns for the defense industry's ability to respond to major power conflict, the likes of which may require mobilization on a scale not seen in nearly 80 years. As the military reorients itself to major power competition, the government as a whole needs to reorient itself to ensure the ability to respond to a crisis in the 21st century. A gap between the government's requirements and the industrial base's capability or capacity to mobilize could exist when the industry at large gives itself a "C." Understanding the gap and building the plan to overcome the gap require action to prepare the United States response to conflict.

The Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics announced the possibility of nationalizing the military aircraft industry, highlighting the lack of competitive manufacturing capability.¹ The United States overcame a shortfall in competitive manufacturing capability in both world wars, and understanding how that worked will prepare the government to enact it quickly in the event of a conflict. Similarly, the Army recently raised concerns over the defense industry's ability to provide fighting vehicles for ground combat. In a

¹ Marcus Weisgerber, "US May Need to Nationalize Military Aircraft Industry, USAF Says," *Defense One*, 14 July 2020, <https://www.defenseone.com/business/2020/07/us-may-need-nationalize-military-aircraft-industry-usaf-says/166894/>.

request for proposals, the Army included a clause opening the door for government teams to submit designs and compete against private industry.² The Army hopes to re-invigorate industrial innovation to better support future procurement needs. These are examples of concerns for the defense industrial base's ability to respond to a future mobilization.

Understanding the total requirements and scale of mobilization in conflict falls on the government's shoulders. If a gap exists or opens if the requirement grows, the government and industry need to find the right way to close the gap and provide the necessary material to support the conflict. Expanding industry and eliminating hurdles to production proved necessary during the world wars and can become effective in a future conflict. This expansion will require strong coordinators to manage the flow of requirements and prioritize work among available manufacturers. These coordinating offices proved successful in the past, but only after adjusting their roles and responsibilities to match mobilization needs. Finally, Congress discussed and passed legislation that bolstered the government's ability to manage the production efforts to meet mobilization requirements. Requirements always fall to the government to manage. The unique situations that require the expansion of industry, centralized prioritization and management of production, and supporting legislation exist only in major power conflict that exceeds pre-war industry capacity to produce.

The United States' experiences in World War I and World War II supply historical examples of ways the United States mobilized for war where the requirements exceeded industrial capacity. The findings in the Fiscal Year 2020 Industrial Capabilities Report to Congress and the associated National Defense Industry Association report raise questions about

² Jen Judson, "Army backs off idea to submit its own bid in Bradley replacement competition," *DefenseNews*, September 17, 2020, <https://www.defensenews.com/land/2020/09/17/army-backs-off-idea-to-submit-its-own-bid-in-bradley-replacement-competition/>.

American industry's ability to respond quickly to the outbreak of major power conflict. It falls to the government to ensure the industry required to support conflict exists or expand the current industry to cover mobilization needs. To succeed in the mobilization of the American defense industrial base, Congress and military planners should look to the historical mobilization of WWI and WWII to identify legislative shortfalls, enact organizational structure efficiencies, and recognize how to manage industrial capability.

MANAGING INDUSTRIAL CAPABILITY

Industrial capability exists on some scale for all materiel required during wartime. This materiel ranges from unique military equipment like military aircraft to necessities like food, clothing, and fuel that compete for production capacity between military and civilian customers. When the United States enters the conflict, communication on the expected scale of mobilization and needs from industry should follow the declaration of war. As the conflict evolves, planners should assume the scale of mobilization will change. A wide variety of factors affect the scale of mobilization, including the size of American forces, the entrance or exit of allied nations, or new understandings of the enemy or environment that change expected attrition. Proper planning should minimize these changes but building a resilient plan for industrial capacity will help to meet the requirement.

World War I and World War II required the defense industry to expand production capacity, transform factories, and train workers to support the requirements for war materiel. Given the time to make these adjustments, efforts in both wars created the chance to succeed. Mobilization of the Defense Industrial Base in World War I met its share of challenges that required delicate balancing. President Wilson's call to arms included the requirement to supply

material for the war both to America and foreign nations already in the war.³ The inclusion of partners as part of President Wilson's War Declaration made the scope of mobilization clear, which increased America's requirements to scale its private industry for war. Even with the preparation from the Council on National Defense and Advisory Commission, a newly created organization responsible for managing mobilization, concern existed about America's ability to mobilize.

Private industry at the start of World War I voluntarily organized itself and informed the government of its capabilities and capacities. There was no source to consult on industrial capability and capacity to understand how best to distribute requirements until this point. Less than 60 days after the American entrance into World War I, the Council on National Defense and Advisory Commission published a report on the mobilization status. Included in that status was an inventory of 27,000 American manufacturing plants, 262,000 miles of railroad, and mapping the highway network. Using this data, the Army and Navy could find manufacturers, order and organize equipment arrival, and better manage shipment to support the frontlines.⁴ With this data and the combinations of legislation, government, and private actors, the United States started to improve mobilization.

American industrial capacity for war products at the outset of World War I was dismal regarding three types of equipment, the tank, artillery, and planes. The military needed these pieces of equipment to break the stalemate of trench warfare. During the whole of the conflict, America only produced 64 tanks, with none making it overseas. However, in the next 140 days,

³ President Woodrow Wilson, *War Message*, April 2, 1917.

⁴ Council on National Defense and Advisory Commission, *A Report from the Director of the Council of National Defense and of its Advisory Commission to the Chairman of the Council* (Washington, DC: Library of Congress, May 28, 1917), 2, <https://babel.hathitrust.org/cgi/pt?id=loc.ark:/13960/t9474wf20&view=1up&seq=3>.

the number of tanks produced increased to 778.⁵ During the conflict, America produced 1,826 pieces of artillery, increasing to 3,077 by the end of April 1919.⁶ These numbers showed a promising future if the war continued; they also show how long mobilization for World War I took as the United States expanded manufacturing.

