After the War: Wartime Saving and Postwar Housing Investment, 1946–1950

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Abstract

Household saving increased dramatically during World War II. By the end of the war, Americans had accumulated substantial liquid assets, largely in the form of war bonds and deposit holdings. This paper examines how wartime accumulation of liquid assets were used by households in the years immediately after World War II, when rationing was relaxed. I exploit geographic variation in wartime saving. Because saving may be endogenous, I use war spending as an instrument for wartime saving. I find that wartime asset accumulation helped fuel a boom in residential investment in the late 1940s. IWartime saving is strongly associated with increases in the housing stock in the immediate postwar years. A 10% increase in wartime saving is associated with a 2.9% to 7.1% increase in the number of housing units in a commuting zone between 1940 and 1950.

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1 Introduction

Household saving increased dramatically during World War II. With increased labor force participation, highly salient payroll deduction plans for war bond purchases, and many durable goods completely unavailable for civilian purchase, Americans bought billions of dollars of war bonds while their deposit holdings continued to rise. By the end of the war, Americans had accumulated substantial liquid assets, largely in the form of war bonds and deposit holdings.

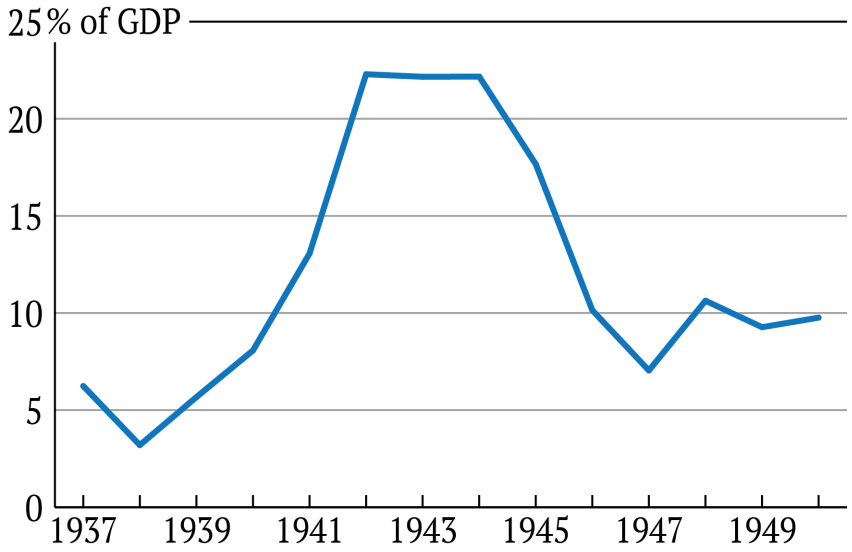
This paper examines how wartime asset accumulation influenced the U.S. economy in the years immediately after World War II. Exploiting geographic variation in wartime saving, I find that wartime asset accumulation helped fuel a boom in residential investment in the late 1940s.

World War II was an extremely unusual event in an economic sense: not only was it the largest fiscal shock of the twentieth century in the United States, the war effort required immense resources—labor, materials, and industrial capacity—with relatively little advance notice. It was impossible to increase productive capacity fast enough to meet the demands of the war effort without constraining the civilian economy. Instead, the government rationed consumer goods, some of which were not produced at all for the duration of the war, and strictly controlled the allocation of strategic materials. Metals were particularly scarce, as they were necessary for nearly every type of war matérial. With consumption restricted, Americans saved. Net private saving during and after World War II is shown in Figure 1.

Moreover, because rationing and other peculiarities of the wartime economic environment limited household and firm choices, wartime savings were largely accumulated in the form of fairly liquid assets such as bank deposits and war bonds. The constraints of the wartime economy incentivized households to keep assets in these liquid forms until the end of the war. This makes wartime saving relatively easy to observe and measure.

After the war, the American economy boomed. The housing market was especially strong, with residential fixed investment growing by over 40% in real terms between 1945 and 1948. Post-war American prosperity is often attributed to World War II in popular history, and

Figure 1: Net Private Saving as a Share of GDP (United States)



Source: Bureau of Economic Analysis

particularly to the war effort on the home front for its role in stimulating the economy. But little direct evidence has linked the post-World War II boom to the economic influences of the war—or to the specific channel of wartime saving.

For understanding how these liquid assets influenced durables consumption and housing investment, I construct a direct measure of wartime saving using the available data on bank deposit holdings and E-bond purchases. Because wartime saving may be endogenous, I also use war spending as an instrument for wartime saving (and condition on key variables that predict war spending). This instrument allows me to isolate a component of saving directly attributable to the war effort.

War spending is a good choice of instrument because it has predictive power for wartime asset accumulation—it is strongly correlated with both deposit holdings and series E war bond purchases in 1944—but it has no predictive power for post-World War II asset accumulation. This may be because the geographic distribution of war spending was not closely correlated to pre-war labor market conditions (Brunet, 2018) or driven by political considerations (Rhode et al., 2017). Previous work has shown that wartime saving increases were larger in locations that received more war spending, suggesting that war spending has enough correlation with

wartime saving to be a good instrument. Fishback & Cullen (2013) show a county-level relationship between war spending and Series E war bond purchases, while Brunet (2018) shows time-varying relationships between war spending and both war bond purchases and bank deposit flows at the state level. This suggests that households in areas receiving more war spending accumulated larger stocks of assets during World War II than households in areas that were less involved in war production, as I will confirm in Section 4.1. Total World War II spending is recorded by county in the *1947 County Data Book*, along with relevant county-level outcomes.

Both the OLS and IV results show that wartime saving was associated with significant growth in the post-war housing stock. I find that a 10% increase in per (adult) capita wartime saving in a commuting zone is associated with a 2.9%–7.1% increase in the number of housing units in that commuting zone in 1950 (relative to 1940).

For my main analysis, I aggregate county-level data to commuting zones. As explained in detail below, using commuting zones rather than counties as the unit of analysis is preferable when examining how the treatment of firms (with war spending) affected households. It is also particularly useful for this period because suburbanization patterns are much more likely to influence county-level data than commuting zone data. For robustness I repeat my analysis with county-level data and find essentially identical results.

Commuting zones were developed by government economists and caught the attention of the profession after the publication of Tolbert & Sizer (1996). In recent years they have become a popular choice for analyses in labor economics, including Autor et al. (2013), Chetty et al. (2014), and Yagan (2017), among others. Labor economists favor them because they capture local labor markets more accurately than counties, but cover the entire country (unlike urban-only units such as MSAs). To date, commuting zones are not commonly used in either economic history or macroeconomics, but the rationale for using them in the context of this paper translates directly from the reasons given in the labor economics literature.

This paper speaks to the growing literature on the relationship between World War II and U.S. postwar economic performance. Higgs (1999) emphasizes the transition away from

military control and towards a free market as a driver of strong economic performance, placing particular emphasis on the absence of a true post-war recession. Fishback and Cullen (2013) focus on how war spending influenced the change in county-level retail sales between 1939 and 1947, and conclude that in the lasting effects of World War II spending were largely through internal migration towards counties with higher war spending. Other recent papers focus on the role of World War II spending on the economic development of specific regions of the United States. Rhode (2003) examines the effects of war spending on the pacific coast, concluding that wartime production helped shift economic activity (and particularly manufacturing) permanently towards the region. Wright (2018) also studies the pacific coast, and reaches similar conclusions. In contrast, Jaworski (2017) examines the effects of World War II spending on economic development in the U.S. south, particularly through captial deepening, and concludes that capital deepening from World War II did not systematically drive southern economic development in the post-war years.

Wartime saving, especially when instrumented with wartime spending, may be conceived of as something akin to an indirect fiscal shock. An extensive literature examines the state and local effects of fiscal shocks. In the historical literature, Fishback & Cullen (2013) use county-level data on World War II spending (the same data used as the instrument in this paper), but focus primarily on retail sales as their outcome of interest. Biolsi (2016) uses contract data on naval shipbuilding in the 1930s to measure local effects on manufacturing employment, output, earnings, and retail sales during the Great Depression. Other recent papers use state and local data to examine the role of various policy shocks in fueling recovery from the Great Depression. Fishback et al. (2005) is similar to Fishback & Cullen in its focus on retail sales, but examines the effects of New Deal spending (specifically, comparing the effects of public works and relief spending to Agricultural Adjustment Act payments). Fishback & Kachanovskaya (2015) measure the relative multiplier on personal income at the state level using a similar group of New Deal spending programs. Hausman et al. (2019) use state- and county-level data on auto sales (as a proxy for consumption), farm exposure, and tradeable/non-tradeable crop mixes to provide new evidence for agricultural responses to

devaluation of the dollar as the mechanism driving the sharp recovery in the spring of 1933. Although Hausman et al. study the effects of a different type of policy shock—the devaluation of the dollar rather than changes in government spending—this paper is relevant because of its focus on durables consumption.

