Rethinking the World War II Economy: The Welfare Effects of World War II and the Role of Household Demand in the Postwar Boom[1].

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Abstract: This paper revisits two debates among economic historians about WWII. First, it looks at measures of welfare on the home front during the war and concludes that disposable income is a better measure of "welfare" than consumption alone. By the metric of real disposable income welfare increased throughout the war. This explains why the war felt like a boom to those on the home front. Secondly, this paper looks at arguments challenging what Robert Higgs has called the "orthodox" story of reconversion. This paper finds that the orthodox story of reconversion—that pent-up demand drove the postwar reconversion process—more or less holds up. However, this paper offers a revision to the orthodox narrative to make it more consistent with the data. There was no need to "spend down" savings to satisfy pent-up demand. Instead, the postwar housing boom meant that households acquired long term assets and liabilities that did not necessitate the immediate drawdown of the liquid assets accumulated during the war.

[1] This paper is from a chapter of my (forthcoming) dissertation written under the advisement of Michael Edelstein, Thom Thurston and Simone Wegge.

1. Introduction

For several decades after the end of WWII it was taken for granted that the war itself a produced prosperity never before seen and that the postwar conversion from a military to a civilian economy produced this boom because of the release of "pent-up" demand driven by a bloated stock of liquid assets. The war prosperity and the postwar success were taken as triumphs of Keynesian economics and as validation of the role of an interventionist government. This triumph carried Keynesian economics forward for several decades.

The postwar story went largely unexamined and unchallenged for several decades. However, two attempts in the 1990s to find alternative explanations for the post war boom have emerged. Robert Higgs published a series of papers—later published as a book—challenging what he called the "orthodox view" of the 1940s. while Richard K. Vedder and Lowell E. Gallaway also challenged the popular narrative of a postwar boom fueled by consumption in their book *Out of Work.* This "revisionist view" challenged the orthodox view on a number of fronts. Vedder and Gallaway (V&G) for instance challenge the Keynesian explanation of the postwar boom by pointing out that aggregate demand fell by $20 billion in 1946. They then argue that there was no increase in aggregate demand until after the reconversion process had been largely completed[2]. Robert Higgs focused on measurement errors of GNP and provided alternate estimations of consumption to make the case that welfare declined during the war, contrary to the orthodox story of a wartime boom. As well, Higgs points to the fact that there was no major draw-down of "liquid assets" such as treasury bonds and bank deposits after the war[3].

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[2] This paper focuses almost exclusively on chapter 8 of Vedder Richard K. and Gallaway, Lowell E. Out of Work. New York University Press, 1993.

[3] Higgs, Robert Depression, War and Cold War. Oxford University press, New York 2006 p106-108. Depression… is a collection of revised essays; the citation for the original articles are as follows: Higgs,

While the revisionists make important contributions to the understanding of the 1940s economy, their explanations of the causes of the postwar boom run into a number of problems. First, the analysis of welfare during the war focuses on a very narrow measure of welfare. Second, they provide no real credible alternative explanations nor do they fully assess the pent-up demand argument. V&G posit a decline in real wages as the driving force behind the postwar success but do not frame this decline in wages in broader historical context. Higgs suggests that it was the return of "regime certainty" of a more business friendly Truman administration. Unfortunately, political confidence arguments are essentially impossible to test. To the extent that Higgs's arguments can be assessed, he does not consider some of the nuances associated with national income and product accounting and this leads him to draw some errant conclusions.

This paper challenges many of the revisionist views and largely resurrects the basics of the orthodox view. Disposable income rises unambiguously during the war even if consumption does not. My interpretation of the data leaves the theory that consumption drove the postwar reconversion remains largely intact. However, I also revise the orthodox story. The "pool" of savings (more accurately, the stock of wealth) did not need to be "spent down" after the war. Instead households were able to hold onto their liquid savings while taking on longer term liabilities to finance many of their purchases. In particular, housing offers a striking example of what savings would have been like after the war if households were not able to take advantage of financing options.

Robert *From Central Planning to the Market: The American Transition, 1945-1947* Journal of Economic History 59(3) page 607-609. Higgs, Robert. "Wartime Socialization of Investment: A Reassessment of U.S. Capital Formation in the 1940s" The Journal of Economic History 64.2 (June 2004): 500-519. Higgs, Robert. "Wartime Prosperity? A Reassessment of the U.S. Economy in the 1409s" The Journal of Economic History 52.1 (Mar. 1992) 41-60

2. National Accounting and Welfare

Higgs's "Wartime Prosperity" seeks to dispel the myth that the war years themselves were boom years. The thrust of his argument is that, even though there was a significant increase in real consumption[4] between 1939 and 1941, the subsequent slight decline over the years 1943-1945 from its 1941 peak represent a net welfare loss over the war. However, Higgs does not give himself a strong enough foundation with consumption figures to make welfare arguments. Yes, people were worse off on average in 1944 than they were in 1941, but what about compared to 1938? Is continuous growth of consumption an unambiguous predicate for increased welfare over such a short period? This section will explore some other objections to the attempt to use NIPA when making welfare statements. After roundly suggesting NIPA is not solid ground from which to make welfare statements, I will commit the same sin as Higgs and present an alternative view of NIPA accounting that suggests welfare did increase—on the home front—throughout the war.

First, however, it should be noted that Higgs serves as an important reminder of aspects of the second world war that have largely been buried. As we drift further away from the actual lived reality of the war we are in danger of the mythology of our "justified" and "good" war permanently replacing the ambiguity of the war as it was experienced.

The first episode of the three part documentary "The Living Dead" by the documentarian Adam Curtis traces the process by which both the Germans and Americans dealt with the aftermath of the war. The Germans repressed their memory of the war while the Americans, through the trials at Nuremberg, wrote the narrative of the "just war"

[4] The complexity of what "real" means during the war will be discussed below.

America had fought[5]. Yet, for the soldiers actually fighting it the war was simply one of survival. William O'Neill in his book A Democracy at War describes American Soldiers:

> Nearly all accepted that having been attacked the United States must defend itself and that they owed the nation a duty. However, for most, winning the war was not the primary goal but rather a means to their real end, to be discharged from the Army. Thus, when soldiers were asked to name the Four Freedoms for which they were ostensibly at war, only 13 percent could remember as many as three. This low level of interest in the war's purpose might seem odd today, considering that it is remembered as the one all Americans believed in. Yet, it could not have been otherwise, given the strength of the isolationism earlier and the fact that America seemed to have so little at stake as far as most of its citizens were concerned[6].

The costs of the war borne by soldiers went beyond death and physical injury. Anywhere from 10% to one half of all soldiers suffered from some kind of mental health issue after the war. These were not simply costs incurred during the course of the war but, like blindness or missing limbs, were injuries that soldiers lived with for a long time. Even those soldiers without a mental health diagnosis were haunted by the war. Paul Fussell, a member of the 103rd infantry division, best articulates what lurked behind the domestic experience both of war and reconversion:

> There is clearly a conflict between individual memory and 'the big story' as you might put it which was constructed out of a number of actual and very useful events. One was the trials at Nuremberg which established the version of the 'good war' which is certainly true. On the other hand, chipping away at that constantly is this secret version of the war which is possessed by the actual combat veterans … The problem is that the experience of the veterans is depressing, pessimistic about human nature. It shows how awful human beings can be and how they can be brought to enjoy murder and enjoy depriving other people of their limbs and their lives. Now that's very bad news for human nature and it conflicts with the optimistic news which is conveyed by the official picture.[7]

These costs, of course, are real and immeasurable. Many men spent European winters in foxholes or were starved and tortured in Japanese prison camps. The real horror

[5] "On the Desperate Edge of Now" The Living Dead. Adam Curtis. BBC Two, May 30, 1995
[6] O'Neill, William L. A Democracy At War. New York, The Free Press 1993 p325
[7] Curtis "On The Desperate Edge of Now" minute 39

of the war, in which the men fighting were not motivated by any particular ideological force, has largely been whitewashed from the history of the war and deserves the attention Professor Higgs pays to it.

However, when discussing the welfare effects of the war, one must make a distinction between the experience of combat soldiers and the experience at home. On the home front the war was a distant affair where men disappeared and sometimes returned. It is this contact point where the war made itself felt on the home front and where welfare analysis using economic aggregates—even limiting analysis to the home front—is at best futile and at worst it is obscene. It is the lot of economists, unfortunately, to risk this obscenity. For example, economists debate such things as the success of the Nazi's instinctual grasp of Keynesian economic policy in a vacuum populated only by productivity measures and coal shipments. Professor Higgs' reminder of the real—ultimately noneconomic—cost of the war is important. However, when economists debate whether or not welfare increased during the war the only question they can rightfully ask and attempt to answer is: did the war increase output and/or income? Was there an improvement in material wellbeing?

With this in mind, one must parse Dr. Higgs' welfare argument into two categories, those aspects of wellbeing that can be measured and those that are more abstract and complex. While Professor Higgs' abstract welfare costs are important they are also notable for what is absent: there is no discussion of the immaterial positive welfare effects of the war which are as impossible to pin down as the suffering of combat. After all, what were the welfare effect of the defeat of global fascism? Such a question is more the purview of philosophers and as economists it seems safer to stay within the confines of less complex

questions. Economists can count out lashes and mark the time on the cross, but that is far from being able to say anything interesting about the resurrection of the holy ghost.

So, let's look at our numbers: it has been a long standing critique that national income and product accounting (NIPA) does not adequately capture welfare even if it has largely become shorthand for welfare. Flaws in it have often been pointed out and other indexes of welfare (no more adequate), such as the Genuine Progress Indicator and the Gini coefficient, have been developed try to capture the determinants of welfare that NIPA misses.

To make his welfare argument Professor Higgs relies largely on tracing Simon Kuznets' search for a proper definition of a final good. Kuznets, perhaps the key founding fathers NIPA initially conceived of it as a system in which goods are categorized as final goods based on whether the good is "welfare enhancing". However, it does not seem relevant to the modern economist exactly what the "purpose" of economic activity is. To a modern economist it fundamentally does not matter, from a GDP standpoint, whether a society has decided to produce Big Macs or B-17 bombers. However, for the modern economist National Product is not a welfare measurement; it is a measure of production and capacity. Higgs, following Kuznets, objects to the "mechanical" way in which the BEA calculates national product. While there is, as with any statistical measure, some inescapable level of arbitrary judgments in NIPA the Kuznets/Higgs methodology would magnify any such problem by imposing a layer of value judgments over what constitutes "legitimate" economic activity and what does not. It is a far safer endeavor to strictly view final goods as the end point of production/purchase instead of categorizing final goods in terms of their "intent".

Kuznets, who very much advocated the provision of consumption goods as the basis for NIPA, frames welfare in terms of a society's "goal". However, even he admits that the provision of consumer goods is not the only metric by which a society can judge its welfare[8]. Kuznets finds himself forced into philosophical proposition that he cannot resolve. The need to distinguish national output that captures "net" welfare contributions to the economy forces one to parse out economic activity among several different "use" categories.

However, the need to make NIPA a kind of welfare accounting is the point where Kuznets gets into trouble—as he acknowledges. Munitions in particular underscore the difficult philosophical problem for advocates of NIPA as a welfare calculation. The difficulty here is obvious. Munitions underscores the level or arbitrariness inherent in the welfare conception of NIPA. Any benefit of munitions is real, but ultimately indirect. As well, many consumer goods produced in peace time are diverted to war use. A pair of pants produces welfare, whether they are worn by civilian or a conscript. This philosophical conundrum leads Kuznets a "dual use" accounting. However, there nothing that limits the this arbitrary classification to two uses. In the limit, this system would become infinitely complex as more uses are considered. Higgs goes so far as to admit in a footnote that Kuznets himself found defending this conception of national product untenable[9].

Kuznets's search for a "meaning" to NIPA is understandable. In 1945, at the time "…Wartime" was written, the American welfare state was in its infancy. WWII confronted Kuznets with an important instance of government muddling the relationship between welfare and private consumption. Kuznet's inability to read the changing economic situation in the face of such a profound secular shift while NPIA estimates were just

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[8] Simon Kuznets National Product in Wartime page 26.

[9] **Higgs, Robert "Wartime Prosperity? A reassessment of the U.S. Economy in the 1940s"** ***The Journal of Economy History*** **52(1) page 47.**

beginning to be formulated is understandable and probably deserves little more than a footnote. For Higgs, however, the consumption-as-welfare conception of NIPA is the lynchpin of his whole argument[10]. The goal of NIPA estimates, however, should not, and cannot be to offer a direct measurement of welfare. Instead, product accounting can only be what it is, the measure of final goods and services from which we can attempt to make indirect assessments of welfare. What's more, if one is to have a discussion about welfare during a period such as WWII in which product estimates are greatly distorted then national income should be the metric used.

