Did the Modern Mortgage Set the Stage for the U.S. Baby Boom?

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ABSTRACT

This paper proposes that the introduction of low down payment, government-guaranteed mortgages set the stage for the mid-twentieth century U.S. baby boom by dramatically raising rates of home ownership for young families. Using newly digitized data on loan issuance and births by state-year and an instrumental variables strategy, we find government-backed mortgages led to 3 million additional births from 1935-1957, 10 percent of the excess births in the baby boom. Consistent with racial discrimination in these lending programs, we find no effects on births for Nonwhite women. Our results highlight the importance of access to home ownership for fertility decisions.

JEL Codes: J13, H31, N32, R38, G21

Keywords: fertility, FHA and VA loans, housing affordability, homeownership

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I. Introduction

After falling for many decades, birth rates in the United States flattened in the mid-1930s, and then began to grow dramatically, growing by 50 percent between 1935 and 1960, a period commonly referred to as the "baby boom." Common narratives of the period often focus on postponed births from the Great Depression or World War II, but the data clearly show the turn-around began in the mid-1930s – well before the onset of World War II and in a period when unemployment rates hovered around 20 percent (see Figure 1). Growth was then sustained for the following two decades during a period characterized by rising incomes, educational attainment, and female labor force participation —factors typically associated with *falling* fertility rates (Bailey and Collins, 2011). Considerable scholarship has been devoted to understanding the causes of the baby boom, but it remains a topic of considerable debate.

Concurrent with the mid-twentieth century baby boom there was a dramatic expansion in U.S. home ownership which was concentrated among young families. This can be seen in Figure 2. Between 1940 and 1960, home ownership rates among adults of childbearing-age rose from 20 percent to 50 percent, an unprecedented increase that has never been replicated. This growth was not simply a reflection of rising post-war incomes. Indeed, much like the pattern with birth rates, the evidence suggests around half of the growth in home ownership occurred *before* the end of World War II, a rather remarkable finding when set against the backdrop of the Great Depression and the virtual halt in residential construction during the war.[1] A direct contributor to the rise in homeownership was government intervention in mortgage markets during the 1930s and 1940s. In particular, the introduction of the Federal Housing Administration (FHA) mortgage insurance program in 1934 and later, the Veteran's Administration (VA) mortgage loan guarantee program in 1944, dramatically lowered required down payments and are credited with standardizing the high loan-to-value (LTV), long-term,

[1] A 1953 study by the Department of Labor found that by 1945, home ownership rates had risen from 43.6 percent to 53.2 percent, roughly half of the total increase from 1940 to 1960 (HUD, 1994). Fetter (2014) finds a similar pattern using data on property tenancy.

fully amortizing, fixed-rate mortgage that remains the norm in the U.S. today.[2] For the first time, home ownership became widely available to young, middle- and working-class families. With access to low down payment mortgages, home ownership shifted much earlier in life, and young people formed their own households earlier (Fetter, 2014).[3] This paper examines empirically whether this government-led revolution in housing finance "set the stage" for the U.S. baby boom.

Home ownership, in particular suburban home ownership, offers a number of benefits that many families value, such as space, stability, and access to safe neighborhoods and good schools. Home ownership, as opposed to rental housing, also allows families to build equity, which can be used as collateral to purchase a larger home to accommodate an expanding family. There is a growing body of empirical research highlighting the importance of housing costs and access to home ownership in childbearing decisions.[4] We propose that by facilitating earlier access to home ownership, the FHA and VA loan programs enabled young people to start families sooner and have more children.

In this paper, we empirically examine the effects of the FHA and VA loan programs on mid-twentieth century birth rates. To do so, we compiled state-by-year data from multiple sources, most of which we digitized for the first time. For mortgages, we digitized state-year

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[2] Prior to this time, mortgages typically required a 50 percent down-payment, payments covered interest only, and full repayment was required after a 5-11 year term (See, for example, Schwartz, 2014 or Green and Wachter, 2006 for reviews of the history of mortgage terms). The FHA and VA loan programs provided insurance against default for loans extended by private lenders. To be eligible for FHA insurance/VA guarantees, FHA/ VA mandated that the loans must include lower down payments (20 percent or less), longer terms (20-30 years), prescribed fixed interest rates, and be fully amortizing (an amortizing mortgage is one in which the principal is repaid over the life of the loan).

