Revising the Revisionist Version of Reconversion

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Abstract In this essay I revisit a debate about the nature of the post-WWII reconvesion process. I argue that supply-side explanations for the success of reconversion ignore important aspects of the data when arguing that lower labor costs and business optimism drove reconversion. However, I argue that the critique of the traditional explanations for the success of reconversion are useful. I also argue that the debate about the multiplier effect of WWII spending obscures the true institutional underpinnings of the reconversion success.

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JEL Classification Numbers: N (Economic History).

1 Introduction

There has been a recent revival in interest in the fiscal/monetary shock of WWII. This renewed interest has been spurred by two major factors. First, there has been a general return to exploring the effects of fiscal policy after the 2008 financial crisis and the subsequent American Recovery and Reinvestment Act. Second, economic historians have tapped into a wealth of panel data covering WWII supply contracts, first introduced by Fishback and Cullen (2013) and later expanded on in studies by Jarwoski (2017), Burnett (2017), and Bossie (2018).

These panel studies, however, produce estimates that show estimated wartime and post-war effects of wartime contact spending that range from very small to possibly negative. In light of this emerging econometric evidence this paper seeks to revisit an old debate about the nature of the post-WWII economic recovery. Research in the 1990s and 2000s by Robert Higgs and Richard K. Vedder and Lowell E. Gallaway (V&G) argued persuasively that the smoothness of reconversion can be attributed to supply side factors. This "revisionist view" stands in contrast to what Higgs characterizes as the prevailing "orthodox view" of reconversion[1] The orthodox view offers a more disbursed mechanism for the postwar recovery arguing the success of reconversion can be attributed to pent up demand for both consumer goods and investment goods after the 15 years of hardships of the Great Depression and WWII. The savings built up during the war was instrumental in supply the means to satisfy this pent-up demand.

The revisionist view seeks to downplay the role of household demand and argues that the relative smoothness of the reconversion process was driven by conditions favorable for business owners. This interpretation argues that reconversion was successful despite the

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[1]Higgs cites the Walton and Rockoff (1994) as typifying the orthodox view while V&G point to Gordon (1961) and Hanson (1967) as articulating the orthodox view most clearly. It is important to note that this debate is largely one of emphasis. The orthodox read of reconversion acknowledges the role of both household consumption and business investment, but perhaps leans more in favor of the role of consumer demand as the driving force of the reconversion success. For the revisionist's part, and Higgs in particular, they acknowledge household demand was relatively strong, but argue that businesses were the driving force of the postwar recovery for their own particular reasons, discussed below.

wartime government spending shock, not because of the spending shock.

The revisionist view follows two strands. V&G (1997) advance the argument that the reconversion process can be attributed to a drop in what they call the "adjusted real wage"—labor's share of personal income—after the war. This drop in labor costs, then, had a predictable effect of buoying labor markets by encouraging firms to hire more workers.

The second line of argument extends from Robert Higgs (1999)[2], who argues that despite the collapse of government demand for output business owners and managers remained optimistic about the potential postwar economy. Higgs argues this optimism is evidenced in the way firms used their accumulated liquid savings to acquire productive assets. He contrasts this with the stagnant behavior of household savings. As Higgs points out, personal savings remains relatively high after the war. As well, the behavior of monetary aggregates, which Higgs takes as synonymous with household liquid savings, is largely inert in the immediate postwar period. Higgs takes this as evidence that pent-up demand among households was muted[3].

Both of these lines of argument rely on a selective reading of the data. V&G ignore both the fact that overall worker compensation—as opposed to only wage compensation—raised the "adjusted real wage" to historical highs after the war. As well, V&G ignore the fact that the decline in labor compensation was primarily driven by the decline in the percentage of national income coming from military payrolls. This would have had little effect on private businesses.

Higgs, when downplaying the role of household demand ignores the fact that the postwar housing boom did not necessitate a "drawing down" of savings commensurate with the size of output produced by the demand for residential investment, since the purchase of a house meant the acquisition of an illiquid asset and an illiquid liability. Only a small portion (traditionally 20%) of housing costs would necessitate the "spending down" of liquid savings

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[2]Higgs wrote a series of articles about the WWII economy that were later collected as chapters in his 2006 book *Depression, War and Cold War*. I cite the original papers here.

