

WAR

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PARADOXICALLY, wars have been important in American economic history by virtue of both their absence and their presence. In their absence, Americans appear to have achieved sustained growth in per capita income. But their presence has been interpreted by many as hastening the appearance of various institutions, innovations, and industries. In this way, wars have been viewed as great watersheds in American economic history.

Only three important wars in American history—the Revolution (1775–1783), the War of 1812 (1812–1815), and the Civil War (1861–1865)—were fought on United States territory. The relative infrequency of such combat has meant that most American wars have not resulted in large physical capital losses or in the serious disruption of civilian life. In particular, the absence of wars on American soil in the twentieth century has saved America from the ruinations experienced in most other developed countries. Earlier, America was able to begin the economic development process less fettered by war than its European counterparts and was also able to continue modernizing in the absence of major modern combat.

Even though the absence of destructive wars has been responsible in part for continued growth in per capita income, many economic historians have interpreted war as tempering the economy. Both the War for Independence and the Civil War are considered critical watersheds in American economic history. “During the forty years after 1775,” argued Curtis Nettels, “the American people brought forth not only a new nation, but also a national economy. The Revolution began a process of change that modified nearly every phase of American life” (*The Emergence of a National Economy, 1775–1815* [New

York, 1962], p. 1). According to Louis Hacker, the American Civil War proved to be

... a revolution indeed. But its striking achievement was the triumph of industrial capitalism. The industrial capitalists, through their political spokesmen, the Republicans, had succeeded in capturing the state and using it as an instrument to strengthen their economic position. It was no accident, therefore, that while the war was waged on the field and through Negro emancipation, in Congress' halls the victory was made secure by the passage of tariff, banking, public-land, railroad, and contract-labor legislation [*The Triumph of American Capitalism* (New York, 1940), p. 373].

The political shifts occasioned by the defeat of the South have thus been regarded as an important engine of capitalistic growth. The War of 1812 was supposed to have given a fillip to the American textile industry and to have resulted in favorably altered trade patterns. World War II (1941–1945) probably hastened American technological development in aerospace and electronics. Wars have been given credit for important social changes such as shifts in the labor force participation by women, in fertility, in immigration, and in internal migration. Federal expenditures on armed conflict, it has been conjectured, have helped to eliminate depressions and unemployment, and fiscal policies during war have fostered a more equal income distribution.

Thus American economic historians have assigned a strangely contradictory role to the impact of war. The economy is seen, on the one hand, to flourish in its absence, undisturbed by its waste of resources and its generally disruptive effects on daily life. But the presence of war supposedly causes the economy to shed its old ways,

to overthrow archaic institutions and industrial practices, and to begin anew.

These two conflicting theories persist because of the difficulties in proving or disproving either one. Both hypotheses turn primarily on the long-range impact of war, which is a very difficult concept to assess quantitatively. It is a somewhat simpler task to show that the economy suffered during certain war years. For example, the most marked decrease in product per capita for any decade in American history between 1839 and 1975 (with the exception of the 1930's) came during 1859-1869 (the Civil War decade). Product per capita fell at 0.39 percent per year, whereas it had grown at 1.80 percent per year in the decade before and grew at 2.56 percent per year in the decade following. The immediate impact of the Civil War was unambiguously negative, but it is not as easy to demonstrate its long-run economic effect. Furthermore, wars do not affect the economy in a uniform manner. Some may act favorably on particular sectors and harmfully on others, and one must aggregate their impact to weigh the evidence.

There are many problems in accurately measuring the impact of war. The next section explores the range of analytical concepts bearing on its economic impact. These include the direct cost of war outlays, the method of financing, inflation and postwar depression, the role of war in accelerating growth, institutional and social changes, and the economic benefits from war. This is a piecemeal approach to the subject and does not yield a single measure of economic impact. Therefore, a concept termed the indirect cost of a war—an attempt to encompass all of these effects—is introduced. The indirect cost measure will be presented first theoretically and then empirically, using the example of the American Civil War. It is very difficult to apply this method to all wars, and one must instead rely on more easily obtainable if less inclusive indicators.

On which side of this debate does the evidence fall? Although wars have probably been assigned too great a positive role in economic development, they have served to hasten some social and institutional change. But the record for the United States indicates that wars are very costly to the economy and that most benefits accruing as a by-product of conflict would have occurred eventually.

THE IMPACT OF WAR ON THE ECONOMY: ANALYTICAL CONCEPTS

The Direct Cost: Outlays, Financing, and Distribution. The most immediate impact of a war on an economy is the redirection of resources and labor that it entails, and it is measured by the direct cost of the war—a simple addition of expenditures or outlays on the war effort. The demands of war are different from those of the peacetime economy, and the change in the composition of output strains the productive capabilities of a nation. The mobilization of a substantial military adds further problems. The civilian population will be forced to curtail both present and future consumption to provide these real resources, and the division between the present and the future is highly dependent on the method of financing. The relative roles of taxation, debt finance, and money creation in paying the direct costs of war are a function of the institutional framework of the economy, especially the development of the banking sector and the existence of constitutional taxing powers. The method of payment also hinges on the willingness of citizens to accept taxation. The economic effect of debt finance is deceptively delayed, and the economic role of money creation in taxing cash balances is rarely recognized by the public. The method of war finance can also affect the distribution among citizens of the costs of the war.

The direct cost of a war seems fairly easy to compute by adding up governmental outlays, but the concept is actually replete with complications and implicit simplifying assumptions. War expenditures are made through time during periods usually characterized by rapid inflation. The valuation of war output is complicated by general price movements, by changes in relative prices, and by the method of accounting. War expenditures will be evaluated differently if they are treated as consumption, capital, or some combination of the two. (See Kuznets 1945 on valuing war output.) Many war expenditures are for items directly displacing civilian purchases, such as food and clothing for the troops. The inclusion of these goods leads to an overestimate of war expenditures because a peacetime economy would have produced them in any case. This accounting problem will be more acute for earlier wars than for later ones that involve noncivilian war machinery to a greater degree. There

are, in addition to the immediate war costs, those of demobilization, interest payments on the debt accumulated to pay for the war, and war pensions accruing years after the termination of conflict. These usually are not incorporated into the direct cost computation.

In spite of these complications, the direct cost of a war expressed as a fraction of the value of national output is a good first approximation of the impact of a war on the economy. The smaller the annual appropriations for a war as a percent of total production, the smaller its probable impact. However, this outlay is but one aspect of a war and might not be a reliable indicator of the magnitude of physical and human capital losses or other important changes incident to victory or defeat.

The direct costs of various wars in current and constant 1860 dollars are given in columns 5 and 6 of table 1. The constant dollar figures were derived by deflating current values by an appropriate price index. This enables one to adjust for price level changes and compare data among various years. Column 9 expresses the direct cost as a percent of the gross national product (GNP) for one year, and column 10 as a percent of government expenditures made during the war. Column 11 gives the per capita burden of the direct cost in constant dollars. The direct costs are solely government expenditures on the war effort, including funds appropriated for acquisition of land after the Mexican War (1846-1848) and the Spanish-American War (1898). The direct cost does not include interest payments on the debt and veterans' benefits. The total cost of the war is simply a summation of war-related expenditures with no discounting, except for the Civil War figures.

Veterans' benefits have been excluded from the data in table 1 because they probably do not change the comparison of costs among wars and they present enormous measurement problems. It is difficult to separate actual costs, such as medical expenses, from transfer payments, such as compensation to widows, by war; and expenditures for each war have been made over very long periods of time. These outlays to survivors of wars and to the relatives of veterans have been, and continue to be, large—for example, the deflated value of such payments attributed to the Spanish-American War is \$2.5 billion (1860 dollars) paid over the time period 1899 to the

present. This amount would be substantially less if it were discounted to the date of the war, a computation implying that these benefits are treated as promises to pay certain individuals and their relatives for serving in the military.

The direct costs of American wars range from a low of 1.8 percent of GNP of one year for the Spanish-American War to a high of 361.1 percent during World War II (using 1940 GNP). All major wars employed a large portion of the national resources even when expressed in terms of an average annual percentage. For example, on an average yearly basis the Civil War involved more than 18 percent of the productive capacity of the North. (One can compute this and similar figures for other wars by dividing column 9 of table 1 by the duration of the war.) This figure, in terms of a comparison, is greater than the percent of GNP that went toward capital formation in 1859. World War I used 21 percent of GNP on an annual basis, again about equal to the percent of GNP comprising gross capital formation in the years preceding the war. Direct war costs made up an enormous percentage of total government expenditures during almost all wars. Prior to World War II, the government share of GNP was small and was greatly expanded during each period of combat. The government sector was considerably larger after the 1930's, and it responded to war somewhat less by expanding than by reallocating its resources.