[3] Fetter (2013, 2014) studies the mid-twentieth century expansion in home ownership. Using credible, causal methods, Fetter (2013) finds that 40 percent of the increase in home ownership can be attributed to changes in mortgage terms, led by the FHA and VA. Fetter (2014) finds that the majority of the change in homeownership can be explained by homeownership at younger ages.

[4] Previous papers have established an empirical connection between home prices and/or mortgage costs and birth rates. For instance, Dettling and Kearney (2014) find that higher housing purchase costs lowers birth rates for non-owners; Lovenheim and Mumford (2013) and Dettling and Kearney (2014) find that the accumulation of home equity raises birth rates for owners; Hacamo (2021) finds that individuals exposed to mortgage market deregulation in the mid-2000s were more likely to buy a home and have a child; and Cumming and Dettling (2024) find that lower mortgage interest rates due to monetary policy actions raise birth rates.

data on FHA and VA loan counts, which we sourced from FHA and VA annual reports from the period. For births, we digitized/obtained state-year-race group birth counts from Vital Statistics reports from the period. We use these data to estimate two-way fixed effects ordinary least squares (OLS) regressions relating FHA and VA loan counts in a given year to births the following year, controlling for state and year fixed effects. Our regression models also control for state-year population and income (by type), obtained from the Census and Bureau of Economic Analysis (BEA), respectively. In some models, we further control for house prices, household savings deposits, and conventional (that is, not government-insured) mortgage lending.

OLS estimates indicate that in state-years in which more FHA and VA loans were originated, there were more conceptions resulting in a live birth the following year. This evidence is consistent with the hypothesis that these preferential mortgages led to an increase in subsequent fertility, presumably through increased home ownership. However, as these OLS estimates are based on realized loans – reflecting the equilibrium outcome of supply and demand for loans – they could reflect reverse causality or omitted variables, for example, if families who just had a child or are planning to have children seek out these loans (that could result in either upward or downward bias). To address the possibility of such bias, we propose a novel instrumental variables (IV) strategy that isolates supply-side variation in loan availability based on lenders willingness and ability to issue government-backed mortgages. In particular, we show that the interaction between government-backed mortgage interest rate spreads (a measure of loan profitability which varies across years) and the baseline concentration of mortgage lenders that specialized in issuing these loans (which varies across states) is highly predictive of state-year variation in government-backed loan issuance.

The IV results confirm the OLS results: government-backed mortgage issuance leads to increases in child-bearing the following year. Overall, we find that for each 1,000 additional mortgages issued in a state-year, there are about 309 additional births in the following year. A simple back-of-the-envelope based on our estimates suggests that the 10 million FHA and VA backed mortgages issued from 1934-1960 led to about 3 million additional births, or roughly 10

percent of the excess births in the baby boom. Additional empirical analyses into the mechanisms and pathways provide suggestive evidence that the availability of these low down payment mortgages lowered age at first marriage, lowered age at first birth, and raised completed fertility – three well-documented features of the baby boom period (see, for example, Bailey and Collins, 2011).

Although the FHA and VA can be credited with dramatically lowering upfront home purchase costs and expanding home ownership for many families, these programs were not available to everyone. It is well established that these programs explicitly discriminated on the basis of race and were essentially not available to prospective Black home buyers.[5] This terrible historical fact provides us with a falsification check on the causal interpretation of our results. Since Black adults did not generally benefit from these mortgages, there should be no direct causal effect of these mortgages on births to Black women. Consistent with racial discrimination in lending, we find economically small, and statistically insignificant effects of the government-backed loans on Nonwhite women's childbearing.