[3]Higg's argument about household savings behavior follows and expands on the narrative of the postwar advanced by Friedman and Schwartz (1963).

in the form of a down payment. In a large proportion of cases, such as with VA mortgages, the purchase of a house did not require any down payment at all. I construct a simple counterfactual to illustrate this point. If housing were treated as a durable consumption good in national accounts instead of an investment good, personal savings rates would have declined rapidly after the war and would have been negative by 1947.

While the revisionist reading of reconversion is somewhat strained, the more general point that the success of the transfer from a war to a peace economy is somewhat more complex than the simple Keynesian story of shifting aggregate demand is one worth pursing, especially in light of the econometric evidence. While no doubt the role of pent up demand— by both households and firms—was the main diving force of the successful reconversion, the final section of this paper outlines some of the "non-multiplier" steps the government took that helped smooth the reconversion process. These steps included generous benefits for veterans, which both helped tamper the postwar increase in the supply of labor and aided in an increased demand for new housing. As well, monetary policy was kept "arbitrarily" accomodative through the reconversion period.

2 The Postwar Recession

The nature of the postwar recession is the first point of contention with the revisionist view of reconversion. Higgs (1999) argues that, when distortions in the official measure of the price level are properly controlled for, the postwar recession—dated from February 1945 to October 1945 by the NBER—is virtually nonexistant. However, this claim rests on his use of the Friedman and Schwartz net national product alternative deflator. This deflator, however, is an outlier in what has become a cottage industry of WWII alternative deflators and relying on it overstates the mildness of the 1945/46 recession. Table 1 offers estimate of real output 1939-1950 under those alternative deflators. I refer the reader to Appendix A for an outline of how these different deflators are calculated.

The F&S deflator produces an inflation rate of about 1% for 1946. This is an implausibly low inflation rate for that year. This estimate of inflation in 1946 follows from the assumption that virtually all of the inflation of 1946 was simply the manifestation of pent up inflation that had been suppressed during the war.

However, both the inflation of 1947[4] and the fact that in 1946 personal consumption increased from 70.5% to 81% [5] of disposable income 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.

The effect of using the F&S deflator is to understate the decline in real GDP relative to the other deflators. From 1944-1946 the F&S deflator produces a decline in real GDP of 3.7%. Correspondingly, as Table 1 shows, the F&S deflator also produces the strongest recovery in "private GDP" at around a nearly 50% increase in GDP from 1945 to 1946. While the Mill's and Rockoff deflator shows similar changes in both total real GDP and private real GDP, other deflators show significantly smaller increases in private GDP and a larger contraction of the economy during the immediate postwar recession.

There are two main "supply side" arguments for the relatively easy reconversiopn process. The first is advanced by V&G. They argue that a strong postwar decline in relative labor costs for firms encouraged firms to increase hiring. This argument, however, rests on a misreading of the data and a misreading of the sources of the decline in labors share of income. Robert Higgs also offers a "business lead" theory of reconversion. Higg's argument rests on contrasting the dynamism of business investment in the immediate aftermath of the war the with the lethargic behavior of household's savings spend down. While Higgs is right to emphasize the strength of business investment demand he overstates the relative weakness of household demand by focusing on liquid savings rates. Households were able to hold onto

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[4]The CPI increased by over 14% December 1946 to December 1947

[5]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

their liquid assets while acquire illiquid liabilities, particularly mortgages.

3   Labor Costs and Reconversion

V&G claim that the mildness of the reconversion recession was due to the fact that workers were willing to take a smaller share of income/output, what they call the "adjusted real wage" . Their adjusted real wage is simply wages as a proportion of personal income and/or GDP. Table 2 extends V&G's adjusted real wage calculations back to 1935. I have also added "nonwage compensation" which V&G exclude from their calculation but is included in the source material. "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. V&G show a decline in their measure of the real wage from wartime highs after the war ended. There are two major issues with this claim. The first is why the lower adjusted real wage did not spur on a stronger recovery during the 30s. More to the point, the annual estimates of the adjusted real wage presented in Table 2 shows that, for only 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. When total compensation is considered, labor's adjusted real wage is higher after the war than it was during the Great Depression. The second issue with their claim that the declining ratio of wages to income spurred business hiring is that more than the entire adjustment to earned wages and salaries from 1945 to 1946 takes place in the decline in military wages and salaries. Wages and salaries paid by the military drop from $22.6 billion in 1945 to $8 billion in 1946 . Total compensation in the whole economy only falls by $6.1 billion from 1945 to 1946. Presumably the discharged soldiers were heading into higher paying jobs. At any rate, it is unclear how lower government payrolls affect the

