NEW APPROACHES TO ECONOMIC AND SOCIAL HISTORY

AMERICA'S ECONOMIC WAY OF WAR

War and the US Economy from the Spanish–American War to the Persian Gulf War

Hugh Rockoff

CAMBRIDGE

America's Economic Way of War

How did economic and financial factors determine how America waged war in the twentieth century? This important new book exposes the influence of economics and finance on the questions of whether the nation should go to war, how wars would be fought, how resources would be mobilized, and the long-term consequences for the American economy. Ranging from the Spanish–American War to the Gulf War, Hugh Rockoff explores the ways in which war can provide unique opportunities for understanding the basic principles of economics as wars produce immense changes in monetary and fiscal policy and so provide a wealth of information about how these policies actually work. He shows that wars have been more costly to the United States than most Americans realize as a substantial reliance on borrowing from the public, money creation, and other strategies to finance America's war efforts have hidden the true cost of war.

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2 *The economics of war*

Economics is a very unsatisfactory science. But it would have to be much more unsatisfactory than it is if such an event as a war, however extensive and destructive, sufficed to upset its teaching.

Schumpeter 1954, 1146

Before beginning the discussion of individual wars, it will be helpful, at least for some readers, to review the ways in which the basic principles of economics can be applied to war economies.[1] As the quote above by the distinguished Austrian and American economist Joseph Schumpeter indicates, there is a tendency to assume that economic ideas don't apply in wartime, perhaps

[1] Here I am concerned with how economics can be used to describe the impact of wars on the economy. The book does not address, except in passing, the question of how resources were or should have been allocated within the military – whether, for example, more resources should have been allocated to the army and less to the navy or air force during particular conflicts – although this issue will be raised on occasion. And it is not about how to achieve an efficient allocation of resources within a service – whether, for example, weapons should have been made in government arsenals or purchased from the private sector, and if purchased from the private sector whether they should have been purchased with cost-plus or through competitive bidding – although again these issues will be raised on occasion. And it is not about war strategy – should the enemy forces be ground down with an aerial bombardment before a ground attack begins? Economists have analyzed these issues using their fundamental tools, and have a great deal to say about them. Indeed, a whole division of economics, defense economics, has arisen to deal with these issues. Defense economics now takes its place alongside other branches such as international economics and agricultural economics, as well it should. Total US exports in 2008 were 12.7 percent of GDP, exceeding the 5.1 percent of GDP generated in the defense sector. But the latter figure was considerably more than the 1.1 percent accounted for by agriculture, forestry, and fisheries (*Economic Report of the President* 2010, Tables B-1, B-12, and B-24). However you look at it, defense is a major component of the economy. Keith Hartley and Todd Sandler (1995) provide an overview of the field of defense economics and a selection of the key papers.

because non-pecuniary motives for human action, such as patriotism, take precedence over mere maximization of income. But as I will try to show here, and in more detail in subsequent chapters, the principles of economics can be extremely helpful in understanding the important economic and financial questions posed by America's decisions to go to war.

The economic causes of America's wars

Untangling the complex forces that have propelled Americans into war has perplexed political scientists, historians, and economists. Nevertheless, it is frequently argued that wars were the result of economic forces. These arguments are usually versions of one of three recurring ideas.

1 One argument is that America was driven into foreign wars by the need to capture foreign markets. John Maynard Keynes (1964 [1936], 381–3), looking back on the experience of Europe in the nineteenth century and World War I, concluded that a combination of free trade and fixed exchange rates under the gold standard had forced nations to a battle for foreign markets. The gold standard deprived the central bank of the use of the rate of interest as a tool for combating unemployment. The only tool left open for attacking unemployment, then, according to Keynes, was to fight for a balance of trade surplus (exports exceeding imports) by creating exclusive foreign markets for a nation's products (for example by establishing colonies) and by denying domestic markets to its rivals (for example by raising tariffs). A balance of trade surplus would create jobs because the positive rounds of spending produced by sales of exports would exceed the negative rounds of spending produced through expenditures on imports – the Keynesian multiplier applies to the trade surplus. A balance of trade surplus, moreover, would mean an inflow of gold, and thus an increase in the money supply that would decrease interest rates, stimulate investment, and push the economy toward full employment. Colonialism, in this story, was simply the nineteenth-century version of a decision by the Federal Reserve to lower interest rates. Competition for a balance of trade surplus, and the resulting competition for markets, Keynes claimed, set

countries on the road to war. Keynes's argument that the search for full employment, imperialism, and war were intimately bound together was widely shared in broad outline, although not in detail, by various heterodox thinkers: Vladimir Lenin, John A. Hobson, Rosa Luxemburg, and so on. We will return to Keynes and the others when we discuss the origins of the Spanish–American War, the Philippine–American War, and World War I. In World War II and in subsequent wars the United States went to war to combat first Fascism and then Communism. There were clearly underlying non-economic concerns – democracy and protection of individual rights – but there was also an economic dimension. In World War II Germany, Italy, and Japan were clearly attempting to establish empires that would have set up barriers to American economic penetration. And the Communists whom Americans fought for decades were bent on destruction of capitalism itself.

2 Sometimes the argument that special interests push the United States into wars takes on an even darker cast. Manufacturers of arms will benefit from a conflict, and it is natural to look to them as the instigators of wars. In the aftermath of World War I there were charges that arms manufacturers, the "merchants of death,"[2] had lobbied for and thus helped push the United States into the war. The resonance of this argument with the American people is the reason that Dwight Eisenhower's warning in his farewell address (January 17, 1961) has become such a favorite:

> This conjunction of an immense military establishment and a large arms industry is new in the American experience. The total influence – economic, political, even spiritual – is felt in every city, every Statehouse, every office of the Federal government. We recognize the imperative need for this development. Yet we must not fail to comprehend its grave implications. Our toil, resources and livelihood are all involved; so is the very structure of our society.

[2] The term, or at least its popularization, can be traced to a book of that name by H. C. Engelbrecht and Frank Cleary Hanighen (1934). Although not as sensational as one might infer from the title, it tells some fascinating stories about the industrial origin of modern weapons. Molander (1976) traces the history of the "merchants of death argument." George Bernard Shaw's play *Major Barbara*, premiered in 1905, created the iconic portrait of an immoral arms merchant.

> In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist.

3 As Eisenhower's classic statement reminds us, special interests that favor war may include segments of the public sector as well as the private sector. Members of the armed services have good reason to assume that promotion to higher rank will be expedited by service in war, and this provides them an incentive to lobby for the continuation of old wars or the launching of new ones. Other segments of the public sector may also benefit. Experts on foreign policy may benefit when wars they have promoted are launched in parts of the world where they are experts. In a provocative but convincing paper, Gregory D. Hess and Athanasios Orphanides (1995) showed that the United States in the twentieth century was more likely to go to war when the President was in his first term (and thus could stand for reelection) and the economy was doing badly (and the President needed to show his competence in war-making to compensate).

Financing wars

Once the decision to go to war has been made – a decision often made in the heat of what is rightly called a war fever – policymakers soon realize that the war will be costly, sometimes far more costly than the initial estimates based on the premise of a quick and easy victory. Soldiers must be paid, munitions must be purchased, and armies must be transported to the field of battle. All this costs a great deal. In other words, the question "how will we pay for the war?" usually follows on the heels of "should we go to war?"

There are many ways of financing wars, but economists, as we noted in the first chapter, tend to draw attention first to three: raising taxes, borrowing from the public, and printing money. Typically, tax finance means simply raising taxes that were already in place before the war, for example tariffs or income taxes. But at times new taxes are introduced to take advantage of wartime patriotism, for example, an excess profits tax. Borrowing from the public also may mean simply issuing more of the type of security

that the government used before the war; but at times new securities may be issued to take advantage of patriotism.