Our results add to the scholarly literature on the causes of the mid-twentieth century baby boom.[6] We add to this literature by proposing that the dramatic changes in the accessibility of home ownership may have "set the stage" for the baby boom. There are a few pathways through which this could have happened, but as a basic notion, the idea is that it became more feasible to purchase a home at a younger age due to lower upfront costs, which would have made starting and raising a family both more affordable and attractive. Of note, we do not propose easier access to homeownership was the *only* factor at play in the baby boom; rather, we hypothesize that the modern mortgage gave families access to space and security, reinforcing and potentially amplifying other contributing factors. We speculatively suggest that

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[5] In particular, to be eligible for FHA and VA backing, homes were required to meet appraisal standards. These standards stipulated that homes in or even near neighborhoods in which Black families lived were too risky for government insurance. For a more thorough discussion see Rothstein (2017), Chapter 4. There is a tangentially related literature to ours on red-lining and its effect on neighborhood segregation and long-run outcomes. See, for example, Aaronson et al (2021).

[6] Prominent examples in economics are Easterlin (1966), Doepke, Hazan and Maoz (2015), Albanesi and Olivetti (2009), and Greenwood, Seshadri, and Vandenbrouke (2005), as discussed in Section 2.

US government intervention in mortgage markets and the resulting expansion in young home ownership could explain why the US had an especially large baby boom relative to other countries (a fact that is documented in van Bavel and Reher, 2013). Consistent with this notion, we find that internationally, there is a strong correlation between a country's adoption of lower-down payment mortgages by the 1960s and the volume of a country's baby boom.

Our paper not only addresses a long-standing scholarly question about factors driving the mid-20th century Baby Boom, but it also has implications for modern policy. Fertility rates have steadily declined in recent decades and nearly all advanced economies are now experiencing below-replacement birth rates. Over the long run, this can slow economic growth and threaten fiscal sustainability, raising questions about what governments can do (see, for instance, Kearney and Levine, 2022). Understanding the causes of the dramatic turn-around in birth rates that occurred in the mid-twentieth century —and what role, if any, government policy played— is thus of critical importance. Many of the policy levers that governments across the globe have employed thus far in attempts to raise birth rates—such as tax incentives and childcare subsidies—have had null to modest effects and typically at a high cost for governments. Our paper suggests efforts to make home ownership more attainable for young adults (whose rate of home ownership fell precipitously after the Great Recession in the U.S., as can be seen in Figure 2) might be one area where governments could intervene and have a potentially meaningful impact.

II. Background

A. The Baby Boom and its Causes

The "baby boom" typically refers to the period between the mid- to late-1930s and 1960, when the general fertility rate (births per 1000 women of child-bearing age) rose from a bit below 80 to over 120—a 50 percent increase (Figure 1). The baby boom was preceded by nearly 100 years of declining fertility and lasted for more than two decades. It began in the mid-1930s, a period in which high rates of unemployment (around 20 percent) coming out of the Great Depression would lead standard models to predict that fertility should have *fallen* (Dettling and Kearney, 2023). Fertility then rose throughout the 1940s and 1950s against a backdrop of rising

educational attainment and female labor force participation, factors that in the past had also been associated with falling fertility (Bailey and Collins, 2011). Then, in the 1960s, fertility rates began to fall precipitously, stabilizing at about 65 births per 1000 women of childbearing age by 1970, where they remained until the mid-2000s. A considerable body of scholarship in economics, sociology and demography has studied this period, as reviewed in van Bavel and Reher (2013). Our read of the literature is that the baby boom is likely explained by a range of sometimes interrelated factors. We argue that more feasible access to home ownership at younger ages is one such factor.

Most of the economics literature about the causes of the baby boom falls within the tradition of the neoclassical Becker (1960) model and highlights changes in incomes and prices, including shadow prices of child-rearing. This includes the common assertation that the booming post-war economy can explain the baby boom. Several papers focus on other labor market developments during the baby boom period. Doepke, Hazan and Maoz (2015) argue that the entry of women into the labor market during World War II then depressed labor market opportunities for later cohorts of women, lowering the opportunity cost of child-rearing. Somewhat problematic for all World War II-related explanations is that birth rates began to rise before the war was over and before these factors would have begun to play out. A contemporaneous working paper by Downes (2024) puts forward the novel proposition that an increase in labor force unionization –which took place in the late 1930s—contributed to the baby boom through increased wages, protection against labor market shocks, and increased female labor force participation.