demand for workers by private firms

4   Household Savings Behavior and Reconversion

One insight of Higgs and V&G's is important. It is rather curious that household dissaving was not more robust through-out the reconversion process. 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 incorrect. While net "dissavings" is impossible, it is striking that even given zero as a lower bound personal savings rates remained quite high. Personal savings in 1945 was just over 14% of GDP and in 1946 were still above 7% of GDP[6]

Underpinning Higg's analysis are estimates of "investment" that are contrasted with consumption. However, Higgs neglects to parse out the difference between residential and business investment. This is important because this masks the extremely strong growth in residential investment. This is important not only becuase this inflates the investment picture painted by Higgs but also because this distorts the view of household savings.

First, personal savings rates remained high in large part because housing is counted in national accounts as investment. Personal savings is counted as a residual when subtracting consumption and taxes. If residential housing were treated as a consumption good, savings rates would have been much lower during reconversion. Relatedly, the nature of housing purchases made it possible for households to acquire an illiquid asset and an offsetting illiquid liability, leaving liquid assets largely unchanged.

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 total fixed investment more or less doubles with the end of the war, residential investment increases 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, however, peaks as a share of GDP in 1948

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[6]Historical Statistics Series Ca74 CA99

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 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.

Higgs also argues that the sluggishness of household demand is also evident in household liquid savings. However, here too the financing of housing does not necessitate large changes in household liquid savings savings. While down payments do involve moving "liquid" savings into an illiquid asset 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. In 1946 and 1947 VA mortgages comprised 13% and 27% of mortgage originations for new construction respectively (Grebler, 1953).

It may make sense to explain this more 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 implies personal savings rates should have been negative (really, approaching zero) 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 and has been noted there were relatively high postwar 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 with no change in his liquid assets. A second case, is the household

that 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. In only the second, instance, a household paying the full purchase price would there be a change in liquid savings comparable to the economic activity generated. In all three cases, there would be no change in measured personal savings. This is both for statistical reasons–housing is not counted as consumption—and because, on net, the change is savings is only a change in the liquidity of savings, not it's level.

An illustrative counterfactual is useful here in establishing the role of residential investment in savings. Let's assume that new residential construction over the immediate postwar period remained unchanged in volume and value, but with housing were recorded in national income and product accounts as a 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.

5   Alternative Non-multiplier Explanations

It should be reinforced that the revisionist take on reconversion is an important attempt to both highlight the weakness of conventional wisdom regarding the success of reconversion and to also explain the rebound of the private economy despite the largely contractionary nature of demobilization.

The evidence is beginning to mount in favor of an interpretation of the entire fiscal policy evolution of the war as having a minimal, or even perhaps negative, effect on economic output. Panel data studies have been very important in this respect. Burnet (2017) finds that at the state level the contemporary relative wartime multiplier on contract spending

to be less than 25 cents per dollar of spending. This is far below the roughly 1.5 multiplier found by Nakamura and Steinsion (2014) for similar military contract spending after 1960. Fishback and Cullen (2013) find there is no effect of contract spending at the county level on retail sales by 1949. Bossie (2018) finds that wartime contract spending is associated with a decline in state level savings in the form of bank deposits, but also finds that this had a very small effect on local bank financed economic activity. Jarwoski (2017) also finds no connection between wartime contract spending and southern economic development. It is important to stress to the reader that these studies all produce local multipliers. This is one step removed from the topic of interest here, the national multiplier, but these studies do seriously complicate multiplier narratives of both the contemporary effect of the war on the economy and any narratives that rely on wartime savings to fuel the realization of pent up demand in the postwar.