While a key advantage of using the *1947 County Data Book* is that it provides comprehensive data for the entire country, this approach also has limitations. Many potential outcome variables are observed pre-war in 1939 or 1940 and then a second time after the war, usually in 1950. Thus the results don't necessarily reflect only post-WWII activity. A priori, it is possible that households may have substituted into housing investment during the war given constraints on durables consumption. However, such investment would be in addition to the effects of wartime asset accumulation, not a result of it. It would be helpful to confirm that the results hold for the post-WWII period only.

I supplement my analysis of commuting zone-level aggregates with an analysis of household-level survey data from the Surveys of Consumer Finances (SCFs, 1947–1951). I link wartime saving (and war spending) to households in the SCF according to the commuting zone in which each household lived at the time it was surveyed. The first SCF was collected in 1947; I have digitized and harmonized the first five years of the SCF, from 1947–51. The pooled data from these SCFs contains 16,369 households in 81 commuting zones. The SCF data produces findings that are broadly consistent with the main analysis. I find that in locations with higher wartime saving (as instrumented with war spending), households surveyed over 1947 to 1951 were significantly more likely to have bought a house in the previous year.

The SCF data is also useful because it allows me to examine links between changes in asset holdings and home purchases at the household level, while controlling directly for the household's demographic characteristics. I find that having purchased a house in the previous year is a strong predictor of whether a household reduced its bond holdings or liquid savings (savings deposits at banks, Savings & Loans, postal savings, etc.) over the previous year. This provides further evidence that wartime saving was in fact the mechanism for post-war residential investment.

The remainder of the paper is organized as follows. Section 2 discusses the data, methodology, and identification. Section 3 presents OLS results for the effects of wartime saving on home ownership. Section 4 discusses the use of war spending as an IV for war spending and presents IV results. Finally, Section 5 concludes.

2 Empirical Approach and Identification

2.1 Data

This paper uses geographic variation in wartime saving to understand how the high saving rate during World War II influenced the post-WWII economy, specifically residential investment. Because saving itself may be endogenous, I will use geographic variation in the distribution of World War II contracts as an instrument for wartime saving. Specifically, I use comprehensive county-level data from the *County and City Data Books* for 1947–1977, which I then aggregate to 1980 commuting zones.

I use commuting zones rather than counties as the unit of analysis for several reasons. War spending—both a major factor driving wartime saving and my instrument for saving—measures the treatment of *firms*, while the employees who work at those firms—i.e. the *households* making consumption and saving decisions—may not always live and work within the same county. Focusing on commuting zones rather than counties reduces this source of noise by using units of observation which line up more closely to the effective units of treatment. Many of the counties that received the highest per capita war spending are in fact less populous counties adjacent to a more populous county, so using commuting zones rather than counties dramatically reduces the number of major outliers. Moreover, people are more likely to move within a geographic area than to move long distances. This is especially relevant during the postwar period, when suburbanization patterns seem likely to introduce bias as well as noise. Once again, using commuting zones should ameliorate the problem.

Aggregating by 1980 commuting zone rather than 1940 county reduces the number of

observations by roughly 75%. Yet for the reasons discussed above, outcomes for commuting zones will generally be as precisely estimated as outcomes for counties.

Table 1 presents summary data by county and then by commuting zone. The median 1940 county had a total population of 27,882 (and an average of 59,524), versus a median of 69,223 per commuting zone (and average of 172,993). Many variables, particularly those measured in dollar amounts (whether wartime saving or war spending or bank deposit holdings), are measured relative to population. Rather than measuring these variables relative to total population, I generally measure relative to *adult* population, defined as population 21 years or older.[1] The reason for this is simple: systematically more babies were born (relative to total population) in counties receiving more war spending both during and after the war. However, it is not appropriate to think of small children as economic agents producing and holding assets. By using a measure of adult population rather than total population,[2] I avoid biasing my results due to differential fertility. The median commuting zone had an *adult* population (21+) of 109,859 in 1940, while the county median was 38,217.

By commuting zones, the median fraction of population residing on rural farms was 41.6%, while the median manufacturing employment rate was 7.1%. In contrast, only 22.9% of the population of the continental United States resided on rural farms in 1940, while fully 20% of the labor force was employed in manufacturing. This implies that county observations skew rural, towards farms and away from manufacturing. In some sense this is unsurprising: population tends to cluster in big cities. However, this is important context for interpreting results: the main results shown in this paper are not driven by major cities, which make up a relatively small number of observations in the sample.

[1]The exceptions to this are the rural farm population share, which is measured as the fraction of total population living on rural farms, and 1940 manufacturing employment, which is measured relative to the 1940 labor force variable (which includes labor force ages 14+, as do the employment statistics). These measures are constructed differently due to data constraints.

[2]21 is used as the age cutoff because it requires the fewest assumptions of any possible cutoff for creating a consistent measure of county-level adult population across the 1930, 1940, 1950, 1960, and 1970 decennial censuses. While there is considerable variation between censuses in the age variables and bins used, it is possible to directly construct county-level measures of population ages 21 and over for the 1930, 1940, 1950, and 1970 censuses. For the 1960 census, it is possible to construct an approximate measure of adult population by subtracting total population ages 19 and under and then one-fifth of the population in the 20–24 age bin.

Table 1: Summary Statistics

By County (N = 3,093)

	mean	SD	min	%25	median	%75	maximum
1940 Population (total)	59,524	162,057	1,873	18,702	27,882	47,190	4,063,342
1940 Adult Population	38,217	112,601	1,132	11,166	16,748	29,022	2,851,587
% Urban Population, 1940	38.0%	20.3%	0.1%	22.2%	34.3%	51%	100%
% Population Rural Farm, 1940	37.2%	19.4%	0%	21.4%	38.2%	51.7%	88.4%
Manufacturing Emp Rate, 1940	13.5%	11.4%	0.5%	4.2%	9.8%	19.8%	60.4%
Housing Units, 1940	12,645	40,165	97	3,439	5,638	9,865	1,170,557
Housing Units, 1950	15,737	51,424	74	3,776	6,340	11,934	1,442,691
Housing Units, 1960	20,081	69,114	98	3,983	6,950	14,374	2,143,227
E-Bond Sales, 1944	$148	$104	$6	$85	$128	$189	$2,485
E-Bond Sales, 1949	$36	$30	$0	$16	$26	$45	$334
Bank Deposits, 1941	$465	$346	$13	$237	$394	$593	$5,036
Bank Deposits, 1944	$830	$485	$0	$492	$751	$1,066	$5,513
Bank Deposits, 1949	$857	$498	$46	$505	$800	$1,110	$8,453
Bank Deposits, 1956	$1,012	$568	$49	$619	$932	$1,280	$8,820
War Spending	$1,764	$4,457	$0	$19	$342	$1,705	$91,970
Wartime Saving	$547	$284	$0	$357	$496	$659	$3,135

By Commuting Zone (N = 761)

	mean	SD	min	%25	median	%75	maximum
1940 Population (total)	172,993	491,034	1,005	28,969	69,223	153,638	9,504,398
1940 Adult Population	109,859	334,574	600	16,807	40,333	92,651	6,495,334
% Urban Population, 1940	29.1%	21.6%	0%	13.2%	26.9%	42.2%	100%
% Population Rural Farm, 1940	41.3%	18.6%	0%	27.3%	41.6%	55.4%	88.6%
Manufacturing Emp Rate, 1940	10.0%	9.32%	0.2%	2.8%	7.1%	14.1%	45.5%
Housing Units, 1940	49,038	144,593	275	8,442	18,698	41,788	2,825,958
Housing Units, 1950	60,423	176,030	244	9,520	20,939	50,492	3,233,568
Housing Units, 1960	76,334	230,492	247	9,909	23,549	58,080	3,964,202
E-Bond Sales, 1944	$174	$115	$28	$108	$157	$211	$1,480
E-Bond Sales, 1949	$42	$32	$3	$20	$31	$53	$242
Bank Deposits, 1941	$516	$364	$0	$311	$439	$618	$4,621
Bank Deposits, 1944	$924	$465	$ 0	$618	$852	$1,148	$4,889
Bank Deposits, 1949	$957	$432	$0	$632	$943	$1,205	$4,485
Bank Deposits, 1956	$1,146	$530	$0	$762	$1,092	$1,391	$5,734
War Spending	$1,333	$2,682	$ 0	$22	$397	$1,527	$43,470
Wartime Saving	$587	$312	$0	$379	$517	$712	$2,623