Several other papers highlight technological innovations which altered the shadow price of childbearing and childrearing during this period. Albanesi and Olivetti (2009) argue that medical innovations in the delivery of babies and infant formula lowered shadow prices. Greenwood, Seshadri, and Vandenbrouke (2005) propose that the diffusion of household appliances (e.g., washing machines, refrigerators, etc.) and time saved in home production lowered the shadow cost of childrearing. However, empirical work by Bailey and Collins (2010)

and Lewis (2014) finds that the timing of electrification and the diffusion of these technologies does not align well with the baby boom.

One of the seminal papers on the baby boom is that of Easterlin (1966), who argues that "relative income" affects preferences for childbearing. Easterlin argues that the baby boom cohorts formed modest material aspirations as children during the Great Depression, and when their post-war incomes exceeded those aspirations, they chose to have more children. Later cohorts' incomes were either about consistent with their aspirations or worse, leading to reversion to earlier childbearing norms of smaller families. This hypothesis is compelling – and arguably the explanation that has held up the best—but a common critique of the Easterlin hypothesis is that later episodes of rising and falling incomes have not led to similar baby boom-bust childbearing episodes. In our final discussion section, we speculate about how changes in home ownership rates might fit into Easterlin's hypothesis.

B. Mortgage Finance and Home Ownership in the Mid-20th Century

Prior to the Great Depression, home purchase financing was scarce and expensive, limiting home ownership to the affluent.[7] Lenders typically were not willing to finance more than 50-60 percent of a property's value, terms were short (generally, 5-11 years), and most mortgages were not self-amortizing. A typical contract was interest-only during the (short) term, after which a balloon (or "bullet") payment for the entire remaining loan was due, or the mortgage would need to be refinanced. With the onset of the Great Depression, many households who had managed to obtain mortgages found themselves underwater, without savings to afford the balloon payments, and lenders lacked the funding to refinance the loans. This led to a wave of foreclosures and threatened to collapse of the entire housing industry.

In response to the housing crisis, the federal government instituted a number of new policies that ultimately transformed housing finance and popularized many of the key features of the modern US mortgage that endure to this day. One on the most transformative was the

[7] For a review of the history of housing finance, see, for example, Schwartz (2014) or Green and Wachter, (2006).

creation of the Federal Housing Administration (FHA) under the National Housing Act of 1934.[8] One goal of the Act was to stimulate housing construction to reduce unemployment, and to achieve this aim, the FHA increased the supply of mortgage credit by providing mortgage insurance on loans extended by private lenders.[9] To qualify for the government insurance, mortgages had to conform to certain requirements, and these requirements ultimately made FHA-insured mortgages considerably more affordable than what had been available, especially for first-time home buyers. Most notably for young prospective homebuyers, the FHA increased allowable loan-to-value ratios (LTVs), reducing required down payments to about 20 percent or less of the purchase price.[10] This meant that families needed to accumulate considerably less savings in order to purchase a home. FHA also required longer terms (20-30 years) and prescribed a relatively low fixed interest rate, ensuring that the monthly payments on these much higher LTV mortgages remained affordable and predictable. Finally, FHA required that the mortgages be self-amortizing, ensuring families would build equity.

After World War II, as a part of the Servicemen's Readjustment Act of 1944 (commonly referred to as the "GI bill"), the Veteran's Administration (VA) began its own mortgage guarantee program for returning servicemen. The VA loan guarantee program followed the FHA model—guaranteeing loans issued by private lenders and requiring that the loans carry high LTVs, long-terms, prescribed low fixed rates, and self-amortize, but the VA offered zero

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[8] There were also shorter-lived programs which were key to stabilizing housing markets by stemming the tide of foreclosures. Key among them was the Home Owners Loan Corporation (HOLC), which refinanced mortgages for homes in foreclosure and also provided funds to make repairs. HOLC helped stabilize the housing market and also proved the feasibility of the long term, self-amortizing mortgages that FHA would later adopt (See, e.g., Schwartz, 2014).