When the US entered World War I, American allies sent a requirement to the United States to produce 25,000 military airplanes, and the Army and Navy added a requirement for 40,000 military airplanes.⁷ The industrial base for this requirement did not exist. When the war started, companies estimated they could produce 2,500 aircraft a year, with only five companies having proven ability to produce more than ten aircraft a year.⁸ In the four years before the war, American industry only produced 681 military and civilian aircraft.⁹ To overcome this gap and meet the production requirements, new companies formed, and old companies from other industries accepted contracts to retool and produce aircraft and aircraft parts under lucrative government contracts. The Dayton-Wright Company in Ohio was formed in 1917 to get a portion of these contracts. One of the founders, Edward A. Deeds, was commissioned into the Army and received an assignment in charge of procurement for the Aircraft Production Board, where he awarded contracts for 4,000 aircraft to the Dayton-Wright Company setting off senate

⁵ Leonard P. Ayres, *The War with Germany; a Statistical Summary*, (Government Printing Office, Washington D.C. 1919), 80, <https://babel.hathitrust.org/cgi/pt?id=loc.ark:/13960/t6j10jn4t&view=image&seq=96>.

⁶ Leonard P. Ayres, *The War with Germany*, 75.

⁷ G. R. Simonson, "The Demand for Aircraft and the Aircraft Industry, 1907-1958," *The Journal of Economic History* 20, no. 3, (September 1960), 363, <https://www.jstor.org/stable/2114930>.

⁸ G. R. Simonson, "The Demand for Aircraft," 363.

⁹ US Department of Commerce, *Statistical Handbook of Civil Aviation*, (Washington, DC: Civil Aeronautics Administration, 1958), 40, https://books.google.com/books?id=hvJGAQAAIAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.

corroborated charges of favoritism.¹⁰ By the end of the war, the Dayton-Wright Company produced 3,400 aircraft of their contract before the government canceled the remaining orders, and nothing additional came of the charges against Deeds or Dayton-Wright.

Companies like Dayton-Wright opened to fill a gap in a new industry that the government needed and was willing to pay. In particular, the aviation industry became a profitable venture for these capitalists due to its infancy. The Dayton-Wright contracts paid cost plus a maximum profit of 12.5 percent with an additional incentive of 25 percent of any savings on the contracted per-unit costs, which paid out a net profit of \$1,525 on their \$4,400 aircraft.¹¹ The aviation industry did not have enough data to correctly estimate unit costs putting contracting officers in the challenging position of signing these contracts with the limited data. However, the contracts created the incentive for producers to join the aircraft industry. By the end of the war, the aircraft industry increased production to a rate of 21,000 planes a year and delivered 13,894 aircraft with a labor force that grew from 5,000 to 175,000.¹² The United States paid for this expansion in a vital war industry then cut contracts three days after the armistice resulting in most of these companies closing while production dropped to 10 percent of its wartime rate.¹³

The World War I aircraft industry example shows how quickly the government can expand an industry with incentives to meet requirements. If the idea holds that a country's industrial base's status influences the end of the war, it should drive a desire to maintain a clear plan of action to get that industry in a position to mobilize quickly. While certainly not ignored in the Central Powers' decision to surrender, the American industrial base's status still lagged in

¹⁰ Judy Rumerman, "The U.S. Aircraft Industry During World War I," *U.S. Centennial of Flight Commission*, accessed April 13, 2021, <https://www.centennialofflight.net/essay/Aerospace/WWi/Aero5.htm>.

¹¹ G.R. Simonson, "The Demand for Aircraft," 364.

¹² G.R. Simonson, "The Demand for Aircraft," 364.

¹³ G.R. Simonson, "The Demand for Aircraft," 365.

real impact. Mobilizers claimed that 1919 would see the full weight of American war-making capability contribute significant numbers of supplies had the conflict continued.¹⁴ If the lead time experienced in World War I proves true, that means America needs resources to support more than 18 months of conflict before the whole of the industrial base can support conflict if the industry knows the military's requirements. One of World War I's constraints was that America emerged from isolationism with an Army and Navy that did not thoroughly plan and prepare for contingencies that demanded mobilization at the scale seen in World War I.

Even with a requirement, profit incentives alone may not drive all manufacturers to retool to support mobilization requirements. In 1940, Edsel Ford, as President of the Ford Motor Company, agreed to support the British's Merlin engine production. This work started as an order for nine thousand engines and would grow to fifty-five thousand by the end of the war.¹⁵ The British announced this agreement and claimed that the order proved support for Britain and its interests from America and the Ford Motor Company. Henry Ford subsequently overrode his son's decision and canceled the order after finding out the engines went directly to Britain and not Americans. He claimed that the war in Europe was not America's problem, and he previously announced to the press that Ford would "never make war supplies for any foreign nation."¹⁶ This isolationist attitude only delayed Ford's role in World War II mobilization.

After President Roosevelt announced the unlimited national emergency resulting from German U-boat actions in the Atlantic, the call went out for aircraft production. America produced only 3,750 aircraft in 1940, but the President wanted 18,000 in 1941, which industry

¹⁴ R. Elberton Smith, *The Army and Economic Mobilization*, (Washington, DC: Center of Military History United States Army, 1991), 38, https://history.army.mil/html/books/001/1-7/CMH_Pub_1-7.pdf.

¹⁵ Arthur Herman, *Freedom's Forge: How American Business Produced Victory in World War II*, (Random House: NY 2012), 100, 105.

¹⁶ Arthur Herman, *Freedom's Forge*, 101.

beat, which grew to 60,000 in 1942 and topping out at 125,000 in 1943.¹⁷ Mobilizers thought it possible using the *rule of three* where "the first year after a production order output was bound to triple, in the second it would jump by a factor of seven, at the end of the third year, the only limits on output were material and labor, whether it was trucks or artillery pieces or bombs or planes."¹⁸ Ford motor company gained national accolades for its actions in World War II in aircraft production by producing 86,865 complete aircraft supporting the American war effort.¹⁹ This turnaround proved that the industry would support mobilization requirements with the right incentives.