While taxes and borrowing from the public are easy to understand, the idea of financing a war by "printing money" requires a bit of explanation. In the Civil War, the term printing money could be understood literally. The United States simply printed the famous greenbacks, declared them to be "legal tender" – acceptable for the payment of taxes (except tariffs) or other debts – and used them to pay soldiers. After the establishment of the Federal Reserve in 1913, however, the process was more complex. The Treasury would sell bonds to the public, acquiring cash. The Federal Reserve would then buy some of those bonds on the open market by writing checks on itself. When these checks were deposited in banks the money supply, defined as the sum of currency and deposits, rose. Not literally printing money – although more paper money would get into circulation if people withdrew some of their deposits – but having the same economic effect: the government has more money on hand with which it can pay soldiers and buy munitions.

The latter method of finance tended to conceal the costs of war. If inflation resulted from printing a new form of money, such as the greenback, it was relatively easy to see that the inflation, and the destruction of value it brought, was a cost of the war, although even in this case, some people might be persuaded that the government was printing more money, and adding more zeros as it did so, because prices were rising. In any case, if the Federal Reserve was purchasing bonds on the open market, the source of monetary expansion and inflation was much harder to see.

The purchase of bonds by the Federal Reserve set in motion a multiple expansion of bank deposits. After the initial purchase of government bonds by the Federal Reserve, banks found themselves with increased reserves. They needed to keep only a fraction of these new reserves against the initial deposit; they could use the rest to make loans or purchase additional government bonds. The amount of government bonds purchased in the first round by the Federal Reserve is usually designated finance through direct monetary creation, the subsequent purchases by the banking system as indirect money finance. Box 1, "The mathematics of the printing press," explains the process in more detail.

1. The mathematics of the printing press

Define the following terms.

Cb = currency held by banks
Cp = currency held by the public
Dp = deposits held by the public in banks
M = money = Cp + Dp
Db = deposits held by commercial banks at the Federal Reserve (bank reserves)
H = high-powered money = Cp + Cb + Db
c = the currency ratio = Cp/Dp
r = the reserve ratio = (Cb + Db)/Dp
Bf = government bonds owned by the Federal Reserve
Bb = government bonds owned by the commercial banks
Bp = government bonds owned by the public
Lb = loans to the private sector held by commercial banks
b = the bond ratio = Bb/Lb
R = the revenue from creating money
Rh = the revenue from creating high-powered money
Rl = the revenue from creating low-powered money
P = the price level
V = velocity
y = real income

The relationships among the assets defined above are based on highly simplified balance sheets of the Federal Reserve, the commercial banking system, and the public.

Federal Reserve

assets	liabilities
Bf	Cp
	Cb
	Db

Commercial banks

assets	liabilities
Cb	Dp
Db	
Bb	
Lb	

Public

assets	liabilities
Cp	Lb
Dp	
Bp	

If there was no banking system, or with a banking system that held 100 percent reserves, then all of the revenues from creating money would flow directly to the government.

(1) $R = \Delta M = \Delta H$

With a fractional reserve banking system, however, the revenue from creating money comes from two sources: the flow from creating high-powered money (sometimes known as "base money") and the flow from the expansion of bank money and the investment by the banking system in government bonds, or the investment by its borrowers in government bonds.

(2) $R = Rh + Rl$

With the help of a money supply equation we can gain a sense of the relative magnitude of Rh and Rl. Combining the definitions of M and H and rearranging terms yields the following money supply equation:

(3) $M = H[(1 + c)/(c + r)]$

Assuming c and r are constant, assuming all the additional resources of the banking system are invested in government bonds, and combining the derivative of (3) with (1) and (2) yields the following:

(4) $R = Rh + Rl = \Delta H + \Delta H[(1 - r)/(c + r)]$

Note that if the banking system holds 100 percent in reserves ($r = 1$) then equation (4) reduces to equation (1): there will be no additional money creation or revenues from a secondary expansion of the banking system. But normally the secondary effects will be larger than the primary effects. For example, if the reserve ratio of the banking system was 10 percent, and the currency ratio was 5 percent, the amount of revenue flowing from the increase in bank money would be six times as large as the amount created by the direct action of the Federal Reserve: $(1 - r)/(c + r) = 6$.

The banking system, however, will not necessarily invest all of its new deposits in reserves and government bonds. It may invest part in new loans to the private sector that may or may not be invested in government bonds. In the case in which none of the additional loans to the public were reinvested in government bonds, the government's share of the additional deposits created by the banking sector would be given by the following equation:

$$(5)\quad Rl = [b/(1 + b)][(1 - r)/(c + r)]\Delta H$$

The quantity theory of money helps us understand the ultimate sources of these revenue flows. It can be written as follows:

$$(6)\quad MV = Py$$

In percentage change terms it is written as follows:

$$(7)\quad \Delta M/M + \Delta V/V = \Delta P/P + \Delta y/y$$

From equation (1) we can write the revenue from creating money in real terms as the product of the amount of new money created and the existing amount of real money balances.

$$(8)\quad R = \Delta M/P = (\Delta M/M)(M/P)$$

Combining equations (7) and (8) yields the following:

$$(9)\quad R = (\Delta P/P)(M/P) + (\Delta y/y - \Delta V/V)(M/P)$$

The first term on the right-hand side is the revenue generated by the inflation tax: inflation forces money holders to increase their nominal money holdings to maintain the real value of their money holdings. The second term on the right-hand side is a voluntary loan to the government (or partly to the private sector if the revenues from inflation are shared) arising from the public's desire to increase its money holdings. This desire may arise either because real income is rising ($\Delta y/y$ is positive) or for other reasons ($\Delta V/V$ is negative).

What is the appropriate mixture of taxes, borrowing, and money creation? What percentage of war expenditures should be financed by taxing, what percentage by borrowing, and what percentage by simply printing the money? Economic opinion about the ideal mixture has changed over the years.

Generally, however, economists through the years have agreed that printing money to finance wars, except in desperate circumstances, is unwise because it produces inflation. The Civil War, when prices more than doubled, and the experience in other wartime economies, shows the danger of the printing press. There are reasons, economists understand, why governments might use the printing press to finance wartime expenditures in certain circumstances. The printing press can be pressed into service quickly, and the administrative costs are low compared with conventional forms of taxing, which requires setting up an administrative network, or borrowing, which requires dealing with the financial community.

Some reliance on printing money has been justified from time to time on the grounds that printing money is simply another form of taxation. Just as an income tax reduces the taxpayer's income or the estate tax reduces the value of the taxpayer's estate, inflation reduces the purchasing power of the money in the taxpayer's pocket or bank account. The inflation rate is the tax rate. Real (adjusted for inflation) money balances are the tax base. During the Revolutionary War Benjamin Franklin made this argument as a way of defending the Continental Congress's heavy reliance on the printing press. Indeed, Franklin argued not only that inflation was a tax, but that it was a very fair tax because almost everyone held money, and the tax was applied for exactly the length of time that the money was in taxpayer's possession (Grubb 2007).

Despite Franklin's ingenious argument, economists have usually regarded printing money with distaste. In *The Economic Consequences of the Peace*, John Maynard Keynes, writing about Germany and other countries in central Europe at the end of World War I, described the evils of using the printing press to finance wars:

> Lenin has declared that the best way to destroy the Capitalist System is to debauch the currency. By a continuing process of inflation, governments can confiscate, secretly and unobserved, an important part of the wealth of their citizens. By this method they not only confiscate, but they confiscate

arbitrarily; and, while the process impoverishes many, it actually enriches some. The sight of this arbitrary rearrangement of riches strikes not only at security, but at confidence in the equity of the existing distribution of wealth. Those to whom the system brings windfalls, beyond their deserts and even beyond their expectations or desires, become "profiteers," who are the object of the hatred of the bourgeoisie, whom the inflationism has impoverished, not less than of the proletariat. As the inflation proceeds and the real value of the currency fluctuates wildly from month to month, all permanent relations between debtors and creditors, which form the ultimate foundation of capitalism, become so utterly disordered as to be almost meaningless; and the process of wealth-getting degenerates into a gamble and a lottery. (Keynes 1920 [1919], 298)

Keynes went on to explain why governments nevertheless adopt inflation as a means of finance: it hides the cost of government.