[9] The National Housing Act of 1934 created the FHA and several housing insurance programs. Our analysis focuses exclusively on the loan insurance program created in Title II Section 203 of the Act, which insured loans on 1-4 family residences. Other parts of the Act provided insurance on renovation loans (Title I) and for the construction of low-income rental housing (Title II Section 207). Although the FHA mortgage insurance program in the Act was initially created as a temporary program in response to the housing crisis, it was extended several times and then made permanent in 1946.

[10] Under the original language of the National Housing Act of 1934, to be eligible for insurance, mortgages could carry maximum LTV of 80 percent and had to fully amortize over terms of 20 years. Later amendments extended the maximum terms to 30 years (in 1948) and LTVs to 90-95 percent (in 1956). Maximum interest rates also changed over time, as shown in Appendix Figure 1.

down payments and slightly lower legislated interest rates than the FHA.[11] In other words, VA loans were even more affordable for first-time buyers because they required no upfront down payment.

The terms offered in FHA- and VA-backed loans —particularly the reduced down payment requirements— dramatically lowered the upfront costs of home ownership, while also ensuring monthly mortgage payments were affordable and predictable. Consider an illustrative example of a prospective buyer of a $100,000 home (in today's dollars): before the FHA, the buyer would need a down payment of $45,000, and after 5-11 years of paying interest-only payments of about $250 a month (accumulating no additional equity outside any home price appreciation), the entire $55,000 loan balance would need to be repaid (or they would need to find a lender to refinance the loan).[12] As noted in Rothstein (2017), "few urban working and middle-class families had the financial capacity to do what was being asked." By comparison, with an FHA loan, the buyer would only need a down payment of $20,000 and would make monthly payments of about $500 for 20 years, at which point the loan would be completely paid off and they would own the home outright. VA loans featured no down payment requirement and even lower interest rates.

Not surprisingly, FHA- and VA-backed loans quickly gained popularity and by the early 1950s they represented nearly 45 percent of all outstanding mortgages (Grebler et al, 1956) and 60 percent of new mortgage debt (Klaman, 1958). Default rates on FHA- and VA- backed loans were ultimately fairly low (indeed, Green and Wachter, 2006 note that the FHA was consistently profitable in this period and typically returned money to the US treasury each year). Over time, as lenders saw that these style mortgages were profitable, they began to offer them more widely, whether the mortgages carried government insurance or not (Schwartz, 2014).[13] The

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[11] Originally, VA loans had maximum terms of 20 year, but over time terms were extended. In 1950, the median LTV on a VA loan was 91 percent and 32 percent of VA loans had LTVs over 100 (Fetter, 2013).
[12] Loan terms in this example are based on Fetter (2014), Table 1, columns 1 and 2, which reports that the typical loan in 1920 has an LTV of 55 percent, a term of 5-11 years and a 6.5 percent interest rate. In 1950, a typical FHA loan had an LTV of 79 percent, a term of 20 years, and a 4.5 percent interest rate. A typical VA loan had an LTV of 91 percent, a term of 20 years, and a 4 percent interest rate.
[13] This transformation mostly occurs after our analysis sample period. Modern private mortgage insurance started with the creation of the Mortgage Guarantee Insurance Corporation in 1957, the last

high LTV, 30-year, fixed-rate, self-amortizing mortgage ultimately became the norm in the US and remains so to this day.[14] In other words, the FHA and VA loan guarantee programs institutionalized the "modern mortgage" in the US.

Between 1940 and 1960, the home ownership rate increased from 45 percent to 65 percent. The expansion in home ownership in the 1940 to 1960 period was primarily a story of young people becoming owners at younger ages, leading to a complete transformation in the age structure of homeownership (Fetter, 2014). Figure 2a plots home ownership by age across Decennial Census years (note that home ownership information from the 1950 Census was destroyed). There is a clear shift toward earlier home ownership from 1940 and earlier Census years to the 1960 and later Census years. Of particular note, this increase in ownership was about equally explained by declines in renting and declines in the share of young adults living at home with parents or other family (Fetter, 2014). This suggests that the expansion in home ownership could have plausibly been accompanied by earlier household formation, marriage, and thus, age at initiation of childbearing—key features of the baby boom period. Indeed, Ricks (2021) finds that the VA loan program increased the marriage rate of likely veterans (relative to likely non-veterans) in places where down payment constraints would have been expected to be more binding due to higher house prices.