War expenditures have been financed in various ways, depending upon the taxing powers of the central government, its ability to borrow, and the urgency of acquiring funds. Although the relative effects of these methods depend on many conditions, their differential impact in most instances can be outlined quite simply. Money creation provides resources for the government by taxing the cash balances of its citizens through inflation. The cost of the war is distributed in this manner, and further burdens are added when the inflation is very rapid. Economic transactions can be very costly during periods of rapid price changes. Prices must be readjusted constantly, hoarding can develop, and in severe hyperinflations literally bushel baskets of money are required for simple purchases. Hyperinflations, such as that which occurred in post-World War I Germany, can lead to a complete breakdown of the market economy. Inflation also has longer-range effects, depending

TABLE I
Economic Aspects of American Wars

(1) War and Duration of U.S. Involvement	(2) Total U.S. Military Personnel (thousand)	(3) U.S. Population (thousand)	(4) U.S. Deaths [Wounds]	(5) Direct Cost Current Dollars (million)	(6) Direct Cost 1860 Dollars (million)	(7) GNP, Current Dollars [1860 dollars]	(8) Federal Gov't. Expenditures During War Years, Current Dollars (million)	(9) Direct Cost/ One Year's GNP [5]/[7]	(10) Direct Cost/ Gov't. Expend. Direct Cost [6]/[3]	(11) Per Capita Real Direct Cost [6]/[3]	(12) Military Pers./ Popul. [2]/[3]	(13) Financing, Percentage by:		(14) Inflation (dates: outbreak to price peak)
												Recpts. (taxes customs other)	Money Creation and Debt	
War for Independence (Revolution) Apr. 1775-Sept. 1783	184-250	2,148	4,004 [6,004]	100-140 (1775 specie value)	143-201	96 [138]	n.a.	104.2	n.a.	66.6	11.6	13.1	86.9	3.01 (1775-1779)
War of 1812 June 1812-Feb. 1815	286	8,179	1,950 [4,000]	87	49	614 [417]	119	14.1	72.5	6.0	3.5	21.0	79.0	1.39 (1812-1814)
Mexican War May 1846-Feb. 1848	116	21,406	13,271 [4,102]	82	89	2,297 [2,368]	130	3.6	62.9	4.2	0.1	41.8	58.2	1.08 (1846-1847)
Civil War: Union Apr. 1861-Apr. 1865	3,393	24,659	360,222 [275,175]	2,302	2,302	3,095 [3,034]	3,419	74.4	67.3	93.4	13.8	9.3	90.7	2.17 (1861-1864)
Civil War: Confederacy Apr. 1861-Apr. 1865	1,034	9,367	258,000 [n.a.]	1,032	1,032	1,087 [1,066]	n.a.	123.4	n.a.	110.1	11.0	13.0	87.0	92.11 (1861-1865)
Spanish-American War Apr. 1898-Aug. 1898	307	73,494	2,446 [1,662]	270	336	15,400 [19,494]	443	1.8	60.9	4.6	0.4	66.0	34.0	1.08 (1898-1899)
World War I Apr. 1917-Nov. 1918	4,744	104,550	116,516 [204,002]	32,740	17,580	76,400 [41,978]	33,189	42.9	98.6	168.1	4.5	24.0	76.0	2.26 (1914-1920)
World War II Dec. 1941-Aug. 1945	16,354	136,739	405,399 [670,846]	360,000	194,970	99,700 [71,214]	380,638	187.9	94.6	1,425.9	12.0	41.0	59.0	2.08 (1939-1948)
Korean War June 1950-June 1953	5,764	157,028	54,246 [103,284]	50,000	17,550	345,500 [119,965]	183,740	14.5	27.2	111.8	3.7	100.0	—	1.02 (1951-1957)
Vietnam War Aug. 1964-June 1973	8,400	204,879	47,704 [303,656]	140,644	32,604	977,100 [219,573]	1,781,000	14.4	7.9	159.1	4.1	n.a.	n.a.	1.69 (1964-1974)

Note: n.a. not available.

TABLE 1 Economic Aspects of American Wars (continued)

Sources: Column 2—Revolution and War of 1812, estimates from Bureau of the Census, *Historical Statistics*, p. 1185; Mexican War, M. A. Kriedberg and M. G. Henry, *History of Military Mobilization* . . . , pp. 706–707, Appendix A: "U.S. Troops Participating in Major Wars;" Civil War, C. Goldin and F. Lewis, "Civil War Cost," p. 305 (Union), p. 308 (Confederacy); Spanish-American War, World War I, World War II, and Korean War, Bureau of the Census, p. 1140; Vietnam War, *Congressional Quarterly Weekly*, Jan. 27, 1973, pp. 148–150.

Column 3—Revolution, Bureau of the Census, p. 1168 (figure is for 1770 and includes the white and black populations); War of 1812, Mexican War, Spanish-American War, World War I, World War II, Korean War, Vietnam War, in Bureau of the Census, *Historical Statistics*, p. 8 for 1814, 1847, 1898, 1918, 1943, 1952, 1970, respectively; Civil War, Goldin and Lewis, p. 323, for 1863.

Column 4—Revolution, War of 1812 and Mexican War, M. A. Kriedberg and M. G. Henry, pp. 706–707 (based on available records; total number probably much greater; no figures available for nonbattle deaths); Civil War, Goldin and Lewis, pp. 304–305; Spanish-American War, World War I, World War II, Korean War, in Bureau of the Census, *Historical Statistics*, p. 1140; Vietnam War, *Congressional Quarterly Weekly*, Apr. 26, 1975, p. 848 (deaths include missing-in-action).

Columns 5 and 6—Revolution, Studenski and H. E. Krooss, *Financial History of the United States*, p. 27, estimate that more than \$100 million in specie value (1775 = 100) was expended, while C. W. Wright, *Economic History of the United States*, p. 185, gives a range of \$100–\$140 million in specie value; War of 1812, Studenski and Krooss, p. 77, give the expenditures of the federal government under the assumption that the Treasury estimated peacetime expenses at \$7.5–\$9 million per year; Mexican War, Studenski and Krooss, p. 123, list \$63.5 million spent on military operations, \$15 million on land, and \$3.5 million for damages paid to American citizens. (The military expenses are allocated in the same proportions as the actual War Department expenditures were for 1846–1848 to get the constant dollar amount; the other expenses are assumed to have been paid in 1849); Civil War (Union), Goldin and Lewis, p. 304, ll. 1, 2, and 3. This figure is discounted at 6 percent to 1861; Civil War (Confederacy), Goldin and Lewis, p. 308, ll. 1 and 2, using the adjusted figure; Spanish-American War, Studenski and Krooss, p. 236 (the current-dollar total direct cost of the war is taken as \$250 million plus \$20 million given to Spain for ceded lands; for the purpose of deflating, it is allocated between 1898 and 1899 in proportion to the excess of War Department and Navy Department expenditures above their 1897 levels); World War I, Studenski and Krooss, pp. 298–299, uses Seligman's estimate of \$32.7 billion, including \$9.4 billion in Allied war loans—very close to J. M. Clark's *The Costs of the World War to the American People* figure—and allows for ordinary peacetime expenditures (the constant-dollar figure was obtained by allocating the \$32.7 billion direct cost in the same proportion as War Department expenditures for the period 1918–1920); World War II, Studenski and Krooss, p. 443 (the constant-dollar figure was obtained by allocating the \$360 billion direct cost in the same proportion as the Department of the Army expenditures for the period 1941–1946); Korean War, Studenski and Krooss, p. 489 (the constant-dollar figure was obtained by allocating the \$50 billion direct cost in the same proportion as Department of Army expenditures for the period 1951–1953); Vietnam War, *Congressional Quarterly Weekly*, Apr. 26, 1975, p. 847.

In column 6, the Warren and Pearson wholesale price index for all commodities (1749–1885) was linked to the implicit GNP deflator (1886–1975). See Bureau of the Census, pp. 201–202; Benjamin Klein, unpublished implicit GNP deflator data cited in B. Klein, "Our New Monetary Standard: The Measurement and Effects of Price Uncertainty, 1880–1973," in *Economic Inquiry*, 13 (Dec. 1975), 461–484.

(continued on page 940)

TABLE 1 Economic Aspects of American Wars (continued)

Column 7—Revolution (1775), assumes that GNP per capita in 1840 dollars was \$55, converted to 1775 dollars and multiplied by an estimated 1775 population of 2,464,223 persons (an average of the 1770 and 1780 figures in Bureau of the Census, p. 1168); War of 1812 (1810), Paul David, "The Growth of Real Production in the U.S. Before 1840," in *Journal of Economic History*, 27 (June 1967), p. 184 (David's 1810 figure was converted into 1860 dollars and made consistent with Gallman's 1840 per capita figure of \$94 [1860 dollars]); Mexican War (1847), R. Gallman, unpublished national income estimates, p. 5; Civil War (1859), *ibid.*, with Union assumed to have had 74 percent of national GNP; Spanish-American War, World War I, World War II, Korean War, Vietnam War, Bureau of the Census, p. 224, for 1898, 1918, 1940 and 1943, 1952, 1970, respectively (the 1940 figure is given first for World War II). The deflator used throughout is the same as that used for column 6.

Column 13—Revolution, D. R. Dewey, *Financial History of the United States*, p. 35, reports that the specie value (1775 = 100) of government expenditures from 1775 to 1783 was paper money, \$37,800,000; domestic loans, \$11,585,506; foreign loans, \$7,830,517; taxes, \$5,795,000; and receipts \$2,852,802 (these figures do not include the expenditures of the various states); War of 1812, Studenski and Krooss, p. 77 (all additions to debt are attributed to the war, since there was a budgetary surplus at the onset of the war); Mexican War, Studenski and Krooss, p. 123; Bureau of the Census, p. 1106 (The increase in government revenue 1846–1849 over the average 1840–1845 expenditure level has been attributed to financing the war; loans are assumed to account for the remainder of the \$82.0 million spent on military operations); Civil War (Union), Studenski and Krooss, p. 152; Bureau of the Census, p. 1106 (the increase in government revenue over its average 1859–1860 level has been attributed to the Union effort, and was deflated and discounted to be comparable to the direct cost figure; the figure for money was computed by deflating and discounting the noninterest-bearing portion of the net debt); Civil War (Confederacy), Studenski and Krooss, p. 157, reports that in undflated terms the total receipts of the South were \$2.3 billion, of which \$2 billion was raised by paper money and loans; Spanish-American War, Studenski and Krooss, p. 236 (the net addition to debt for 1898 and 1899 over the figure for 1897 is attributed to the war effort); World War I, Studenski and Krooss, pp. 297–298, quotes Selegman's figure of 31 percent for the proportion of war costs covered by taxation, but this does not appear to allow for receipts covering peacetime expenditures (a corrected figure, assuming peacetime receipts would have been at the 1915 level, is given); World War II, Studenski and Krooss, p. 436, states that 46 percent of war costs was covered by taxes, but this figure is decreased to 41 percent by assuming an allowance of \$6 billion per year for peacetime expenses financed out of taxes; Korean War, subtracting average expenses for 1948–1950 from receipts for 1951–1953 shows the total direct costs of the war more than covered by the residual, the full cost of the war, above and beyond a peacetime level of expenditures, was financed by taxation.