Professor Higgs is very correct to point out that price controls and quotas have a distorting effect on National Product. It is extremely difficult to get an accurate national product estimate during wartime, particularly during a war with such large macroeconomic effects. Furthermore, it is correct that it becomes impossible to evaluate investment as a discounted Kuznetzian measure of future welfare when large portion of investment's purpose is purely "disposable". This ambiguity of course makes it easier to make the "negative welfare" case since, for the war period, one can then ignore investment all together. This narrows, along national product grounds, the scope of welfare measurement to simple consumption.

However, there is a way to avoid many of the problems of national product accounting. Income, as the other side of the NIPA coin, offers an attractive way to think about national accounting that avoids many of the ambiguities of national product. Firstly, price distortions are largely minimized when one is trying to measure income versus

[10] While the objections Higgs has raised seem overly "philosophical" and lean too hard on the idea that government spending is simply illegitimate for the purposes discussed here he does make a very valid point along these lines in chapter 4 of Depression… . As he points out, any explanation of postwar prosperity that incorporates a significant role for the capital stock built during the war is built on very shaky ground.

measuring output. While price distortions do make dollar values a poor proxy for physical quantity, income is received in dollar amounts and so no translation from dollar values to physical quantities must take place. For instance, in the case of relative prices changes, if price controls (or changes in market prices) make the price of a loaf of bread $1 one year and $100 the next year, this will certainly cause problems in trying to assess bakery output, especially if bread is only one of many goods. However, $1 or $100 dollars is still income for the baker. Likewise, much has been made of the costs associated with price controls for consumers. Though price controls that keep prices "unnaturally" low do represent a redistribution from producers to consumers most of the distortions caused by price controls and quotas are distortions in consumer and producer surplus. NIPA accounting, however, is not a measure of producer and consumer surplus; it is a measure of output at current prices. Under a price control regime there remains the problem of measuring price changes and inflation by using either the Consumer Price Index or the NIPA. One major distortion to NIPA accounting, both on the production and income side caused by price controls and quotas that should be noted, is the presence of a black market, which biases output and income measures downward since it is a range of economic activity that does not get recorded. It is not clear, however, how dramatic these distortions are. Hugh Rockoff's Drastic Measures makes it clear that much black market activity was done "on the books" though it may not have been recorded at actual prices[11]. Strictly off the books activity does not seem overly prevalent, though apparently meat was an exception.

Most important in using disposable income instead of private national product is the role of savings in disposable income. The welfare effect of savings has been largely ignored

[11] Rockoff, Hugh. Drastic Measures: A History of Wage and Price Controls in the United States Cambridge University Press, New York, 1984.

or dismissed[12]. Professor Higgs goes so far as to dismiss the increase in savings improperly as "money illusion"[13]. It may be that economists are used to simply thinking of savings as deferred utility which has no role to play in "current period" utility. However, after the decade of the depression, the security real of savings alone must have been utility producing. What's more, the wartime prosperity mirrored the boom of the 20s but with a more equitable distribution of income; savings, therefore were more equitably distributed. It seems safe to assume that more equitably distributed savings means a higher marginal welfare for each aggregate dollar saved compared with the previous boom.

That most other economic historians have ignored savings as generating welfare may be in the way savings is conceptualized theoretically. Economists tend to think of savings as deferring utility producing consumption. However, it may make sense to think of non-myopic agents as gaining utility from accumulating savings. Forward looking agents can, perhaps, gain utility from the anticipation of purchases. John Blum, whose "carnival of consumption"[14] line Higgs takes out of context suggests:

> Full employment and prosperity, for their part, permitted Americans, in spite of wartime restrictions, to begin to buy many of the necessities and some of the

[12] Modern scholarship on home front welfare best summarized by three papers: Robert Higgs's work is cited above, Rockoff, Hugh *The United States: From Ploughshares to Swords* in The Economics of World War II: Six Great powers in International Comparison edited by Mark Harrison. Cambridge University Press, New York 1998. And Vatter, Harold. *The Material Status of the U. S. Civilian Consume in World War II: The Question of Guns or Butter* in The Sinews of War edited by Geofery T. Mills and Hugh Rockoff. Iowa State University Press, Ames, Iowa: 1993. Of the three only the Vatter article offers savings data and only in passing.

[13] Higgs, Depression,War, and Cold War page 74.

[14] John Blum V was for Victory: Politics and American Culture During World War II. New York: Harcort Brace Jovanovich, 1976 p 90. Quoted in Higgs Depression, War and Cold War p 75. At the risk of sounding pedantic the full sentence reads: "Within the arsenal of democracy, government expenditures made business vastly better than usual and restored the circumstances for a carnival of consumption, which newly prosperous businessmen and their friends ordinarily attributed to the blessings of free private enterprise." It is not quite clear what Blum is trying to say in this sentence. It seems that it can be read in two ways. Most convincingly it seems Blum has sacrificed clarity for alliteration and that what he means is a "carnival of investment", what Hugh Rockoff has compared to a gold rush (Rockoff 1996). He may also be talking about the prosperity and consumption of the wealthy which, because of a greater access to resources, was not as curtailed as that of average Americans. At any rate, it is clear from the rest of Blum's book that he is very aware of the ambiguity that is at the heart of the debate this paper is concerned with.

> comforts they had been unable to afford for so long, and to *dream* about buying others once an end of war made those again available [emphasis added][15].

Savings may also be a better measure of differed or potential consumption than investment. As was suggested above, investment is a heavily distorted measure of future consumption during wartime. Since much physical investment in munitions production was destined to be shut down or reconverted it is easy to dismiss such investment. Furthermore, there were serious measurement issues. The WWII distortions in investment are significant, leading Robert Gordon to declare that $45 billion dollars in wartime investment had been "mislaid"[16]. Savings, however, is computed more simply as the residual of income minus taxes and consumption. While this presents some problems, detailed below, it is appealing for its simplicity. Further, there is no need to distinguish between private savings held in government securities and in private assets. Savings is simply differed consumption for the individual. Furthermore, it is a better measure of future consumption in that it is not necessarily tied to the productive capacity of a resident country. The reconversion from public to private was quick and relatively painless. Had it not, savers would have had the option of consuming foreign goods and making foreign investment. In this sense investment does not measure full potential future welfare as well as savings.

There is a second way in which income is a useful way of discussing the gains from what can be term the "disposable investment" of the war such as factories only used to build munitions shut down after the war and barracks and bases abandoned after the war. Measurement issues aside, investment as only legitimized—as Higgs does—as future consumption is too tight a straightjacket for the accounting concept. Firms will only seek to

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[15] Blum V was for Victory p. 90

[16] Robert Gordon "$45 Billlion Dollars of Investment has been Mislaid" *The American Economic Review* (59) page 221-238

purchase or create new physical capital if the income received makes it worthwhile, regardless of whether the investment horizon is ten years or ten months. These short term disposable investments were still income for workers and owners. The physical wealth generated by these projects was short lived, but it does not mean it is appropriate to assume that wealth was destroyed by their creation and subsequent abandonment. These investment projects were undertaken under the assumption that principle and interest would be earned. After munitions projects ran their course the firms who built them simply moved onto other projects with fatter pockets. Here, then, accumulated savings offers a more clear picture of the creation of wealth than the accumulation of discarded, temporary investment.

One final point about disposable income: As a measure of welfare it also explicitly rules out any possibility that government (war) spending is welfare enhancing as does Kuznets and Higgs' national product conception. Naturally this biases any approximation of total welfare downward, though it is not a plausible to assume government has no role in increasing welfare. Even during World War II, when military spending was absorbing huge portions of GDP, many New Deal programs remained active and nondefense oriented. For instance, the United States Housing Authority and the Work's Project Administration continued many civilian projects[17].

So let's look at disposable income. In Chart 1 we see that an increase in income and consumption in nominal terms is unambiguous throughout the war. While some of the subjective assessment of prosperity probably came from what is commonly called money illusion, the real variables, presented in Chart 2[18] illustrates that there is a very clear increase in real incomes as well. Chart 2 shows real disposable income presented with two different

[17] Bateman and Taylor: "The New Deal at war: alphabet agencies' expenditure patters, 1940-1945. " Explorations in Economic History, 40 (2003) 251-277

[18] A discussion on the various deflators in table 1 is left for the appendix.

deflators: the deflator preferred by Robert Higgs, the Friedman and Schwartz adjusted NNP deflator and an alternative deflator proposed by Hugh Rockoff[19]. Both deflators show the slight decline in aggregate consumption during the war. This flattening out of real disposable income came after the passing of The Revenue Act of 1942 which imposed a broad based income tax for the first time. In 1939 income taxes accounted for $2.2 billion of federal revenue, by 1945 income taxes accounted for over $35 billion.[20]

Both deflators also show that disposable income continues to increase until 1944, when it begins to fall. It is interesting to note that disposable income begins to fall in 1945, the same time that measured consumption begins to increase. The decline in disposable income in 1945 is consistent with the increase in the unemployment rate from 1.10% in the first quarter of 1945 to 3.66% in the fourth quarter[21]. The rise in the unemployment rate and the decline in GNP that begins in the third quarter of 1945 is consistent with the "winding down" of the war after VE day in May of 1945. The two deflators tell very different stories. Using the Friedman and Schwartz deflator real disposable income jumps up in 1946 by 5.7% although unemployment remains around 4%. This seems implausible and is likely due to the construction of the F&S deflator rather than indicative of actual macroeconomic conditions. The Rockoff deflator shows disposable income falling through 1946 and bouncing back.

There is also another way of assessing the "real" impact of savings on households and to assess the claim that the increased welfare from savings was due to "money illusion". Commonly, money illusion refers to an increase in income or wealth that is offset by increases in the price level, so that one feels richer while maintaining the same real income.

[19]Table 1 is also included, showing real income and consumption for several other deflators discussed in the appendix

[20] Brownlee, Elliot W. Federal Taxation in America Cambridge University Press 2004 Page 115

[21] Vedder and Gallaway 1997p164-165, table 8.4

Obviously, Higgs means something slightly different, though the basic point being implied remains the same. Higgs argues that consumption did not increase during the war and, as well, that savings also did not increase in a "real" sense. His focus, as has been discussed has been on investment as the metric by which to judge real savings. Chart 3, on the other hand, offers a simple illustration of the "real" impact of the war on savings. It shows the ratio of five and ten years of accumulated saving to current disposable income. The point being made by the graph is clear. As a percentage of nominal income, accumulated savings was at least twice as high coming out of the war as it was during any other time afterwards. This is not simply the illusion of greater wealth. The war represented an unprecedented shock to the financial stock of wealth. It may be that—as Higgs claims—this was not a shock to physical wealth, but it unambiguously represented a shock to the stock of wealth for individuals and households. It placed consumers in a more sound financial position.

This wealth, however, took the form mainly of government bonds. Surely, the increased borrowing by the government meant having to pay back the debt in the future.

Obviously, if we start from a position of pure Ricardian equivalence then the savings produced by the war is clearly not new for those that hold treasuries. Instead, those treasury bonds simply represent a future tax burden. In which case, a perfectly forward looking rational agent simply treats his savings as being directly off set. Ignoring the fact that the war itself clearly produced a structural break and that the WWII postwar era was unlike any other along virtually every possible economic dimension, what would a backward looking rational agent forecast as his expected tax burden once the war was over? His main points of reference would of course be the debt burden after the Civil War and—probably more prominently—the debt burden after World War I. Surprisingly, had this agent forecast

according to previous war experience he would have predicted a significantly lighter postwar tax burden than was actually the case. Chart 4 shows indexes for Federal Debt in the three major postwar periods. There are a couple of things to keep in mind when looking at this graph. First, the relative debt burned was much higher coming out of WWII. Debt was around 120% of GDP, whereas after the Civil War and WWI debt peaked at around 35-45% of GDP. Secondly, while there is a clear "peak" in war debt immediately after the end of the first two conflicts (1866 and 1919 respectively) "war" debt continues to grow after WWII until 1950, which is the point of reference for the graph. It is not until 1951 when debt slightly, only to pick up again in 1952.

That having been said, there is clearly a concerted effort on behalf of the Federal Government to retire debt after the first two conflicts. The downward trajectory of the post WWI debt repayment is clearly interrupted by the Great Depression, though there is clear dedication to retiring the debt before the depression hits. The response after WWII is very different, obviously. There is no attempt to repay debt, and in fact, the absolute debt continues to grow in the post war era.

Charts 5 and 6 show the changes in both federal government expenditures and the changes in revenue, respectively. It is clear from these two graphs that government expenditures in both periods fall to a relative level lower than revenues do after the reference wars[22]. A backwards looking agent would assume that after WWII revenue would fall, but not as much as expenditures and accumulated debt would be paid back that way. Unambiguously, then, expectations would be for the tax burden to fall but not by as much as "government services" defined loosely. The reality was actually quite different.