Although a number of factors are often cited as leading to this transformation in home ownership—for example, rising post-war incomes, suburbanization, the construction of new affordable housing developments, preferential tax treatment of housing, and expanded transportation options—our read of the literature is that scholars of this period of home ownership expansion have come to see the FHA- and VA- led changes in housing finance has having played a sizeable, and potentially primary, role in this transformation. Green and Wachter (2005) write: "With the strong expansion of the U.S. economy in the post–World War II

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year of our analysis sample period. This allowed lenders to issue low down payment loans beyond the FHA limit. Over time, the private sector out-competed FHA and "conventional mortgages" with long terms and high LTVs came to dominate the market (Green and Wachter, 2005).

[14] The exact US-style mortgage is not common internationally. Specifically, it is not common to have fixed terms at long maturities (adjustable rates and shorter terms are more the norm). High LTVs are relatively common, however (Green and Wachter, 2005).

period driving up incomes, together with the new institution of the long-term (and therefore affordable), fixed-rate, self-amortizing mortgage, homeownership expanded rapidly. America was transformed from a nation of urban renters to suburban homeowners…The FHA mortgage was a key to this transformation." According to a 1953 Department of Labor Study, about half of the total growth in home ownership occurred before 1945, when most of the factors cited above had not gotten underway (HUD, 1994). Furthermore, Fetter (2013)—who, to the best of our knowledge, conducts the only credible, causal analysis of the role of housing finance in the transformation in home ownership in this period—finds that 40 percent of the increase in home ownership is likely attributable to changes in mortgage terms.

Although the FHA- and VA- loan programs made home ownership more accessible for many young families, the programs overtly discriminated by race and promoted segregation (see, for example, Rothstein, 2017, Chapter 4). Both FHA and VA required that homes and borrowers meet appraisal standards to be eligible for insurance. To assist appraisers, the FHA created an *Underwriting Manual*, which the VA also used for its appraisals. A key aspect of this appraisal was FHA's judgement of the quality of the neighborhood in which the home under consideration for a loan was located, and race was considered a critical factor of the quality of a neighborhood.[15] Explicit in the *Manual* was the proposition that homes in neighborhoods in which Black families lived were too risky to be eligible for government mortgage insurance.[16] The *Manual* included maps with color-coded letter ratings for each neighborhood within a city, with the riskiest neighborhoods in which the FHA would not insure homes shaded red. Nearly all neighborhoods in which Black families lived were shaded red (leading to the term

[15] FHA and VA also had appraisal standards for the property itself and the borrower.

[16] For example, the 1935 *Manual* stated: "If a neighborhood is to retain stability it is necessary that properties shall continue to be occupied by the same social and racial classes. A change in social or racial occupancy generally leads to instability and a reduction in values." The 1934 *Manual* stated: "The more important among the adverse influential factors … are the ingress of undesirable racial or nationality groups…All mortgages on properties in neighborhoods definitely protected against the occurrence of unfavorable influences obtain a higher rating."

"redlining"). In practice, this meant that FHA/VA almost exclusively insured mortgages for White families in Whites-only neighborhoods.[17]

Figure 2b shows home ownership rates by race and age group over this period based on Census data.[18] White adults of childbearing age (under age 45) exhibit a marked increase in their home ownership rates, which rise from about 20 percent to 50 percent between 1940 and 1960. By comparison, groups that were less likely to benefit from the new mortgages – Nonwhite adults and older White adults – did not experience as large an increase. Home ownership rates among nonwhite adults of childbearing age increased only from 10 percent to about 20 percent. A key part of our analysis in this paper will be estimation of heterogenous effects by race, as we would not expect government-backed home lending to have direct effects on childbearing for Black women in this period.[19]

III. Data

Most of the data used in this paper are newly digitized. This section briefly describes the sources; the Data Appendix provides considerably more detail on the sources and methods of data collection. Table 1 displays summary statistics of the data we collected.