The cost to maintain the defense industry prohibits America from keeping a constant state of readiness to support large-scale mobilization. While defense industries continue to develop new product lines and technologies, the Defense Production Act using title III can enable the government to keep critical production lines that require extended time to restart or new lines that need greater capacity alive or growing.²⁰ The Fiscal Year 2020 Industrial Capabilities Report from the Department of Defense highlighted the risks of small production capability, discussing the Chemical, Biological, Radiological, Nuclear Defense industrial base. The report uses the low order quantities and stringent quality controls on decontamination kits as reasons for the single supplier market.²¹ Due to these limitations, the government decided that the risk to

¹⁷ G.R. Simonson, "The Demand for Aircraft," 374.

¹⁸ Arthur Herman, *Freedom's Forge*, 166.

¹⁹ "WWII and Ford Motor Company," Michigan History, accessed February 21, 2021,

<http://michiganhistory.leadr.msu.edu/wwii-and-ford-motor-company/#:~:text=By%20the%20end%20of%20the,War%20II%20Production%20Efforts!>

²⁰ Dan Else, "The History of the Defense Production Act and What it Means for COVID-19," *War on the Rocks* (blog), April 13, 2020, 6, <https://warontherocks.com/2020/04/the-history-of-the-defense-production-act-and-what-it-means-for-covid-19/>,

²¹ US Department of Defense, *Fiscal Year 2020 Industrial Capabilities Report to Congress*, (Washington, DC: Office of the Secretary of Defense for Acquisition and Sustainment Office of Industrial Policy, January 2021), 59, https://www.businessdefense.gov/Portals/51/USA002573-20%20ICR_2020_Web.pdf?ver=o3D76uGwxcg0n0Yxvd5k-Q%3d%3d.

maintain a single source and the low incentives require the department to build the organic capability for Chemical, Biological, Radiological, Nuclear Defense production.²² Cost decisions like this provide good short-term savings and decreased risk, but in terms of mobilization, shrinking the number of companies to provide expansion capabilities challenges the system that brought success in both world wars. To expand this capability in times of war, the government needs an easy-to-follow production method to cover requirement increases and expand the capability to new factories involving management and labor with no experience with this production.

Managing industrial capability comes down to requirements, a concept all parties need to understand. World War I's delays only increased as the tiny War Department worked to identify how much equipment they needed. World War II planning turned out to be only marginally better, with the War Department sending a requirement to the Office of Production Management in the summer of 1940 to build a one-million-man Army by October 1941 and two million the following January.²³ Numbers help industry and mobilizers build a plan or measure the realism of current plans. In World War II, pushback came from economists on the War Production Board. After reviewing the numbers, the economists started the "feasibility dispute" with the Army. The feasibility dispute argued that the army plan proved unsupportable from an economic and social construct. The orders for uniform trousers in 1942 left enough industrial capability to produce only sixty percent of the total number of trousers produced in the worst year of the

²² US Department of Defense, *Fiscal Year 2020 Industrial Capabilities Report*, 60.

²³ Arthur Herman, *Freedom's Forge*, 90.

depression.²⁴ Constraints like the total capacity for trousers should not change the requirements, but planners need to consider and adjust priorities and delivery times.

The Department of Defense needs to plan and communicate the scope of possible expansion in major power competition. The National Defense Industry Association, in its annual report, includes a section on capacity and surge readiness. For their measurements, they define surge as an order that "requires leveraging the latent excess productive industrial capacity in the national economy."²⁵ The examples from World War I and World War II above clearly exceed the National Defense Industry Association's definition of a surge. Determining this measurement's appropriateness remains a government responsibility and one that needs attention before the start of major power competition. The Chief of Staff of the Air Force recently announced that "Tomorrow's Airmen are more likely to fight in highly contested environments, and must be prepared to fight through combat attrition rates and risks to the Nation that is more akin to the World War II-era than the uncontested environment to which we have since become accustomed."²⁶ Determining the type of mobilization required for major power conflict after it starts puts mobilization roughly 18 months behind schedule if the timelines from the World Wars apply in the 21st century.

ORGANIZATION OF THE GOVERNMENT

There is little appetite in the United States to pass legislation that begins a mobilization at the national level in advance of a declaration of war to get ahead of the timeline. Historically,

²⁴ David M. Kennedy, *Freedom From Fear: The American People in Depression and War, 1929-1945*, (New York: Oxford University Press, 1999), 628.

²⁵ National Defense Industrial Association, "Vital Signs 2020: The Health and Readiness of the Defense Industrial Base," (Arlington, VA, February 5, 2020), 13, https://www.ndia.org/-/media/vital-signs/vital-signs_screen_v3.ashx?la=en.

²⁶ Chief of Staff of the Air Force, *Accelerate Change or Lose*, August 31, 2020, 3, https://www.af.mil/Portals/1/documents/csaf/CSAF_22/CSAF_22_Strategic_Approach_Accelerate_Change_or_Lose_31_Aug_2020.pdf.

Americans have been concerned that beginning mobilization prematurely is a signal that the nation has already decided to go to war. During World War I and World War II, mobilization started in part when industry expanded to sell war materiel while the government resisted entering the war, a position that the United States cannot expect in a future great power conflict. Mobilization during this window happened primarily through voluntary efforts on the part of the business, but the government needed a way to meet all the requirements efficiently. Advisory committees sprang up to take this role during the prelude to support the impending requirements as conflict increased in likelihood. These committees continue as part of the Defense Production Act of 1950, which formalized advisory committees as a linkage between experts in critical areas and the government.

As America started organizing production before the United States entrance into World War I, "[e]mergency agencies sprang up in great profusion and aggressively competed for policy-making authority. Like business in general, steel could not turn to any single source for the direction it needed."²⁷ To focus the production effort, Congress created the Council of National Defense to organize industry in 1916. Congress intended the council to act as the executive branch's tool to prepare for and manage the United States' mobilization. The Army Appropriations Bill in 1916 (nine months before the United States entered World War I) laid out the role of the council "for the coordination of industries and resources for the national security and welfare...the increase of domestic production of articles and materials essential to the

²⁷ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry and Price-Fixing during World War I," *The Business History Review* vol 44, no. 3 (Autumn 1970), 293.

support of armies."²⁸ The council itself consisted of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor.