Both the orthodox and revisionist stories rely on a multiplier reading of the role of the Federal Government, in which the way the Federal government interacts with the economy is though government consumption and whatever associated (inter-temporal) multiplier results. The postwar story is more complex and there a larger institutional story to be told, but I would like to advance two "non-multiplier" mechanisms that served a very clear purpose in managing the postwar economy. First, the continuation of the wartime low interest rates through the end of the 1940s helped ensure no sudden shocks to the availability of financing to both housholds and businesses. Second, the GI Bill played a very powerful role in the reintegration of service members back into the economy.

The role of monetary policy of the reconversion process with respect to monetary policy is very simple and straight forward. The Treasury, was focused on financing the massive debt accumulated during the war. The desire of the Treasury to maintain low rates was reinforced by the consensus among economists at the time that monetary policy should remain subordinate to government finance needs (Metlzer, 2003 p579-581). The reconversion period was marked by strong inflation, but also marked by the availability of credit to both

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firms and households. No doubt this helped buoy aggregate demand.

The generosity of the GI Bill also played a significant role in managing the postwar economy indirectly. The veterans organizations advocating for benefits found a post-New Deal world more receptive to government sponsored programs than ever before (Atschuler and Blumin 2009; p36-37). This led to a novel and abundant package of benefits for GIs when returning to civilian life.

Two well know arenas in which the GI Bill played out in the postwar economy are labor and housing markets. Unemployment benefits, $20 a week for up to 52 weeks likely made it easier for veterans to stay out of work, though use of the benefit was relatively limited, with the average veteran using roughly 19 of the full 52 weeks of unemployment benefits. The flexibility of the unemployment scheme likely allowed veterans to remain unemployed for longer periods of time that they would have otherwise. Mustering out pay[7], which ranged from $100-$300 based on term of service likely lowered labor force participation rates in the short run (President's Commission on Veterans' Pensions, 1956).

While it is unclear how unemployment benefits and mustering out pay would have affected the supply of labor on net, the education benefit, which on top of paying for college and subcollege education also provided a stipend to GIs, likely had a partially untended one way effect on the measured unemployment rate. Figure 1 shows the actual measured unemployment rate and a counterfactual in which all veterans who took the educational benefit are also included in the labor force. The counterfactual unemployment rate is nearly twice as high in 1947 without the GI education benefit. The assumption that all of these veterans would have been unemployed is obviously too strong and the counterfactual unemployment rate should be thought of as a upper bound. However, this upper bound offers a useful picture of the role of VA benefits in reducing the pool of potential workers and thus suppressing the unemployment rate. By 1947, just under 2.5 million service men were taking advantage of the GI Bill's educational provision, either in college or in a subcollege program. This clearly

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[7]It should be noted this is not technically part of the GI Bill.

reduced supply pressure on labor markets and helped smooth the transition into the postwar period, both for individual veterans and the economy at large.

The role of monetary policy and the GI Bill are only offered here as examples of what should be thought of as a more broad "institutional" framework under which the reconversion period played out. The revisionist criticism of the simple Keynesian theory of wartime and postwar economic success remains a valid challenge, even if the offered alternative explanation is inadequate.

Students of WWII are best to think of the postwar institutional environment similarly to the way Peter Temin (1989) describes the pre-Depression policy regime the New Deal replaced. The economic recovery during the 1940s, as with the economic collapse at the beginning of the 1930s was not simply mono-causal. Rather, the postwar prosperity was the result of of a matrix of factors that all operated under the institutional environment that emerged in the second half of the 1930s and was reinforced during the war. This is a more complicated, but richer tapestry for economic historians to explore than the appealing, though increasingly strained multiplier narrative.