[22] I have truncated the Actual WWII spending series to keep the graph readable, needless to say both series continue to increase along essentially the same path.

Expenditures and Revenue both continued to increase in absolute terms after the WWII debt peak.

The level of debt, revenue, and expenditures is of primary concern in a Ricardian world. Chart 7 shows the postwar tax burden relative to GDP both in actuality and under the counterfactuals of the two previous wars. Clearly, before WWII the public finance goal was to gradually (over the span of about ten years) lower taxes to about five percent of GDP. After WWII, of course, this changes dramatically. Revenue actually increases as a proportion of GDP. I have included a fourth line in Chart 7 that shows government revenue minus military spending for the post WWII period. This can be taken as a proxy for what would have been the tax burden had the US followed its pattern of rapid demobilization and shrinking of military expenditures once a major conflict had subsided. There are two things of note: First, tax revenue is permanently higher post WWII[23] even exclusing military spending. Secondly, there is not a rapid demobilization as seen after the previous two wars. For all intents and purposes, military spending remains at around 10% of GDP permanently.

So, extrapolating from history would give a sense that while the tax burden would be heavier than "normal" for about a decade after the war was over it would be lighter than it was during the war. While worries over taxation and debt to GDP ratios never seem wholly grounded in rational analysis, it would seem that the rationally backward looking agent would understand that the debt burden after WWII was large but they could expect that Washington would move to slowly roll back the tax increases of the war while make provisions for retiring the war debt. So, it would seem, for the rationally backwards looking agent, there would have been little anxiety over the repayment of the debt the federal

[23] It should be pointed out for clarity that this measure of revenue does not include social security transfer taxes.

government accrued during the war. Thusly, they could look forward to spending their incomes on cars and washing machines instead of paying taxes.

3. The Postwar Reconversion

Higgs also presents an alternative explanation for the success of the postwar reconversion[24]. This explanation largely parallels that of V&G's *Out of Work* but with a different emphasis. V&G, like Higgs, place the success of the postwar reconversion on the supply side. For V&G the reconversion was successful because of a decline in real wages after the war which spurred hiring which brought about the postwar boom. For Higgs the success was due to a post-Roosevelt/post-New Deal return to "regime certainty" that had a similar effect in encouraging firms to expand. This in turn produced the investment boom that smoothed the transition from a war economy back to a private economy.

V&G's argument centers around a series of regressions run as a counter-factuals. V&G's estimate "simple consumption functions" [25] for the pre war 1929-1941 and postwar 1948-1970, the interpretation of which results rest on the assumption that during the 1945-1947 period the consumption-income relationship of other periods should have held. The analysis is problematic, however. With lags in the reconversion process it would be impossible to observe anything but a distortion in the consumption/income ratio over the period 1945-1947 because to vary degrees consumption goods were still not available. This is a limitation on how quickly "pent-up" demand could be satisfied. V&G take the decline of consumption as a share of income as evidence that the reconversion couldn't not have

[24]Higgs Depression, War and Cold War p 101-123 originally printed in Higgs, Robert"From Central Planning to the Market: The American Transition, 1945-1947." *Journal of Economic History*, 59(3) (1999): p600-623.
[25] Out of Work, page 166

been a demand side phenomenon rather, than that the adjustment period was not instantaneous.

What V&G ignore is that the pressure of pent-up demand cannot be released until there is the productive capacity to do so. They cite that savings was still around 11% [26]of disposable income in the first quarter of 1946, although they do not cite where that particular number came from. Using the 1949 *Statistical Supplement to the Survey of Current Business,* I get slightly different numbers. In the first quarter of 1946 savings was 8.6% of disposable income. However, a year earlier the savings rate was around 22.3% of disposable income[27]. Had the savings rates remained the same in 1946, consumption would have been 18.5 billion dollars lower. The savings rate continued to drop throughout 1945 and 1946. However, because consumption's share of income did not rise above "normal" levels for the century until the second quarter of 1947 (when savings dropped below one half of one percent for the single quarter) V&G take this as evidence that consumption played no role in reconversion.

The increase in consumption's share of income was *concurrent* with the reconversion process and consumers could only shift from savings to consumption as quickly as the supply side of the economy was shifted from military to civilian uses. It is very easy to tell a story contrary to V&G's reading of the data: That consumption's share of income returned to "normal" levels in 1947 suggests that reconversion was over and that consumption and savings had returned to more or less historical proportions, at significantly higher levels than those in 1939. Consumption's share of income alone, however, does not tell us anything about what drove the reconversion process.

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[26] Ibid page 166

[27] US Department of Commerce "1949 Statistical Supplement to the Survey of Current Business" 1949 page 7.

More convincingly, what seems to have happened is that, after very low savings rates during the Great Depression the war offered the chance to replenish the aggregate stock of wealth. It seems very difficult—assuming the investment dearth story—to claim that investment was the engine of reconversion given the relative lags of consumption and investment. Consumers could have easily dipped into their pool of wealth at any moment and may very well have been driven to buy consumer durables as quickly as possible given the inflation of the war years and of 1946. Investment, on the other hand, would have required both the assessment of demand and the building and conversion of factories from wartime uses. No matter how short the reconversion process, it would have had to be much longer than reaching under the mattress or writing a check. It seems reasonable to describe the reconversion process as consumers with the pedal to the floor while business slowly changed gears, only reaching highway speeds in early 1947. Not, as V&G and Higgs would describe it, the other way around.

It is also possible to object to V&G's reading of the postwar reconversion on their own grounds. Essentially V&G argue that workers were willing to take a smaller share of GDP in wages, what they call the 'adjusted real wage"[28]. This adjusted real wage is simply money income as a proportion of personal income and/or GDP. They use the decline in the adjusted real wage as driving the success of the postwar adjustment. That is, they posit that it was workers willingness to take a smaller share of output and not an increases in Keynesian aggregate demand that was at the root of postwar boom.

[28] Out of Work 169-172

Table 2 extends V&G's adjusted real wage calculations back to 1935[29]. I have also added "non wage compensation" which V&G exclude from their calculation but is included in the source material.[30] "Supplements to wages and salaries" as it is labeled in the *1949 Statistical Supplement* are comprised of things such as payments to public and private pension plans and unemployment insurance. While it is somewhat ambiguous how these things function as income for workers they unambiguously increased per employee costs, which would change the demand for labor and business decisions by firms based on the cost of labor all else being equal.

V&G claim that the data overwhelmingly suggests a decline in the real wage after the war ended.[31] This proposition alone is not controversial. It is to be expected that with the influx of workers into the economy that wages should fall and unemployment would rise. That the declining wages played a central role in the adjustment out of a war economy is considerably less obvious. V&G's analysis does not answer a few central questions. The first is why the lower adjusted real wage did not spur on a stronger recovery during the 30s. The annual estimates of the adjusted real wage presented in table 2 show that, in only for the narrowest measure--wages and salaries divided by total personal income--is V&G's adjusted real wage lower than it was during the great depression. For all other measures of the adjusted real wage, compensation is higher after the war than it was during the great depression. Furthermore more than the entire adjustment to earned wages and salaries from 1945 to 1946 takes place in the decline in military wages and salaries paid out. Wages and

[29] V&G's presentation of the data (their table 8.6) is quarterly and only from 1945-1948. Page 170 of Out of Work

[30] See table 2 for source.

[31] Out of Work page 168-169

salaries paid by the military drop from $22.6 billion in 1945 to $8 billion in 1946[32]. Total compensation in the whole economy only falls by $6.1 billion from 1945 to 1946. This implies that private employment was absorbing many discharged soldiers. Presumably the discharged soldiers were heading into higher paying jobs. This statistic also sheds some light on the idea of the recession in 1946. While it is difficult to pin down what happened in 1946, the overall decline in wage compensation, even ignoring the increased unemployment would have looked much like a recession to those experiencing the reconversion transition. Finally, during the immediate postwar era V&G's unemployment and adjusted real wage model under predicts the unemployment rate in 1947 and 1948[33] which suggests that their adjusted real wage implies more flexibility in the economy than was present.

One insight of Higgs and V&G's is important. It is rather curious that there was no aggregate dissaving throughout the reconversion process[34]. Here Higgs is right in that the "orthodox story"--that the postwar boom was fueled by a drawing down of liquid savings to finance consumption--is wrong. His explanation of a "business led" recovery is wanting, however.

First, and most important, is a technical problem with the way the NIPA treats a very important part of the postwar boom: it's somewhat curious way of measuring housing. Effectively, the postwar housing boom is missing from the aggregate consumption data. Since residential housing is counted in investment the business investment boom much touted by Higgs is dramatically overstated[35]. While counting housing in investment spending makes a certain amount of logical and accounting sense in the NIPA, for the

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[32] 1*949 Statistical Supplement, Survey of Current Business* page 6

[33] Out of Work Figure 3.2 page 36-37

[34] For Robert Higgs' breakdown of savings after the war see Higgs, Robert. *From Central Planning to the Market: The American Transition 1945-1947* p. 607-609

[35] *From Central Planning to the Market…* page 609

purposes of identifying the cause of the postwar boom, housing is dramatically misplaced in the national accounts.

Table 3 shows the percentage of GDP devoted to private nonresidential investment, and residential housing. Two things stand out. First, both investment and residential housing pick up in 1946. While fixed investment more or less doubles with the end of the war, residential investment increased fourfold. By 1947 while nominal fixed investment is only a little less than triple what it was in 1945, residential housing is over seven times what it was in 1945. Nonresidential investment peaks as a share of GDP in 1948 and then declines slightly for the following two years. It never reaches the 1929 peak of 10.51%. If nonresidential investment is taken as a share of "private" GDP[36] the 1948 peak of 11.71% surpasses the 1929 peak of 11.56%. However, the share of private GDP taken by non-housing investment declines in 1949 and 1950 as it does in total GDP. On the other hand, residential investment increases steadily through the end of the decade. By 1950 residential housing comprised more than 42% of total investment spending--a peak never exceeded in the postwar period[37].

Another major problem with the NIPA measurement of housing is that while NIPA does include a proxy for the costs of owning a house such as its "imputed rent" measure it does not include the purchase costs, such as down payments, in consumption at the time the houses are purchased. Son the national income side, savings is calculated as a residual and not directly measured. Since savings is simply what is left over from income after consumption and taxes have been deducted from total income these purchases costs are

[36] Private GDP is simply GDP less federal, state and local government spending. I present this measure here to keep the argument on both Higgs's and V&G's terms.

[37] In fact, according to the BEA national accounts estimates, outside of the 40s and 50s boom residential housing was only greater than 36% of total private investment spending in three years: 1963, 2004 and 2005. The average share of residential housing as a share of private investment after WWII is around 30%.

implicitly calculated in savings. This leads to a distortion in what people feel they are saving and how it is registered in the NIPA accounts. Furthermore, there was a large portion of home buyers who did not have to pay down payments at all. VA guaranteed loans, provided for under the GI Bill, required no down payment.

It may make sense to explain this more formally and concretely. The high savings rates during the war meant that households built up a large stock of wealth. The traditional, Keynesian, story goes that households after the war "spent down" their stock of wealth. This should have meant that savings rates should have been negative in the immediate postwar era as households consumed more than their incomes, financing the consumption beyond their incomes out of their pool of wealth. Higgs, as well as V&G, are right to point out that we saw no such negative savings rates. What they miss, however, is that a significant portion of household purchases were made in such a way that did not necessitate the spending down of wealth. There are three basic scenarios in the purchasing of a house. First is the way a returning serviceman would have bought a house: with no down payment. The GI, in this scenario is taking on an asset (his new house) but also a corresponding liability (his mortgage) that directly offsets his asset. In a second scenario, the household pays cash-in-full for their house. Here, the household is simply exchanging a liquid asset, say a checking account or cash kept under the mattress, for a less liquid asset. Finally, the traditional way we think of buying a house is a mixture of the two. A households down payment becomes equity in their new home, while the additional value of the house above the down payment is offset by the leverage the household has taken on.

A counterfactual is useful: Let's assume that new residential construction over the immediate postwar period remained unchanged in volume and value, but with the absence of

financing and as though housing were recorded in NIPA as any other consumer durable. Table 4 shows hypothetical savings rates under this counterfactual which drop even more rapidly after the war and becomes negative from 1947 through the rest of the decade.

The point here is that the savings rate did not go negative after the war because from both an output and income accounting perspective buying a house is "consumption neutral".