Lenin was certainly right. There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose. (Keynes 1920 [1919], 298)

While economists tend to agree that financing by printing money is bad, the choice between taxes and borrowing has been the subject of changing opinions. The "classical" tradition favored taxes over borrowing.[3] As originally set out by David Hume (1970 [1770], 91–2)[4] and Adam Smith the case for taxes was political rather than economic. In the following passage Smith explains how bond finance encourages war by hiding the true costs of war.

In great empires the people who live in the capital, and in the provinces remote from the scene of action, feel, many of them, scarce any inconveniency from the war; but enjoy, at their ease, the amusement of reading in the newspapers the exploits of their own fleets and armies. To them this amusement compensates the small difference between the taxes which they pay on account of the war, and those which they had been accustomed to pay in time of peace. They are commonly dissatisfied with the return of peace, which puts an end to their amusement, and to a

[3] The philosopher Immanuel Kant (1917 [1795]) also insisted on tax finance as a way of reducing the likelihood of a war.

[4] Although Hume's essay first appeared in 1752, the argument against bond finance was not included until an edition published in 1770.

thousand visionary hopes of conquest and national glory from a longer continuance of the war. (Smith 1976 [1776], 1080)

Later economists in the classical school such as David Ricardo continued to favor financing one hundred percent by taxation. Ricardo believed that there was a risk that wartime government debt would "crowd out" private savings and reduce the capital stock. Ricardo acknowledged that if people were well informed and rational they would recognize the higher future taxes implicit in current debts and increase their savings accordingly – this is the basis of so-called "Ricardian Equivalence" – but he thought that in practice people were unlikely to recognize the full future tax costs of wartime government borrowings (Dooley 1989). John Stuart Mill, as might be expected from his centrist image, took a more moderate position. Mill emphasized the dangers of borrowing, but thought that some borrowing would be tolerable. The rate of interest was the test: a stable rate would show that borrowing has been held to a prudent level; an increase would be the sign that borrowing had reached an excessive level (Mill 1936 [1848], 873–6).

By World War I concerns about equity had begun to play a major role in the thinking of economists. However, these concerns again pointed to taxes as the most desirable means of financing a war. With bond finance a soldier drafted into the army would suffer doubly, once when he was drafted and again when he paid higher taxes imposed to pay off wartime debt after the war. With tax finance the soldier would make the greater sacrifice, possibly his life, but the man who stayed home would pay for the increase in government expenditures.

Economists had always understood that higher taxes in wartime could discourage work effort, especially because they were temporary. Why spend long hours at one's desk or in the factory, if the government was simply going to tax away the financial gain? It might be hoped that patriotism would offset the effects of higher taxes, but if patriotism could not be relied on, it would be better to raise taxes only a little during the war, by enough to assure payment of interest on the debt, and then keep them higher after the war to fund the gradual retirement of the debt. If taxes were plotted against time, they would show a gradually rounded swelling, rather than a sharp peak during the war. Debt should be employed, to use the economists' favorite term, to *smooth* taxes. Robert J. Barro is

the economist most closely associated today with the view that debt should be used to smooth wartime increases in taxes in order to moderate the impact on production (Barro 1987, 1989). As we will see as we explore America's wars in detail, all of the ideas about war finance developed by economists – from Adam Smith's idea that debt finance encourages war by hiding its true costs to Robert J. Barro's idea that debt finance smoothes taxes – have shaped the actual financial decisions of the United States as it has fought its wars.

The draft and other veiled means of financing wars

The three typical forms of finance – taxing, borrowing, and printing money – are, as I have noted, by no means the only ways that a nation can acquire resources for a war. Resources can also be acquired, for example, through voluntary contributions. The families who brought blankets to their soldiers during the Revolutionary War are an early example. The scrap drives of World War I and World War II, and the financial contributions made to the United States by Saudi Arabia to offset US costs during the Persian Gulf War, which we will discuss below, are twentieth-century examples.

In some cases resources can be taken from the enemy. In the nineteenth century armies often focused on capturing artillery so that it could be turned against enemy troops. In the twentieth century the specialized ammunition and training that would be needed to make use of captured weapons made this a less useful tactic. There were still many ways, however, to make use of resources captured from the enemy. Ships and railroad cars, for example, can be confiscated and used to transport troops and supplies. Once the enemy has been defeated new governments can be installed that impose taxes that can defray the costs of occupation. This was the case in the Philippines, a case we will explore below, and it was a hoped-for result in the Iraq War. In some cases formal reparations can be imposed, as was done with Germany after World War I. Acquiring resources from the enemy reduces the cost of war to the American people. Exaggerated hopes for resources from this source, however, may hide, for a time, the ultimate cost of the war.

Another way to acquire war resources is to reduce government spending on non-military categories or even on military categories not directly related to the war. Governments can reduce the

amounts spent on maintaining roads, subsidizing the production of agricultural products, undertaking scientific research, and so on. Delayed maintenance of roads and other means of transport is another hidden cost of war. Taxpayers being asked for money to repair roads and highways in the postwar period, sums that may have been magnified because scheduled maintenance was delayed, are unlikely to understand that the sums they are paying are part of the cost of the war.

Resources can also be commandeered, that is taken directly from their owners without full compensation. Any type of resource may be commandeered – land for building military facilities, mines that produce raw materials necessary for producing arms, even patents for chemical processes important to the war effort. In practice the draft has been the most important form of commandeering, indeed, the most important non-financial means of acquiring resources. The Spanish–American, Philippine–American, and Persian Gulf wars were fought with volunteer armed forces, but in World War I, World War II, the Korean War, and Vietnam War soldiers were drafted.

The draft can be compared to a tax. The individual who is drafted pays the tax which is the difference between what the draftee would earn if he or she chose to serve in an all-volunteer army and what he or she actually receives in a draft army. The idea of a draft as a tax appeals to economists because it forces one to think about the opportunity cost of the resources used in a war, but the concept seems alien to the average citizen. If the opportunity cost of a soldier is the same whether he or she is drafted or induced to serve through high wages and benefits, why do governments resort to the draft? One reason is that the draft hides the cost of the war. We tend to think of the cost of the war simply as the tax bills we pay – income taxes, gas taxes, property taxes, and so on – and not the more exotic taxes conceived by economists.

One of the best ways of understanding the economics of the draft during the twentieth century is to consider the draft used in the Revolutionary War and in the North during the Civil War when draftees were allowed to hire substitutes to fight in their place. One of the most famous examples is Grover Cleveland who served as President in 1885–9 and 1893–7. Cleveland was drafted in the Civil War, but although only twenty-six, he was already a successful lawyer and chose to hire a replacement. Indeed, this was not difficult, aside

2. The draft and the supply and demand for soldiers

Figure 2.1 illustrates the economics of the draft. The supply curve shows the number of soldiers who would serve voluntarily depending on the wages and other benefits offered by the government. The demand curve is "inelastic," meaning that the government would not reduce its demand for soldiers "much" even as the cost in terms of wages and benefits rose. This assumption is probably more nearly correct for the major wars, when there was a sense that war must be won at all costs, than for the minor wars. The government could hire all the soldiers it wanted by paying AG. But instead it chooses to pay only AD. This decision may reflect the conviction that the higher taxes associated with AG would undermine support for the war. At wage AD, however, there will be a shortage of EF soldiers; DE will be willing to serve, but the government wants DF. A draft can be the answer; EF soldiers can be forced to serve whether they want to or not.

The draft lowers the nominal (budgetary) cost of the war. Each soldier is paid only AD. But each soldier in the draft army is in fact paying a tax, DI, which is the difference between the amount that the soldier would be paid in an all-volunteer armed force, AI, and what they are paid as draftees, AD. To the public the military labor budget looks to be ADFC, but properly measured it is AIJC.