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6 Figures and Tables

Table 1: GDP and the Change in GDP 1937-1950 Under Different Price Deflators (1939=100)

Year	GNP/GDP/NNP Deflators					CPI Deflators		
	BEA	Kuznets	F&S	M&R	V&G	Rockoff	Vatter	Author
Real GDP								
1937	90.16	91.85	91.85	91.85	91.85	91.85	89.77	90.94
1938	86.31	86.75	86.75	86.75	86.75	86.75	86.16	87.22
1939	93.50	93.50	93.50	93.50	93.50	93.50	93.49	93.50
1940	101.96	101.76	101.76	101.76	101.76	101.76	102.16	101.64
1941	120.33	118.58	118.58	118.58	118.58	118.58	122.12	114.94
1942	142.52	134.55	134.55	134.55	140.85	137.83	141.46	136.25
1943	166.45	151.00	145.46	147.52	155.49	150.14	155.95	157.78
1944	179.79	162.17	149.73	154.23	156.28	153.99	155.39	169.28
1945	**178.19**	**160.00**	**145.70**	**152.39**	**143.13**	**146.77**	**142.31**	**161.63**
1946	**158.02**	**149.13**	**144.18**	**146.73**	**134.16**	**134.71**	**127.99**	**147.51**
1947	**155.89**	**146.35**	**146.35**	**146.35**	**141.71**	**143.47**	**–**	**146.73**
1948	162.29	150.99	150.99	150.99	152.07	149.37	–	159.23
1949	161.19	151.87	151.87	151.87	151.87	151.87	–	161.35
1950	175.78	163.93	163.93	163.93	163.93	163.93	–	164.52
Percent Change in Real GDP								
1938	-4.27%	-5.56%	-5.56%	-5.56%	-5.56%	-5.56%	-4.02%	-4.09%
1939	8.34%	7.78%	7.78%	7.78%	7.78%	7.78%	8.52%	7.20%
1940	9.05%	8.83%	8.83%	8.83%	8.83%	8.83%	9.27%	8.71%
1941	18.01%	16.53%	16.53%	16.53%	16.53%	16.53%	19.54%	13.09%
1942	18.45%	13.47%	13.47%	13.47%	18.78%	16.23%	15.84%	18.53%
1943	16.79%	12.23%	8.11%	9.64%	10.39%	8.94%	10.24%	15.81%
1944	8.01%	7.39%	2.94%	4.55%	0.51%	2.56%	-0.36%	7.29%
1945	**-0.89%**	**-1.34%**	**-2.69%**	**-1.20%**	**-8.41%**	**-4.69%**	**-8.42%**	**-4.52%**
1946	**-11.32%**	**-6.79%**	**-1.04%**	**-3.71%**	**-6.27%**	**-8.22%**	**-10.06%**	**-8.74%**
1947	**-1.35%**	**-1.86%**	**1.51%**	**-0.26%**	**5.63%**	**6.50%**	**–**	**-0.52%**
1948	4.11%	3.17%	3.17%	3.17%	7.31%	4.11%	–	8.52%
1949	-0.68%	0.58%	0.58%	0.58%	-0.13%	1.67%	–	1.33%
1950	9.05%	7.94%	7.94%	7.94%	7.94%	7.94%	–	1.96%
1944-1946	**-12.11%**	**-8.04%**	**-3.71%**	**-4.86%**	**-14.15%**	**-12.52%**	**-17.63%**	**-12.86%**
1944-1947	**-13.29%**	**-9.75%**	**-2.26%**	**-5.11%**	**-9.32%**	**-6.83%**		**-13.32%**

Sources: BEA Table 1.1.5; See Appendix A

Table 2: Annual Average "Adjusted Real Wages" 1935-1948

Year	W&S	Supplements to W&S	Total Compensation	Personal Income	Nominal GNP	Proportion of Personal Income		Proportion of GNP	
						W&S	Total Compensation	W&S	Total Compensation
1935	37.1	0.6	37.7	56.8	72.2	65.3%	66.4%	51.4%	52.2%
1936	42.7	0.9	43.6	64.7	82.5	66.0%	67.4%	51.8%	52.8%
1937	47.7	1.7	49.4	73.6	90.2	64.8%	67.1%	52.9%	54.8%
1938	44.7	1.9	46.6	67.4	84.7	66.3%	69.1%	52.8%	55.0%
1939	47.8	2.1	49.9	72.5	91.3	65.9%	68.8%	52.4%	54.7%
1940	51.8	2.2	54	81.3	101.4	63.7%	66.4%	51.1%	53.3%
1941	64.3	2.5	66.8	103.6	126.4	62.1%	64.5%	50.9%	52.8%
1942	84.9	3	87.9	137.1	161.6	61.9%	64.1%	52.5%	54.4%
1943	109.2	3.6	112.8	169.7	194.3	64.3%	66.5%	56.2%	58.1%
1944	121.2	4.2	125.4	183.8	213.7	65.9%	68.2%	56.7%	58.7%
1945	123	13	136	182.7	215.2	67.3%	74.4%	57.2%	63.2%
1946	117	12.9	129.9	179.6	212.6	65.1%	72.3%	55.0%	61.1%
1947	127.6	13.6	141.2	201.7	235.7	63.3%	70.0%	54.1%	59.9%
1948	140.3	15.2	155.5	226.2	262.4	62.0%	68.7%	53.5%	59.3%