Column 14—The Warren and Pearson wholesale price index for all commodities is used for Revolution through Civil War (Union). Lerner's price index for the Confederacy is used for Civil War (Confederacy). The Bureau of Labor Statistics wholesale price index for all commodities is used for Spanish-American War through Vietnam War. See Bureau of the Census, pp. 199, 201–202; Eugene M. Lerner, "Money, Prices and Wages in the Confederacy, 1861–65," in R. Andreano, ed., *The Economic Impact of the American Civil War*.

upon how people alter their expectations about future price changes.

Debt financing (government borrowing) can result in transferring part of the cost of war to future generations, depending upon who holds the debt and who pays the taxes to finance the interest on it. This transfer of the cost of war from one generation to another has been a policy objective of various governments in distributing the burden of war more equitably. But the true burden of debt financing lies in the reduction of private capital formation. Interest rates are usually raised to entice lenders to switch from private to government debt, although very often in times of war the government places controls on the bonds and securities markets, as was the case during World War II. The capacity of the economy to expand depends, in part, on the size of its capital stock. Therefore, a reduction in private capital formation can place a burden on future generations by resulting in lower future rates of growth. Debt financing can also foster inflation if the debt is short-term, and if its financial instruments come to be considered close money substitutes by consumers.

The third method of financing, that of taxation, has more obvious consequences to both contemporary citizens paying for the war and later analysts determining its impact. The economic incidence of taxation is easier to measure than that of either money creation or debt finance. This proposition is generally true of an income tax but is less so of excises. Although it is also possible to transfer some of the cost of war to future generations with taxation—by allotting future tax refunds to the wartime generation—this method has never been employed. (The 5 percent victory tax on net income over \$624 passed in October 1942 provided for a partial refund, but it was repealed in 1944.) Taxation has usually been applauded as a method of war finance because it does not give rise to monetary inflation and does not burden future generations with a reduced growth rate. (See Modigliani 1961 on the burden of the debt.) Taxation allows citizens to know the full cost of a war, and for this reason it has been rejected on many occasions. Although taxation has been regarded as a demoralizing influence during some wars, its effect in eroding popular support for the Vietnam conflict (1964–1975) has been considered beneficial. When people realized how

much they were paying for this war, many felt combat was too costly.

The history of financing American wars is almost coincident with the history of taxation and tariff legislation in the United States. Each war awakened the republic to its less-than-adequate taxing powers, and with each war additional legislation was adopted enabling the central government to raise funds. But no matter how the machinery of revenue raising was expanded, each war up to the Korean War (1950–1953) required complex additions to the fiscal apparatus.

The first war that the United States fought as a nation was financed primarily through money creation because of the limited taxing powers then assigned to the central government. The absence of taxing provisions was a deliberate policy of the colonists who were going to war in direct response to their arbitrary taxation by England. It is difficult to ascertain the exact division among the methods of finance used in the Revolution. Records are not entirely extant, and rampant inflation complicates the calculation. The price level as measured by the Warren and Pearson wholesale price index rose to more than three times its 1775 level, reaching a peak in 1779.

Davis Dewey reports in *Financial History of the United States* that almost 60 percent of the federal government expenditures were financed by printing currency. The new nation resorted to money creation not only because taxation was virtually impossible but also because loans were difficult to secure. The Revolutionary government was an untested enterprise without a particularly good credit rating. Much of the national wealth was controlled by Tories, and there were few institutions for acquiring the resources of the colonists. The central government was also hamstrung by its inability to force the states to provide funds. It could only request payments, not compel them. Many of these difficulties created almost disastrous circumstances—for example, the lack of provisions at Valley Forge that almost lost the war to England. Such hardships may well have been in the minds of those who later drafted the Constitution, which vastly strengthened the revenue-raising ability of the central government.

The cost of the Revolutionary War has been estimated at \$100 to \$140 million in specie value. (Rapid price inflation made current-dollar

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quotations misleading, and contemporaries such as Alexander Hamilton converted the figures into specie of constant value with 1775 = 100.) Although this figure is not entirely reliable, "the total direct costs as a fraction of probable national output was great" (Andreano 1965, p. 122). In fact, it is possible that the total cost over the eight-year duration of the war just equaled GNP in 1775 and was about 15 percent of GNP on an average annual basis. (See table 1, column 9, for an explanation.)

Article I, section 8, of the Constitution of the United States rectified some of the problems encountered in financing the Revolution. It gave Congress the power to "lay and collect Taxes, . . . Imposts, and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States . . ." These powers alone proved insufficient for the nation to fight its second war. It also needed a plan of war finance and a central bank, and when war was declared in June 1812, the country had neither. The charter of the first Bank of the United States had expired in 1811, and the Senate had rejected Secretary of the Treasury Albert Gallatin's tax plan, first recommended in 1807. Loans in the form of bonds or notes were relied on during the early part of the war, and even when Congress finally passed the Gallatin tax legislation in 1812, it proved futile in raising revenues. Declining trade, a by-product of the war, reduced the efficacy of trade duties, and customs revenues diminished in 1814. Loans were again issued after this attempt to raise revenue failed to meet expenditures. Receipts, almost entirely from customs revenue, covered about 21 percent of the total direct cost of the war.

Because much of the debt circulated as money and some was paid with bank notes that entered circulation, prices soared during the War of 1812 (see figure 1). The war cost about \$86.5 million current dollars spread over four years, or about 14.1 percent of GNP in 1810.

The United States was far less strained financially when fighting the war against Mexico in 1846, and in the end that conflict proved to be a very profitable venture. The total direct costs of the war, including the money spent to purchase land and recompense American citizens, was less than 4 percent of GNP in 1847. Since these expenditures were spread over at least three years, the annual burden was very small.

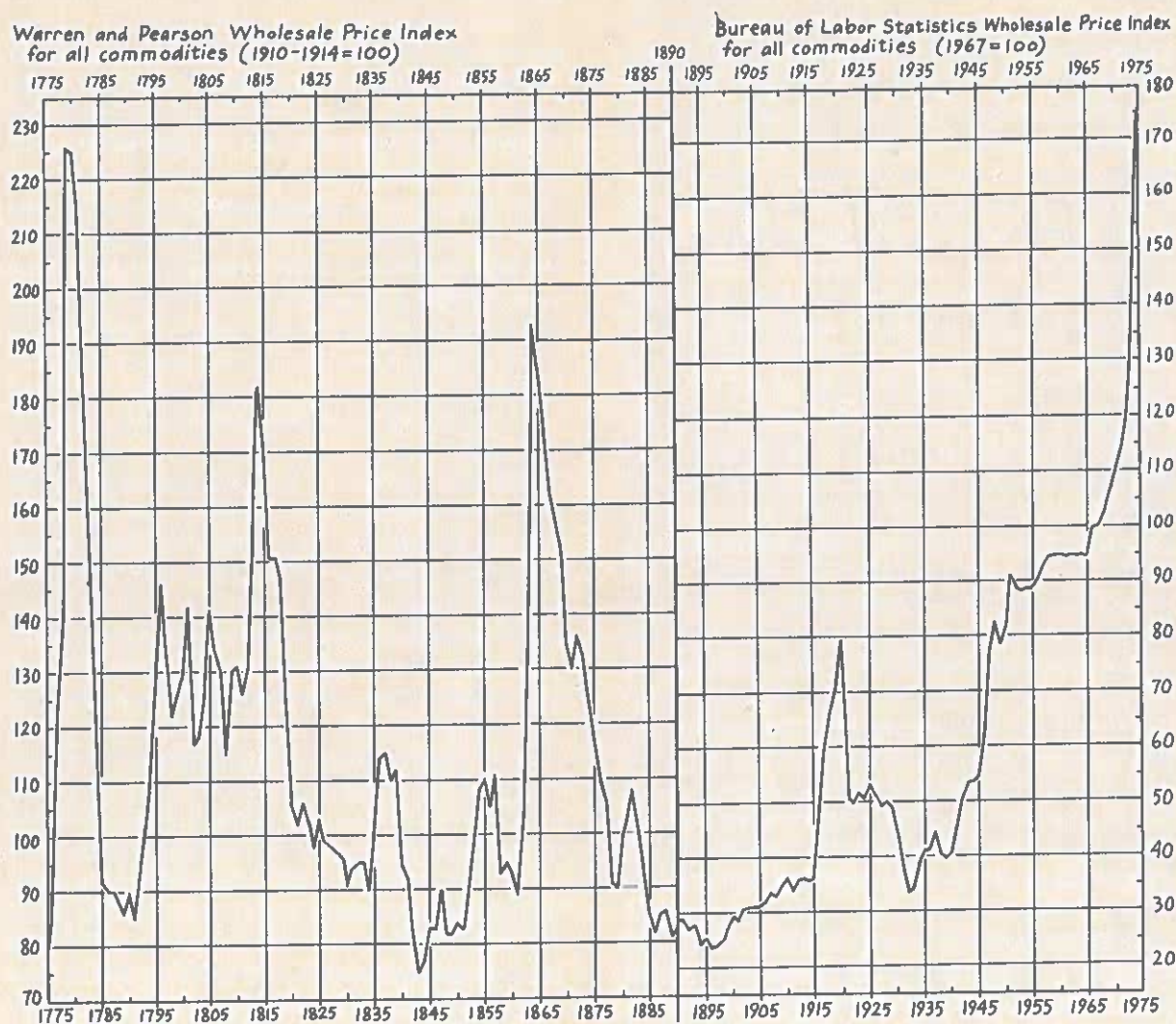
Tax revenues provided a greater portion (41.8 percent) of the expenditures of this war than they did in 1812, because foreign trade was high enough to yield substantial receipts from tariffs. During the period 1846–1848, the military costs of the war (\$63.5 million in current dollars) amounted to a little less than 50 percent of all federal government expenditures, and the total costs were just over 60 percent. The resources devoted to the war were an insignificant fraction of the national productive capacity, but the government sector was so small that war expenditures constituted a large share of its budget.