Data come from the Decennial Censuses and/or City and County Data Books. County-level bank deposit data for 1941 provided by Paul Rhode. All dollar amounts reported in 1950 dollars and rounded to the nearest dollar. The manufacturing employment rate is the number of workers employed in manufacturing divided by the county labor force (age 14+). Adult population is defined as population aged 21 and older. (This cutoff was chosen because it was the easiest consistent measure of adult population to construct given the different age bins used for different census years.) Retail sales, E-Bonds, bank deposits, manufacturing (new) capital expenditures, and war spending are all measured relative to adult population (ages 21+). Fraction of population living on rural farms is computed relative to total population, since complete data on rural farm population by age is not available. All dollar amounts are rounded to the nearest dollar. For ease of interpretation, the inverse hyperbolic sine transformation is not applied to summary data.

Table 2: Summary Statistics: Surveys of Consumer Finance. 1947–51

	SCF 1947-1951, pooled	1950 Census
Black	7%	10%
WWII veteran	24%	28%
Age 18-64	89%	90%
Age 65 plus	11%	10%
Less than high school	42%	66%
High school	38%	28%
College	21%	6%
Rural	15%	36%
Homeowner	46%	55%

In contrast, the households in the Survey of Consumer Finance skew more urban than the nation as a whole, as well as more educated, though fairly similar to the US population as a whole over other dimensions. Table 2 compares the demographics of households surveyed in the SCF to demographics for the U.S. population as reported in the 1950 Census.

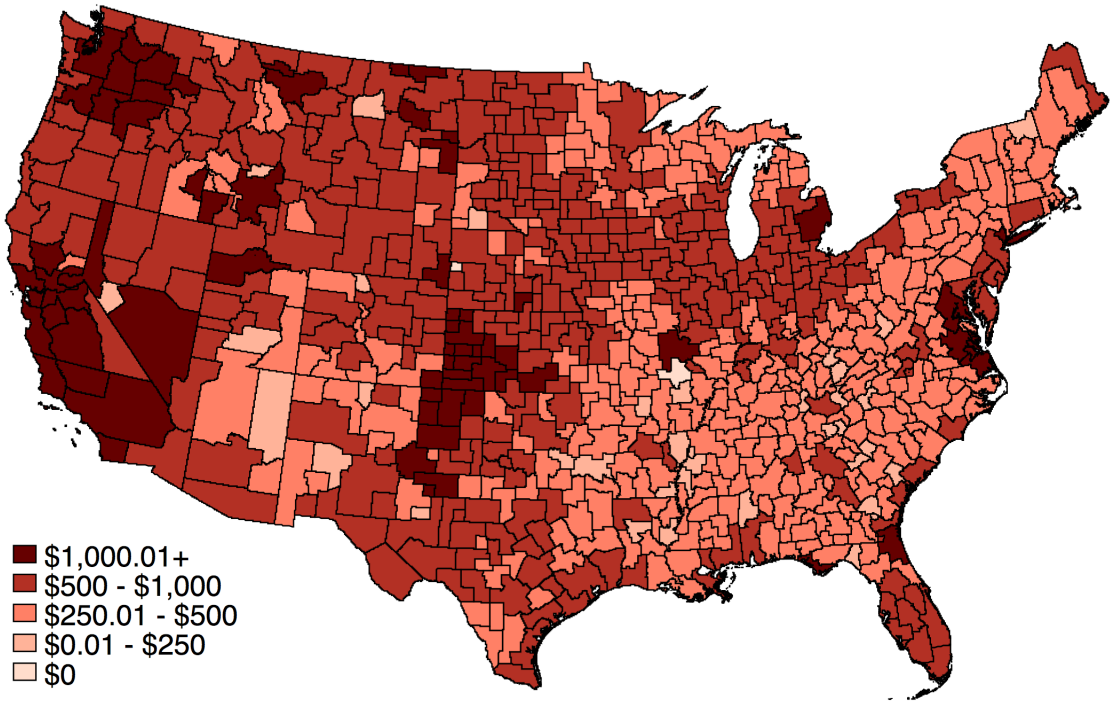
I construct my measure of wartime saving using the simplest approach possible given the available data: I take the difference in aggregate bank deposit holdings between the end of 1941 and the end of 1944 (years chosen for data availability, although the aggregate saving rate was in fact at its peak from 1942 through 1944) and then add Series E bond purchases for 1944 (the only year for which they are available by county). Specifically,

$$\text{wartime saving}_i = (\text{bank deposits}_{i,1944} - \text{bank deposits}_{i,1941}) + \text{E-bonds}_{i,1944} \tag{1}$$

where all prices are adjusted to 1950 dollars, and then scaled by the commuting zone's 1940 adult population (ages 21+). While imperfect, this is as good a measure as the available data allows. As seen in Figure 1, net private saving peaked over 1942–44. Since deposit data measure deposit holdings on December 31, this measure of wartime saving captures the change in deposits for each location over the period when saving was highest. County-level data on Series E bond purchases was only recorded for 1944. Figure 2 shows the geographic distribution of wartime saving by commuting zone.

The geographic distribution of per (adult) capita war spending is shown in Figure 3. While

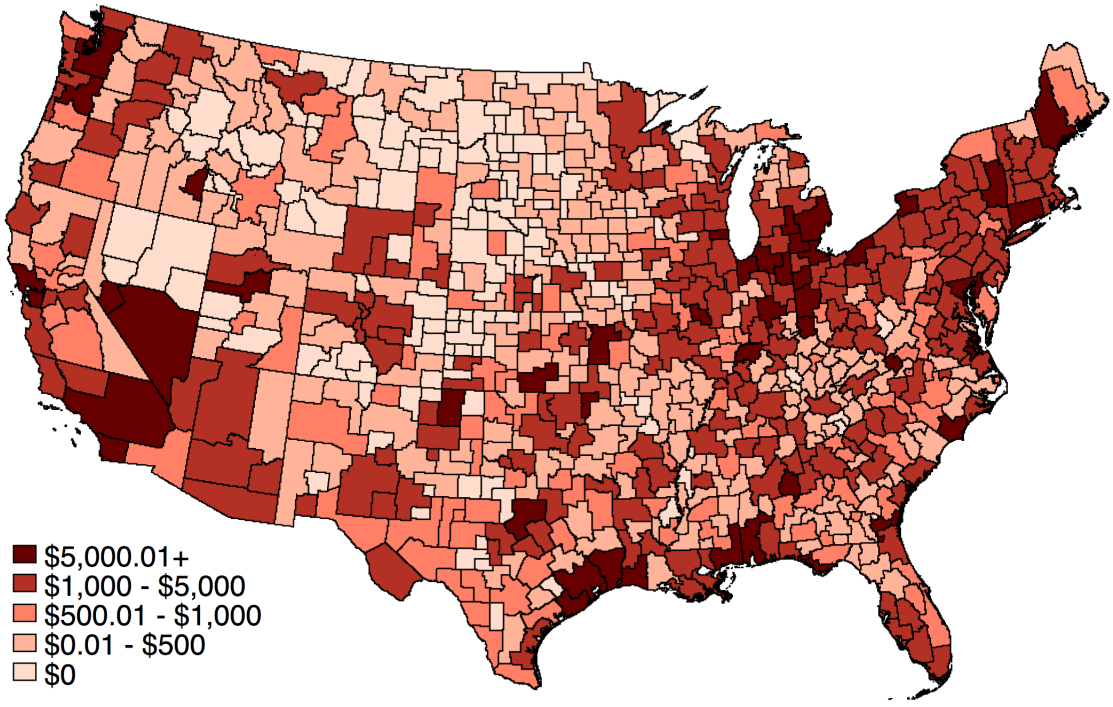
Figure 2: Total Wartime Saving per Capita (Population Age 21+, by Commuting Zone, 1950 $)



Source: Author's calculations using data from City & County Data Book

there is a positive correlation between war spending and wartime saving, the patterns are also significantly different, as can be seen by comparing the two maps. War spending was largely concentrated in urban areas, at least in part because they had pre-existing manufacturing capacity that could be turned to war production. The geographic distribution of pre-war manufacturing employment is shown in Figure 4. The raw correlation between 1940 manufacturing employment and total war spending is 0.37 at the level of the commuting zone. It is also essential to note that food production and food processing (the type of manufacturing most concentrated in rural areas) were excluded in the tabulations of war spending collected by the War Production Board. Table 1 shows that the median commuting zone received only $397 per adult in war spending, compared to an average of $1,333 per commuting zone. Switching from counties to commuting zones reduces the number of extreme outliers and reduces the skewness of the sample for many variables of interest.