Source: 1949 Statistical Supplement, Survey of Current Business (Washington, D.C.: Government Printing Office, 1950)

* W&S = Wages and Salaries

Table 3: Residential and Nonresidential Investment 1929-1950

	Total GDP							Private GDP (C+I+NX)			
Year	Nominal GDP	Investment	Residential Investment	Housing as % of Investment	Investment as % of GDP	Residential Investment % of GDP	Nonresidential Investment % of GDP	Private GDP	Investment % of Private GDP	Residential Investment % of Private GDP	Nonresidential Investment % of Private GDP (%)
1929	103.7	14.9	4	26.85%	14.37%	3.86%	10.51%	94.3	15.80%	11.56%	4.24%
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 Statistics of the United States, Millennial Edition series Ca74, Ca98, Ca80, Ca83

Table 4: Savings Rates Adjusted For Residential Investment As Consumption

Year	Nominal GDP	Residential Investment	Personal Savings	Personal Savings % Nominal GDP	Savings-Residential Investment	Counterfactual Savings Rate % 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, Millennial Edition. Series Ca74, Ca99 Ca73
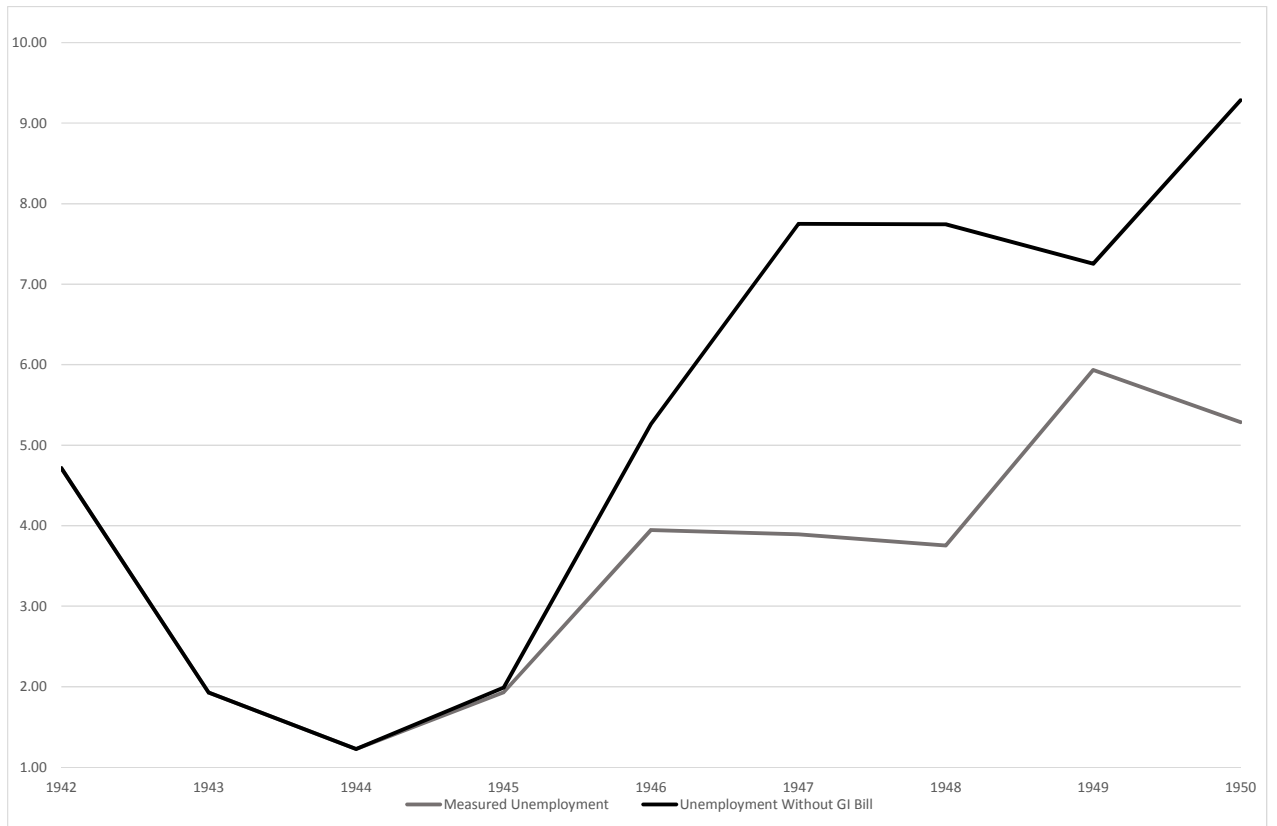
Source: Historical Statistics Millennial Edition Ba479 Ba484 Ed468 Ed469