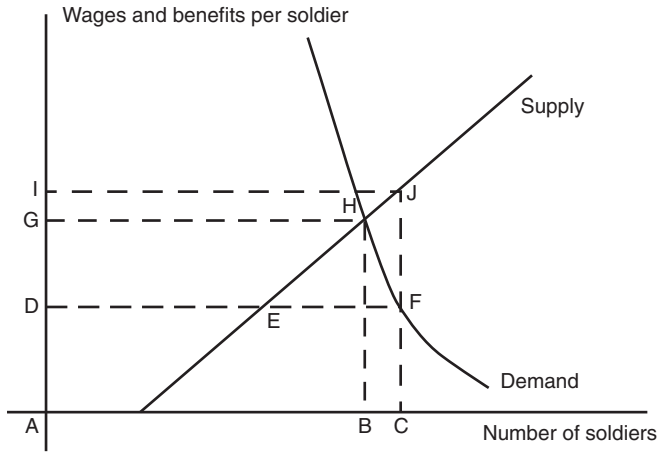

Figure 2.1 The supply and demand for soldiers.

from the cost involved, because a well-functioning market for substitutes evolved during the Civil War. For an economist concerned about efficiency the system of allowing draftees to hire substitutes seems eminently sensible. The draftee pays the tax directly to the substitute. If the draftee has a high income because he or she is highly skilled – Grover Cleveland is an example – the economy is more efficient than it would be if the draftee was forced to serve. But one can, of course, think of a different kind of example: the prodigal son of a rich landowner. Why should the prodigal son avoid the fight just because he can draw on the resources of a wealthy father? Or as the saying went in the Civil War, why should it be a "rich man's war and a poor man's fight"? In 1917 after the declaration of war, the United States passed the Selective Service Act, creating a very different sort of draft to raise the huge army needed for World War I. The use of enlistment bounties to attract volunteers and the hiring of substitutes were explicitly prohibited. The mistakes of the Civil War were not going to be repeated.

Mobilizing resources

The crucial decision for the United States, as indeed for any nation at war, regards how much of its resources to devote to the war effort. Our first reaction is to say that we need to devote as much as necessary to win. But that idea seldom provides a guide for practice. Estimates of how much is needed will differ, and absolute commitment to victory is a seldom realized ideal. Typically, a political group favoring vigorous prosecution of the war will have to contend with other groups that favor compromise or even the admission of defeat. The government's plan for mobilization then will be to allocate enough resources to the war effort to move the country in the direction of victory, but not so many resources that political support for the war erodes.

Economists like to describe the tradeoff between war goods and private sector goods, the tradeoff between "guns and butter," with a production possibilities curve such as the one shown in Figure 2.2. Guns, measured along the vertical axis, stands for the output of military goods: tanks, planes, ships, the food, clothing, and shelter for the army, and so on. Butter, measured along the horizontal axis, stands for the output of all other goods: food, clothing, and shelter for civilian workers, entertainment, housing, and so on. If all production was for the civilian and none for the military, in other words if the

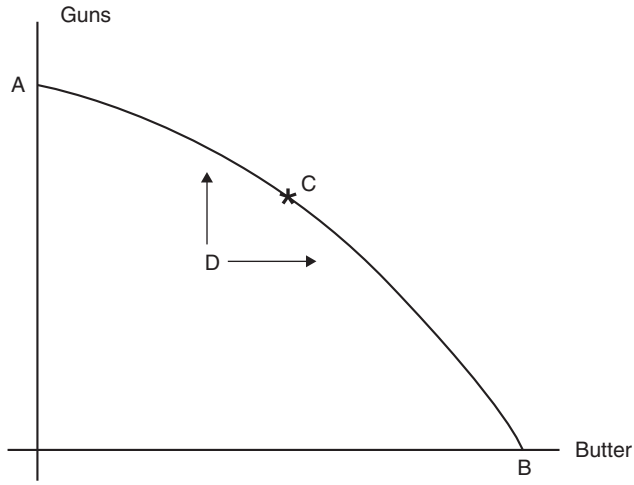

Figure 2.2 The tradeoff between guns and butter.

economy produced only butter, then the economy would be at point B, maximum production of butter and zero production of guns. If, on the other hand, the economy were at maximum production of guns it would be at point A. To be sure, it is hard to imagine an economy that literally produced only guns. Therefore, it makes more sense to regard the vertical axis as measured net of some bare minimum production of civilian goods necessary to maintain production. Once the economy reaches full employment – all the workers have jobs and all the factories are humming – the economy will be on the production possibilities frontier, the curved line between A and B. If the economy is at C, for example, production of more war goods can only be achieved by moving along the production possibilities curve toward A. That is production of more guns can be achieved only by reducing consumption of butter. The production possibilities curve is curved. Why? The curve reflects the idea of diminishing returns. As production of munitions rises it becomes harder and harder to squeeze out more. Workers have to work overtime, machines have to be pushed and repaired more often, raw materials must be brought from more distant sources. All this means that the amount of butter that must be sacrificed to obtain one additional unit of guns rises.

One value of this analysis is that it shows how macroeconomic conditions affect the tradeoff between guns and butter. If the economy is at less than full employment, as represented by point D, then

mobilization can take place relatively easily. The economy can move toward the production possibilities curve as shown by the vertical arrow above D, increasing production of guns without reducing production of butter. The most famous case was the United States on the eve of World War II when it could (to some extent) increase production of guns without reducing production of butter simply because there were still unemployed resources resulting from the Great Depression. Indeed, if the economy is at less than full employment when the war begins, the fiscal and monetary stimulus from government spending is likely to push the economy toward the production possibilities curve. The experience in World War II, and in several other cases, of a wartime boom gave rise to the idea of "wartime prosperity," the idea that war is good for the economy. We will explore this idea in more detail as we discuss the histories of individual wars.

Given that a decision has been reached about the total amount of resources to be devoted to the war effort, how much will be in the form of labor and how much in the form of capital? The United States has always been a country with a high ratio of wages to the cost of capital compared with other countries, and so, following good economic principles, the United States has always used a relatively high ratio of capital to labor: more cannons, tanks, ships, and airplanes per soldier than in nations with lower wages and higher costs of capital. A large manufacturing sector with the capacity to turn out large amounts of capital for war is likely to have, and in the American case has had, the ability to innovate. Not only have Americans gone to war heavily armed, but they have been able to refine existing weapons and develop new ones, on more than one occasion even as the war has progressed. To be sure, politics has worked to reinforce economics. A democratically elected government is not likely to survive for long if it is not minimizing casualties and magnifying the enemy's casualties with massive firepower. Capital intensity, in short, constitutes an important component of the "American Way of War."

In a market economy prices and profits are the incentives that produce the reallocation of resources to the war sector, that move the economy along the production possibilities curve away from B and toward A. As the order books of munitions makers fill with profitable contracts they are able to bid resources away from firms producing for civilian markets. For a variety of reasons, however, governments may intervene to prevent market mechanisms from working and by

substituting alternative mechanisms. This was particularly noticeable in World War I and World War II when elaborate systems of price controls and rationing were introduced.

Why did the United States, a traditionally free market economy, turn to government controls during some of its wars? Several factors were at work. First of all, ideology played a role. World War I, World War II, and the Korean War were fought under presidents who were deeply skeptical about the efficiency and fairness of free markets. The prominence of the military in wartime worked in the same direction. The military is organized in a hierarchical fashion. When the general commands, soldiers obey. It is understandable that when the military comes to the fore, and when military purchasers become one of the leading purchasers in the economy, they would want the private sector to be organized in the same fashion.

Second, sometimes it was hoped that patriotism could substitute for the financial incentives of the marketplace. It was hoped, for example, that workers could be persuaded to work longer and harder for the good of the nation, rather than simply for the reward of higher wages.