Figure 3: Total War Spending per Capita (Population Age 21+, by Commuting Zone, 1950 $)

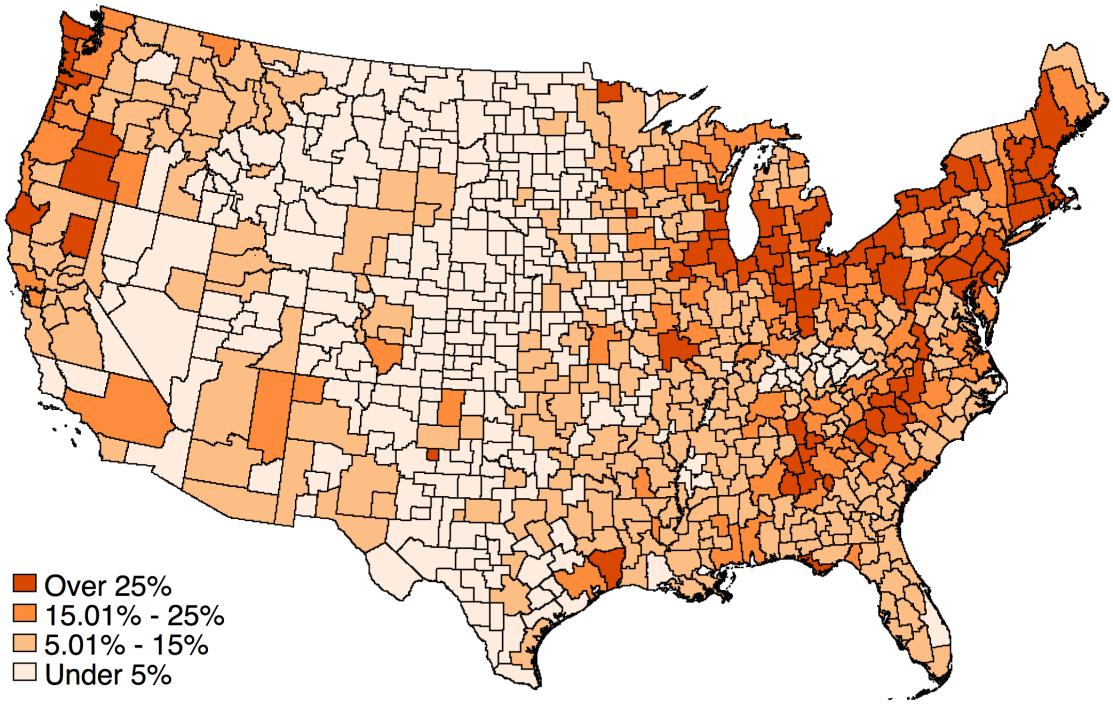


Source: Author's calculations using data from City & County Data Book

Because many variables of interest measured in dollar values include observed zeros, I use the inverse hyperbolic sine transformation for all appropriate variables, specifically wartime saving, war spending, deposit holdings, and war bond sales.[3] In this transformation, y_i is replaced with $log(y_i+(y_1^2+1)^{1/2})$. This transformation avoids the problems for values near zero introduced by more basic logarithmic transformations, but for larger values is approximately equal to $log(2y_i) = log(2) + log(y_i)$, so can be interpreted as if it were a standard logarithmic variable. Standard errors are clustered at the state level, with multi-state commuting zones assigned to the state containing the largest city in the commuting zone.

[3]Certain control variables already expressed as fractions between 0 and 1 (e.g. the fraction of occupied housing units containing mechanical refrigerator, the fraction of the population residing on farms) are not transformed.

Figure 4: Manufacturing Employment Rates in 1940 (by Commuting Zone)



Source: Author's calculations using data from City & County Data Book

2.2 Identification

Given my reliance on geographic variation, the key identifying assumption is that the geographic distribution of war spending is not driven by unobserved location characteristics that also influenced saving or residential investment.

Crucially for the validity of this identifying assumption, all specifications include controls for the location's pre-war manufacturing employment (i.e. manufacturing employment as reported in the 1940 Census divided by 1940 labor force) and the fraction of the population residing on rural farms in 1940. Together, these factors capture the key economic factors governing contract placement. I also include the change in the location's population between 1930 and 1940 to control for underlying trends in migration and population change while still allowing for migration driven by the war effort to influence the results. I include controls for pre-war values of all dependent variables.

War contracts were placed by the military and the military was neither interested in nor

concerned about the civilian economy. As a result, differences in local labor market conditions or differential recovery from the Great Depression were generally ignored when the military placed contracts.[4] The military's main consideration was reliability: both the quality and timeliness of production were key considerations when the military placed contracts. This led to a higher dollar volume of contract placements in places with more initial manufacturing capacity—places which might have received differential post-war shocks due to their greater manufacturing capacity. Thus, all specifications include controls for 1940 manufacturing employment rates.

The one function of the civilian economy which the military (and other war planners) intentionally protected from war production was food production, which was of course concentrated in farm areas. Importantly, while food production and food processing (the type of manufacturing activity most common in many rural areas) were part of the war effort, spending on food production and processing was excluded from the War Production Board's tabulation of war contracts, and thus is excluded from the data. This may mean that war spending is systematically undercounted in agricultural areas. Controlling for the share of the population employed in agriculture employed in 1940 accounts for the influence of these factors on contract placement. Since manufacturing capacity and agriculture appear to have been the key economic factors influencing contract placement, including controls for these variables is essential for causal interpretation of estimates.

2.3 Accounting for Population Changes

Previous work on the longer-term effects of World War II in the U.S. strongly suggest that the longer-term effects of World War II spending and production on economic activity worked through population flows. Fishback and Cullen (2013) find that war spending predicts post-war population growth, but find no lasting effects of war spending on wages or retail sales (which they interpret as a proxy for income and may also be interpreted as a proxy for non-durable consumption). Jaworski (2017) examines the role of World War II in the twentieth-

[4]Detailed evidence regarding the factors driving contract placement is presented in Brunet (2018).

century economic development of the U.S. South, but finds no evidence that war spending spurred development through capital deepening (as previous scholars had posited). Rhode (2003) examines the role of World War II spending in the development of the pacific coast, and (in contrast to Jaworski's study of the South) finds evidence that the war did matter: by permanently shifting economic activity towards California, Oregon, and Washington. However, Rhode's findings are largely consistent with Fishback's contention that war spending influenced economic activity largely through population flows, specifically migration.

As mentioned above in Section 2.1, war spending is associated with higher birth rates both during and after the war (even adjusting total population estimates to reflect post-war growth in the adult population). This implies that war spending drives population increases through both adult migration *and* increased fertility.

Given that, it is perhaps unsurprising that the results presented below are often sensitive to how population is computed. In the results given below, I always compute per capita values relative to the adult population (21+), to avoid bias due to differential fertility in locations receiving more war spending. I also (crudely) update population measures by always using adult population from the nearest census.[5] Thus wartime saving and war spending are measured relative to the adult population of 1940, as are 1944 bank deposit holdings and E-bond purchases, while 1948 bank deposit holdings and E-bond purchases are measured relative to the adult population of 1950. In this way the results condition upon migration—since population denominators account for it—but do not account for fertility differences, as those should affect economic activity only on a significant time lag, and could be interpreted as a unique form of both consumption and investment.

While the inverse hyperbolic sine transformation is applied to the number of housing units present in a location (commuting zone) in both 1940 and 1950, I do not adjust the number of housing units for population. This is because housing units reflect fixed capital. If these figures were adjusted for population changes, then areas with population declines would see artificial

[5]In the absence of good county-level intercensal population estimates and conscious that 1940s population flows were far from even across years—and very possibly contain trend breaks around the end of the war—this simple approach appears least likely to invite endogeneity problems.

increases in their housing stocks, over and above actual residential investment. Conversely, areas with population increases would see artificial declines in their relative housing stocks, even if residential investment was substantial. Population changes influence the *demand* for new housing stock, but that does not automatically translate into new investment. Indeed, in the modern era, housing stocks do not always keep pace with population growth in fast-growing areas, causing significant increases in housing costs.