The direct cost of the Civil War to the North and the South was enormous. The conflict involved more than two-thirds of the Union government expenditures from 1861 to 1865. Had all these funds been spent in 1859, they would have exhausted almost 70 percent of the northern share of GNP, and the war expenditures of the Confederacy amounted to well over 100 percent of its 1859 gross product. The resource cost of the war was even higher than these figures indicate, because the war involved capital destruction, trade disruption, and other problems that magnify the direct outlay estimate. (The section on the indirect-cost estimate will explore this issue further.)

The Civil War was the most massive war effort that the nation had experienced until then, and the government revenue system was still in an infantile stage of development when fighting began in 1861. The tax system was based on customs revenues, sales of public lands, and other sources that could not be relied upon to yield the necessary funds. This tax structure proved inadequate for the Union. It lacked flexibility, and revenues could not be mobilized quickly. Both sides were limited initially by an inability to obtain loans. The federal government did not have a central bank and had, instead, to deal with an enormous number of state banks, each issuing different notes. The Union eventually raised funds by using a combination of long- and short-term loans, paper money (greenbacks), and various taxes. The latter included an income tax (repealed in 1872) and excises. The fiscal deficiencies of the federal government (taxation accounted for only about 10 percent of expenditures) probably led to a far more rapid rate of inflation than would otherwise have been the case. Wholesale prices in the

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FIGURE 1 Price Indexes, 1775-1975



Source: Bureau of the Census, *Historical Statistics*, pp. 199-202.

North rose at an average rate of 25 percent per year and peaked at more than twice their initial level (Friedman 1952).

The Confederacy resorted to the printing press even more than did the North, and prices in the South spiraled upward at a considerable

rate. Eugene Lerner's price index for the Confederacy in 1865 is 92 times its 1861 level. This hyperinflation was an added economic burden to a region already strained by the real resource costs of the war (Lerner, in Andreano 1965).

The cost of the war to the North was probably

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borne by its citizens in a regressive fashion, that is, persons with lower-than-average incomes implicitly spent a larger fraction of their incomes on the war than did those with higher-than-average incomes. It is conceivable that wages lagged in their response to price increases and that consequently wage earners were heavily taxed by inflation (DeCanio and Mokyr 1975). The issue of debt probably curtailed private capital formation by diverting resources away from the private sector, although the quick postwar redemption of the debt somewhat reversed this process (Williamson 1974).

In an economic sense, the next American military conflict after the Civil War, the Spanish-American War, was indeed a "splendid little war," to quote Theodore Roosevelt. It involved the nation in just five months of conflict, and total expenditures amounted to only 2 percent of the GNP of one year. The undertaking was financed to a large degree out of current receipts as a result of its relatively small size and the newfound ability of the federal government to expand revenues on short notice.

The direct cost of World War I (1917–1918) to the American people was, in real terms, about five times that of the Civil War, although these costs were a smaller portion (41.5 percent) of GNP for a single year. The economy had grown since the previous major conflict, and its ability to convert from peacetime to wartime production had also been expanded. Although the United States declared war in April 1917, it had begun the process of shifting resources into war-related industries earlier in order to supply European demands. By the time the United States formally entered the conflict, its military had been expanded and provisions had been made for additional revenues. But preparation was far from complete, and there was much havoc in the production and allocation of war goods.

Prior to World War I, wars were fought and financed on an ad hoc basis. The concept of centralized planning and mobilization was initiated with World War I, and this war, like all previous wars, led to an increase in government powers. Although the federal government had expanded its revenue-raising powers with the institution of corporate and personal income taxes in 1913, revenues provided only about one-quarter of total American expenditures on World War I.

The fiscal policies employed were more progressive than those used in previous wars, and therefore the economic burden of the war was probably borne more equitably.

World War II led the United States to its largest mobilization in history. The direct costs of the war were 95 percent of the federal government budget for the years 1941–1946, and \$360 billion, or almost two years of 1943 GNP, were exhausted. This global conflict began while the United States was still mired in a severe depression. Unemployment in 1940 was 14.6 percent of the labor force, and even when war was declared in 1941, almost 6 million persons (10 percent of the labor force) were still out of work. But by 1943 unemployment was no longer an issue, for less than 2 percent of the labor force was seeking employment. It is entirely possible that, without the vast wartime expenditures, unemployment would have persisted for a much longer time. This rapid reduction of unemployment was an indirect benefit of war outlays. Government expenditures contributed to greater efficiency and equity during and after the war, but they provided benefits that are very difficult to quantify.

Because the war began during a depression, some of the resources that it required came out of increased employment and some out of decreased consumption. In fact, the personal consumption expenditures of American citizens was, on a per capita basis, higher during the war than before, and higher at its conclusion than at its beginning. It was \$1,178 (1958 dollars) in 1940, \$1,197 in 1943, and \$1,238 in 1945 (Bureau of the Census, *Historical Statistics . . .*, p. 225); note that the impact of price controls on the quality and availability of goods has not been considered explicitly.

World War II was the first major national conflict financed to a considerable degree by taxation, and, most important, the form of taxation employed was more progressive than ever before. The income tax was increased, exemptions were lowered, the excess profits tax was raised to 95 percent, and regressive sales taxes were opposed. All of these elements would be expected to have fostered a more nearly equal distribution of income. Although the precise causal role of each element is still unclear, greater equality is precisely what occurred.

The distribution of income in the United States was dramatically altered twice during

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World War II. The first shift toward greater equality came at the onset of the war in 1941 and was due almost entirely to the large reduction in unemployment. The richest one-fifth of the population had 51.7 percent of pretax personal income in 1935-1936 but only 48.8 percent in 1941. This was reduced further to 45.8 percent in 1945. The second shift in the income distribution, occurring in 1945, was also due partly to lowered unemployment. Since posttax earnings are more equally distributed than pretax ones, the use of taxation to finance the war must certainly have accelerated this movement toward equality. Some of the decrease in inequality may also have resulted from the changing composition of the labor force. The increased labor force participation of women, for example, probably lessened the inequality of family income.

The Korean War was not as significant as World War II in terms of its direct costs, but it was more costly in constant dollar terms than World War I had been. Because it initiated the Cold War increase in defense spending, its important effect on government expenditures far transcended the resources spent directly on it. The financing of the war was entirely out of increased taxes and some decreased expenditures. This war was truly fought on a pay-as-you-go basis, with income taxes in 1953 amounting to a greater percentage of national income than they had during World War II.

The next major war fought by the United States was that in Vietnam—a conflict marked by public disapproval and acrimonious congressional debate. Even the duration of the war has been a subject for disagreement. The Gulf of Tonkin Resolution (August 1964) is used as a convenient starting point, although American involvement began long before. The war, the longest war in American history, formally ended in June 1973.

The absolute cost of this war was high—in real per capita terms it was greater than that of the previous war. But when expressed as a percent of one year's GNP, this war was actually less of a burden than the Korean War. Measured in this relative way, the Vietnam War involved about 14 percent of GNP in 1970, and on a yearly basis it involved less than 2 percent of one year's GNP.

This conflict was accompanied by public anti-war demonstrations, civil disobedience, and other indications of a general lack of support

unrivaled in American history. The increased taxation and inflation from waging the war could not have been solely responsible for the erosion of support. The aims of the war expressed by those in command of the government and the military, and the impact of the war on individuals through the military draft, were more influential in swaying opinion than was the financial burden imposed by the war. Note that the expenditures on the war do not include the full cost of the military, but only the actual amount paid. Since the government can and did coerce men to enlist at less than the market wage, the full cost of the war is understated. Total costs should include the difference between the market wage and military pay. This problem arises in calculating the cost of all wars, but it is probably more acute in computing that for the Vietnam War.