A further reason may have been that it was easier, or at least appeared to be easier, to manage the economy centrally, because the ultimate goals of economic activity were clearer in wartime. One of the great strengths of the market system is that it reveals consumer preferences. If people lose interest in movies about cowboys and become more interested in movies about hardboiled detectives, the box office receipts will soon reveal the change in preferences, and induce the appropriate change in output. When the nation is at war, especially when it is involved in the life and death struggle of a world war, consumer preferences are already known. The overarching goal is to win the war and the economic problem is how to allocate resources in the most efficient way to achieve that end. In wartime, moreover, time is of the essence. In peacetime we can afford the luxury of allowing people to delay the performance of a task while we negotiate and cajole them into performing it. In wartime we cannot afford to wait; people must be compelled by government to act immediately. The famous British economist Lionel Robbins explored this argument in *The Economic Problem in Peace and War*, a book based on his experiences in Britain in World War II (Robbins 1947, 85).

Finally, centralized controls may be another way of hiding the cost of the war. One way for the government to deprive a citizen of his or

her resources is to raise taxes. Then, as Adam Smith pointed out, the cost of the war will be obvious. Consider a different story. The amount of good X that a consumer is allowed to purchase is strictly rationed. This allows the government to purchase a portion of the amount produced of X at a lower controlled price. Will the consumer recognize that it is the government's prosecution of the war that has limited purchases of X? Or will they blame the "shortage" of X on profiteers or, best of all, on the enemy?

Economics also comes into play when we move from the amount of war goods produced to the more specific question of the kinds of munitions. One example is the choice between airpower and ground power. Relying on air power makes sense for a nation, such as the United States, that is capital rich, namely where the cost of capital is low relative to the cost of labor. But what about the choice between tactical bombing (bombing in support of ground forces) and strategic bombing (bombing aimed at crippling the enemy's economy)? This choice will depend upon military considerations, but also on the assessment of the economic effects of the bombing and the connection between the economic effects and the military capacity of the enemy. Our production possibilities curve is useful in analyzing some of the effects of strategic bombing. A campaign aimed simply at the mass destruction of the enemy can be thought of as an attempt to shift the enemy's production possibilities curve in Figure 2.1 to the left, so that it cuts through D rather than C. But, as the figure makes clear, the enemy can attempt to offset the effect of bombing on the position of the curve by moving along it, by shifting from production of butter toward production of guns.

The costs of wars

The most important costs of war from the point of view of the American people were the deaths and non-mortal wounds suffered by the fighters, their fellow citizens. Appendix 2 shows deaths – distinguishing between those in combat and those that occurred while the individual was in the armed forces, but for other reasons such as accident and disease. The table also shows non-mortal wounds by war. Economists have tried to place monetary values on these losses. We could, for example, think of an individual killed in

battle as an amount of human capital, the discounted value of future earnings, and add that value to other costs. And in our calculations of the cost of wars we will include an estimate of veterans' benefits which includes monetary compensation to veterans for wounds suffered and compensation paid to the families of veterans who died. Most people, however, view the loss of life and the grieving of families who have suffered the loss of loved ones in a different light – one that reflects a wide range of philosophical, religious, and political values – from the loss of civilian output when resources are devoted to the production of war goods. As much as we economists might want to reduce all of the costs of war to a single dollar value. It makes more sense to view loss of life and limb, on the one hand, and economic costs, on the other, as distinct and at times incommensurate costs of war.[5]

The economic cost of war may be defined as what the resources employed in the war could have produced had they been employed for alternative purposes. The list of alternatives is endless; it is the whole range of goods that could have been produced by the civilian economy (bridges, coffee cups, productions of *Macbeth*, medical research, butter, and so on) and other goods that could have been produced by the government (lighthouses, highways, medical research, and so on). Perhaps the most important distinction here is between investment goods and consumption goods. To the extent that wars employed resources that would have produced investment goods, then our current standard of living has been affected by past wars. If research in medicine or agriculture was slowed, if plans to build new dams and bridges were shelved, if workers went into the army rather than to technical school, then we are the worse for it. On the other hand, if it was mainly consumption that was reduced then our current standard of living may be much the same as if no war was fought. This

[5] Even when we adopt the economic approach there are philosophical choices that must be addressed. Is the goal of economic life to maximize GDP, in which case we would include in the cost calculation the value of all of the output that would have been produced by the fallen soldier; or is the goal to maximize per capita income, in which case we would include only the decrease in the income of the survivors – the externalities that would have been generated by the fallen soldier? This issue is further complicated by the possibility of immigration. If we focus on the income of the survivors, how do we measure the loss of life in the war when the income of the survivors can be restored by admitting an immigrant with the skills of the fallen soldier?

was part of what the Nazi leaders Hermann Goering and Joseph Goebbels were getting at in the 1930s when they said that Germany should have guns instead of butter (Birchall 1936, 1). Butter was a consumption good, a luxury. In the long run the standard of living would not be reduced if in the short run people switched to a less expensive substitute.

The opposite problem arises when the war-related spending creates capital that is valuable in peacetime. The synthetic rubber plants created in World War II are a good example. Although the rubber they produced contributed to the war effort, the plants were mainly employed after the war to produce synthetic rubber for the civilian market. In a case like this we may want to deduct the value of the flow of postwar civilian products from the wartime cost of the capital to get at the true cost of the war. In practice, however, such a calculation is hard. For a variety of reasons plants that were sold to the private sector were sold at a price below the discounted value of future profits. One reason was that the private firm that had been operating a plant during the war had an inside track when it came to purchasing the plant. Even when an auction was held, there were few outside bidders.

Human capital may also be created in wartime. A worker may learn new skills that make him or her more productive after the war. For many farm workers, for example, work in war factories in World War I and World War II provided skills that made it possible to continue in factory work after the war. To be sure, many agricultural workers would have made the transition from farm to factory even if the nation had remained at peace. But the high demand for industrial labor during the war may have tipped the balance in favor of making the transition. Similarly, moving can be an investment. Many American laborers made the trek to California during the depressed 1930s, but the ease of finding a job in California during World War II persuaded many others that the 1940s was the right time to make a move they had long contemplated. The cost of moving to do war work should be counted as part of the cost of a war, a cost not included in conventional estimates. But omitting this cost is probably not a major problem because a worker typically recaptured some of those expenses in the form of higher wages or more enjoyable living conditions after the war.

A major issue encountered in any attempt to measure the costs of war, but especially the costs of "minor" wars, is whether we should

include all the costs of the military, or only the additional costs produced by the decision to go to war. It is the classic economic problem of how to allocate fixed costs. There is no single "right way" to make the calculation. As is often the case in economics, the decision about how to allocate the fixed costs of the military spending depends on the question we are asking. Looking at the marginal cost of the war – ignoring the fixed costs of the military establishment altogether – may lead to sensible conclusions about whether to engage in a particular war, given that past spending is a sunk cost. On the other hand, looking at only marginal costs would produce bad decisions about whether maintaining large armies and navies ready to engage in wars makes sense. To answer the latter question looking at the average cost of wars is more useful. Setting the share of fixed costs at zero and computing only the marginal costs of wars, in other words, makes imperial war-making appear less costly than it is. All this is clearer if we take a less politically charged example: the fire department. The marginal cost of fighting a particular fire given the expenditures already incurred to buy equipment, build firehouses, employ firefighters, etc. is normally small. This small marginal cost is the right one to look at if the question is: Does it pay to put out the fire on Mulberry Street in Springfield? However, if we add up the marginal costs of fighting the ten fires that occur annually in Springfield, we will greatly underestimate the annual cost of maintaining the fire department. To address the question of whether Springfield needs a fire department we are better served by looking at the average cost of maintaining the fire department.

When we turn to the interest on the government debt, which in some ways is analogous to veterans' benefits, there is more agreement among economists that to count both the expenditures on the war itself and the interest and principal payments made subsequently is double counting. Again, it helps to consider a less emotionally charged example. When we pay $300,000 for a home, we say that is the cost whether we reduce our bank account by $300,000 or take out a mortgage at 8 percent interest for thirty years. True, the total payments are different. If we pay cash, we write a check for $300,000; if we take out a thirty-year mortgage at 8 percent, we will write checks that total about $790,000. But if we claimed that we were living in a $790,000 home because that was the sum of all the interest and principal payments we would rightly be accused of exaggerating.