The 1940s were characterized by unusually high rates of internal migration within the U.S. Accurately accounting for the effects of this migration on saving would be extremely difficult because we do not observe the savings of migrants separately from that of non-migrants. Approximately 60% of commuting zones gained population over the 1940s, while the other 40% lost population. It may be that the large accumulation of liquid assets during World War II reduced the financial frictions that often prevent households from moving, enabling the decade's unusually high mobility. However, these frictions are difficult to observe directly so it is hard to test this hypothesis.

3 Wartime Saving & Postwar Residential Investment

Housing construction—particularly in (new and expanding) suburbs—is a key element of the popular narrative of the post-war boom. Housing construction was limited during the war, giving rise to popular comedies like *The More the Merrier* (Columbia Pictures, 1943).[6] Since a large fraction of wartime savings was accumulated by households, it is natural to examine the influence of wartime saving on housing.

The ideal data for this question would be a local measure of new residential housing construction (or investment) after the war. However, county-level data on new residential construction is not available for this time period. (The aggregate data show large and lasting increases in residential construction after the war, matching the popular narrative). However, each decennial census for the period contains a variable measuring the total number of housing

[6]While there was some residential housing construction during World War II, over 70% of all single-family housing starts between 1940 and 1950 were after 1945.

units (both occupied and unoccupied). While this is not a direct measure of residential construction, it provides a good indirect measure, especially since the distinctions between single-family homes and multi-unit dwellings, or between owner-occupied and rented homes, are not of first-order importance in this setting. Regardless of who owned the new homes, any increase in the number of housing units in an area reflects residential investment.

3.1 Estimation

I estimate the following specification:

$$y_i = \alpha + \beta w_i + \gamma' X_i + \epsilon_i \tag{2}$$

where y_i is outcome y for geographic area i, w_i is total wartime saving in commuting zone i, divided by the area's 1940 adult population, and X_i is a vector of controls. Specifically, X_i includes the area's pre-war manufacturing emplopyment rate (the fraction of the area's population employed in manufacturing in 1940 divided by the 1940 labor force age 14 and up), the fraction of the area's population which lived on rural farms in 1940, and the area's population change over 1930 to 1940. The first two controls are important predictors for the geographic distribution of war spending (and influence economic outcomes in their own right). Including population changes from the preceding decade controls for underlying trends in migration unrelated to the war. X_i also includes state fixed effects.[7]

As with wartime saving, 1941 bank deposits and car registrations are calculated relative to adult population and then transformed using the inverse hyperbolic sine transformation. Since residential investment revolves around the stock of physical capital, I do not scale the number of housing units by population, though I do apply the inverse hyperbolic sine transformation. I also include the (inverse hyperbolic sine of the) number of housing units in the commuting zone in 1940 as a control in each regression, as housing stock is highly persistent over time.

[7]For CZs spanning counties in more than one state, the CZ is generally assigned to the state containing the largest population center in the modern data. In a handful of instances, this algorithim makes questionable assignments, which are corrected manually.

Note that the coefficient on 1940 housing units is approximately 1, as one should expect.

3.2 OLS Results

The OLS relationship between wartime saving and the number of housing units in 1950 is shown in the first column of Table 3. The estimates suggest that if per (adult) capita wartime saving increases by 10%, the number of housing units in an area increases by 2.9%. Back-of-the-envelope calculations suggests this implies that approximately $4,100 in wartime saving is associated with each additional housing unit. Given that the average purchase price of a home in the SCF is $8,052 (and that the SCF skews urban and therefore probably overestimates home costs for much of the country), the magnitude of the effect is large but plausible.

Column 2 of Table 3 shows the OLS relationship between wartime saving and the fraction of housing units in a commuting zone with modern private bathrooms (that is: running water, flush toilets, and a bathtub or shower, private to the housing unit) in 1950. A 10% increase in wartime saving is associated with a 1.1% increase in the fraction of the area's housing units with modern private bathrooms (relative to the fraction of housing units with those amenities in 1940). While it is not possible to observe whether the improved bathrooms are in new housing units or whether they are improvements to previously existing housing units, this estimate suggests that wartime saving is associated not just with an increase in the quantity of housing, but also with increased quality of housing.

Column 3 shows the OLS relationship between wartime saving and the fraction of housing units in a commuting zone with electric refrigerators in 1950. A 10% increase in wartime saving is associated with a 1.1% increase in the fraction of housing units with electric refrigerators in 1950, conditioning on the fraction of housing units with an electric refrigerator in 1940. Again, this may simply reflect that new housing units were more likely to have modern electric refrigerators rather than older iceboxes, or it may reflect upgraded durable goods in older housing units.

Finally, column 4 of Table 3 shows the OLS relationship between wartime saving and

Table 3: Wartime Saving, Residential Investment, and Durables Consumption

	(1) # Housing Units (HU)	(2) % HU w/ modern bathrooms	(3) % HU w/ electric fridge	(4) # Cars registered
Wartime saving	0.294***	0.113***	0.110**	0.0140**
	(0.0403)	(0.0240)	(0.0536)	(0.00658)
1939 mfg employment	0.0148	0.0402	0.0910	-0.00642
	(0.0698)	(0.0258)	(0.0597)	(0.0211)
% pop rural farm 1940	-0.299***	-0.0645*	0.0324	0.0728***
	(0.0549)	(0.0378)	(0.0743)	(0.0128)
1941 deposits	-0.0417	-0.00439	-0.0196	-0.0260***
	(0.0490)	(0.0152)	(0.0750)	(0.00881)
Population change '30–'40	0.00269***	0.000314**	-0.000286	-0.000172**
	(0.000959)	(0.000137)	(0.000396)	(6.59e-05)
# Housing Units '40	0.986***			
	(0.00771)			
HU w/ modern bathrooms '40		0.748***		
		(0.0449)		
HU w/ electric fridge '40			0.707***	
			(0.0824)	
# Cars registered '39				0.806***
				(0.0324)
Observations	761	761	761	761
R-squared	0.992	0.950	0.770	0.912

Data come from the decennial censuses and the County Data Books. 1941 bank deposits were provided by Paul Rhode, 1939 car registrations by Paul Rhode and Joshua Hausman. Population, employment, liquid asset, and car registration variables are measured as fractions of the adult population in the nearest decennial census year. The inverse hyperbolic sine transformation is used for all dollar amounts. State fixed effects estimated but not shown. Standard errors are clustered by state. *** p<0.01, ** p<0.05, * p<0.1

the number of registered cars (relative to population) in a commuting zone in 1947. A 10% increase in wartime saving is associated with a 0.1% increase in the number of registered cars (relative to the adult population) in a commuting zone, when controlling for the number of cars registered in the same location in 1939. While this result is statistically significant, the magnitude is quite small. Because cars wear out much faster than housing, it appears that a significant fraction of car purchases in the immediate post-war years simply replaced older cars purchased pre-war—and that geographic variation in wartime saving does not explain much of the post-war increase in car ownership.

3.3 Associations Between Declines in Asset Holdings and Home Purchases in the SCF

The Surveys of Consumer Finances supplement the results presented above by letting us examine the link between assets and housing at the household level. Table 4 shows the household demographic characteristics of bond holders in the SCF. Note that these estimates are *not* causal estimates. However, they show the close association between changes in asset holdings and home purchases at the household level, illustrating a mechanism that is not observable at the commuting zone level.

Column 1 shows the relationship between household demographics and the total value of a household's A-F bond holdings at the time it was surveyed for the SCF. The results are largely unsurprising: white households, more educated households, higher income households, older households, and more urban households all held significantly more A-F bonds (including both war bonds and victory bonds). The only slightly surprising finding is that households containing a World War II veteran held slightly fewer bonds on average than other households. However, this result is not statistically significant.