Wartime Inflation and Postwar Depression. Every major war fought by the United States has been associated with price inflation. In fact, there are no extreme price peaks in figure 1, which graphs the wholesale price index from 1775 to 1975, that are not accompanied or preceded by a war. These enormous price rises were caused by a combination of war-related factors. Impediments to trade sometimes drastically curtailed supplies of imported goods, as in the Revolution and the War of 1812, when the economy was somewhat dependent on external trade. Fighting has hindered productivity—for example, in the Confederacy during the Civil War. Every war has strained the productive capability of the nation in particular areas, and therefore certain goods experience price increases far exceeding others'. These factors have affected what is called the "real" side of the economy. They have changed either the national supply of goods and resources or the productive capacity. There are other factors as well: those on the monetary side of the economy, which influence prices. The method of war finance and the structure of the banking system can determine changes in the price level. The greater the reliance on money creation, the greater the pressure on prices, as occurred in the Revolution and the Civil War. The effect on prices of a change in the money supply depends mainly on the expansion ratio of the banking system and the income velocity of circulation. The former indicates the amount of reserves that banks must hold against outstanding debts, and the latter describes the prefer-

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ences of the public in holding funds. The greater the magnitude of these two factors, the greater the inflation from money creation.

Prices during three important wartime periods—the Civil War, World War I, and World War II—more than doubled from their levels at the outbreak of war to the price peak. The price peak occurred a month before the end of the Civil War, a year and a half after World War I, and three years after the end of World War II. The most extreme increases in prices were those accompanied by money creation. Prices in the Confederacy increased ninety-two-fold from January 1861 to the currency reform enacted in April 1864, or 209 percent per year on an average annual basis. They also rose considerably during the Revolution, with prices in 1780 about three times their prewar (1775) level. Price increases during the War of 1812 occurred from a combination of monetary and real forces. Wholesale prices for all commodities rose an average of 40 percent, but the prices of certain traded goods displayed enormous disparities among regions. Rice sold in New York for nine times its Charleston price, and flour in Boston was three times its price in Richmond.

Periods of economic recession closely follow almost all wars, reflecting the difficulties of readjusting to a peacetime economy. In addition, three of the wars listed in table 1 were fought on American soil, involved the destruction of physical capital, and engendered general economic disruption. An economic downturn most likely followed the American Revolution. It was caused partly by the disruptive effects of the war itself and partly by the termination of favored trade relations with England. The evidence for a post-Revolutionary depression is indirect, consisting of a comparison of an estimate of per capita income in 1800 with one for the prewar period. Since the years immediately following 1793 are considered to have been ones of economic expansion, the equality between the numbers for 1774 and 1800 indicates that there must have been a drop in income during or directly after the Revolution. This statement is both conjectural and somewhat surprising, considering the lack of economic cohesion in the colonies. Many have questioned whether a war fought in so predominantly an agricultural setting could have had major economic repercussions. This conclusion is consistent with information on agricul-

tural productivity after the Revolution.

A precipitous drop in trade accompanied the War of 1812, but its effects on income are difficult to compute because there are no annual income data for that period. We do know that real per capita income between 1810 and 1820 grew at 0.9 percent per year, much lower than its average of almost 2.0 percent for the period just following 1820–1840. An assessment of the effects of the Civil War is complicated by the abolition of slavery and the political and agricultural reorganization of the South. The war must have played a major role in slowing southern growth, but it was not directly responsible for the poor income performance of the South during the half-century following Appomattox. December 1867 does mark a business cycle trough for the entire economy, and GNP per capita fell by 0.4 percent from 1859 to 1869. Similarly, World War I was followed by a severe and worldwide depression lasting from 1920 to 1921, and the Vietnam War ended in a national economic downturn. Unemployment rose to almost 9 percent in 1975, and GNP per capita declined from 1973 to 1974. World War II was the major exception to the rule that wars end in depressions; far from fostering a downturn, it was partly responsible for terminating a severe depression.

The postwar depression phenomenon appears to be ubiquitous historically. Economic downturns and business distress in England followed the Dutch War in 1678, the Seven Years War in 1763, and the Battle of Waterloo in 1815. South Africa after the Boer War in 1902, Japan after the Russo-Japanese War in 1905, and Germany after the Franco-Prussian War in 1871 all suffered severe depressions as well.

There are many reasons why the termination of wars has been historically associated with economic downturns. The reorganization of wartime activity and production, and the adjustment to rapid war-related price inflation and then deflation, are but two. There is, in addition, an accounting problem in assessing postwar economic downturns. Measured income might decline, and unemployment could rise, in the postwar economy because the value of military goods, included in wartime GNP, necessarily declines in peacetime. Therefore, some postwar depressions might in fact be the illusory products of incorrect measurement. But the evidence for real and prolonged economic downturns fol-

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lowing wars is strong and warrants much attention.

War As an Economic Spur. Even though the facts indicate that wars are almost always followed by recessions, many individuals have interpreted the long-run impact of war as accelerating economic growth. Wars create demands for capital-intensive goods, stimulate manufacturing, reduce unemployment, and induce technological change. There is no doubt that certain wars have had a stimulating effect on particular sections of the economy. The trade barriers during the War of 1812 gave an impetus to American textile production, the Civil War spurred the pig iron industry, World War I aided chemicals, and World War II caused the expansion of the electronics and aircraft industries. Because wars are generally followed by depressions, it sometimes appears that economic expansion can be maintained only in a wartime economy. Furthermore, some of the added output during wartime comes from mobilizing unemployed resources, as in World War II, and there may also be an added productive spurt from patriotism. Although there is some truth to the proposition that wars stimulate the economy, most of this stimulation has been to a few specific industries at the expense of many others. Resources are moved around at the dictation of the wartime needs of the economy, and peacetime demands are postponed.

Part of the modern notion that war aids the economy results from the American experience with the Great Depression and World War II. When the war began, unemployment was about 15 percent of the labor force; at its termination, Americans were enjoying a newfound prosperity. People were moving to the suburbs, purchasing automobiles and other durables, and expanding their families. This postwar boom became inexorably linked to the war itself. But there is no reason why large fiscal expenditures in the absence of war could not have had the same result. The American experience with most other large-scale wars has been just the opposite. Wars have not accelerated growth; they have inhibited it.

The Civil War, for example, has been assigned a major role in stimulating the growth of American industry, and many use it to mark the transformation of the economy from an agricultural to an industrial one. But how accurate is

this assessment? Data on the growth in total commodity output and value added in manufacturing indicate a decline in the rate at which the United States was industrializing from 1840–1860 to 1870–1900, not an increase. “Thus the new data show,” Stanley Engerman noted, “that while the Civil War decade marked a clear departure from the nineteenth-century trend, this departure is a direction opposite to that anticipated on the basis of the Beard-Hacker thesis” (Stanley Engerman, “The Economic Impact of the Civil War,” in Ralph Andreano, *The Economic Impact of the Civil War*, p. 191). Therefore the Civil War probably did not accelerate the economy. This statement does not imply that its political ramifications were totally unimportant to economic growth, and it also does not follow that the hypothesis that wars accelerate the economy is always incorrect. But the example of the Civil War does point to some of the fallacies in viewing war production as something that always stimulates the entire economy.

Population: Immigration, Fertility, and Mortality. Wars have an impact not only on those living and residing in the belligerent countries, but also on their future generations and on potential immigrants. Most wars discourage the movement of people, thereby curtailing immigration and internal migration. Fertility usually falls during wars as couples defer births and young persons postpone marriage. Wars, of course, also result in deaths and wounds due to battle and in higher civilian mortality.

Chester W. Wright has concluded that one of the most enduring economic consequences of American wars has been to reduce population growth. He estimated that the Revolutionary War reduced immigration by about forty thousand during its eight years (2 percent of the colonial population in 1770), and that slave importation also declined considerably. However, these population decreases simply may have been deferred and, therefore, not lost entirely. Death statistics are incomplete for the Revolution, and the only extant records indicate that just over four thousand colonists were killed in battle. Immigration also declined during the War of 1812, and Wright has estimated that the shortfall was about 131,000 (1.6 percent of the 1814 population).

The Civil War probably resulted in 1.3 million fewer immigrants, if one applies the same esti-

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mation techniques that Wright used for the War of 1812. Deaths amounted to about 618,000 for the Union and Confederacy together (table 1), and their combined impact was to reduce population by about 5.6 percent. Wright's estimate for World War I is a reduction of 3.3 million immigrants and of 116,000 persons due to battle deaths (3.3 percent fewer persons due to both causes). The change in immigration policies following World War I makes this calculation unnecessary for later wars, since immigration was severely curtailed by these policies.

Wars have obviously changed population growth in numerous ways. But the "most enduring" aspects of decreased immigration and fertility are their effects on per capita income and economic growth, and these have presented difficult measurement problems that have not yet been solved.

Institutional Change: Government Size and Control. When the Revolution was fought, the powers of the central government were few, and its inability to raise funds severely hindered the war effort. The Constitution remedied this, and since that time wars have steadily broadened the power of the central government and the size of its budget. Herman Krooss stated, "The major wars . . . did more than anything else to add to government power, for in each major war, government clearly became the pre-eminent player on the economic stage, and when the war was over, the government never completely reverted to the status of bit player" (Krooss 1966, p. 468). This thesis, that war permanently expands the government sector, has also been advanced for Britain: "Although British government expenditure declines after the wars, it does not return to the prewar level. . . . In Britain, the plateaus of expenditure establish themselves at successively higher levels, and the share of government expenditure on national product remains much greater after the wars than it was immediately before them" [A. Peacock and J. Wiseman, *The Growth of Public Expenditures in the United Kingdom* (Princeton, 1961), pp. 25-26].