Figure 1: Unemployment in the 1940s. Actual and GI Education Counterfactaual.

Appendix A: WWII Deflators

The purpose of this appendix is to summarize the methodologies behind the estimation of the various WWII deflators used to construct the alternative real GDP estimate in the main text of this paper. The underlying delfators can be found in Table A1. The need for these deflators arises because the official wartime deflators do not take into account the distortions caused by price controls during the war. The deflators are of two types, either a substitute for the BEA's GNP deflator or as a substitute for the BLS's Consumer Price Index.

The F&S deflator is based Kuznets measure of net national product. In a nutshell, F&S (1972) construct log trends of output and the implicit price deflator for 1914-1942[1]. They then calculate the responses of the implicit price deflator to deviations of output from trend. They then 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 do to the lifting of price controls during that year and the "unveiling of price controls that had occurred earlier"[2]. That is, consumers were already paying the 1946 market price, but they were paying it in terms of black market activity broadly defined. By lifting price controls in 1946 the Truman administration was simply shifting the way in which these market prices were articulated.

Other price deflators include one constructed by Kuznet[3] though his deflator is simply the implicit deflator from his estimates of net national product (1869-1947). It is unadjusted to compensate for wartime distortion and is included here simply for completeness.

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[1] 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.

[2] Milton Friedman and Anna J. Schwartz, A Monetary History of the United States, Princeton, Princeton University Press, 1963: p 558.

[3] As reported in Freidman and Schwartzs Monetary Trends in the United States and the United Kingdom.

Table A1: World War Two Alternative Deflators

Year	CPI	BEA GDP Deflator	BEA PCE Deflator	Kuznets NNP Deflator	F&S NNP Deflator	Rockoff CPI	V&G GNP Deflator	M&R GNP Deflator	Vatter CPI	Author CPI
1937	103.3	103.2	103.3	101.3					103.6	102.3
1938	101.3	101.3	101.0	100.8					101.4	100.2
1939	100.0	100.0	100.0	100.0					100.0	100.0
1940	100.7	100.9	100.8	101.1					100.7	101.2
1941	105.8	107.5	107.1	109.1					106.0	112.6
1942	117.2	116.5	120.5	123.4		120.4	117.9	123.4	117.3	121.8
1943	124.4	122.0	131.5	134.5	139.6	135.3	130.6	137.7	130.2	128.7
1944	126.4	124.9	139.1	138.5	150.0	145.8	143.7	145.6	144.5	132.7
1945	129.3	128.1	144.6	142.6	156.6	155.5	159.4	149.8	160.4	141.2
1946	140.3	144.2	154.7	152.8	158.0	169.1	169.8	155.3	178.0	154.1
1947	160.6	160.3	170.4	170.8	170.8	174.2	176.3		–	170.3
1948	172.9	169.3	180.0	182.0		184.0	180.7		–	172.6
1949	171.1	169.2	178.7	179.6					–	169.1
1950	173.0	170.8	180.8	183.1					–	182.5

Sources: See text.