The same is true of civilian government spending. We say that a program to finance medical research is the $50 billion we pay now; we do not count future interest payments as part of the cost. To do so would mislead someone who assumed that the normal conventions were being followed.

There is an extreme case worth considering. In Britain it was once a common practice to finance government deficits by issuing consols, or perpetuities, as they were sometimes known. The principal of a consol need never be repaid: a consol promised a fixed amount of interest each year forever. If a war or other government program was financed by issuing consols, and the cost of the program was measured by adding all future interest payments, the conclusion would be that the cost was infinite. After the war taxes must be raised to pay for the interest on debt. Therefore, some citizens have more income and others have less, but leaving aside the distorting effect of the taxes, the size of the economy is not affected. Evidently, it would be misleading when measuring the costs of wars to include interest payments because it means adopting an accounting practice different from the one normally used in measuring costs in the private sector or the civilian government.

As we explore the costs of war in the twentieth century we will need to compare the costs over time. The cost of the Spanish–American War (before adding veterans' benefits) was about $274 million (see Appendix 3). But we want to know how much that is in today's money. Prices and wages have changed a great deal since 1898, so it will not do to simply compare the number of dollars spent on the Spanish–American War with the amount spent on wars being fought today. We must, to use the economists' term, "inflate" the costs of the Spanish–American War to make them comparable to costs incurred today. As usual in economics, there is no single measuring rod that is always the right one to use. We use different measuring rods depending on the question we want to address. A price index is the most commonly used measuring rod. The consumer price index in 2010 was about twenty-seven times as high as it was in 1898 (Officer and Williamson 2011). So using the consumer price index to inflate the costs of the Spanish–American War would mean that the cost of the war was about $7.4 billion ($274 million $\times$ 27.01) in today's money. This figure tells us how much money it would take today to buy the goods and services that Americans used to carry out the war in 1898. There are a variety

of price indexes one could use. If the cost of the Spanish–American War was inflated using the GDP deflator the figure would be smaller, at $6.5 billion ($274 million × 23.6). The GDP deflator is broader than the consumer price index; it includes, importantly, investment goods as well as consumption goods. It is probably a better deflator in terms of describing how much it would cost to outfit a similar force today.

One could also use an index of the costs of war goods (labor and munitions), although as far as I am aware there is no index currently available that extends back to the turn of the century. In the case of weapons, technological progress becomes important. The cost of modern weapons has risen greatly since the turn of the century. Rifles, artillery, machine guns, and battleships all cost more than did similar weapons in 1898. Inflating the amount spent on weapons by a price of weapons index that was not adjusted for quality would yield a much larger figure for the amount that would be needed today to equip the military as it was equipped in 1898. Modern weapons, however, are far more lethal than their turn-of-the-century counterparts. To equip an army today that was of equal lethality to the army of 1898, which could, for example, fire the same number of bullets per minute, might require a smaller sum than was spent in 1898. What really matters is the firepower of one army relative to its enemy. We might want to ask how much it would cost today to create an army that had the same edge over the Spanish military as did the US army and navy of 1898.

Wages are another commonly used inflator. The use of wages has a long and distinguished history. This is how Adam Smith justified using wages to compare values at different points in time:

> Equal quantities of labour, at all times and places may be said to be of equal value to the labourer. In his ordinary state of health, strength and spirits; in the ordinary degree of his skill and dexterity, he must always lay down the same portion of his ease, his liberty, and his happiness. The price which he pays must always be the same, whatever the quantity of goods he receives in return for it … Labour alone, therefore, is alone the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. (Smith 1976 [1776], 50–1)

In 2010 the wages of unskilled labor were about 124 times higher than they were in 1898 (Officer and Williamson 2011). So using this

inflator, the cost of the Spanish–American War would be $34.0 billion ($274 million × 124.01). This computation answers a somewhat different question than the previous computations: how much would it cost today to acquire the same amount of labor that was employed in the war in 1898, both as actual combatants and as civilian workers producing goods for the military?

GDP is still another, and very different, inflator often used to compare wars. GDP in 2010 was about 810 times what it was in 1898 (Johnston and Williamson 2010). Thus, if we use GDP we find that the cost of the Spanish–American War in today's money would be about $221.9 billion ($274 million × 810). Now we are talking about real money! This is what the United States would have to spend today to say that it was making the same effort that it made at the turn of the last century. There is, to sum up, no one right answer to the question of how much a past war costs in today's money. Instead, there are an array of estimates, each illuminating a different question.

Perhaps one of the most important costs of wars is one of the least visible: the moral cost. Few wars are fought according to rules laid down by philosophers. When people are desperate for victory, savagery often wins out. Typically, a few courageous voices oppose attacks on civilians during war, but opposition is often muted by the overwhelming desire for victory and the fear of reprisals from supporters of the war. In retrospect many people find the means adopted to fight a war troubling. Indeed, the moral costs of the war may grow over time, even as other costs, such as the cost of caring for veterans, diminish. In retrospect, for example, many Americans are troubled when they learn about the savage tactics used against civilians during the Philippine–American War that will be described below. It is natural, and to some degree justified, to be cynical about such feelings. There was considerable opposition to America's use of savage tactics in the Philippine–American War, even as the war was being fought, but support was widespread. Theodore Roosevelt, who after the assassination of McKinley was President while much of the war was being fought, went on to be elected President in his own right, and to win the Nobel Peace Prize (although for his role in ending the Russo-Japanese War – not for his role in the Philippine–American War). In retrospect, to take another example, many Americans are troubled by the use of strategic bombing during World War II. The use of firebombing against Hamburg, Dresden, and Tokyo, and the use of atomic bombs

against Hiroshima and Nagasaki, which will also be described below, are viewed today by many Americans, including some of our best young historians, as among the most shameful episodes in American history. But at the time the goal of minimizing the costs of victory created irresistible pressure for attacks on civilians.

The tendency for sympathy for others to disappear in wartime is, of course, nothing new and nothing uniquely American. As Adam Smith pointed out 250 years ago our sympathy for others declines as our social distance from them increases. In wartime we are concerned mainly with how our fellow citizens feel about our behavior, and so opposition to war or to the more savage methods of waging war is likely to be of little significance. This is how he put it in *The Theory of Moral Sentiments* (Smith 1976 [1759], part III, chapter 1):

> In the most unjust war, however, it is commonly the sovereign or the rulers only who are guilty. The subjects are almost always perfectly innocent. Whenever it suits the conveniency of a public enemy, however, the goods of the peaceable citizens are seized both at land and at sea; their lands are laid waste, their houses are burnt, and they themselves, if they presume to make any resistance, are murdered or led into captivity; and all this in the most perfect conformity to what are called the laws of nations.[6]

Smith would have recognized American behavior in World War II. Sympathy for the plight of German and Japanese civilians (who were often vilified in American propaganda), although voiced by a few individuals, was generally missing. Only after the war, as the fears and passions generated by the war faded, and as America developed productive economic and diplomatic relations with Germany and

[6] Smith (1976 [1759], part III, chapter 1) also noted that our lack of sympathy for our enemies is likely to produce a breakdown in the niceties of international affairs:

> When two nations are at variance, the citizen of each pays little regard to the sentiments which foreign nations may entertain concerning his conduct. His whole ambition is to obtain the approbation of his own fellow-citizens; and as they are all animated by the same hostile passions which animate himself, he can never please them so much as by enraging and offending their enemies . . . In war and negotiation, therefore, the laws of justice are very seldom observed. Truth and fair dealing are almost totally disregarded. Treaties are violated; and the violation, if some advantage is gained by it, sheds scarce any dishonour upon the violator. The ambassador who dupes the minister of a foreign nation, is admired and applauded.