The American experience is not as clear-cut as these quotations imply. Figure 2 shows federal expenditures as a percent of GNP, and, although the graph rises dramatically during periods of war, it always reverts to its prewar level until the 1930's. After that period, the graph appears quite different. Increased government expendi-

tures during a war are not significantly reduced at its conclusion. The share of GNP spent by the federal government rose sharply during World War II, and postwar expenditures appear to have been significantly affected by the expanded wartime government sector. The effect was again experienced with the Korean War, although much of this postwar expansion in the government sector was due to Cold War defense expenditures. Even though recent American history parallels the findings of Peacock and Wiseman for Great Britain, the period from 1845 to the 1920's does not display a similar trend in American government activity. The four wars fought during these years did not have the long-run impact on the share of government expenditures in GNP that did those that followed.

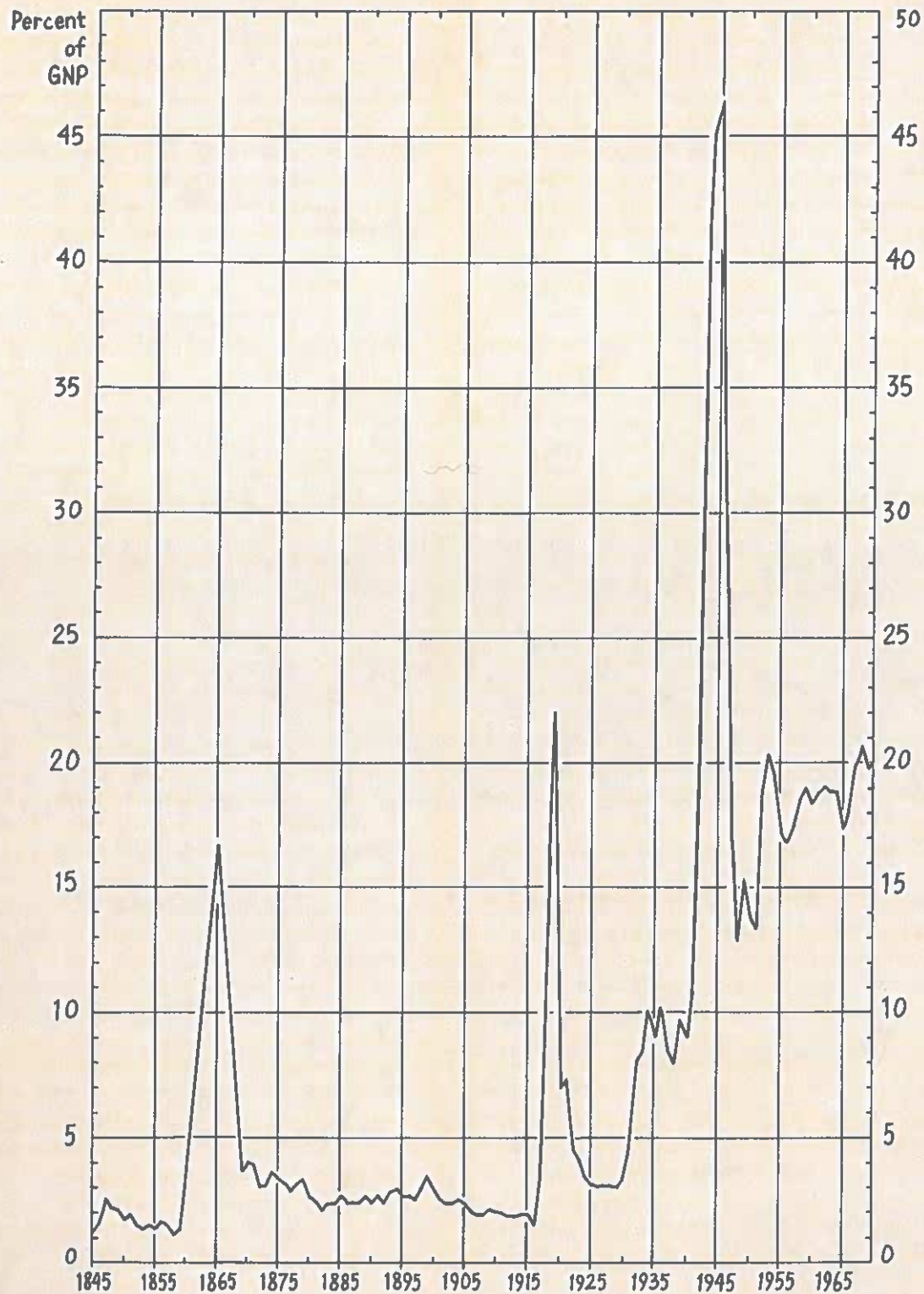
Each war expanded the taxing powers of the American central government. The eighteenth- and nineteenth-century wars led to greater tariffs and excise taxes, and those in the twentieth century, to income and corporate taxes. The latter allowed for more flexibility in finance and more equity in the raising of funds. Customs revenues were between 80 and 100 percent of total federal government receipts from 1789 to 1814, when they declined to 54 percent. They then returned to their previous level, with minor variation due to the sale of public lands in the 1830's. The Mexican War was too small to affect government fiscal powers, and customs receipts provided for much of its expense.

The national tax structure was dramatically changed with the Civil War. Most of the internal duties employed during the War of 1812, such as the taxes on liquor, tobacco, and sugar, were retained, and additional excises on all manufactured goods were used. A mildly progressive income tax was levied in January 1862, and a tax on inheritances was also employed. There was substantial evasion of all these taxes, and deficit spending was resorted to throughout the war. Yet internal revenue accounted for 62.8 percent of total revenue in 1865, and the taxation powers of the central government were finally exercised.

Internal revenue accounted for between one-third and two-thirds of total federal revenue until World War I, although the Civil War income tax expired in 1872. The next major fiscal change was the institution of an income tax in 1913, and its first real test was in financing part of World War I. Although substantial taxing

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FIGURE 2 Federal Expenditures as a Percentage of GNP, 1845-1970



Sources: Robert Gallman, unpublished national income data; Bureau of the Census, *Historical Statistics*, pp. 224, 1114-1115.

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powers were in place by that time, the war was financed primarily through the issue of debt. The government feared that high taxes would hurt the war effort by lowering civilian morale, and deficit financing did not seem to pose such immediate problems. Even though the government did not take advantage of its full fiscal leverage, World War I witnessed the heaviest federal tax burden that American citizens had ever experienced. Taxes were raised to a historical high-water mark of \$40.27 (1860 dollars) per capita in 1920, versus the Civil War figure (1866) of \$4.54 (1860 dollars). Total federal taxes were about 4.8 percent of per capita income in 1866 and 6.1 percent in 1920. Internal revenue had finally surpassed customs as the primary method of raising funds during war and peacetime. Most important, "The wartime revenue policies gave a decided impetus to progressive and direct taxation" (Studenski and Krooss 1963, p. 298).

World War II further expanded the use of the individual and corporate income taxes and led to an even more progressive tax schedule. Because World War II was financed to a considerable degree by these taxes, the cost of that conflict was borne in a progressive fashion. The withholding system of paying income taxes was instituted during the war as a means of easing the tax load on citizens and providing more immediate flexibility for the government. Per capita federal taxes amounted to about \$171 (1860 dollars), or more than four times the World War I figure. Even though per capita income rose as well, taxes were more than one-fifth of 1945 per capita income.

The Korean War, financed entirely by current revenues, seemed to raise personal income and corporate tax rates above their World War II peaks. Incomes had expanded as well, and therefore the tax burden was about the same as it had been during World War II: \$165 (1860 dollars) per capita (19.1 percent of per capita income).

In the fiscal realm, the immediacy of wars forced an expansion of the ability of the central government to raise funds. The first methods used were tariffs, then general excises, and then corporate and personal income taxes. The expanded taxing abilities of the government were retained, in most cases, after the wars, and throughout the twentieth century they led to a more progressive tax structure to finance larger government budgets. Although it is highly prob-

able that these fiscal reforms would have arisen eventually without the impetus of war, the wars certainly hastened change.

During almost all wars, the central government has exercised enormous powers in controlling prices, labor, and supplies of materials, powers that extend far beyond those in peacetime. "The military requirements," noted Herman Krooss, "generated an increase in, and acceptance of, centralized federal activities which continued after the war. This tendency of crisis and war to encourage increasing economic activity and controls in economic matters has continued in our history" (Krooss 1966, p. 218).

Government controls in wartime had a long history. The states, for example, tried to curb inflation during the Revolution by fixing prices. During the Civil War the Confederacy confiscated goods and fixed payment for them at lower than market prices. Both sides also instituted a system of drafting their military personnel, with the provision that, in the Union, a draftee could pay a fee to secure a substitute. The first centralized wartime mobilization came with the institution of civilian control agencies and the Selective Service System during World War I. Although not as well organized and effective as the government had hoped, this attempt did expedite the war effort. "Certain major elements," observed Merle Fainsod, "were developed: co-ordinated military requirements, a crude but reasonably effective system of priorities, far-reaching measures of material conservation and substitution, the beginnings of a system for curtailing nonwar construction and less essential civilian production, and substantial expansion of facilities for some munitions" (Fainsod et al. 1959, p. 827). Most important, the experience of World War I set the stage for government controls during the New Deal and for the much greater mobilization of World War II.

The War Production Board, with powers over production, procurement, and the allocation of resources, was established during World War II after a short period of ineffective mobilization. The Office of Price Administration was given the power to fix prices on nonfarm items and to ration civilian goods. When other agencies were created, leaving the War Production Board no longer a centralized coordinating agency, the Office of War Mobilization was set up. "By the end of the War," Herman Krooss noted, "gov-

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ernment activity had been enormously intensified and covered the whole economy. Basic commodities and manpower were subject to priorities and were allocated among the different sections of the economy according to the needs of war. Civilian goods were price fixed and rationed" (*American Economic Development*, p. 480).