The Army Appropriations Bill built stronger linkages between the government and private industry by creating the Advisory Commission that answered to the council. The Advisory Commission's membership consisted of leaders in critical areas of national need. These members received approval from the President after nomination from the Council of National Defense for their "special knowledge of some industry, public utility, or the development of some natural resource."²⁹ The first Advisory Commission consisted of seven industry leaders from the railroad, labor, automobile industry, presidents of academic institutes, department store presidents, and financiers. This method put former, often well-connected industry leaders in a position of influence over mobilization mechanisms that balanced business and government requirements.³⁰ The council succeeded in several notable areas through its myriad of committees, sub-committees, and boards. In their first report to the Chairman (Secretary of the War), which Congress required, the Council of National Defense and Advisory Commission celebrated its ability to mobilize the railroad for national defense, connect the telephone and telegraph companies to ensure rapid communication, and settle a potential railroad strike before it stopped distribution.³¹ These actions represented the government's attempts to entice private industry into supporting the war effort with minimal coercion from the government. Two successes from the Advisory Commission stand out and continue through today. First, they recommended fair and just prices. The General Munitions Board, created by the Council of National Defense in April

²⁸ *Army Appropriations*, HR 17489, 64th Cong., Sess. I, Chapter 418 section 2, (29 August 1916), 649-650, <https://www.loc.gov/law/help/statutes-at-large/64th-congress/session-1/c64s1ch418.pdf>.

²⁹ *Army Appropriations*, 649.

³⁰ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 298.

³¹ Council on National Defense and Advisory Commission, *Report to the Chairman*, 1-2.

1917, for example, advised government purchasers on the reasonable costs for munitions purchases in the War and Navy Departments, helped producers find sources for raw materials and facilities to increase production, and set the priority of contracts.³² The other lasting success was the General Munitions Board's "establishment of priority," which attempted to prioritize urgent wartime contracts over competing contracts.³³ Historians Robert Cuff and Melvin Urofsky described this process as a success, precisely because it happened outside of the traditional acquisition bureaucracy, which enabled the board members to negotiate without the restriction of legislation.³⁴ To this day, the government manages methods to prioritize contracts to limit disruptions in mobilization and quickly meet the requirements for conflict.

The General Munitions Board grew in strength and evolved into the War Industries Board, which gained independence when Congress passed the Overman Act; this act allowed President Wilson to restructure the executive branch agencies, bureaus, and offices to increase governmental efficiency.³⁵ As part of the reorganization, President Wilson brought the War Industries Board out of the Council of National Defense connected it to the President's office to increase its influence and coordination between private industry and other government departments. While there were still issues meeting mobilization requirements, the War Industries Board showed promise in mobilizing America. German Chief of Staff, Field Marshall Paul von Hindenburg summed up the defense industry's contribution to World War I through this quote: "Her brilliant, if pitiless, war industry had entered the service of patriotism and had not failed it.

³² "Records of the War Industries Board," National Archives, last reviewed August 25, 2016, <https://www.archives.gov/research/guide-fed-records/groups/061.html>.

³³ Council on National Defense and Advisory Commission, *Report to the Chairman*, 9, 12.

³⁴ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 298.

³⁵ *Overman Act*, 65th Cong. Sess. II, S.3771, (March 18, 1918), <https://www.visitthecapitol.gov/exhibitions/artifact/s-3771-bill-authorizing-president-coordinate-or-consolidate-executive-bureaus>.

Under the compulsion of military necessity, a ruthless autocracy was at work and rightly, even in this land at the portals of which the Statue of Liberty flashes its blinding light across the seas. They understood war."³⁶ Field Marshall von Hindenburg identified the central coordination authority, a move that fell out of line with the traditional American capitalist revolutions, as a key to the production efforts.

To start mobilization during World War II, President Roosevelt appointed members to the advisory commission in May of 1940 to "facilitate the production of materials and machines to meet the requirements of the military."³⁷ The commission continued its work in a similar way to its World War I counterpart, working through voluntary agreements to shape industry to support the demands of wartime production.³⁸ However, World War II's mobilization requirements drove voluntarism closer to government coercion. The production demands required a robust central organization to control the production levers while still maximizing its benefits. In January 1941, President Roosevelt created the Office of Production Management to build capability and speed into the defense industrial base and coordinate the other government's needs with industry.³⁹ This new organization started the transition from committees organizing production to a bureaucratic style needed for increasingly strict production controls. Under the same executive order, President Roosevelt made the Office of Production Management the liaison between the Advisory Commission to the Council of National Defense and the executive

³⁶ R. Elberton Smith, *The Army and Economic Mobilization*, 38.

³⁷ Senate Library, *Domestic Stability, National Defense, and World War II: Legislative and Executive Background 1933-1946*, (Government Printing Office, Washington D.C. 1947), 12.

³⁸ Robert Cuff, "American Mobilization for War 1917-45: Political Culture VS Bureaucratic Administration," In *Mobilization for Total War: The Canadian, American, and British Experience 1914-1918, 1939-1945*, ed. N.F. Dreisziger (Waterloo, Ontario, Canada: Wilfrid Laurier University Press, 1981), 75.

³⁹ President Franklin D. Roosevelt, *Executive Order 8629 on the Office of Production Management and the Office for Emergency Management*, (January 7, 1941), <https://www.presidency.ucsb.edu/documents/executive-order-8629-the-office-production-management-and-the-office-for-emergency>.

agencies that made up the Council of National Defense.⁴⁰ This move put mobilization responsibility into one office with direct access to the President, but it still urged industry leaders to voluntarily meet the government's requests. The attack on Pearl Harbor changed the voluntary approach to mobilization requirements.