4. Regime Certainty After The War.

Higgs's preferred explanation for the corporate business boom was the return of a more business friendly environment after the death of FDR and Truman's subsequent replacement of the "long haired boys"—the hippie bureaucrats of the New Deal—with more business friendly men. If, in fact, this brought comfort to the business world, it was a tent in a tornado. Truman, as a member of the Senate Military Affairs Committee, helped germinate an original—stronger—version of what eventually became the Full Employment Act of 1946. As well, Truman unveiled his 21 point program in his first postwar speech to congress. This speech included, among other things, an endorsement of the original Full Employment Act bill, an extension and increase in the minimum wage and the extension of wartime price controls. In part these price controls were asked for because a tax cut passed in late 1945 had been expected to increase inflationary pressure and increase the federal budget deficit. Compounding the problem, the fed had been rendered powerless to curb inflation because it continued to be committed to supporting treasury prices and low interest rates[38].

The decontrolling of prices was a long and messy process lasting through November of 1946. First, wages were decontrolled in August of 1945 but profits were not until January

[38] This brief summary comes from Campagna, Anothony U.S. National Economic Policy 1917-1985.Prager. New York, NY. 1987

1946. More fundamentally, the original Emergency Price Control act was set to expire at the end of June 1946. Debate over the issues concerning the renewal of the bill such as which industries should be granted an exemption lasted until June 28th when Truman vetoed the bill. The Emergency Price Control Act expired and prices floated freely. A new bill was put forth that was signed into law on July 25th which would have ended price control by the end of June 1947. With the new bill some industries were exempt and others were not. In October, Truman announced a speeding up of the end of controls and in mid-November had eliminated all price controls except for rent, sugar and rice[39]. How this squares with Higgs's regime certainty theory is unclear since the price at which goods can be sold must be most business' primary concern. While the Executive Branch maybe have become more business friendly, democracy itself had not.

What's more, 1946 saw labor disruptions on a scale never seen before or since. General Motors, for instance, found itself mired in a 113 day strike—from November 1945 to March 1946--of 200,000 workers[40]. Labor unrest had been building throughout the war, but it reached its peak in 1946. Chart 7 and 8 show strike activity and its costs to business over the reconversion period in two different ways. Finally, what is perhaps the signature "business friendly" legislation of the reconversion period, the Taft-Hartley Act of 1947, was passed over Truman's veto. If anything, it was the republican majority —a first since 1928— and its coalition with southern democrats that should be viewed as instituting the kind of regime certainty that Higgs is suggesting business would be comfortable with. However, the new house and senate did not convene until early 1947.

5. Conclusion

[39]Rockoff (1984) . p98-108
[40]Campagna p204.

While the "revisionist" economic historians have made important contributions to the discussion of both welfare during WWII and the causes of the postwar boom their alternate explanations and characterizations of the 1940s do not adequately capture the dynamics of the time. In summary, supply side explanations do not hold up, both because of a mis-measuring of the postwar investment boom and a mischaracterization of the source of the postwar boom. Furthermore, the pent-up demand explanation is not convincingly disproved since both Higgs and Vedder and Gallaway fail to demonstrate what the transmission mechanism is from the supply side to increase aggregate demand.

A more nuanced view of NIPA seems to come down on the side of both increased "welfare", as measured by income accounting during the war and the "pent-up demand" explanation of the postwar boom. The orthodox story however, needs to be adjusted somewhat. It is not that consumers ate up war savings but that there was a change in botht he supply and demand for consumer finance. It was that the increase of savings meant an increased availability of loans, most importantly, the availability of mortgages.

It is also important to note that government also played an important role in the postwar reconversion even if one discounts basic Keynesian mechanisms. Most relevant to the argument in this paper is the role government played in the housing market. Mortgages exploded after the war. The amount of mortgages under $20,000 exploded from $4.6 billion in 1944 to $16.1 billion in 1950. In 1950 34% of mortgages were insured through the Federal Housing Administration (FHA) or guaranteed by the Veterans Administration (VA). Government insurance and guarantees peaked as a percentage of new mortgages in 1947 when they covered 36% of mortgages[41]. What's more, the FHA--a New Deal creation--essentially allowed for the creation of a more widespread mortgage market by demonstrating

[41] *6th Annual Report* Housing and Home Finance Agency 1953Table 10

the viability of these mortgages[42]. For better or worse, the modern mortgage market found a use for the pool of savings to satisfy the pent-up demand for homes and families that the war had created and it was directed there largely by government policy.

Appendix A: A short note on WWII deflators

It may be useful to summarize the results and methodologies of the various WWII deflators. The need for the deflators arises from the problem price controls, shortages, and black markets posed for gaging the actual "quantity" of output and/or consumption. The deflators are of two types, either a substitute for the BEA's GNP deflator or as a substitute

[42] Quigley, John M. *Federal Credit and Insurance Programs: Housing* "Federal Reserve Bank of St. Louis Review" July/August 2006

for the BLS's CPI. The deflators are listed in Table A2. The consequent estimates of real total and real "private" output are included in tables A3 and A4. The Friedman and Schwartz (F&S) deflator is based on Simon Kuznets's measure of Net National Product (NNP). This is somewhat problematic, since most modern authors use Gross National Product when discussing the war. That distortion aside, their alternate WWII deflator is very thoughtfully constructed. In a nutshell, F&S construct (log) trends of output and the implicit price deflator for 1914-1942[43]. They then calculate the responses of the implicit price deflator to deviations of output from trend. They use this to construct an "adjustment factor" used to predict the price level response to the (very large) deviations of output from trend during the war.

The F&S deflator produces a curious result for the year 1946. According to their deflator inflation in 1946 was around 1.0%. They argue that the official price increase in 1946 is largely due to the lifting of price controls during that year and the "unveiling of price controls that had occurred earlier"[44]. That is, consumers were already paying the 1946 market price, but they were paying it in terms of black market activity broadly defined and other inefficiencies created by government controls. By lifting price controls in 1946 the Truman administration was simply shifting the way in which these market prices were articulated. This does not seem entirely plausible. Both the inflation of 1947[45] and the fact that in 1946 personal consumption increased from 70.5% to 81%[46] of disposable income

[43] F&S do test to see if postwar data (1947-1965) is of any use in constructing a baseline for the war years. They find that the 1914-1942 period provides a better fit. This is not surprising since for 1948 on F&S are using BEA data that has been awkwardly adjusted to conform to the Kuznets series.
[44] Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, P*rinceton, Princeton University Press, 1963: p 558.
[45] The CPI increased by over 14% December 1946 to December 1947
[46] Vatter, Harold. *The Material Status of the U. S. Civilian Consume in World War II: The Question of Guns or Butter* in The Sinews of War edited by Geofery T. Mills and Hugh Rockoff. Iowa State University Press, Ames, Iowa: 1993. 11.1

suggest that postwar demand pressure itself was playing an inflationary role. Given a slackening but not elimination of shortages and controls the jump in consumption suggests that the "first movers" who could produce new or more goods for the market had significant pricing power.

Other price deflators include the deflator constructed by Simon Kuznet. His deflator is simply the implicit (unadjusted for the war years) deflator from his estimates of net national product (1869-1947). It is included here because the F&S deflator is based on Kuznets's calculations. As mentioned before most modern work that discussed adjustment to output deflators focus on GNP but take the (NNP based) F&S deflator as the baseline adjustment to the official data. Consequently, the F&S deflator is the same as the Kuznets deflator for the "unadjusted years" (all years except 1942-1946). Again, it is important to bear in mind that the Kuznets priced deflator (and, again, the F&S deflator) is a deflator of net as opposed to gross national product. However, despite this problem, following F&S and Mills and Rockoff I treat the Kuznets NNP deflator as the baseline for all unadjusted years in both Table 1 of the main text and the relevant appendix tables. Table A1 shows Kuznets NNP measure[47] against the measures of national income and gross domestic product found in the Historical Statistics of the United States, Millennial Edition.

V&G[48] regress the official GNP deflator for the years 1916-1941 on M2, and measures of interest rates, railroad volume, and employment. They then extrapolate their trend through 1948. Mills and Rockoff[49] estimate the a GNP deflator using the relationship

[47] As reported in Freidman and Schwartz's Monetary Trends in the United States and the United Kingdom
[48] Vedder and Galloway (1993) p 155.
[49] Mills, Geofrey and Hugh Rockoff. "Compliance with Price Controls in the United States and the United Kingdom During World War II" Journal of Economic History 47.1 (1987) p 197-213

between the price level and a combination of aggregate income and wages reasoning that inflationary pressure is more linked to wages (buying power) than it is to output.

There are several flaws with these deflators. First, it is not clear that using a GNP deflator captures cost of living, particularly in the wartime economy where so much of output is absorbed by munitions. Furthermore, the natural channels of income to prices are distorted. In normal times, any income and/or money supply increases that does not go into consumption, adding pressure to prices of consumption goods, goes into private investment in the form of savings and puts pressure on the prices of investment goods. During the war consumption was curtailed and much of excess savings went directly to the government to be spent on munitions. In the munitions industry there were not only (more easily enforced) price controls, but prices were coming down as the industry became more productive**.** However, the most serious problem with these various deflators is that they all implicitly assume that price controls had no effect. F&S and V&G assume that the prewar relationship between the money supply and income held throughout the war. Price controls, however, are instituted precisely to break down the relationship between money and income[50].

Rockoff and Rockoff and Mills offer a smattering of evidence that suggest that between a quarter and a third of Americans had contact with the black market during the war[51]. This is likely to overstate the extent of the black market since not all transactions carried out by these people were black market transactions. While scarcity and quality deterioration are likely to be more widespread, it seems unlikely that all goods in all markets suffered from these problems.

[50] Rockoff (1984)
[51] Ibid. p163-174; Rockoff and Mills (1987) p199

With these objections in mind, a more preferable way to approach the deflator issue is though the CPI. The CPI dispenses entirely with the distortions caused by including munitions in a GNP. As well, a consumption deflator is more appropriate to the debate about welfare and consumption during the war. Harold Vatter[52] and Hugh Rockoff[53] offer alternative deflators based on the CPI. Vatter simply assumes that the true CPI measured price level in 1945 was the price level of 1947 and then smooths out the price increases across years. Hugh Rockoff, has constructed an alternate CPI deflator based on the findings of the wartime Mitchell Committee, which attempted to calculate the amount by which the official CPI was understating inflation.

There are some limitations to using the Mitchell Committee findings. First the committee only looked at prices in 1942 and 1943. As well, the distortions were purposefully understated since the committee thought that labor should have to bear some of the costs of the war and so it was careful in how it constructed the index that would be the basis for wage increases[54]. As well, the committee avoided issues of uptrading (the disappearance of low cost goods), and certain kinds of quality deterioration and shortages. Rockoff adjusts his measure of inflation accordingly. The Rockoff deflator is included in chart 2 alongside the F&S deflator because it offers the most distinct alternative adjustment of nominal income. The Rockoff measure is an attractive "microeconomic" alternative to the "macroeconomic" method of F&S.

[52] Vatter (1993)
[53] Rockoff, Hugh (1978). *Indirect Price Increases and Real Wages During World War II.* Explorations in Economic History. Vol 15 p407-420
[54] Rockoff (1984) p169

Tables A1 and A2 have been added for reference. Table A1 shows real GDP[55] as measured by the several deflators mentioned above. Table A2 shows private GDP (C+I+NX). It should be pointed out that the Rockoff and Vatter deflators are somewhat less suited as deflators of GDP since they are based on the CPI and are intended as consumption deflators.