Governments have exercised extensive powers during wars, controls that appear to have had long-lasting impacts. The experience with wage and price controls during wartime seems to have prepared Americans to accept more willingly the same powers in peacetime. The success of the government in operating the railroads during World War I, for example, must have broadened the base of public sympathy for nationalization in general. Government control seemed to work during the two world wars, and this fact may well have quickened the acceptance of a wider set of powers for the central government since the 1950's. Extensive price controls on foods and gasoline in the early 1970's were probably a by-product of market restrictions used in World War II. People were even prepared to accept proposed gasoline rationing, as they had in the 1940's. Wars appear to have led indirectly to a diminution of the laissez-faire economy, at least in the twentieth century.

Wars have also led to the expansion of the monetary sector and fostered institutional change—for example, in the creation of a central bank. All wars before the Spanish-American were fought in the absence of a central monetary authority, and each experience heightened the need for one. The Bank of North America was chartered in 1781, during the Revolutionary War. The War of 1812 was fought just after the charter of the first Bank of the United States expired, and the political changes incident to the Civil War led to the National Banking Act. World War I was the earliest major conflict to have its financing managed by a centralized monetary authority, the Federal Reserve system. This war also revealed some of the deficiencies in the monetary sector that were rectified after its conclusion.

Social Change. Wars have affected society in a wide variety of ways, but only a few such changes survived long enough after the war to be considered genuine social transformation. The most important are probably those pertaining to the labor force, especially the participation by

women. World War II helped to increase the proportion of married women in the labor force from 13.8 percent in 1940 to 21.6 percent in 1950. Even though the trend toward higher female participation is evident from earlier data, the period of World War II marks a clear break with the past in terms of an accelerated rate of participation. World War II probably did more than any social movement before it or since to awaken women to their potentially greater role in the economy. Wars have also engendered labor unrest and therefore have fostered unionization.

Immigration and migration patterns were changed considerably during and directly following wars. The end of World War I marked two of the most important changes in this regard—the virtual closing of immigration to the United States and the beginning of the black migration from the South to the North. It is difficult to know whether both changes would have occurred in the absence of war, but they are nevertheless important social changes that have been associated with it.

Other social changes resulting from war include the emancipation of slaves, the social impact of land acquisition, and the reaction of civilians to increased government control. Wars have inspired citizens with a strong commitment to country and have led to civil disobedience during the more unpopular conflicts such as that in Vietnam. Certain political changes incident to wars have also had important social ramifications. The Revolution probably led to a broadening of franchise rights, the Civil War to the enfranchisement of blacks, and World War I to women's suffrage.

A complete discussion of the social impact of wars is beyond the scope of this study. The increased participation of women in the labor force, as noted above, most clearly shows the interface between economic and social change resulting from war. Just as wars initiate institutional change, so they also seem to shock the social system and produce effects that would probably have occurred eventually. Changes in the labor force, emancipation, increased suffrage, and heightened internal migration would probably have occurred without war but would have taken more time. Wars therefore do have an impact by hastening the destruction of the social status quo and by enabling the resultant

changes to be accepted more rapidly.

The Benefits from War. This article has, so far, stressed the economic cost of war and has mentioned possible benefits only briefly. Some of the potential gains stem from the quickening of social and institutional changes. Yet these gains could not have amounted to very much in comparison with the cost of war. Other benefits from war were in the direct acquisition of land. Most notably, the Mexican War secured the Rio Grande boundary for the new state of Texas and gave the United States upper California and New Mexico. The Spanish-American War led to the purchase of the Philippines and the annexation of Puerto Rico and Guam. The most spectacular gains in territory from combat were those made at the expense of the American Indians. Yet it is very difficult to state exactly what parcels of land were taken in battle, because there were no legal claims until treaties were made. In certain instances there was obvious aggression; in other cases settlers occupied land, later secured in battle, that was not immediately being used by natives.

Some of the gains from war are reaped differentially by class, income, region, occupation, and other social categories. Emancipation, for example, involved a transfer of \$2.7 billion (1860 dollars) in wealth from slave owners to slaves. Similarly, the confiscation of Tory property benefited colonists who supported the Revolution. Wage earners gained at the expense of owners of capital during World War II, although the precise connection between this redistribution and the war is unclear. Certain industries and persons with particular military skills have made substantial wartime profits. All of these gains are difficult to assess because some pertain only to certain groups, whereas others affect all citizens.

That countries can acquire territory and resources from war is an ancient notion, and this simple Machiavellian justification for war has been obvious in many instances. The national gains made after the wars against the Indians, Mexicans, and Spanish indicate that these were profitable imperialistic ventures. The War of 1812 was fought by some in the hope of acquiring Canada and the Floridas, although it was far less successful in this regard than was the defeat of the Indians in the South and Northwest. The United States has also been involved in minor

imperialistic skirmishes, such as interventions in Chile, Brazil, and Hawaii during the 1890's; in Cuba and Nicaragua during the early 1900's; in Mexico from 1912 to 1917; in the Soviet Union after World War I, and in many other countries in the twentieth century.

In other wars cause or motive is far less transparent. The cause of the Civil War, for example, is a perennial question for historians. Gerald Gunderson argues that a model of costs and benefits with probabilities attached to each for the Union and Confederacy can be used to assess causation. He concludes, "The weight of the . . . evidence places strong, primary emphasis on antislavery as the motivation which caused the North to go to war. . . . The South's behavior can be entirely explained by its respective vested interest in slavery . . ." ("The Origin of the American Civil War," pp. 944-945). In general, though, it seems that few major American wars can be analyzed with a simple cost-benefit approach. Most of the minor wars were not worthwhile propositions economically, and some were terribly miscalculated adventures for which eventual costs far outstripped any possible benefits.

A SINGLE MEASURE OF THE ECONOMIC IMPACT OF WAR: THE INDIRECT COST

The preceding discussion has outlined the range of economic impacts by listing the economic factors that could be affected by war. These analytical concepts have concerned both the immediate and the long-run impacts of war. However, no single, objective criterion for assessing the total effects of war has been discussed. The only concept that enabled comparison among wars was that of the direct-cost estimate (the adding up of actual war expenditures). But this criterion has severe limitations in approximating the complete economic impact of war. It does not measure the long-term impact, but only the value of war-related expenditures. In many cases the direct-cost estimate is only a proxy for the true value of these resources, because the government may have requisitioned goods, drafted troops at less than their market price, and controlled prices and wages outright. Rapid inflation in time of war also confounds the

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equivalence between direct costs and wartime expenditures.

The most important deficiency of the direct-cost measure is that it does not reflect the long-range economic impact of war. It does not encompass the economic changes incident to victory or defeat; does not account for losses from physical capital destruction and trade disruptions; and does not evaluate the economic development associated with social and institutional change. Still, the direct-cost estimate can be used in certain instances. It is not severely deficient in assessing the effects of particular wars that are fought on the soil of another country, involve a small percentage of national income, and end without reparations to either side. Under these circumstances, the direct-cost estimate is a good approximation of the real resource cost of the war. But the importance of wars in American economic history hinges on their longer-term effects. The debate over impact cannot be resolved with information on direct outlays only.

Another, better technique must be able to evaluate the economic changes that occur during the war and long after its conclusion. Since many of the theses on the economic impact of war involve the distribution of income and wealth, this measure must also be capable of assessing the costs to different groups in society and to various regions of the country.

The only way to accomplish this task is to construct a hypothetical economy that did not fight the war in question. The information required for this computation would be the value of consumption per capita in the hypothetical economy for the period of the war and for a considerable number of years beyond its termination. (Consumption, not income, is the correct criterion as long as the time span used in the analysis is long enough.) One can then interpret the difference between the actual and hypothetical consumption streams as the indirect or complete cost of the war. This indirect cost would include the direct cost plus any losses in consumption due to items that present measurement problems, such as capital destruction. It would also include gains due to such factors as land acquisition and reparations. This difference can be discounted, at some appropriate rate, to, say, the beginning of the war. And it could be interpreted as the total net resource cost of war at that time. This simple

statement of the indirect cost computation obviously finesses the complicated problems of constructing the hypothetical economy and accounting for additional problems, such as deaths and deferred immigration.

The indirect cost is extremely important because it is the only single measure of the impact of a war. The simple adding-up method can understate or overstate the true resource cost. The indirect cost makes possible the inclusion of possible benefits accruing after a war, thereby allowing the measure to capture net gains to some members of society. The various Indian wars, the Mexican War, and the Spanish-American War were probably lucrative investments for all American citizens. The Civil War has been viewed by Charles and Mary Beard and by Louis Hacker as bestowing benefits on certain groups, such as northern capitalists. When viewed in this broader light, the causes of war and its total export impact become more apparent.

The theoretical method of computing the total net cost of a war, although easy to conceptualize, is rather difficult to carry out. As John Maurice Clark wrote in his preface to *The Costs of the World War to the American People* (New Haven, 1931), "A study of war costs is either a relatively simple matter of tabulation and fiscal allocation; or else it is an economic problem of insoluble difficulty" (p. xi).

Although Clark is correct in stating that difficulties are encountered in estimating the cost in an alternative way, the problems are not always insurmountable. One empirical calculation using this indirect method has been performed for the American Civil War by Claudia Goldin and Frank Lewis in "The Economic Cost of the American Civil War." The results of this exercise are highly instructive in showing the pitfalls of using the direct-cost method as a proxy for the total cost of war. This example also highlights the problems of calculating the indirect cost when the benefits to a particular group are historically important.