At a meeting with automakers on January 5, 1942, the Director-General of the Office of Production Management, William "Bill" Knudsen, called out required orders then asked for volunteers among the industry leaders to fill them.⁴¹ This voluntary approach worked but did not drive the country's mobilization, and President Roosevelt created a new organization that "had the authority to force a manufacturer to accept a contract."⁴² To create this organization, President Roosevelt consolidated the mobilization coordination under the newly created War Production Board in January 1942. The War Production Board "exercise[d] general direction over the war procurement and production program."⁴³ Using the Office of Production Management, which it oversaw, and the powers from the Supply Priorities and Allocations Board, which dissolved as its roles moved to the War Production Board, it became the central organizational purchase and contracting office of war materiel. As a demonstration of the power that the War Production Board had, Donald Nelson, the new chairman, announced the end of public car production and the auto industry's complete conversion to wartime production.⁴⁴ From this point on, mobilization carried a big stick, although it still preferred the carrot method to encourage production rather than take over industries.

⁴⁰ President Franklin D. Roosevelt, *Executive Order 8629*,

⁴¹ Alan Clive, *State of War: Michigan in World War II*, (The University of Michigan Press: Ann Arbor, 1979), 25, https://books.google.com/books/about/State_of_War.html?id=9xPSACb3YAwC.

⁴² Arthur Herman, *Freedom's Forge*, 193.

⁴³ Senate Library, *Domestic Stability, National Defense, and World War II: Legislative and Executive Background 1933-1946*, Government Printing Office, Washington, DC, 1947, 26.

⁴⁴ Alan Clive, *State of War*, 26.

When the Korean War started, President Truman and congressional leaders looked to World War II's success and drafted the Defense Production Act in 1950. This act captured the primary means to organize American mobilization in seven titles. These titles allowed the government to set priorities for production, build and buy materiel and property needed to mobilize, expand production capacity, ration war-related materiel and control wages and prices, settle labor disputes, manage consumer credit, and protect manufacturers from trust issues and create a pool of industry experts to support federal mobilization.⁴⁵ Over the next seven decades, several substantive changes to the original act highlight how influences both in and outside Congress adjusted to maintain its relevancy. The most extensive structural change to the Defense Production Act occurred in 1953 when Congress elected not to extend the "requisition of private property (Title II), fix wages, prices and ration goods (Title IV), forcibly settle labor disputes (Title V), and control various aspects of consumer credit (Title VI)."⁴⁶ Congress kept the rest of the act as a tool to enable the government to stay prepared for the next conflict. The retention of the committees authorized under Title VII shows how much those organizations aided in industry mobilization. Even with the strengthening of the bureaucracy by the end of World War II, the committee members provide insights into industries' workings and capabilities that public servants do not fully understand. Institutionalizing the remaining titles gives a chance that the more extreme measures removed from the Defense Production Act would prove unnecessary to meet future mobilization requirements.

⁴⁵ Michael H. Cecire, and Heidi M. Peters, *The Defense Production Act of 1950: History, Authorities, and Considerations for Congress*, CRS Report for Congress R43767 (Washington, DC: Congressional Research Service, March 2, 2020), 2, <https://fas.org/sgp/crs/natsec/R43767.pdf>.

⁴⁶ Aidan Lawson, and June Rhee, "Usage of the Defense Production Act throughout history and to combat COVID-19," *Yale School of Management*, 3 June 2020, 5, <https://som.yale.edu/blog/usage-of-the-defense-production-act-throughout-history-and-to-combat-covid-19>.

MOBILIZATION LEGISLATION

Meeting the requirements of future mobilization requires legislation that creates options when voluntary efforts from the industry itself or persuasion by government organizations fail, a system that balances the freedoms and liberties foundational to American society while ensuring mobilization success. During American mobilization for war, ideally, the industrial base would voluntarily maximize its production effort. The United States' historical experience shows that this ideal does not match reality. Americas Legislative and Executive Branch in both world wars tackled issues that negatively influenced the ability to meet requirements, including pricing, bureaucratic organization, and labor relations, all in the name of supporting the war effort while setting expirations to the solutions because their nature would not be tolerated well in peace if it ever was during a war. These measures could include the nationalization of industry or robust conflict resolution systems to settle disputes with minimal impact on mobilization.

Less than two months after the declaration of World War I, administration officials began negotiating with steel producers for voluntary price cuts to support rapid mobilization. They relied on appeals to public interest and patriotism while also enticing producers with profits from the large orders the government would need for the war.⁴⁷ Unfortunately, these efforts were not successful. Steel producers did not believe that the government deserved special pricing treatment. The government and steel companies reached an impasse on inflation protections for civilian purchasers, and the companies rejected the administration's position on protecting the prices on purchases from other countries. During President Theodore Roosevelt and President Wilson's administrations, the Steel Trust became a typical example of corporate greed and power that negatively affected other aspects of society. This negative attention coupled with a recession

⁴⁷ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry, 292, 294.

in 1914 that cut their profits decreased their willingness to allow the government to control their business model once wartime profits arrived.⁴⁸

During the negotiations with the steel industry, administration officials hinted at taking measures to force the pricing issue to continue production to meet the requirements. President Wilson mentioned on many occasions that nationalizing the steel industry would be a possibility.⁴⁹ Questions existed about the feasibility of doing so, but President Wilson nationalized several industries during World War I, for various reasons, using the 1916 Army Appropriations Bill. During the War, President Wilson and Congress (when needed) nationalized the railroad, telegraph, and telephone networks.⁵⁰ These industries all represented critical capabilities for war mobilization, and each encountered difficulty in infrastructure, management, or labor that challenged its ability to support the war. After the war, the government returned each of these networks to private ownership. Even though some advocates argued for retaining these critical networks under government control, capitalism won out and put the potential for profit back into corporate hands. Nationalization was extreme in an American society that promoted individual and local control over federal. However, a step like nationalization added controls for prices that took off with an increase in demand for steel while giving the government tighter control on production.⁵¹

⁴⁸ Melvin I. Urofsky, *Big Steel and the Wilson Administration*, (Columbus, 1969), 32-36, 41, 63-64, 86-87, quoted in Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry and Price-Fixing during World War I," *The Business History Review* vol 44, no. 3 (Autumn 1970), 292.

⁴⁹ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 293.