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Charts and Tables:

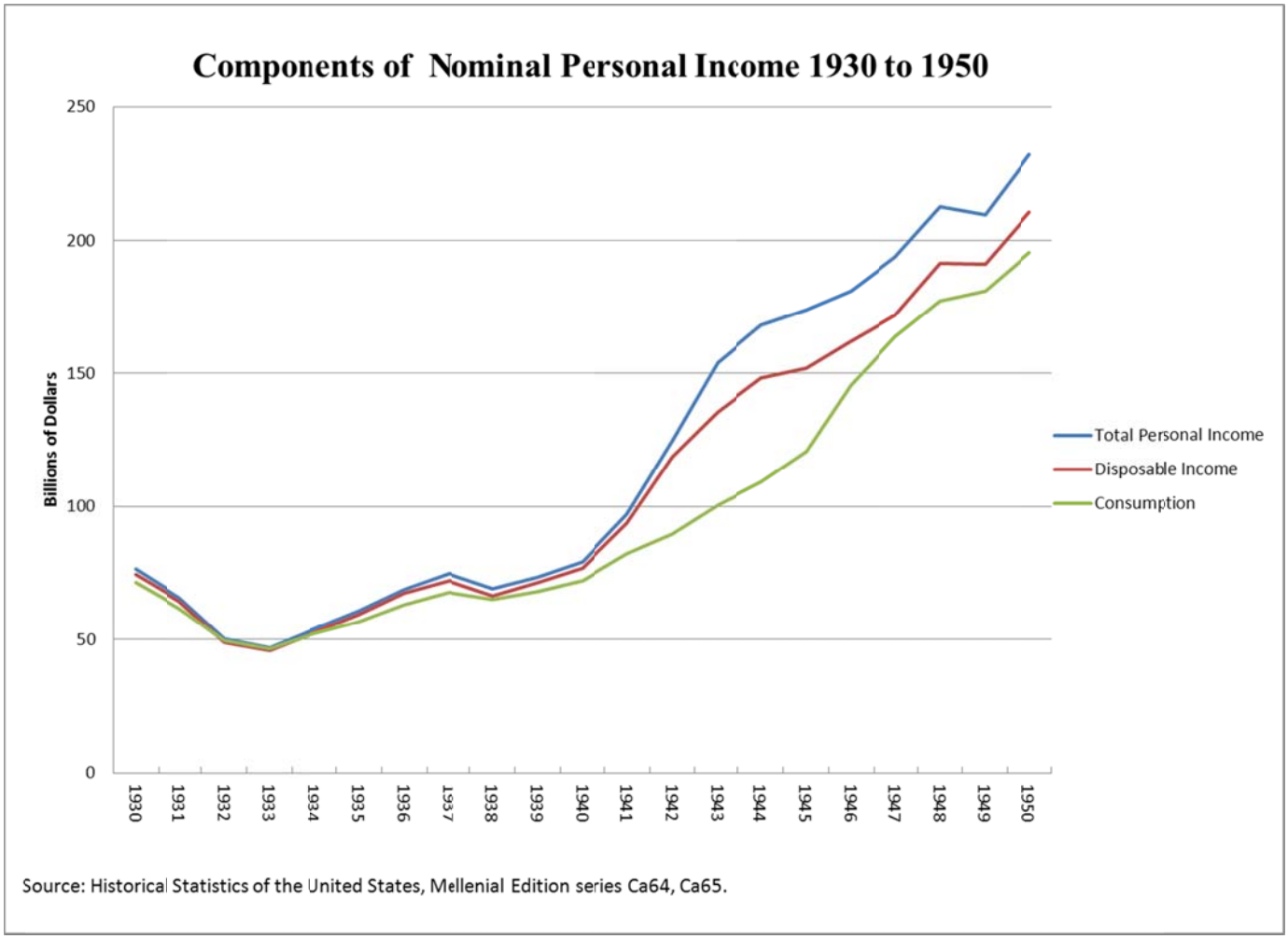

Components of Nominal Personal Income 1930 to 1950
Billions of Dollars
250
200
150
100
50
0
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
Total Personal Income
Disposable Income
Consumption
Source: Historical Statistics of the United States, Mellenial Edition series Ca64, Ca65.

Chart 1

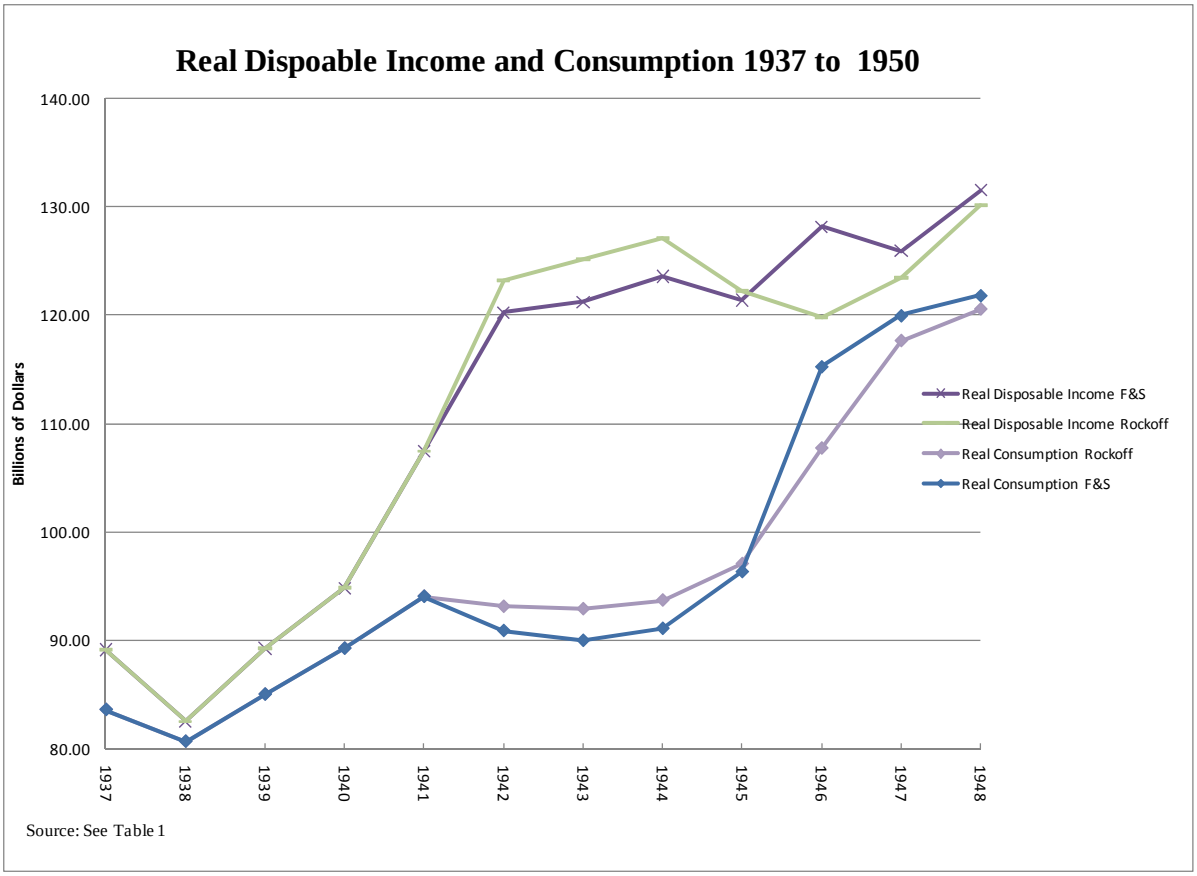

Real Dispoable Income and Consumption 1937 to 1950
140.00
130.00
120.00
110.00
100.00
90.00
80.00
Billions of Dollars
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
Real Disposable Income F&S
Real Disposable Income Rockoff
Real Consumption Rockoff
Real Consumption F&S
Source: See Table 1

Chart 2

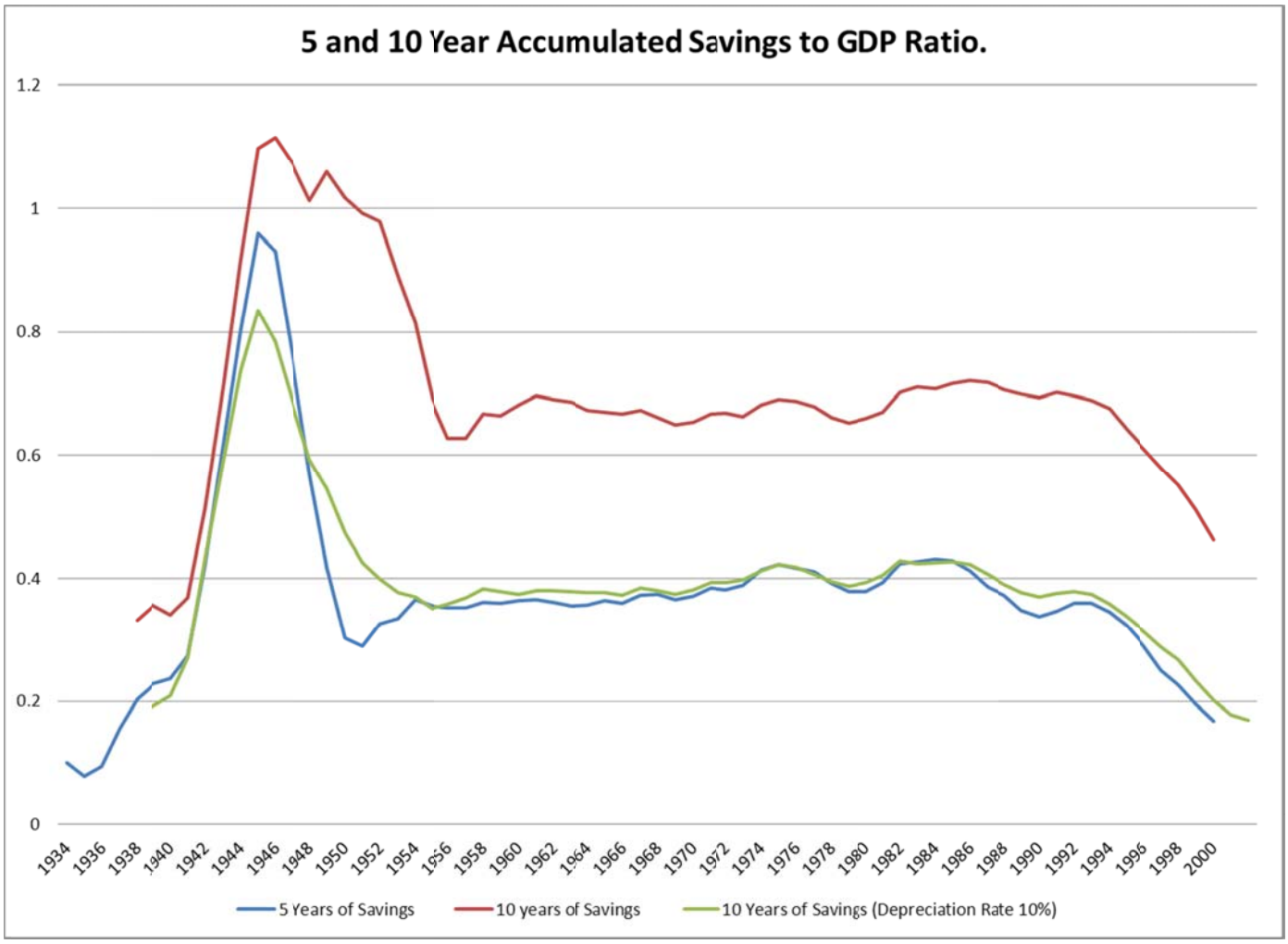

5 and 10 Year Accumulated Savings to GDP Ratio.
1.2
1
0.8
0.6
0.4
0.2
0
1934
1936
1938
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
5 Years of Savings
10 years of Savings
10 Years of Savings (Depreciation Rate 10%)

Chart 3

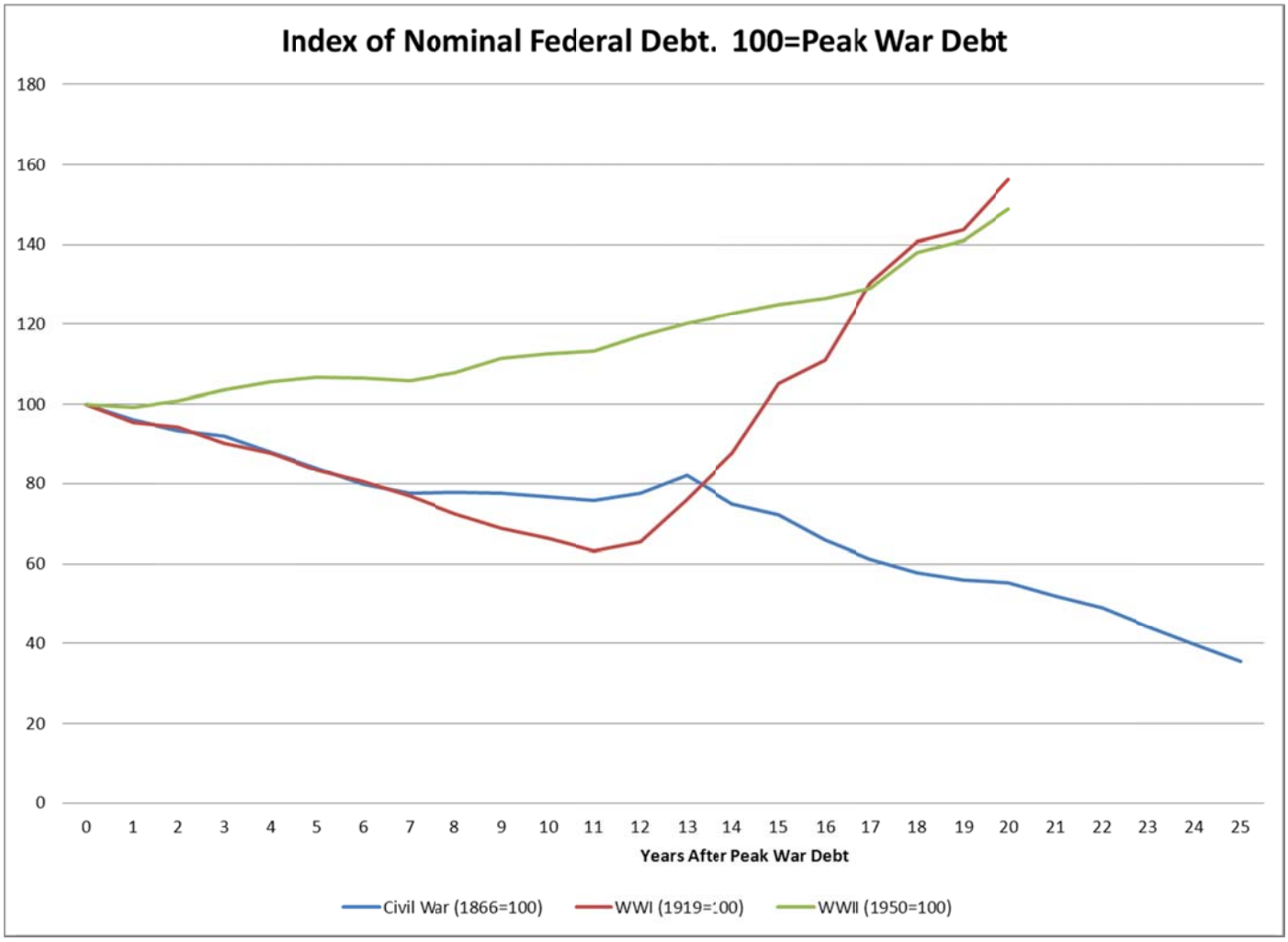

Index of Nominal Federal Debt. 100=Peak War Debt
180
160
140
120
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Years After Peak War Debt
Civil War (1866=100)
WWI (1919=100)
WWII (1950=100)