Column 2 shows how the same characteristics influence the likelihood that a household increased its A-F bond holdings (i.e. bought victory bonds) in the year before it was surveyed. The outcome is a binary variable, so the estimation is a linear probability model. Probit

Table 4: Demographics of Bond Ownership and Changes in Bond Holdings

	A-F bond holdings	Increase A-F holdings	Decrease A-F holdings
Black	-1.753***	-0.193***	-0.0308***
	(0.135)	(0.0187)	(0.0115)
Grammar school	0.695***	0.0493**	0.0246*
	(0.159)	(0.0233)	(0.0132)
High school	1.642***	0.143***	0.0432***
	(0.201)	(0.0264)	(0.0151)
College	2.808***	0.231***	0.0649***
	(0.232)	(0.0288)	(0.0166)
Wage income	0.602***	0.0540***	0.00771*
	(0.0574)	(0.00586)	(0.00396)
Zero wage	5.041***	0.441***	0.0396
	(0.484)	(0.0457)	(0.0339)
1939 mfg employment (county)	0.755	0.0602	0.0548
	(0.891)	(0.117)	(0.0575)
WWII veteran in household	-0.0991	-0.0222***	0.0276***
	(0.0603)	(0.00783)	(0.00722)
Head of household age 25-34	0.335***	0.0112	0.00997
	(0.0939)	(0.0128)	(0.00960)
Head of household age 35-44	1.257***	0.108***	0.0127
	(0.114)	(0.0179)	(0.0108)
Head of household age 45-64	2.022***	0.171***	0.00637
	(0.0945)	(0.0151)	(0.0110)
Head of household age 65+	1.652***	0.140***	-0.0337***
	(0.126)	(0.0182)	(0.0106)
Non-metro area, population 50K+	-0.285	-0.0381	-0.00315
	(0.187)	(0.0257)	(0.00998)
Population 2.5 – 50K	-0.293	-0.0430*	0.0141
	(0.198)	(0.0258)	(0.0123)
Town, population < 2.5K	-0.459**	-0.0568**	-0.00474
	(0.202)	(0.0250)	(0.0121)
Countryside	-0.521**	-0.0674**	0.00552
	(0.208)	(0.0273)	(0.0114)
Farm population (county)	-0.391	0.0229	-0.278**
	(2.292)	(0.285)	(0.119)
Observations	15,994	15,995	15,995
R-squared	0.171	0.104	0.033

Data come from the Surveys of Consumer Finance from 1947–1951. The inverse hyperbolic sine transformation is used for all dollar amounts. Standard errors are clustered by location. Omitted categories are white, less than grammar school education, head of household age < 25, and metropolitan area. Survey year is included but not shown. *** p<0.01, ** p<0.05, * p<0.1

estimation produces qualitatively similar results. The same characteristics that predict the amount of bond holdings also predict increases in bond holdings: white households, more educated households, higher income households, older households, and urban households are all more likely than others to have increased their bond holdings over the past year.

Column 3 of Table 4 shows how the same demographic characteristics predict the likelihood that a household decreased its holdings of A-F bonds (either by selling them or by redeeming matured bonds and not reinvesting them in government bonds) in the year before the household was surveyed. As in column 2, the outcome is a binary variable. Once again, probit estimation produces qualitatively similar results to the linear probability model shown.

The striking thing about column 3 is how little the factors that predict both total bond holdings and bond increases seem to matter. This is most obvious in the R^2 reported at the bottom of the table, which is much lower than for the other two columns. Black households were less likely than others to have decreased their holdings of A-F bonds in the past year, likely because they were less likely to have held bonds to begin with. Households headed by a person aged 65 or older were also less likely to have decreased their A-F bond holdings. There is still a relationship between education and decreases in bond holdings, and a weak relationship between decreased bond holdings and education. However, in almost every case the magnitude of the estimated coefficient is much smaller than for the analogous coefficients in column 2, suggesting weaker relationships. The major exception is the control for the fraction of population in the household's commuting zone living on rural farms, which had no predictive power for total bond holdings or bond increases, but is negative and significant (both economically and statistically) in column 3. This implies that households in agricultural areas were more likely to retain their assets in the form of bond holdings than households in less agricultural areas.

Since the demographic characteristics that so strongly predict increases in bond holdings have so little power for predicting decreases in bond holdings, an obvious question is what other household characteristics are associated with decreases in bond holdings. Table 5 addresses this question.

Table 5: Explaining Decreases in Bond Holdings

	(1)	(2)	(3)
Bought car in past year		0.0365***	
		(0.00732)	
Bought house in past year			0.169***
			(0.0160)
Black	-0.0308***	-0.0272**	-0.0269**
	(0.0115)	(0.0121)	(0.0115)
Grammar school	0.0246*	0.0216	0.0255*
	(0.0132)	(0.0133)	(0.0134)
High school	0.0432***	0.0359**	0.0436***
	(0.0151)	(0.0155)	(0.0158)
College	0.0649***	0.0583***	0.0675***
	(0.0166)	(0.0171)	(0.0177)
Wage income	0.00771*	0.00485	0.00546
	(0.00396)	(0.00429)	(0.00435)
Zero wage	0.0396	0.0162	0.0176
	(0.0339)	(0.0370)	(0.0376)
1939 mfg employment (county)	0.0548	0.0639	0.0569
	(0.0575)	(0.0540)	(0.0495)
WWII veteran in household	0.0276***	0.0265***	0.0241***
	(0.00722)	(0.00703)	(0.00794)
Head of household age 25–34	0.00997	0.00699	0.00358
	(0.00960)	(0.0102)	(0.0103)
Head of household age 35–44	0.0127	0.0106	0.00741
	(0.0108)	(0.0113)	(0.0115)
Head of household age 45–64	0.00637	0.00257	0.00381
	(0.0110)	(0.0117)	(0.0117)
Head of household age 65+	-0.0337***	-0.0324***	-0.0326***
	(0.0106)	(0.0121)	(0.0117)
Non-metro area, population 50K+	-0.00315	-0.00688	-0.00398
	(0.00998)	(0.00973)	(0.00896)
Population 2.5 – 50K	0.0141	0.00771	0.00828
	(0.0123)	(0.0115)	(0.0111)
Town, population < 2.5K	-0.00474	-0.0119	-0.00708
	(0.0121)	(0.0126)	(0.0115)
Countryside	0.00552	-0.00601	-0.000197
	(0.0114)	(0.0126)	(0.0101)
Farm population (county)	-0.278**	-0.229*	-0.287***
	(0.119)	(0.116)	(0.105)
Observations	15,995	14,845	15,058
R-squared	0.033	0.036	0.045

Data come from the Surveys of Consumer Finance from 1947–1951. The inverse hyperbolic sine transformation is used for all dollar amounts. Standard errors are clustered by location. Omitted categories are white, less than grammar school education, head of household age < 25, and metropolitan area. Survey year is included but not shown. *** p<0.01, ** p<0.05, * p<0.1

Column 1 of Table 5 simply repeats column 3 of Table 4. Column 2 adds an indicator for whether the household purchased a car in the past year. A household that bought a car in the year before it was surveyed for the SCF is 3.7% more likely to have decreased its bond holdings over that year than a household that did not buy a car. While statistically significant, the magnitude of this result is relatively small.

Column 3 of Table 5 adds an indicator for whether a household purchased a house in the past year. This time the result is both economically and statistically significant (though it should still not be interpreted as a causal estimate). A household that bought a house in the past year is 16.9% more likely to have decreased its bond holdings than a household that did not buy a house. While at some level this is unsurprising—households must come up with cash for at least a down payment when they buy a house—it shows a clear association between decreasing asset holdings and housing purchases at the level of the individual household.

Table 6 replicates Table 4, except with savings (combined savings accounts at banks, Savings & Loan accounts, postal savings, and other similar accounts) as the outcome variable in place of A-F bonds. The results are extremely similar across all three outcomes: total savings account balances, an indicator for the household having increased the balance of its saving account(s) in the past year, and an indicator fo the household having decreased the balance of its savings in the past year.

4 War Spending as an Instrumental Variable

While the results shown in the previous section are strongly suggestive, they are not causal estimates. Households may save for many reasons, and many demographic characteristics can influence households' accumulation of savings. To separate out the influence of World War II on household saving and subsequent household behavior (particularly residential investment), I will instrument for wartime saving using war spending.