⁵⁰ Thomas M. Hanna, "A History of Nationalization in the United States," *The Next System Project*, Washington D.C. November 4, 2019), 4-10, https://thenextsystem.org/sites/default/files/2019-09/A_History_of_Nationalization_in_the_US-Hanna-NSP.pdf.

⁵¹ John H. Ohly, *Industrialists in Olive Drab: The Emergency Operation of Private Industries During World War II*, ed. Clayton D Laurie, (U.S. Government Printing Office: Washington D.C., 1999), 12, <https://babel.hathitrust.org/cgi/pt?id=uiug.30112048582065&view=1up&seq=5>.

Rather than face nationalization, or unilateral prices set by the government, James Farrell, US Steel President, countered that the American Iron and Steel Institute (steel lobby organization) should propose a government pricing plan that would set prices for particular products. "Farrell realized that this step would centralize responsibility for prices on the government side, open the possibility of consistently stable prices, and most assuredly give the industry a large voice in the decision-making process. Furthermore, such an agreement would take the question out of politics and give it to administrative agencies where bargaining could go ahead without charges of immorality and lack of patriotism."⁵² Thus, there was a desire on the corporate side to avoid direct government intervention into production prices. However, the proposal failed, with President Wilson calling for a Federal Trade Commission report on steel pricing before agreeing to these terms. Congress followed suit with an investigation into steel pricing. The steel industry accepted a stopgap measure to charge pre-war costs while negotiations continued for the current cost. Thus, production continued, and private industry was able to keep pre-war profits while negotiating rather than give the government a discount.⁵³

Congress decided to take up this issue on steel pricing with Senator Newlands, Chairman of the Senate Committee on Interstate Commerce, discussing the intent of a senatorial investigation and proposed legislation:

[T]he inquiry should also embrace the larger question of the control of the prices of the basic materials and supplies. ... The chairman said that the abnormal conditions created by the war had disturbed the price levels which had hitherto been adjusted by competition. ... In such condition it was necessary that there should be some Governmental action covering ... all the basic materials which constituted the very necessities of production.

⁵² Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 295.

⁵³ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 296.

Under our Constitution, life, liberty, and property were protected, and yet the country was exercising the right of conscripting its young men, fixing absolutely their compensation, and their term of service, and engaging in a service which might result in a loss of their lives. It was clear that this war power must be exercised with reference also to commodities, but it was also necessary that it should be exercised in such a way as to stimulate production in order that the war demands might be met; the producers might rest assured that no action would be taken which would injure or impair their industries but only such action as would prevent abnormal prices arising from an abnormal demand.⁵⁴

The intent of this investigation captured the unique balance of a government in a capitalist system. A state's requirement to support the common defense using material bought off the market system works during times of peace. However, during mobilization, a unique urgency strained the capitalist system, and the government needed to set standards detailing how to respond to conflicts between industry, the government, and other consumers to support the common defense.

As a result of the conflict between pricing and rapid production, Congress tried to pass two pieces of legislation; the Cummins bill focused on commodities, and the Pomerene resolution focused explicitly on coal. To set up a stable price for wartime commodities, the Cummins bill capped the cost of war-related goods to pre-war prices from June 30th, 1916, with exceptions to increases to a level no higher than the production cost plus ten percent.⁵⁵ The Cummins bill did not become law, but its threat created an environment where private companies re-engaged voluntary negotiations to avoid congressionally dictated prices for goods. Even without the price control legislation, the government continued its efforts to stabilize prices as a

⁵⁴ "Investigation of Cost of Steel Manufacture: One Inquiry by Federal Trade Commission, Another by the Senate Commerce Committee – A Tentative Price of \$56 for Plates," *The Iron Age* 99, no. 26, (New York: David Williams Co. June 28, 1917), 1560-1561, <https://babel.hathitrust.org/cgi/pt?id=mdp.39015014665338&view=1up&seq=1672>.

⁵⁵ *Price Regulation of Coal and Other Commodities.: Hearing before the Senate Committee on Interstate Commerce*, 65th Cong., (1917), 3, https://books.google.com/books?id=uCsuAAAAAYAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.

government's responsibility during mobilization. Only 19 days after the Senate Committee investigation started, President Wilson made a statement about the government's role in controlling private costs for goods that government actions affected. He declared that "the public and the government must receive identical *just* prices on all goods."⁵⁶ While his statement did not provide methods to measure a just price, and legislation outlining details for a helpful measure fell apart in committee, administration officials gained support, not only to negotiate but also to publish and standardize costs for American citizens and the government on mobilization related products including steel.⁵⁷

Both World War I and World War II used legislation that allowed the executive branch to reorganize itself to a wartime structure to streamline the bureaucracy, which proved necessary for mobilization. The Council of National Defense, made up of executive department secretaries, still ruled the bureaucracy, and the War Industries Board only had patriotism and volunteerism to support Council efforts. Patriotism appealed to individuals prioritizing national need over personal need, usually by carrying a burden. Volunteerism, as an ideal, called on individuals to accept those burdens without government directive. As an example, The Food Administration had difficulty negotiating with the pork industry. They relied upon appeal to the companies' patriotism and voluntarism but had no success on an agreement for stable pricing. To aid the negotiation, the President signed an executive order authorizing the Food Administration to set profits based on the average in 1914.⁵⁸ This introduced enough leverage to reach an agreement on a "voluntary" basis. Once President Wilson gave the War Industries Board Chairman final

⁵⁶ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 296 [emphasis in original].

⁵⁷ Robert D. Cuff, and Melvin I. Urofsky, "The Steel Industry," 299.

⁵⁸ Robert D. Cuff, "The Dilemmas of Voluntarism: Hoover and the Pork-Packing Agreement of 1917-1919," *Agricultural History* vol. 53, No. 4 (October 1979), 234.

authority with the Overman Act, there was a change in how the board coordinated mobilization requirements.