Japan, did large numbers of Americans come to be disturbed by the attacks on civilians carried out during the war. Evidently, it is easier to be upset about actions taken in the past, when all that is called for in response is moral indignation, than to oppose attacks on civilians when war is ongoing and the risks of defeat are real. Nevertheless, even if we are entitled to discount expressions of sympathy and moral indignation that come long after the fact, we must still count the shame produced when war crimes are finally uncovered, as one of the important, if hidden, costs of war.

The economic legacies of wars

Wars produce many long-term changes in the economy. The tax system is almost always changed during a war, and these changes persist. The federal alcohol and tobacco taxes levied during the Civil War are still with us, as is the federal inheritance tax imposed during the Spanish–American War. Partly, the long-term effects on the tax system are a reflection of the long-term burdens of interest payments and veterans' benefits that follow wars. Wars have also left their marks on the monetary system. The Federal Reserve's reliance on open market operations was a result of World War I; the collapse of the international gold standard during the Depression and World War II led to the Bretton Woods system adopted after the war.

One of the most frequently cited, and most frequently debated, effects of wars is on the status of women and minority workers. The increased demand for labor produced by wartime mobilizations and the decrease in the supply of male workers resulting from expansion of the armed forces, and (in some cases) the decreased supply of immigrant labor, leads to increases in the employment of women and minorities. The question is to what extent these temporary changes become permanent changes. Do they open opportunities in the post-war economy by changing the attitudes of employers, coworkers, and the women and minority workers themselves? Or does the status quo reassert itself after the war is over?

As the last point suggests, wars are often alleged to produce economic benefits as well as costs. Better access to job markets for women, the elderly, and minorities may increase productivity. Defense of the principle of free trade may increase access to world markets. Suppression of Communist revolutions may protect American property. But in each

case the benefits are hard to measure. The non-economic benefits of wars, such as protection of human rights, moreover, lie along a dimension different from the economist's usual profit and loss calculations. In the end, when it comes to putting numbers to wars, we will stick, as economic historians usually do, to measuring mainly the fiscal costs of wars. We will address the other economic costs and benefits, but acknowledge our limited ability to measure them.

One of the most important economic legacies of wars was in the realm of economic ideas. The opinions of economists and economic policymakers are strongly influenced by their past experiences: by booms and depressions, inflations and deflations, stock market bubbles and busts, and so on, that occurred when they were forming their basic ideas. With the exception of the Great Depression, no experience has shaped economic opinion as much as war. World War II, as we will see, had an enormous impact on the way economists see the world. Many economists were attracted to the case for spending on public works to cure unemployment in a depression laid out by John Maynard Keynes in the *General Theory* (1936). But it was the rapid transition from depression to full employment, powered by military spending before and during World War II, that seemingly provided conclusive evidence for the theoretical case made by Keynes. Most centrist economists followed Keynes in believing that the government's role could be limited to maintaining sufficient aggregate demand. Once full employment was achieved through fiscal policy, Keynes argued, conventional economic thinking that stressed the costs of government intervention in individual markets came back into play. Some prominent economists on the left, however, went further than Keynes, basing their case on the war experience. For John Kenneth Galbraith, who was a major figure in the government agency controlling prices in World War II, and a major public intellectual after the war, the wartime experience was proof that the economy could be run better with a combination of heavy demand produced by expansionary fiscal policies and price controls to contain inflation (Galbraith 1952, 81).

The economics of veterans' benefits

Veterans' benefits are the expenditures paid directly to men and women who have served in the military, or paid for services provided to them, after their service has ended. Veterans' benefits were an

important part of the fiscal cost of every war in the nineteenth and twentieth centuries, and constituted the largest component of the costs of the smaller wars, except Korea. The vexing problem for economic historians is how to treat veterans' benefits when computing the "opportunity costs" of wars. Almost no one doubts that payments made to the dependants of military personnel killed while in service, or payments made to surviving veterans for medical care for disabilities incurred while in the service, or to compensate veterans for earnings lost after the war as a result of their war-related disabilities, are true opportunity costs of war. Clearly the output of the economy as a whole is lower if a veteran was killed or his or her productivity was reduced by injuries – including, we have finally recognized, psychological injuries. Measures to provide for the care of maimed and sick soldiers and sailors in England date from the first Elizabeth's reign, and were widely adopted in colonial America (Glasson and Kinley 1918, 9–18). Similarly, one can see that a veteran whose post-service earnings are reduced because he or she, while serving in the military, lost time that could have been spent developing skills useful in the postwar economy, also represents a true opportunity cost of war. The postwar economy is poorer just as if the veteran had been physically injured. In all of these cases – physical and psychological injuries and time lost that could have been invested in education or skill-building work in the private sector – there is an opportunity cost of war and that fact cannot be changed whether we make the burden of that loss fall on the veteran by denying a benefit, or whether the public as a whole shoulders the burden and compensates the veteran for his or her loss.

However, payments to veterans who are just as productive in the postwar economy as they would have been had they not volunteered for or been drafted into military service, or perhaps more productive, are less clearly part of the opportunity cost of war. The income of veterans is higher than it would otherwise be in the postwar era, and the income of taxpayers is correspondingly lower, but if the output of the economy is unaffected should we regard the payment to the veteran as a transfer or as an opportunity cost of the war? Because of this ambiguity some students of the cost of war have treated veterans' payments as a separable "fiscal cost" of war (from the point of view of the government budget) (Clayton 1972, 375–95), leaving it to the users of the estimates to decide for themselves whether they

want to include veterans' benefits as a part of the economic cost of war. Thus we can treat veterans' benefits as analogous, to some extent, to social security benefits, an item that affects the federal budget and through it taxes and other financial variables, but does not represent a using up of GDP in the same sense as current military expenditures.

But it is also important to recognize that veterans have come to anticipate post-service benefits. Benefits, from this point of view, are a form of deferred pay, a bonus for dedicated service. If that bonus had not been offered, the veteran might not have served, or if forced to serve by a draft, might not have served with the same commitment. Without the implicit or explicit promise of veterans' benefits, additional resources would have been needed during the war to fight with the same effectiveness, or the war might not have gone as well as it did, and the postwar product of the economy might have been lower. For that reason, I have followed the practice of including all veterans' benefits as true opportunity costs of war, although also showing them separately so that someone who views the matter differently can see the costs net of veterans' benefits. This focus on injuries and losses, and wages, I should note, ignores the undeniable fact that some veterans acquired important skills, including leadership skills, that increased their productivity in the peacetime economy. In those cases veterans' benefits can be regarded as similar to the subsidies that firms sometimes pay workers for attending school and learning new skills.

Since veterans' benefits are paid over a long period of time we are faced with the problem of how to take the element of time into account. The most natural approach for an economist, and the one usually followed, is to discount veterans' benefits back to the period of the war itself. In effect, this approach asks the following question: suppose the nation was to purchase a bond, the interest from which would have paid the future veterans' benefits, how large would that bond have to be? But, of course, veterans' benefits are never funded in this way. They are, to use the modern jargon, an unfunded liability, another hidden cost of war.

America's nineteenth-century and colonial wars

America's twentieth-century wars were the offspring of the wars that it fought in the nineteenth century and, on occasion, of wars that it fought during the colonial era. Military technology, of course,

changed a great deal, but the similarities in the political and economic context are striking. In some cases, similarities reflected continuity in underlying political or economic institutions: similar institutions faced with similar challenges produced similar results. In other cases, the similarities between the earlier wars and the wars of the twentieth century reflect the lessons of history – this is what we did last time, so this is what we should do this time – and in some cases the similarities simply reflect the personalities involved: the same generals and the same politicians met the challenges of a new war in the same way they had met the challenges of an earlier war. Space prevents us from considering these similarities in detail, but we can identify the major continuities in the way America fought its wars.