Vedder and Galloway (V&G)[4] regress the official GNP deflator for the years 1916-1941 on M2, and a measures of interest rates, railroad volume and employment. They then extrapolate their trend through 1948. Rogoff and Mills[5] estimate a GNP deflator using the relationship between the price level and a combination of aggregate income and wages reasoning that inflationary pressure is more linked to wages (buying power) than output.

It is not clear that using a GNP deflator captures cost of living, particularly in the wartime economy where so much of GDP is absorbed by munitions. Furthermore, the natural channels between the money supply, income and prices are distorted. 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. The role of munition prices during the war make distorts output deflators as a measure of the cost of living for consumers.

Some authors have also tried to estimate alternative CPIs. There are some advantages to using a CPI instead of a GNP deflator. Of particular use when studying the war economy is that the CPI avoids distortions caused by including munitions in GNP. As well, a con-

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[4]Vedder and Galloway (1993) p 155.

[5]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

sumption deflator is more appropriate to the debate about welfare and consumption during the war. Harold Vatter[6] and Hugh Rockoff[7] 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 as Rockoff points out. 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[8]. 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.

One issue 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[9].

The effectiveness of price controls during the war is an open question but this question largely centers on the extent of "black market" (broadly defined) activity do to get around those controls. Rockoff and Mills and Rockoff 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[10]. 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

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[6] Vatter (1993)

[7] Rockoff, Hugh (1978). Indirect Price Increases and Real Wages During World War II. Explorations in Economic History. Vol 15 p407-420

[8] Rockoff (1984) p169

[9] Rockoff (1984)

[10] Ibid. p163-174; Rockoff and Mills (1987) p199

suffered from these problems.

To try to capture the possibility that price controls had an effect I have also included an additional deflator I have constructed. My alternative CPI deflator is relatively simple and is generated from the response of prices to the lifting of controls in 1946. Price decontrols played out in fits and starts from Feburary 1946-October 1946 and any pent up inflation from those controls would have manifested themselves as controls were lifted during 1946. I reapportion the change the CPI from the end of 1945 to the end of 1946 between 1942 and 1946, assuming that the January 1, 1947 CPI is measured accurately. The apportionment is done according to how much of the change in personal consumption from 1942 to 1946 is attributed to each year under the somewhat strong assumption that consumer demand is the sole driving force behind increases in the CPI[11] .

Figure A1 shows the behavior of the CPI and the food and housing indexes from January 1944 to January 1949. The shaded areas represent the three basic price control "regimes" in effect during during reconversion[12] The first period continued full price and wage controls up through Feburary 1946. February 1946- October 1946 is the period of the vacillating and confused decontrol process. After October 1946, price controls are entirely abandoned. It should be clear from Figure A1 that June 1946 is a crucial month. June-July 1946 represents and aborted attempt to allow price controls to expire entirely. It is striking that this period shows the largest spike in inflation over the whole 1945-1947 period. Equally striking, when controls are allowed to expire permanently in Oct 1946 inflation is very low, dropping to zero for the month of December 1946.

The strong inflation in the summer of 1946 and the very low inflation after controls are finally completely lifted are the basis for the defltor I construct. The basic assumption being that pent up inflation clearly manifested itself in the second half of 1946, particularly in

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[11]Initially the thought was to use aggregate disposable income to also account for potential inflationary pressure from "forced savings" during the war but using disposable income brought my estimates further away from the other alternative deflators.

[12]Rockoff (1984) Table 4.3 divides these price control regimes up into more detailed period. For the purposes here, I condense the more detailed time line into three broad periods
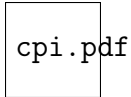
Figure A1: Monthly Changes in the Consumer Price Index Jan 1944-Dec 1948

the summer of 1946. I take the change in the CPI from January 1946-December 1946 as containing the "missing" inflation from official statistics during the war. It is reasonable to assume that pent up inflation would have manifested itself relatively rapidly after decontrols (or partial decontrols). The fact that inflation in food and beverages is particularly rapid in summer 1946 underscores this point, since one would expect retailers and food suppliers to be able to adjust prices relatively quickly. The end result is a deflator that produces inflation rates similar to the Rockoff and Vatter CPI deflators.

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