Using the Overman Act as a baseline from World War I, just two weeks after the Japanese attacked Pearl Harbor, Congress passed the First War Powers Act. The War Powers Act allowed the executive branch to reorganize itself to a wartime structure.⁵⁹ President Roosevelt combined several different organizations to create the War Production Board, which managed defense mobilization. World War II's transformation efforts paled compared to World War I primarily because of the increase in public administrators that supported Roosevelt's New Deal.⁶⁰ Cuff argues that this increase in public administrators decreased the burden of transition to a wartime footing. While this is true, the administration still benefited from reorganizing to a wartime administration.

Thus far, legislation focused on the supportiveness of companies to war production. Another critical voice that directly impacts the production capacity of American industry is labor. Much like disagreements over wartime pricing, labor relations could disrupt the flow of material to the war effort. President Roosevelt tried to anticipate this by calling for a meeting of both union and management six days after the declaration of war. The outcome of this conference was the "no-strike pledge," which represented union leaders' full support of wartime production and promise not to call for strikes.⁶¹ The no-strike pledge did nothing to solve the problems affecting the labor force, and as the war progressed, these issues flared up with union

⁵⁹ *First War Powers Act*, Ch 593, 55 stat, 838 18 December 1941, <https://tile.loc.gov/storage-services/service/ll/uscode/uscode1946-00405/uscode1946-004050a009/uscode1946-004050a009.pdf>.

⁶⁰ Robert D. Cuff, "An Organizational Perspective on the Military-Industrial Complex," *The Business History review* 52 no. 2 (Summer 1978), 261.

⁶¹ James B. Atleson, *Labor and the Wartime State: Labor Relations and Law During World War II* (University of Illinois Press, Urbana, 1998), 45.

leaders attempting to settle issues without strikes. Having little success, workers took the initiative to organize wildcat strikes, or strikes lead by workers not organized by union leaders.⁶² In response to the growing strikes, President Roosevelt created the National War Labor Board in January 1942 with the power to settle disputes between labor and management through mediation, voluntary arbitration, or arbitration.⁶³ The volume of strikes and their influence drew President Roosevelt's and Congress's attention, both calling for action to minimize the impact on war production.

In 1943, labor strikes cost 13.5 million man-days to the war effort affecting industrial sites across the nation.⁶⁴ The turbulence of 1943 started when United Mine Workers called for a strike in April to negotiate for regular work hours, a pay increase, and compensation for time spent getting from the surface into the mine.⁶⁵ This strike drew a swift rebuke from President Roosevelt. The loss of that coal production turned out to be enough for President Roosevelt to order the Department of the Interior to control the mines. Just five days after it started, the union announced it would return to work after reaching an agreement with Secretary of the Interior Harold Ickes through direct negotiations that avoided the National War Labor Board system.⁶⁶ It was unclear how exactly the President expected the Army to control the mines. The Army built a plan for a similar situation in a steel strike in 1941, intending to send tanks and soldiers to Pittsburg to protect the families and property of non-strikers and threaten the strikers. Even with the Army presence, this idea proved foolhardy. Union leader John L Lewis claimed, "[i]f the

⁶² James B. Atleson, *Labor and the Wartime State*, 68.

⁶³ President Franklin D. Roosevelt, *Executive Order 9017 Establishing the National War Labor Board*, (January 12, 1942), <https://www.presidency.ucsb.edu/documents/executive-order-9017-establishing-the-national-war-labor-board>.

⁶⁴ Arthur Herman, *Freedom's Forge*, 246.

⁶⁵ Thomas M. Hanna, "A History of Nationalization" 13.

⁶⁶ John H. Ohly, *Industrialists in Olive Drab*, 60.

soldiers come, the mine workers will remain peacefully in their homes, conscious of the fact that bayonets in coal mines will not produce coal."⁶⁷ The government did not retain an inherent ability to force labor to work even if arbitration settled a dispute.

Six days after the United Mine Workers entered a second strike in June, Congress passed the War Labor Disputes Act, which supplied supporting legislation for such a federal seizure. During World War II, the federal government conducted 64 seizures of industries.⁶⁸ Reasons for the seizures ranged from workplace disputes to pricing, inefficiency, insolvency, and quality.⁶⁹ This act enabled the President to take over any wartime material supporting facility that would limit necessary production. It required labor to return and work for the government under the same conditions that existed immediately before the strike. Appeals to the National War Labor Board to change those conditions were possible while under government control. This act also made it a crime for any individual to intentionally cause further delays in the production process of the seized production company, including further strikes. The final two articles of the act pushed President Roosevelt too far and created the conditions to veto the bill. These last articles required 30 days' notice about planned strikes and prohibited labor unions from making campaign contributions during the war to the Secretary of Labor, the National Labor Relations Board, and the National War Labor Board.⁷⁰ President Roosevelt disagreed that 30 days' notice created the conditions favorable to solving the problem.

⁶⁷ John L. Lewis, Quoted in John H. Ohly, *Industrialists in Olive Drab: The Emergency Operation of Private Industries During World War II*, ed. Clayton D Laurie, (U.S. Government Printing Office: Washington D.C., 1999), 58, <https://babel.hathitrust.org/cgi/pt?id=uiug.30112048582065&view=1up&seq=5>.

⁶⁸ John H. Ohly, *Industrialists in Olive Drab*, Appendix C.

⁶⁹ John H. Ohly, *Industrialists in Olive Drab*, Appendix B-1 – B-4.

⁷⁰ *War Labor Disputes Act*, Senate 796, 78th Cong., Congressional Record 144, public law 89 (June 25, 1943), S. 163-168, <https://uscode.house.gov/statviewer.htm?volume=57&page=164#>.

President Roosevelt believed that this foray into legislating negotiations would increase animosity, preclude success, and delay the return to production. He expected a union vote to strike (needed to start the 30 days' notice) could only heighten the underlying issues solidifying the two parties' grievances and limit negotiation.⁷¹ The vote also tied the hands of union leaders. Their earlier "no-strike" pledge effectively removed their biggest negotiating tactic while the required government secret ballot to strike after the 30 days undermined the unions' collective bargaining power. Instead, he suggested amending the Selective Service Act, increasing the age limit to 65 years so that the government could enlist individuals engaging in the prevention of work in plants into non-combat military service.⁷² Congress disagreed with the President's comments and overrode his veto in eleven minutes.⁷³ The War Labor Disputes Act failed to stem the occurrence of strikes; with a path to strike, local union leaders pressed forward and used the 30 days to build support from fellow workers.⁷⁴ This gap between the legislative and executive branches on this issue and the dynamics of organizing and solving labor problems demonstrates the need to build a plan before the conflict.