Table 6: Demographics of Savings Account Balances and Changes Thereof

	Savings Account Balances	Savings Increase	Savings Decrease
Black	-2.023***	-0.0455***	-0.0306*
	(0.145)	(0.0119)	(0.0159)
Grammar school	1.137***	0.0152	0.00992
	(0.164)	(0.0160)	(0.0160)
High school	2.093***	0.0548***	0.0325*
	(0.192)	(0.0158)	(0.0173)
College	3.030***	0.0829***	0.0125
	(0.213)	(0.0154)	(0.0208)
Wage income	0.627***	0.0316***	0.0136***
	(0.0530)	(0.00438)	(0.00387)
Zero wage	5.676***	0.222***	0.0994***
	(0.452)	(0.0374)	(0.0313)
1939 mfg employment (county)	0.686	0.139	0.282***
	(0.767)	(0.0873)	(0.0744)
WWII veteran in household	-0.0495	-0.0191***	0.0339***
	(0.0567)	(0.00623)	(0.00733)
Head of household age 25–34	0.729***	-0.0550***	0.0349**
	(0.0875)	(0.0158)	(0.0147)
Head of household age 35–44	1.268***	-0.0715***	0.00426
	(0.0911)	(0.0176)	(0.0126)
Head of household age 45–64	1.715***	-0.0662***	-0.00780
	(0.0996)	(0.0192)	(0.0118)
Head of household age 65+	1.067***	-0.0453**	-0.0305**
	(0.147)	(0.0197)	(0.0140)
Non-metro area, population 50K+	-0.328***	-0.0289	-0.0273
	(0.124)	(0.0187)	(0.0183)
Population 2.5 – 50K	-0.159	-0.0366*	-0.0324
	(0.148)	(0.0186)	(0.0208)
Town, population < 2.5K	-0.349**	-0.0554***	-0.0454**
	(0.141)	(0.0187)	(0.0179)
Countryside	-0.180	-0.0569***	-0.0776***
	(0.221)	(0.0203)	(0.0227)
Farm population (county)	0.702	-0.365**	-0.519***
	(1.740)	(0.178)	(0.166)
Observations	15,983	15,995	15,995
R-squared	0.201	0.063	0.047

Data come from the Surveys of Consumer Finance from 1947–1951. The inverse hyperbolic sine transformation is used for all dollar amounts. Standard errors are clustered by location. Omitted category is head of household age < 25.
*** p<0.01, ** p<0.05, * p<0.1

4.1 The Validity of War Spending as an Instrument for Wartime Saving

For war spending to be a good instrument for wartime saving, it needs to be a good predictor of asset holdings late in World War II, but not a good predictor of saving during other periods.

I begin by examining the relationship between war spending and liquid assets (i.e. stocks of saving) both during the war and in the post-war period. I first confirm that war spending predicts variation in liquid asset holdings during World War II, then examine the persistence of those effects after the war. I estimate the following specification:

$$y_i = \alpha + \beta w_i + \gamma' X_i + \epsilon_i \tag{3}$$

where y_i is outcome y for geographic area i (either E-bond sales or deposit holdings, divided by adult population in the nearest census year), w_i is total war spending in area i, divided by the area's 1940 adult population, and X_i is a vector of controls. Specifically, X_i includes the area's pre-war manufacturing emplopyment rate (the fraction of the area's population employed in manufacturing in 1940 divided by the 1940 labor force age 14 and up) and the fraction of the area's population which lived on rural farms in 1940. Both of these variables are important predictors for the geographic distribution of war spending (and influence economic outcomes in their own right). X_i also includes state fixed effects.[8] As with war spending, I use the inverse hyperbolic sine of per capita E-Bond sales and bank deposits.

Table 7 shows the relationship between war spending and two key forms of liquid saving: series E war bond purchases and bank deposit holdings. Only individuals were allowed to purchase Series E war bonds (banks and other institutional investors could purchase Series F & G war bonds instead), so there is no overlap between E-bond purchases and deposit holdings. Series E bonds were not sold before May 1941, and county-level sales data is only available for 1944. At the state level, 1944 E-bond sales are highly correlated with total E-

[8]For CZs spanning counties in more than one state, the CZ is generally assigned to the state containing the largest population center in the modern data. In a handful of instances, this algorithim makes questionable assignments, which are corrected manually.

Table 7: Effects of War Spending on Post-War Saving

	(1)	(2)	(3)	(4)	(5)
	E-Bond Purchases		Bank Deposits		
	1944	1949	1944	1949	1956
War spending	0.0405***	0.000688	0.0483***	-0.0197	0.00515
	(0.00458)	(0.00101)	(0.0138)	(0.0123)	(0.0126)
1939 mfg employment	-0.0867	-0.00965	-0.313***	-0.133	-0.0957
	(0.0647)	(0.0155)	(0.105)	(0.107)	(0.111)
% pop rural farm 1940	-0.138*	-0.0418***	-0.150	-0.0825	-0.338*
	(0.0711)	(0.0144)	(0.168)	(0.169)	(0.174)
Population change '30–'40	-0.000495**	-0.000302***	-0.000770	-0.00146**	0.00144**
	(0.000214)	(8.93e-05)	(0.000553)	(0.000719)	(0.000609)
1941 deposits			0.888***	0.816***	0.822***
			(0.199)	(0.211)	(0.195)
Observations	761	761	761	761	761
R-squared	0.438	0.655	0.790	0.720	0.723

Data come from the decennial censuses and the County Data Books. 1941 bank deposits were provided by Paul Rhode. Population, employment, liquid asset, and car registration variables are measured as fractions of the adult population in the nearest decennial census year. The inverse hyperbolic sine transformation is used for all dollar amounts. State fixed effects estimated but not shown. *** p<0.01, ** p<0.05, * p<0.1

bond sales over the course of the war, so 1944 E-bond sales are likely a good proxy for total E-bond sales at the county level as well. County-level data on bank deposits for 1941 were tabulated by Paul Rhode, and are used as a control for deposit holdings at the start of the war. While war spending began in earnest in 1940, wartime saving did not increase dramatically until 1942, so measuring wartime saving relative to 1941 deposits is quite sensible.

Helpfully, county-level data on both E-Bond sales and bank deposit holdings is available for both 1944 and 1949, making it possible to directly observe cross-sectional differences in wartime saving both during and after the war. A 10% increase in war spending is associated with a 0.41% increase in E-bond purchases and a 0.48% increase in deposit holdings in 1944.[9] These relationships are highly statistically significant ($p < 0.01$) in 1944.

[9]The E-bond variable measures annual sales, so is inherently a flow variable. In contrast, bank deposit holdings are measured as a stock, though with the inclusion of 1941 deposits as a control the coefficients of interest may implicitly be interpreted as changes relative to 1941 deposits.

Both of these relationships attenuate by 1949. A 10% increase in war spending is associated with a 0.007% increase in E-bond purchases and a -2% decrease in deposit holdings in 1949. Neither of these results is statistically significant. The effects of war spending on deposit holdings are in fact never significant for any year for which data is available in the two decades after World War II.

4.2 IV Results

My IV specification is the same as the specification given in Section 3.1, except with war spending used as an instrument for wartime saving. The first-stage F-statistic for war spending is reported at the bottom of each regression table.

Table 8 is analogous to Table 3, except that it uses war spending to instrument for wartime saving. The first-stage F-statistic on war spending ranges from 29.2 to 40.5.

When using war spending as an instrument for wartime saving, a 10% increase in wartime saving is associated with a 7.1% increase in the number of housing units in 1950 relative to 1940. This estimate is considerably larger than the OLS estimate of 2.9%. A back-of-the-envelope calculation suggests that on average, a new housing unit would be associated with $1,843 in saving.

Even assuming that a non-trivial fraction of new housing was created by breaking existing housing into more housing units (e.g. converting large older houses to apartments rather than new residential investment), that the cost per unit of new housing units in multi-unit dwellings was significantly lower than the cost of new single-family homes, and that new housing was systematically built in the suburbs where land was cheaper, these magnitudes (whether OLS or IV) suggest that a very large fraction of wartime saving went into increasing the residential housing stock.

Column 2 of Table 8 shows that a 10% increase in wartime saving is associated with a 1.7% increase in the fraction of housing units with modern private bathrooms. This estimate is slightly larger than the OLS estimate, but not significantly different.