Chart 4

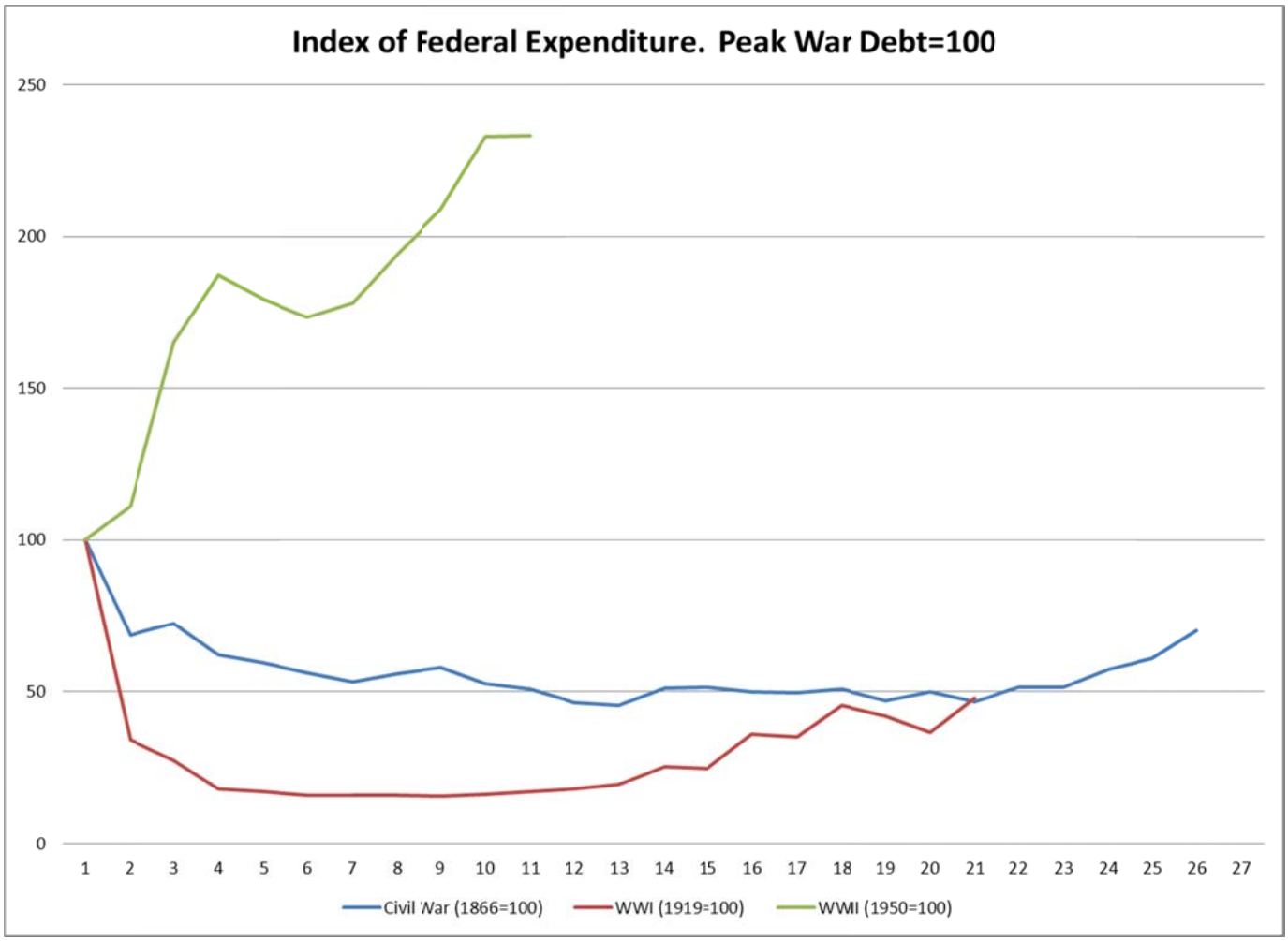

Index of Federal Expenditure. Peak War Debt=100
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Civil War (1866=100)
WWI (1919=100)
WWII (1950=100)

Chart 5

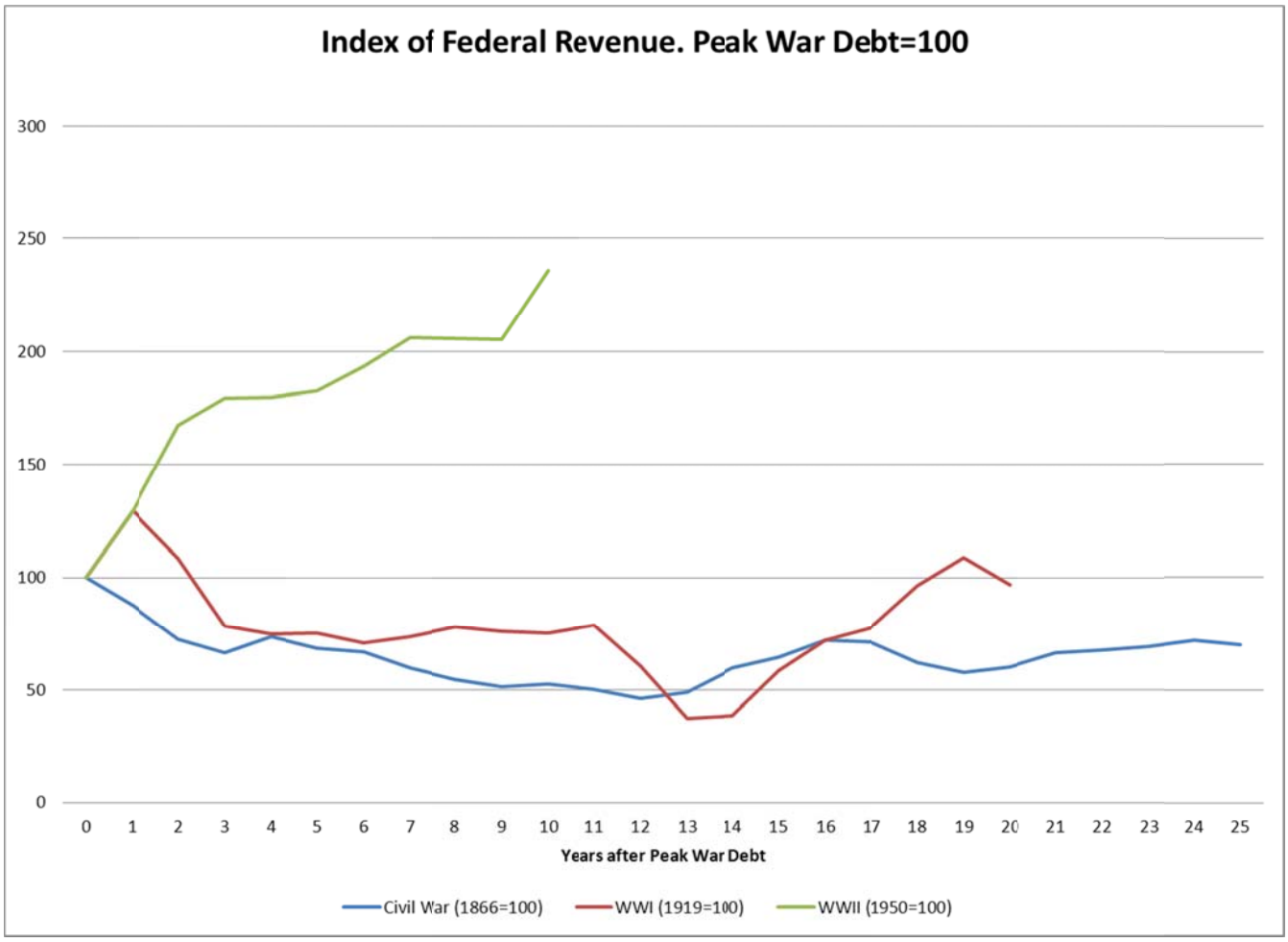

Index of Federal Revenue. Peak War Debt=100
300
250
200
150
100
50
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Years after Peak War Debt
Civil War (1866=100)
WWI (1919=100)
WWII (1950=100)