In December 1943, President Roosevelt relied upon the War Labor Disputes Act when he signed an executive order to control the railroads.⁷⁵ Railroad workers voted to strike, which threatened to stop the movement of men and supplies around the country, and three days before the deadline, the Army "took control" of the railroads. The railroad management and labor did not change their daily operations, and the day before the deadline, they negotiated an agreement. In reality, this seizure happened, and nothing more than the increased presence of Army officers

⁷¹ President Franklin D. Roosevelt to the United States Senate, June 25, 1943, The American Presidency Project, <https://www.presidency.ucsb.edu/documents/veto-the-smith-connally-bill>.

⁷² President Franklin D. Roosevelt to the United States Senate, June 25, 1943.

⁷³ Arthur Herman, *Freedom's Forge*, 246.

⁷⁴ James B. Atleson, *Labor and the Wartime State*, 196.

⁷⁵ John H. Ohly, *Industrialists in Olive Drab*, 137.

changed in the three weeks between the executive order and the withdrawal of troops from the rail industry. While the law existed, many challengers questioned the ability of the government to take over industry effectively. The impact of strikes overall decreased in 1944 by nearly one-third compared to 1943; their frequency increased, but the duration decreased so as not to affect mobilization negatively⁷⁶.

Price controls, labor relations, and Executive Branch organization became levers that executive branch leaders manipulated to mobilize the defense industrial base with at least some support from the Legislative branch. However, the wartime legislation all included a clause to terminate at some interval after the war's conclusion. Regardless of the law or the government's success in organizing mobilization, many viewed these measures as federal overreach and undesirable in the absence of war. While the examples from the steel industry pricing to the rail strikes needed solutions, the government only justified its foray into managing them under extreme disruption to wartime production. For this reason, Congress needs a legislation "war chest" to break open at the outset of hostilities rather than fumble through legislation needed to drive future mobilization. Legislation could both prepare and deter war; delaying updates to the legislation risks an unprepared defense industrial base for global conflict. The best example above came from the Overman Act of World War I, which fed directly to the First War Powers Act of World War II, allowing the President to reorganize the executive branch to a wartime posture in support of major conflict. Organizing a series of legislation to accompany conflict will speed the mobilization efforts needed to support the war.

⁷⁶ James B. Atleson, *Labor and the Wartime State*, 146, 147, 148.

CONCLUSION

Mobilization in America includes factors not included in this paper, not the least of which involves the people and mobilizing society for war. World War II images of Rosie the Riveter, along with the rationing system, required uncommon support to mobilization efforts. American society did not automatically support the war or blindly accept these taxes on their lives; leaders must cultivate popular opinion to achieve success. Learning from the success and failures of getting society behind a war requires careful evaluation and estimations on application to support future mobilization.

Another aspect that received minimal attention in the paper is the advisory committees included in Title VII of the Defense Production Act. Members of this advisory group in both wars proved critical in conveying and coordinating industry requirements, especially before Congress declared war. In 1983 the General Accounting Office evaluated the program and identified significant shortfalls in how the Federal Emergency Management Agency carried it out.⁷⁷ The recent suspension of the board activity and membership of many of the Pentagon's advisory committees by Defense Secretary Lloyd Austin calls to question these groups' effectiveness.⁷⁸ These positions and the people in them represent a critical enabler that future mobilizations need to leverage. With the potential short notice of the United States' entrance into a war, these advisors hold positions that shape the United States response; maintaining alignment of the efforts between industry and government is critical, and these individuals enable that alignment.

⁷⁷ Government Accountability Office, *National Defense Executive Reserve Program*, (Washington DC: General Accountability Office, February 28, 1983), 1, <https://www.gao.gov/assets/210/206264.pdf>.

⁷⁸ Ellen Mitchell, "Defense Secretary removes hundreds of advisory board members in sweeping review," TheHill.com, February 2, 2021, <https://thehill.com/policy/defense/537008-defense-secretary-removes-hundreds-of-advisory-board-members-in-sweeping>.

World War I and World War II together developed a successful process for American mobilization. The process requires industry and the government to align priorities between competing demands that range from warships to trousers. Clearly defining priorities while understanding that not everyone mobilizes for war and still needs resources to support the home front produces a balance that helps everyone succeed. Volunteerism represents the ideal way to organize industry in wartime. Aligning government aid and support to expand production capacity in qualified companies allows the industry to support mobilization rapidly. Even voluntarism costs a significant amount of money, and no one should expect that conflict will rouse enough American spirit that the production of required goods will be cheap.

If the industry does not support the necessary shift in production to support mobilization, the government still needs to outfit its armed forces for conflict. Congress should use the history described above to help the Executive Branch reorganize itself as needed and give it some levers to manipulate while managing the mobilization requirement, pricing, and efficiency. Mobilizers need tools in the form of legislation to allow the government to step in or, at a minimum, discussions among lawmakers that indicate an appetite for action that keeps producers involved in negotiations. Even if legislation does not directly make products, the processes give mobilizers methods to enable necessary industry transition. Legislation, for example, proved to be enough to persuade the steel industry to support mobilization without using it to nationalize that industry in World War I.

If the legislation, industry, and communicators exist, the last hurdle is to lay out the requirements. Choosing the right plans at the start of conflict goes a long way to help mobilizers organize the industry successfully. Understanding all the factors that change the production requirement then quickly communicating those changes if the factors evolve is critical to

success. There are significant differences between World War I, World War II, and today. The birth of the all-volunteer force, increasing complexity of military equipment, and industrial capacity look different compared to 80 years ago. Understanding the interplay between the government, industry, and society that created an environment for mobilization success in the past is still one of the best ways to create that success in major power competition.

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