Table 8: Wartime Saving as Instrumented by War Spending

	(1) # Housing Units (HU)	(2) % HU w/ modern bathrooms	(3) % HU w/ electric fridge	(4) # Cars registered
Wartime saving	0.714***	0.167**	0.0406	0.0285
	(0.224)	(0.0797)	(0.0614)	(0.0195)
1939 mfg employment	0.118	0.0560	0.0690	-0.00402
	(0.119)	(0.0354)	(0.0672)	(0.0196)
% pop rural farm 1940	-0.215***	-0.0707*	0.0397	0.0752***
	(0.0824)	(0.0412)	(0.0701)	(0.0124)
Population change '30 –'40	0.00302***	0.000367***	-0.000402	-0.000162**
	(0.000966)	(0.000130)	(0.000349)	(6.33e-05)
1941 deposits	-0.205	-0.0174	-0.00436	-0.0310**
	(0.147)	(0.0293)	(0.0768)	(0.0129)
# Housing Units '40	0.980***			
	(0.0123)			
HU w/ modern bathrooms '40		0.711***		
		(0.0806)		
HU w/ electric fridge '40			0.774***	
			(0.0986)	
# Cars registered '39				0.788***
				(0.0396)
First Stage F-Stat	40.51	31.20	29.24	36.45
Observations	761	761	761	761
R-squared	0.989	0.947	0.765	0.911

Data come from the decennial censuses and the County Data Books. 1941 bank deposits were provided by Paul Rhode, 1939 car registrations by Paul Rhode and Josh Hausman. Population, employment, liquid asset, and car registration variables are measured as fractions of the adult population in the nearest decennial census year. The inverse hyperbolic sine transformation is used for all dollar amounts. State fixed effects estimated but not shown. Standard errors are clustered by state. *** p<0.01, ** p<0.05, * p<0.1

Column 3 shows that a 10% increase in wartime saving is associated with a 0.4% increase in the fraction of housing with an electric refrigerator. Unlike the OLS estimate for electric refrigerators, and unlike the previous IV estimates, this estimate is not statistically significant. The first stage F-statistic on war spending is 29.24, so weak instrument problems seem unlikely.

Column 4 of Table 8 shows that a 10% increase in wartime saving is associated with a 0.3% increase in the number of cars registered in 1947. While the coefficient is nearly twice the magnitude of the OLS estimate, it is no longer statistically significant.

Finally, Table 9 examines the influence of wartime saving on household-level outcomes in the SCF. Columns 1–3 show OLS estimates of the influence of average wartime saving for households in a given location on three different household outcomes relating to housing. The outcome in column 1 is an indicator variable for whether the household purchased a home in the past year. The outcome in column 2 is an indicator variable for whether the household lives in a home that was newly constructed (i.e. the household is the first to occupy its home). In column 3, the outcome is the (inverse hyperbolic sine of the) dollar amount of the household's current mortgage, which is likely to be higher for houses purchased more recently. Columns 4–6 repeat the same three regressions but using war spending as an instrument for wartime saving. These regressions include a wide array of demographic controls.

None of the OLS results are significant: after controlling for household characteristics, average wartime saving in a region has no predictive power for housing outcomes. However, the IV results are statistically significant at at least the 95% level for two of the three outcomes. A 10% increase in average wartime saving (as instrumented with war spending) in the household's commuting zone is associated with a 1.1% increase in the likelihood that a household purchased a new home in the past year and a 1.2% increase in the likelihood that a household lives in a home that was newly constructed when they bought it.

Because the treatment is only observed at the level of the commuting zone, it is impossible to include fixed effects for commuting zones. However, state fixed effects are included, and standard errors are clustered at the level of the commuting zone. The SCFs include households

Table 9

	OLS			IV		
	Home bought past year	Home built new	Current mortgage	Home bought past year	Home bought new	Current mortgage
Wartime saving	0.0117	0.00595	0.579	0.109***	0.118**	2.195
	(0.0173)	(0.0166)	(0.551)	(0.0409)	(0.0498)	(1.385)
Black	-0.0171***	-0.0171***	0.592*	-0.0173**	-0.0170***	0.601*
	(0.00632)	(0.00615)	(0.321)	(0.00701)	(0.00632)	(0.323)
Grammar school	-0.00447	0.00410	-0.182	-0.00785	-0.000230	-0.218
	(0.0114)	(0.0102)	(0.376)	(0.0115)	(0.0107)	(0.347)
High school	-0.000781	0.0134	0.190	-0.00578	0.00742	0.115
	(0.0114)	(0.0106)	(0.404)	(0.0117)	(0.0111)	(0.371)
College	-0.0102	0.00654	0.184	-0.0166	-0.00128	0.0941
	(0.0122)	(0.0114)	(0.409)	(0.0127)	(0.0125)	(0.374)
Wage income	0.0156***	0.0116***	0.496***	0.0142***	0.00997***	0.473***
	(0.00333)	(0.00296)	(0.0750)	(0.00352)	(0.00302)	(0.0760)
Zero wage	0.135***	0.0993***	3.445***	0.122***	0.0842***	3.211***
	(0.0251)	(0.0243)	(0.683)	(0.0269)	(0.0249)	(0.696)
1939 mfg employment (county)	0.0215	0.0553	0.468	0.110	0.165	1.834
	(0.0736)	(0.0914)	(1.584)	(0.0921)	(0.104)	(2.285)
WWII veteran in household	0.0223***	0.00236	0.439***	0.0228***	0.00358	0.441***
	(0.00536)	(0.00436)	(0.161)	(0.00523)	(0.00451)	(0.163)
Head of household age 25-34	0.0254***	0.0107	0.364	0.0246***	0.00973	0.324
	(0.00796)	(0.00727)	(0.553)	(0.00778)	(0.00694)	(0.553)
Head of household age 35-44	0.0184**	0.00768	-0.784	0.0175**	0.00654	-0.836
	(0.00870)	(0.00679)	(0.568)	(0.00886)	(0.00721)	(0.568)
Head of household age 45-64	-0.00598	0.00499	-2.824***	-0.00691	0.00437	-2.860***
	(0.00802)	(0.00680)	(0.549)	(0.00802)	(0.00685)	(0.550)
Head of household age 65+	-0.0289***	0.0105	-4.025***	-0.0302***	0.00885	-4.088***
	(0.00874)	(0.00854)	(0.576)	(0.00865)	(0.00863)	(0.575)
Non-metro area, population 50K+	0.00783	-0.00691	-0.395	0.0303	0.0182	-0.0665
	(0.0103)	(0.0113)	(0.311)	(0.0219)	(0.0230)	(0.487)
Population 2.5 – 50K	0.0263**	0.0184	-0.574	0.0481**	0.0440**	-0.203
	(0.0102)	(0.0133)	(0.356)	(0.0201)	(0.0221)	(0.499)
Town, population < 2.5K	0.0234**	0.0179	-1.101***	0.0502**	0.0493*	-0.658
	(0.0110)	(0.0161)	(0.399)	(0.0206)	(0.0262)	(0.565)
Countryside	0.00717	0.0319**	-1.761***	0.0318*	0.0605***	-1.317**
	(0.0101)	(0.0124)	(0.390)	(0.0193)	(0.0216)	(0.542)
Farm population (county)	0.0955	0.00700	-5.151	0.331	0.282	-1.779
	(0.142)	(0.179)	(3.929)	(0.211)	(0.241)	(4.762)
First Stage F-Stat				11.12	11.60	11.26
Observations	15,058	12,419	4,236	15,058	12,419	4,236
R-squared	0.017	0.081	0.220	0.008	0.067	0.213

Data come from the Surveys of Consumer Finance from 1947–1951. The inverse hyperbolic sine transformation is used for all dollar amounts. Standard errors are clustered by location. Omitted categories are white, less than grammar school education, head of household age < 25, and metropolitan area. A dummy for survey year is included but not shown.
*** p<0.01, ** p<0.05, * p<0.1

from 81 commuting zones, so it is not surprising that the first stages are significantly weaker for this regression than for the main analysis (containing 761 commuting zones). However, the first stage F-statistics for war spending are all slightly above 11, so the instrument still has enough power to be useful.

5 Conclusion

This evidence supports the popular narrative that World War II spending contributed to post-World War II economic prosperity by fueling the housing boom. Moreover, it suggests that the total stimulative effect of World War II spending may have been larger than estimates of the short-run fiscal multiplier would suggest.

In some sense the strong relationship between wartime saving and increases in the post-war housing stock are entirely consistent with the previous literature on the longer-term effects of World War II spending. Previous papers have shown that the main mechanism through which World War II spending influenced the American economy over the long run was through population flows. The 1940s U.S. saw more internal migration than any other decade in the 20th century. But these growing populations needed homes to live in. This paper provides suggestive evidence that wartime saving provided the capital households used to purchase new homes. Purchases of household durables helped outfit new homes.

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