Chart 6

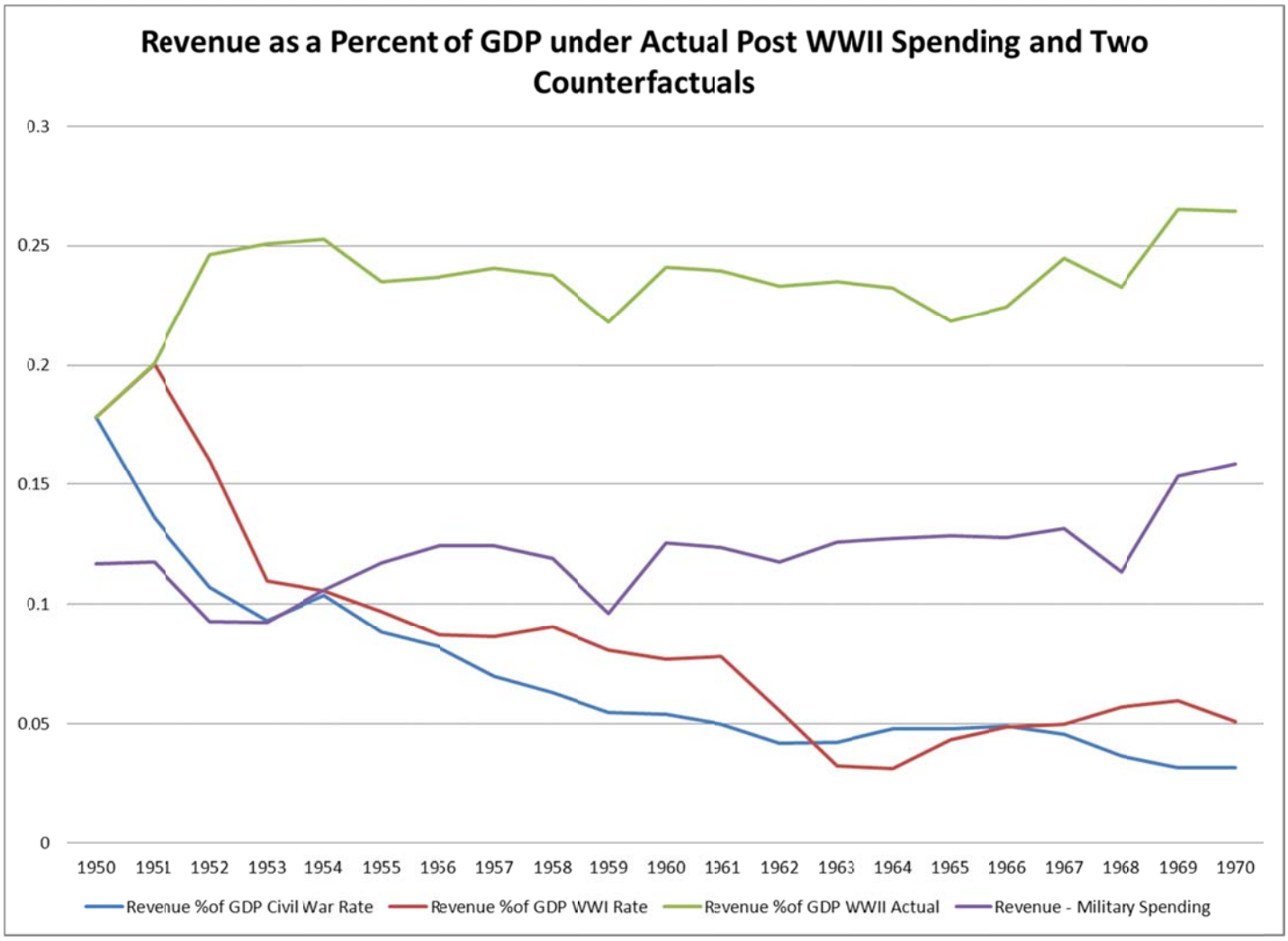
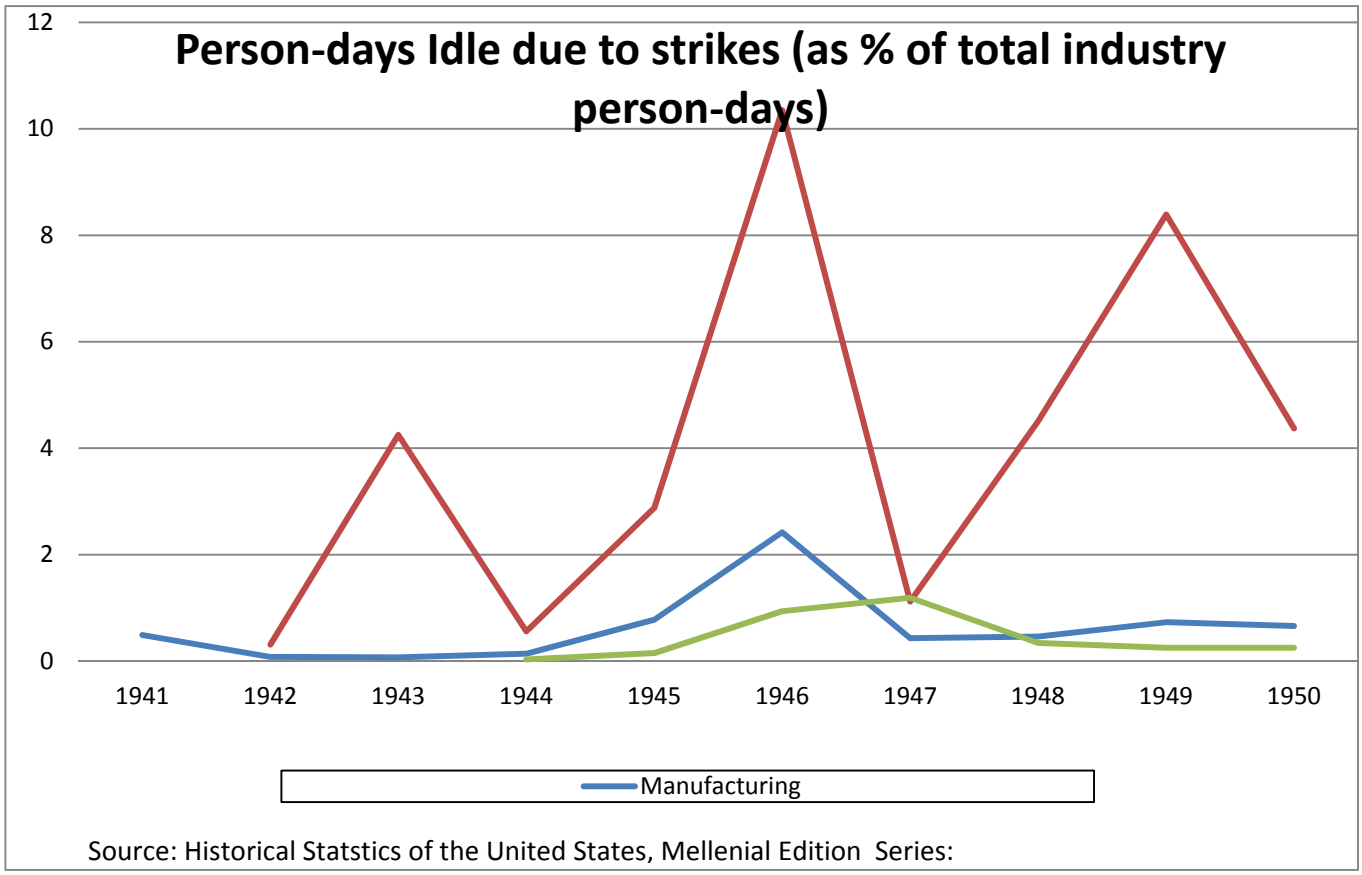

Revenue as a Percent of GDP under Actual Post WWII Spending and Two Counterfactuals
0.3
0.25
0.2
0.15
0.1
0.05
0
1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970
Revenue %of GDP Civil War Rate
Revenue %of GDP WWI Rate
Revenue %of GDP WWII Actual
Revenue - Military Spending

Chart 7



Source: Historical Statstics of the United States, Mellenial Edition Series:

Chart 8

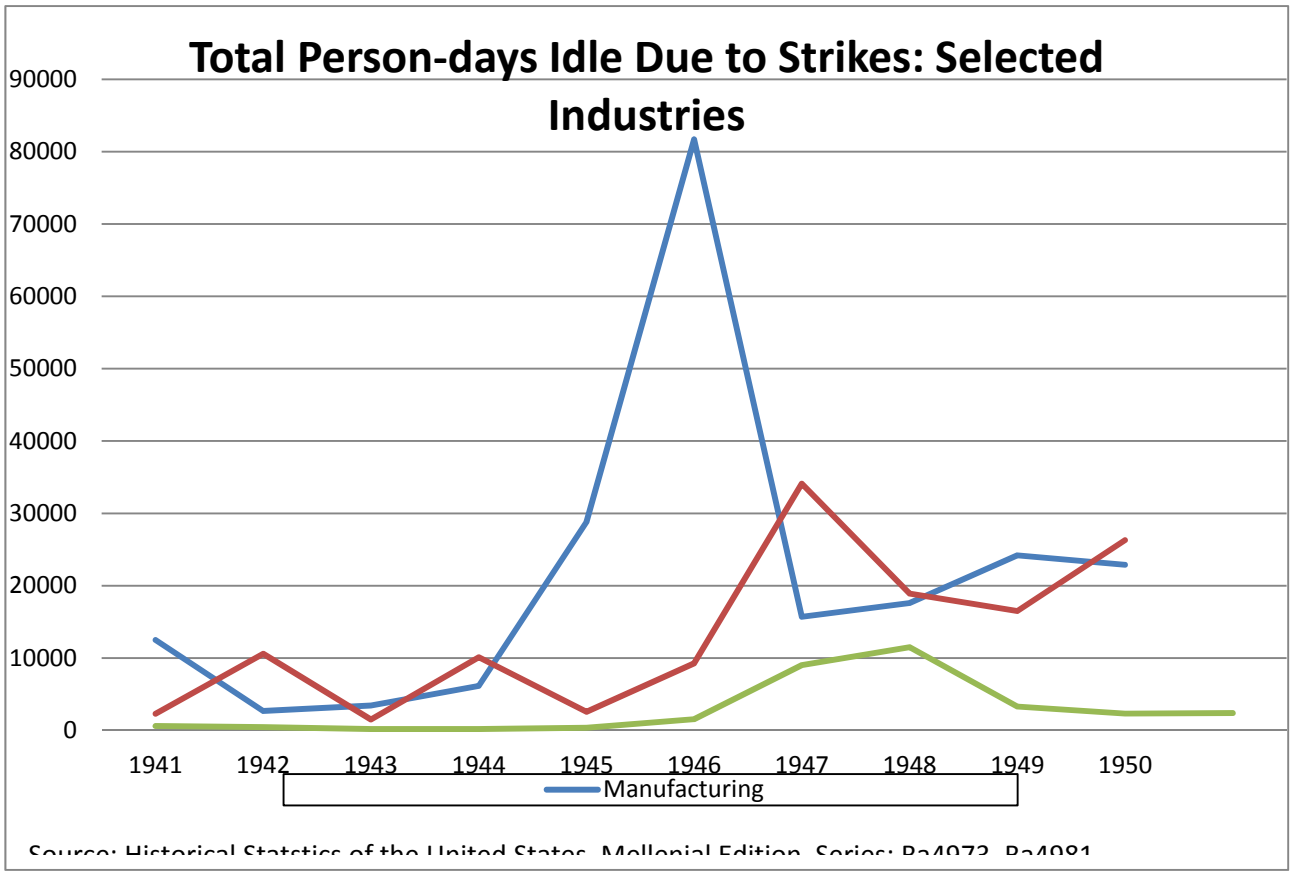

Total Person-days Idle Due to Strikes: Selected Industries
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
Manufacturing
Source: Historical Statstics of the United States, Millenial Edition, Series: Ba4973-Ba4981

Chart 9

Table 1: Estimated Real Disposable Income and Consumption 1929 prices

Year	Nominal Dispoable income	Real Disposable Income						Nominal Consumption	Real Consumption					
		Kuznets Deflator	F&S Deflator	Rockoff Deflator	V&G Deflator	M&R Deflator	Vatter Deflator		Kuznets Deflator	F&S Deflator	Rockoff Deflator	V&G Deflator	M&R Deflator	Vatter Deflator
1937	72.2	89.1					87.74	67.7	83.6					93.77
1938	66.5	82.5					82.54	65.0	80.6					97.74
1939	71.4	89.3					89.89	68.0	85.0					95.24
1940	76.7	94.8					95.88	72.2	89.2					94.13
1941	93.8	107.4					111.45	82.1	94.0					87.53
1942	118.7	120.3		123.19	125.9		127.36	89.7	90.9		93.1	95.1		75.57
1943	135.4	125.8	121.2	125.12	129.6	122.9	130.90	100.5	93.4	90.0	92.9	96.2	91.2	74.22
1944	148.3	133.8	123.6	127.10	129.0	127.3	129.18	109.3	98.6	91.1	93.7	95.1	93.8	73.70
1945	152.1	133.3	121.4	122.28	119.3	127.0	119.43	120.7	105.8	96.3	97.0	94.6	100.8	79.36
1946	162	132.6	128.2	119.75	119.3	130.4	114.60	145.7	119.2	115.3	107.7	107.3	117.3	89.94
1947	172	125.9		123.44	121.9		--	163.9	120.0		117.6	116.2		--
1948	191.5	131.5		130.12	132.5		--	177.4	121.8		120.5	122.7		--
1949	191.1	133.0		-			--	181.1	126.0		-			--
1950	210.6	143.8		-			--	195.4	133.4		-			--

Source: Friedman and Schwartz Monetary Trends in the United States and the United Kingdom table 4.2, 4.8. Vedder and Gallaway Out of Work table 8.3.
Mills and Rockoff *Compliance with price Controls in the United States and the United Kingdom During World War II Table 2.*
Rockoff *The United States: From ploughshares to Swords* Table 3.6 . Vatter *The Material Status of the U.S. Civilian in World War II*: Table 11.2
Historical Stastics of the United States, Mellennial Edition Series Ca64 Ca65

Table 2 Annual Average "Adjusted Real Wages" 1935-1948									
						Proportion of Personal Income		Proportion of GNP	
year	Wages and Salaries	Suppliments to wages and salaries	Total Compensation	Personal Income	Nominal GNP	Wages and Salaries	Total Compensation	Wages and Salaries	Total Compensation
1935	37.1	0.6	37.7	56.8	72.2	0.6532	0.6637	0.5139	0.5222
1936	42.7	0.9	43.6	64.7	82.5	0.6600	0.6739	0.5176	0.5285
1937	47.7	1.7	49.4	73.6	90.2	0.6481	0.6712	0.5288	0.5477
1938	44.7	1.9	46.6	67.4	84.7	0.6632	0.6914	0.5277	0.5502
1939	47.8	2.1	49.9	72.5	91.3	0.6593	0.6883	0.5235	0.5465
1940	51.8	2.2	54	81.3	101.4	0.6371	0.6642	0.5108	0.5325
1941	64.3	2.5	66.8	103.6	126.4	0.6207	0.6448	0.5087	0.5285
1942	84.9	3	87.9	137.1	161.6	0.6193	0.6411	0.5254	0.5439
1943	109.2	3.6	112.8	169.7	194.3	0.6435	0.6647	0.5620	0.5805
1944	121.2	4.2	125.4	183.8	213.7	0.6594	0.6823	0.5672	0.5868
1945	123	13	136	182.7	215.2	0.6732	0.7444	0.5716	0.6320
1946	117	12.9	129.9	179.6	212.6	0.6514	0.7233	0.5503	0.6110
1947	127.6	13.6	141.2	201.7	235.7	0.6326	0.7000	0.5414	0.5991
1948	140.3	15.2	155.5	226.2	262.4	0.6202	0.6874	0.5347	0.5926