The direct-cost estimate of the Civil War includes all war expenditures by both Union and Confederate governments (including state and local outlays) and the value of destroyed physical capital. (Losses due to deaths and wounds are not included, although under certain assumptions they can be. The indirect measure given in table 2 has also excluded them.) The losses due

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to the disruptive effects of the war are included in this calculation in only a limited way, and any gross benefits from the war are not incorporated. The direct-cost estimate for the North was calculated by summing Union expenditures during the war and demobilization periods, then subtracting an estimated cost of maintaining defense in the absence of war. Added to this were state and local expenditures, primarily on bounties to attract soldiers to fill quotas. The military draft, instituted in 1863, shifted some cost from taxpayers to soldiers, and this hidden expense has been included as well. All costs are viewed from 30 June 1861, and are discounted at 6 percent to that date.

TABLE 2
The Direct and Indirect Costs of the Civil War
(thousand 1860 dollars in 1861)

	Direct Costs	Indirect Costs
Union	\$2,302,305	\$4,514,000
Confederacy	\$2,518,767	\$8,969,500

Notes: Direct and indirect costs are net of human capital losses. The direct cost for the Confederacy includes \$1,487,241 in decreased value of physical capital. The cost to all residents is used as the indirect measure. Source: Claudia Goldin and Frank Lewis, "The Economic Cost of the American Civil War . . .," tables 1, 2, 4, 5.

The direct cost to the Confederacy was computed in a similar fashion and includes all the above items plus an estimate of the value of physical capital destroyed. The expenditures of the Confederate central, state, and local governments were revised upward because of incomplete reporting and the prevalence of military seizures of civilian goods.

The indirect cost of the war to either the North or the South is the present value in 1861 of the decrease in consumption that resulted from the war. The basic assumption employed for the hypothetical North is that the per capita consumption observed in the postbellum North was the result of a "catching-up" process that would not have existed in the absence of the war. This appears reasonable because 1879 is the year in which observed income would have equaled hypothetical income had the warless economy experienced per capita income growth at the realized 1839-1859 rate of 1.56 percent

per year. Business fluctuations have been incorporated by assuming that deviations from the trend rate of growth in per capita consumption experienced after the war would also have occurred in the hypothetical economy. Therefore the business troughs of the 1870's and 1890's are not attributed to the Civil War.

The indirect cost of the war to the South was computed in a fashion similar to that for the North. The South did not experience as rapid a "catching-up" process as did the North; consequently per capita consumption in the hypothetical, warless South is assumed to grow at its realized 1839-1859 rate until 1909.

The indirect costs of the war are in excess of the direct costs (see table 2), which shows that a simple adding-up of expenditures does not measure the total impact of the war. The difference between the two measures equals all those items that could not be included in the direct-cost measure or were only partially estimated. This difference could even be negative, indicating that on net there were gains to the entire region from waging a war. The indirect cost itself could turn out to be zero or could be negative, implying that on a cost-benefit basis the war was generally a good economic investment. Neither of these results occurred for either region in this example. However, a finer breakdown for the North might have shown whether the war had an impact on the distribution of income between labor and capital.

The difference between the indirect-cost and direct-cost estimates for the Confederacy has a complicated interpretation. It includes not only the residual costs of the war excluded from the direct-cost estimate but also the costs incident to emancipation and reconstruction. To the extent that slaves reduced their labor supply upon becoming freedmen, the indirect estimate includes an implicit value of their leisure time, computed at a maximum of \$1.96 billion (1860 dollars in 1861). However, this figure still accounts for only about one-third of the full residual cost. It has also been suggested that the demand for cotton may have slackened in its increase after 1870. If this would have occurred without the war, and if it resulted in reduced incomes, then the indirect estimate overstates the losses incident to the war.

There are pitfalls in using either the direct-cost or indirect-cost estimate. The direct-cost

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method only partially includes the aftereffects of a war. In theory the indirect method rectifies this problem, but in practice it is extremely difficult, if not impossible, to construct an accurate hypothetical warless economy. Although in most cases only the direct estimate can be computed, it is nonetheless important to conceptualize the difference between the direct estimate and its indirect counterpart. This difference, in the example given, is much greater for the Confederacy than for the Union. The residual will be greater, in general, the more civilian disruption and destruction there is from a war. A military draft will understate the direct-cost measure, unless a correction is made for the additional cost of soldiers' time above the payment for compulsory service.

There is also the problem of historical interpretation. In the case of the Civil War, some of the effects of emancipation might correctly be viewed as war costs. If economies from large-scale farming were lost by the breakup of the plantations, slave owners lost not only their property in slaves (merely a transfer of income to slaves) but also productivity in management. If the North gained by the political reshuffling in Congress, the direct cost will overstate the indirect measure. It is highly improbable that the legislation passed in the northern-dominated Congress benefited all sectors equally, and it would be instructive to compute the indirect measure for various groups in the society, such as capital and labor. But this is not possible with currently available data. The redistributive effects of other wars, such as World War II, can be computed directly and have already been discussed.

One can view the indirect-cost estimate as a particular weighted average of the various factors listed in the previous section. For example, the increased labor force participation by women would increase consumption per capita, and in this way decrease the indirect-cost estimate. Increased migration would be included in a similar fashion. If wages were higher in the North than in the South, the movement of persons to the North would increase average consumption over the lifetime of all individuals. Land acquisition would be treated similarly, by the amount that this land increased the average consumption basket of all citizens. On the negative side, lowered rates of capital formation, postwar depres-

sions, and capital destruction would be translated into consumption streams and serve to increase the indirect measure.

CONCLUSION

This article began with the idea that there are two conflicting hypotheses about the impact of war on the economy. One is that wars accelerate economic growth by their urgent requirements for new technologies and by their primary reliance on industrial capacity. The economy drags on in their absence, sluggish in its performance until a new war comes along to spur it to a higher rate of growth. The other view plays down the importance of war in hastening constructive change, stating instead that war is always the worthless destruction of resources.

John Nef reviewed this dichotomy and expressed extreme concern for the belief that war is economically beneficial.

As abundance made total war with explosives economically feasible, a novel notion arose that war itself is economically a constructive force. The advantage of gaining territory and riches by conquest is, of course, one of the oldest justifications for war. But the new idea, brought forward by Sombart on the eve of the First World War, was different. He held that the economic experiences of modern war had actually served to raise the level of industrial efficiency and productivity *within* the participating nations. . . .

The material progress, which accompanied the industrial revolution, has helped to make total war feasible. But this progress has not made warfare constructive [*War and Human Progress* (New York, 1950), pp. 375, 378].

What does the American experience tell us about the impact of war on the economy? War has been a generally destructive force in American economic history, although it is difficult to prove this in all instances. The debate on the effects of war in American history has centered primarily on the causes and results of the American Civil War. Many of the theories concerning the effect of this war on industrial capitalism antedated statistical series on production. The bulk of the evidence that has since been marshaled demonstrates that the Civil War was not a great watershed in transforming the economy from ag-

ricultural to industrial. The indirect-cost calculation attempted to express its impact in terms of one number—the value of consumption lost because of the war. The results of the exercise point to the destructive aspects of war—the indirect cost is very large for the South and, although somewhat smaller for the North, is still sizable. If this calculation could be performed for the other wars as well, we would have a better notion of their impact. But we must be content with the more piecemeal approach for analyzing impact as presented in the first part of this essay.

The direct-cost calculations pointed to the enormity of the outlays for the two world wars and the Revolution. The War of 1812 strained the economy in terms of its direct cost and was even more costly in its entire impact. Only our most imperialistic ventures—the wars against the Indians, Mexico, and Spain—seem to have been economically justifiable, but the Nef-Sombart debate is not really applicable to these instances.

Column 11 of table 1 allows a comparison in real terms of the direct cost of the various wars on a per capita basis. These figures have been deflated to measure real cost in 1860 dollars and are subject to the usual errors that enter deflated figures. They state that in real terms the Civil War was almost as costly per capita as the Korean War, which was slightly less costly than either World War I or the Vietnam War. World War II was about fifteen times more expensive than the Civil War. The War of 1812, the Mexican War, and the Spanish-American War were all about as expensive in 1860 dollars per capita. Column 12 of table 1 expresses the direct cost as a percentage of GNP and therefore demonstrates how much the war drained per capita resources relative to per capita income. Expressed this way, the Korean and Vietnam wars shrink in their impact, and the War of 1812 becomes more costly. The direct outlays expressed in any of these ways show that almost all American wars drained a substantial share of our resources. Furthermore, these data are merely fiscal outlays, and they ignore all other disruptive effects.

But this article has also stressed that wars have some economic benefits as well as costs and that each conflict has been associated with beneficial institutional and social transformations. Although it is difficult to quantify the gains from hastening such changes, it does not appear that

they balance out the destructive elements of war.

The present American view toward the economic results of war has unfortunately been conditioned by the national experience with World War II. The economy entered that conflict in a period of depression and emerged four years later in one of prosperity. One hopes that our more recent disastrous experience in Vietnam, and this historical discussion, will serve to change this view.

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[See also CENTRAL BANKING; ECONOMIC GROWTH; FOREIGN TRADE; GOVERNMENT MANAGEMENT OF THE ECONOMY; IMPERIALISM; MILITARY-INDUSTRIAL COMPLEX; MONEY SUPPLY; PRICES AND WAGES; STATE AND LOCAL GOVERNMENTS; TARIFFS; and TAXATION.]