Throughout the colonial era and most of the nineteenth century the United States fought wars to drive Native Americans from land that white Americans wanted as white America expanded westward, and to subdue or destroy the Native Americans who remained. The tactics were often brutal. The Philippine–American War (1898–1902), which we will explore below, was in some ways a continuation. Indeed, many of the officers and men who fought in the Philippines had fought in the Indian Wars. General Leonard Wood won a Medal of Honor in the campaign to capture the Apache chief Geronimo (*New York Times*, March 19, 1916, SM1), helped organize and lead the Rough Riders in Cuba, fought against the Moros in the Philippines, and eventually became commander of the department of the Philippines. Williams (1980, 828) studied the backgrounds of the thirty generals who served in the Philippine War from 1898 to 1902 and found that twenty-six "had experience with Indians in the West." Wood's friend Theodore Roosevelt wrote that colonial expansion was "precisely parallel between the Philippines and the Apaches and Sioux. My doctrine is what I preached in my *Winning the West* . . . to withdraw from the contest for civilization because of the fact that there are attendant cruelties, is, in my opinion, utterly unworthy of a great people" (quoted in Williams 1980, 826).

The brutal tactics employed against Native Americans and against the native populations of the Philippines were partly the product of racism. Many Americans felt little sympathy for peoples whom they considered different and inferior. Cruelty, however, also was demanded by the economics of war. During the colonial era and the nineteenth century American settlers occupied small homesteads

spread over thousands of miles. Protecting all of them from surprise attacks by concentrated forces of Native Americans was prohibitively expensive. It was possible to assemble small armies of volunteers in response to particularly violent attacks or increases in the level of attacks, but how could Native Americans be brought to battle? What was to prevent them from melting into the forest when faced with a concentrated force, only to return later for guerilla attacks? The answer was the punitive campaign. By burning the crops of Native Americans, by destroying their villages, and by killing men, women and children, white armies could intimidate Native Americans, and perhaps bring them to battle where superior numbers and firepower would deliver victory. These were the tactics, for example, that brought success to General "Mad Anthony" Wayne in his campaign against Native Americans in Ohio, where in August 1794 he won a decisive battle against a confederacy of Native American tribes at the Battle of Fallen Timbers.

But cruelty toward civilians, we should remember, is a commonplace of war, and not confined to wars against people of other races or people who employ inferior military technologies. Americans have used brutal tactics against white as well as Native American populations when the cost of alternatives was prohibitive. When Union General William Tecumseh Sherman planned his "march to the sea" during the Civil War, he did not tell his superior, General Ulysses Grant, that he would win the "hearts and minds" of the people of Georgia and persuade them to give up slavery and rejoin the Union; he told Grant that he would "make Georgia howl." The logic was unavoidable. Deep within the Confederacy, faced with an enemy who could retreat for hundreds of miles or turn to guerilla warfare, Sherman needed some way to intimidate the South or bring Southern armies to battle. In World War II, faced with distant well-entrenched enemies the United States turned to aerial bombardments of civilian targets, including nuclear attacks. The purpose was much the same.

Mexico, unlike Native American tribes, could field a European-style army with units of field artillery. But Mexico was simply too small and too poor to defeat a determined United States. The Mexican War (1846–8) ended with Mexico ceding large areas in the Southwest, including California. The Mexican War was in many respects similar to the Spanish–American War that would follow fifty

years later. In both cases the United States relied on an army of volunteers to win a quick and decisive victory over a second-tier power. And in both cases the United States won significant colonial concessions. Hunger for land, it is true, was advertised more nakedly in the Mexican War than in the Spanish–American War. President James K. Polk made no secret of his goal of wresting California from the Mexicans. The Spanish–American War, as we will see below, was pushed in part by public concerns about Spanish atrocities committed in the course of suppressing the Cuban independence movement. But the partisans of imperialist expansion, such as Theodore Roosevelt and Henry Cabot Lodge, had their hand in the war as well. Both wars, moreover, spawned opposition by American foes of imperialism. Ulysses Grant, who fought in the Mexican War, regarded it "as one of the most unjust ever waged by a stronger against a weaker nation" (Grant 1885, 53). John Sherman, the brother of Grant's principal lieutenant, William Tecumseh Sherman, as we will see, opposed the war to conquer the Philippines. During the Vietnam War, opposition to it would force President Lyndon Baines Johnson to give up his quest for reelection.

During the colonial period and the nineteenth century the United States also fought wars against major powers. The French and Indian War was the American branch of the Seven Years War, in many ways a world war. The War of 1812 was fought against Britain, the leading military power of the age. The British blockade of the European continent during the Napoleonic Wars, and the resulting interference with what America saw as its right as a neutral to trade wherever it was profitable, was a major cause. The rallying cry was "Free trade and sailors' rights." The same issue would help propel the United States into World War I. Germany's submarine blockade of Britain, in part a response to the latter's surface blockade of the continent with conventional ships, brought Germany into direct and violent conflict with the United States.

America was a rich nation by world standards in the eighteenth and nineteenth centuries. Wages were relatively high and interest rates low. Heavy reliance on capital made economic sense when America went to war. Firepower, historian David Hacket Fischer tells us, was one of the basic principles of George Washington's army. At the First Battle of Trenton the ratio of guns to soldiers in Washington's army was twice that of the Hessian army it faced (Fischer 2004, 374). Heavy reliance

on capital was a feature of the armies that Lincoln and Grant constructed in the Civil War to subdue the South. Grant relied on the telegraph to coordinate his forces striking simultaneous blows at widely dispersed points in the South. And both sides relied on the railroads to move troops. A high ratio of capital to labor would be even more characteristic, as we will see, of the American approach to war in the twentieth century.

The wars of the eighteenth and nineteenth centuries raised many of the same financial problems that were encountered in the twentieth century. The Revolutionary War was largely financed with "Continental dollars" and the Civil War was financed in the North, initially, with greenbacks and in the South, throughout the war, with Confederate dollars. "Financed by printing money" was more than an informative analogy; it was the literal truth. Governments also relied on increased taxes and borrowing to finance wars. During the Civil War the United States introduced a personal income tax and a corporate income tax along with "sin taxes" on alcohol and tobacco. The United States also borrowed large amounts of money during the Civil War, turning as it did so to the investment banker Jay Cooke, who marketed war bonds to the middle class. When World War I began the Secretary of the Treasury turned, naturally, to the history of the Civil War for lessons about war finance.

The problem of whether to prosecute a war to victory or negotiate a compromise was felt most strongly during the Civil War. With casualties mounting Lincoln was urged repeatedly to negotiate a settlement with the South. But despite some gestures, in the end Lincoln stuck to the policy of unconditional surrender. This policy, undoubtedly, prolonged the Civil War and cost many lives. Once defeat was on the horizon the South might well have agreed to many Northern demands in exchange for an end to the fighting. But the policy of unconditional surrender laid the basis for "reconstruction" of the South. The South was occupied and the slaves were freed. The Radical Republicans wanted to go much further. They wanted to break up the plantations and give the former slaves the land – forty acres and a mule. They wanted, moreover, to give the former slaves the vote: a democratic society would replace rule by the "slaveocracy." Lincoln and Grant's policy of unconditional surrender had made such reforms possible. The costs of unconditional surrender, in other words, could be seen as an investment in a democratic future based on reconstruction.

Of course, things did not go as far as the Radical Republicans had hoped. Land reform was blocked; the Ku Klux Klan, the product of unreconciled Confederate soldiers turning to guerrilla tactics, used terror to maintain white power; and the project of turning the South into a democratic society would have to wait until the second half of the twentieth century. Reconstruction, of course, had and continues to have a contentious reputation. For some, the failures of reconstruction were proof that Lincoln should have negotiated an end to the war. For others, the right conclusion to draw from the failures of reconstruction was that there was a missing ingredient: Lincoln's policy of charity toward the defeated South. Had Lincoln lived, the policy of unconditional surrender followed by "charity for all, and malice toward none" could have proved to be the right policy. In any event, America's conflicted views of unconditional surrender and reconstruction would play important roles in determining the response of the United States to the challenges posed by World War I and World War II.