Source: *1949 Statistical Supplement, Survey of Current Business* (Washinington, D.C.: Govrnment Printing Office, 1950)

Table 3: Private Investment 1935-1950											
Total GDP								Private GDP (C+I+NX)			
Year	Nominal GDP	Investment	Residential Investment	Housing as % of Investment	Private Investment as % of GDP	Residential Housing as % of GDP	Private Investment - Residential Housing as % of GDP	Private GDP	Investment (%)	Investment-Residential housing (%)	Residential Housing (%)
1929	103.7	14.9	4	26.85%	14.37%	3.86%	10.51%	94.3	15.80%	11.56%	4.24%
1930	91.3	11	2.4	21.82%	12.05%	2.63%	9.42%	81.3	13.53%	10.58%	2.95%
1931	76.6	7	1.8	25.71%	9.14%	2.35%	6.79%	66.7	10.49%	7.80%	2.70%
1932	58.8	3.6	0.8	22.22%	6.12%	1.36%	4.76%	50.0	7.20%	5.60%	1.60%
1933	56.4	3.1	0.6	19.35%	5.50%	1.06%	4.43%	47.6	6.51%	5.25%	1.26%
1934	66	4.3	0.9	20.93%	6.52%	1.36%	5.15%	55.5	7.75%	6.13%	1.62%
1935	73.3	5.6	1.3	23.21%	7.64%	1.77%	5.87%	62.4	8.97%	6.89%	2.08%
1936	83.7	7.5	1.7	22.67%	8.96%	2.03%	6.93%	70.6	10.62%	8.22%	2.41%
1937	91.9	9.5	2.1	22.11%	10.34%	2.29%	8.05%	79.1	12.01%	9.36%	2.65%
1938	86.1	7.7	2.1	27.27%	8.94%	2.44%	6.50%	72.3	10.65%	7.75%	2.90%
1939	92	9.1	3	32.97%	9.89%	3.26%	6.63%	77.2	11.79%	7.90%	3.89%
1940	101.3	11.2	3.5	31.25%	11.06%	3.46%	7.60%	86.2	12.99%	8.93%	4.06%
1941	126.7	13.8	4.1	29.71%	10.89%	3.24%	7.66%	100.1	13.79%	9.69%	4.10%
1942	161.8	8.5	2.2	25.88%	5.25%	1.36%	3.89%	99.0	8.59%	6.36%	2.22%
1943	198.4	6.9	1.4	20.29%	3.48%	0.71%	2.77%	103.4	6.67%	5.32%	1.35%
1944	219.7	8.7	1.4	16.09%	3.96%	0.64%	3.32%	114.2	7.62%	6.39%	1.23%
1945	223	12.3	1.7	13.82%	5.52%	0.76%	4.75%	129.8	9.48%	8.17%	1.31%
1946	222.3	25.1	7.8	31.08%	11.29%	3.51%	7.78%	182.5	13.75%	9.48%	4.27%
1947	244.4	35.5	12.1	34.08%	14.53%	4.95%	9.57%	207.9	17.08%	11.26%	5.82%
1948	269.6	42.4	15.6	36.79%	15.73%	5.79%	9.94%	228.9	18.52%	11.71%	6.82%
1949	267.7	39.6	14.6	36.87%	14.79%	5.45%	9.34%	220.9	17.93%	11.32%	6.61%
1950	294.3	48.3	20.5	42.44%	16.41%	6.97%	9.45%	247.4	19.52%	11.24%	8.29%

Source: Historical Statstics of the United States, Mellenial Edition series Ca74, Ca98, Ca80, Ca83

Table 4: Savings rates adjusted for residential investment as consumption						
Year	Nomainl GDP	Residential Housing	Personal Savings	Personal Savings as % of Nominal GDP	Savings-Residential Housing Investment	Counterfactual savings rate as percent of GDP
1940	101.3	3.5	4.5	4.44%	1	0.99%
1941	126.7	4.1	11.7	9.23%	7.6	6.00%
1942	161.8	2.2	29	17.92%	26.8	16.56%
1943	198.4	1.4	34.9	17.59%	33.5	16.89%
1944	219.7	1.4	39	17.75%	37.6	17.11%
1945	223	1.7	31.4	14.08%	29.7	13.32%
1946	222.3	7.8	16.3	7.33%	8.5	3.82%
1947	244.4	12.1	8.1	3.31%	-4	-1.64%
1948	269.6	15.6	14.1	5.23%	-1.5	-0.56%
1949	267.7	14.6	10	3.74%	-4.6	-1.72%
1950	294.3	20.5	15.2	5.16%	-5.3	-1.80%

Source: Historical Statistics of the US, Mellenial Edition. Series Ca74, Ca99 Ca73

Table A1: Alternative Measures of Income/Output 1937-1950			
Year	NNP*	National Income**	GDP***
1937	75.070	74	91.9
1938	68.793	67.4	86.1
1939	73.848	72.9	92
1940	81.843	81.1	101.3
1941	98.958	104.3	126.7
1942	129.275	137.6	161.8
1943	157.521	171.4	198.4
1944	171.503	184.3	219.7
1945	172.983	183.3	223
1946	160.465	182.3	222.3
1947	179.049	198.6	244.4
1948	198.360	223.3	269.6
1949	196.072	216.7	267.7
1950	217.891	241	294.3

NNP: F&S TABLE 4.2

National Income: Historical Stats Ca20

GDP: Hist States Ca74

Table A2: Vrious Deflators and price Indicies 1937-1948. 1939=100

Year	CPI (unadjusted)	BEA GDP Deflator (unadjusted)	BEA PCE Deflator (unadjusted)	Kuznets Deflator	F&S Deflator	Rockoff CPI	V&G Deflator	M&R Deflator	Vatter CPI
1937	103.6	103.2	103.3	101.3					103.60
1938	101.4	101.3	101.0	100.8					101.44
1939	100.0	100.0	100.0	100.0					100.01
1940	100.7	100.9	100.8	101.1					100.73
1941	105.8	107.4	107.1	109.1					105.96
1942	117.3	116.3	120.4	123.4		120.44	117.9	123.4	117.34
1943	124.5	122.8	131.5	134.5	139.6	135.27	130.6	137.7	130.24
1944	126.6	125.8	139.0	138.5	150.0	145.85	143.7	145.6	144.54
1945	129.5	129.0	144.6	142.6	156.6	155.48	159.4	149.8	160.35
1946	140.3	143.8	154.7	152.8	158.0	169.10	169.8	155.3	177.98
1947	160.4	159.8	170.4	170.8	170.8	174.18	176.3		--
1948	173.4	168.9	180.0	182.0		183.97	180.7		--
1949	171.2	168.8	178.6	179.6		--			--
1950	173.4	170.1	180.8	183.1		--			--

Source: See Text and Table A1. CPI: Historical Stats Melenial Edition. Series Cc1. BEA data from Table 1.1.4.

Table A3: Real GDP 1937 to 1948, Various Deflators.

Year	BEA Real GDP	BEA % Change	F&S Real GDP	F&S % Change	Kuznets Real GDP	Kuznets % change	M&R Real GDP	M&R % Change	V&G Real GDP	V&G % Change	Rockoff Real GDP	Rogoff % Change	Vatter Real GDP	Vatter % Cahnge
1937	71.81		90.77		90.77		90.77		90.77		90.77		88.70	
1938	68.32	-4.85%	85.46	-5.85%	85.46	-5.85%	85.46	-5.85%	85.46	-5.85%	85.46	-5.85%	84.87	-4.32%
1939	73.50	7.58%	92.00	7.65%	92.00	7.65%	92.00	7.65%	92.00	7.65%	92.00	7.65%	91.99	8.39%
1940	78.18	6.37%	100.17	8.88%	100.17	8.88%	100.17	8.88%	100.17	8.88%	100.17	8.88%	100.57	9.32%
1941	89.73	14.78%	116.11	15.90%	116.11	15.90%	116.11	15.90%	116.11	15.90%	116.11	15.90%	119.57	18.89%
1942	107.08	19.33%	131.14	12.95%	131.14	12.95%	131.14	12.95%	137.29	18.24%	134.34	15.70%	137.88	15.32%
1943	125.36	17.07%	142.09	8.35%	147.51	12.48%	144.11	9.88%	151.89	10.64%	146.67	9.18%	152.34	10.48%
1944	133.74	6.69%	146.47	3.08%	158.63	7.54%	150.87	4.69%	152.87	0.65%	150.63	2.70%	152.00	-0.22%
1945	**134.71**	**0.72%**	**142.38**	**-2.79%**	**156.35**	**-1.43%**	**148.91**	**-1.29%**	**139.87**	**-8.50%**	**143.43**	**-4.78%**	**139.07**	**-8.51%**
1946	**125.47**	**-6.86%**	**140.70**	**-1.18%**	**145.53**	**-6.92%**	**143.19**	**-3.85%**	**130.92**	**-6.40%**	**131.46**	**-8.34%**	**124.90**	**-10.19%**
1947	121.09	-3.49%	143.13	1.73%	143.13	-1.65%	143.13	-0.04%	138.59	5.86%	140.31	6.73%	--	--
1948	125.90	3.98%	148.13	3.49%	148.13	3.49%	148.13	3.49%	149.19	7.65%	146.55	4.44%	--	--

Source: Friedman and Schwartz Monetary Trends in the United States and the United Kingdom table 4.2, 4.8. Vedder and Gallaway Out of Work table 8.3.
Mills and Rockoff *Compliance with price Controls in the United States and the United Kingdom During World War II Table 2*. BEA Table 1.1.4 .
Rockoff *The United States: From ploughshares to Swords* Table 3.6 Historical Stastics of the United States, Mellennial Edition Series Ca74
Vatter. *The Material Status of the U.S. Civilian in World War II*: Table 11.2

Table A3: Real Private GDP 1937 to 1948, Various Deflators.

Year	BEA Real GDP	BEA % Change	F&S Real GDP	F&S % Change	Kuznets Real GDP	Kuznets % change	M&R Real GDP	M&R % Change	V&G Real GDP	V&G % Change	Rockoff Real GDP	Rogoff % Change	Vatter Real GDP	Vatter % Cahnge
1937	75.94		78.02		78.02		78.02		78.02		78.02		76.25	
1938	71.59	-5.73%	71.76	-8.03%	71.76	-8.03%	71.76	-8.03%	71.76	-8.03%	71.76	-8.03%	71.27	-6.53%
1939	77.30	7.97%	77.30	7.72%	77.30	7.72%	77.30	7.72%	77.30	7.72%	77.30	7.72%	77.30	8.45%
1940	85.20	10.22%	85.24	10.27%	85.24	10.27%	85.24	10.27%	85.24	10.27%	85.24	10.27%	85.58	10.72%
1941	92.70	8.80%	91.73	7.61%	91.73	7.61%	91.73	7.61%	91.73	7.61%	91.73	7.61%	94.47	10.39%
1942	85.01	-8.30%	80.24	-12.52%	80.24	-12.52%	80.24	-12.52%	84.00	-8.42%	82.20	-10.39%	84.37	-10.69%
1943	84.22	-0.92%	74.06	-7.71%	76.88	-4.19%	75.10	-6.40%	79.16	-5.76%	76.44	-7.00%	79.39	-5.89%
1944	90.86	7.88%	76.13	2.81%	82.45	7.26%	78.42	4.42%	79.46	0.38%	78.30	2.43%	79.01	-0.48%
1945	**100.61**	**10.73%**	**82.87**	**8.85%**	**91.01**	**10.37%**	**86.68**	**10.53%**	**81.41**	**2.46%**	**83.48**	**6.62%**	**80.95**	**2.45%**
1946	**126.37**	**25.61%**	**115.44**	**39.30%**	**119.41**	**31.21%**	**117.49**	**35.55%**	**107.42**	**31.94%**	**107.87**	**29.21%**	**102.48**	**26.61%**
1947	130.09	2.94%	121.87	5.57%	121.87	2.06%	121.87	3.73%	118.01	9.85%	119.47	10.76%		--
1948	135.49	4.15%	125.77	3.20%	125.77	3.20%	125.77	3.20%	126.67	7.34%	124.42	4.14%	--	--

Source: Friedman and Schwartz Monetary Trends in the United States and the United Kingdom table 4.2, 4.8. Vedder and Gallaway Out of Work table 8.3.

Mills and Rockoff *Compliance with price Controls in the United States and the United Kingdom During World War II Table 2*. BEA Table 1.1.4 .

Rockoff *The United States: From ploughshares to Swords* Table 3.6 Historical Stastics of the United States, Mellennial Edition Series Ca75-78

Vatter. *The Material Status of the U.S. Civilian in World War II*: Table 11.2