Data on FHA and VA mortgage issuance by state and year were hand-digitized from annual reports from each agency.[20] FHA Annual Reports for the years 1935-1960 were found in

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[17] Rothstein (2017) points out that not only would the FHA not lend to Black families in either white or diverse neighborhoods, but they also would not lend to white families in diverse neighborhoods, thus promoting segregation. He does note there are a few examples where FHA insured homes for Blacks in Black-only neighborhoods, but this was relatively uncommon.

[18] Only household heads or spouses in owned housing are consider homeowners. Other adults are considered nonowners, including household heads and spouses in rented housing as well as adults who are neither the household head nor the head's spouse in owned housing.

[19] Our results will estimate direct effects of these loans, but as we noted earlier, there were indirect effects on housing finance and housing markets from the introduction of these loans that we cannot estimate and these might have affected family formation among Black families as well. For example, the availability of these loans is widely credited with spurring suburbanization and an expansion in housing supply. If that made obtaining a (larger) home or rental easier or more affordable, that could have independently affected Black childbearing decisions. Thus, although we would not expect government-backed loans to have *direct* effects on Black homeownership and birth rates, it is plausible they had positive, *indirect* effects on Black families.

[20] State is the lowest level of geography for which these data are available for the entire baby boom period. That being said, state is arguably preferable to lower levels of geography (such as counties) for

bound volumes. VA Annual Reports from 1945-1958 can be found on the VA website. For FHA, we collected information on total cumulative loans (number and dollar volume) with FHA insurance under Title II, Section 203 of the National Housing Act of 1934. For VA, we similarly collected total cumulative loans (number and dollar volume) guaranteed by the VA under the Servicemen's Readjustment Act of 1944. Both series are cumulative counts since program inception, which we convert into yearly issuance using a difference from the prior year. The VA reports are on a fiscal year basis and the data are recorded at mid-year (end of June). Thus, to match the rest of our data we assign half the loans in each publication year to the prior calendar year. In all our analyses, mortgage counts are expressed in thousands and dollar volumes in millions of nominal dollars. Figure 3 shows the time series of FHA and VA loan issuance over time.

We compiled birth counts from National Center for Health Statistics (NCHS) Vital Statistics publications. For the years 1933-1939, we use published birth counts by state of occurrence, race (White or Nonwhite), and year, which were digitized by Eriksson et al (2018) and can be found at ICPSR. We limit the sample to after 1933 because that is the first year in which every state had entered the birth registration area system. For the years 1940-1960, we use birth counts by mother's state of residence, race (White or Nonwhite), and year, from data digitized for Fuller (2024), which was generously provided to us by the author. All birth counts are expressed in thousands.

We also compiled data on population and income. Population counts by state and year were obtained from Census State Intercensal population tables and expressed in thousands. These data reflect total population, rather than the female population 15-44, which to our knowledge is not available by state and year in this period. Thus, these population counts will include newly born babies, however, in all of our analysis the dependent variable will be births

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our question for a few reasons. First, families often move across counties and neighborhoods when they purchase their first home. Indeed, the loans we study were most typically used to purchase homes in new suburban neighborhoods, typically in outlying counties away from older neighborhoods in urban centers. Second, the regulatory environment of the period makes states the appropriate unit of analysis of the lending environment, as banks were generally prohibited from lending on properties across state lines but could lend outside their immediate neighborhood within a state.

in year *t+1* (in order to date births to the year of conception) so there is no overlap in the measures. Data on personal income comes from the Bureau of Economic Analysis (BEA). We use total personal income by state and year, separately by type of income (wage and salary, proprietors, farm, and non-farm), all of which are expressed in millions of nominal dollars.

IV. Baseline Empirical Strategy and Results

A. Empirical Specification

We begin our analysis by estimating ordinary least squares (OLS) models of the following form:

$$births_{st+1} = \beta_1 mortgages_{st} + \beta_2 population_{st} + \beta_3 income_{st} + \delta_s + \theta_t + \varepsilon_{st} \quad (1)$$

where $births_{st+1}$ refers to the count of births in a state and year. We use births in *t+1* in order to date births to the year of conception (approximately) since that is when the decision is made to become pregnant. $mortgages_{st}$ refers to the number of either FHA or VA (or combined) mortgages issued in a state and year. In robustness checks we alternatively look at dollar volumes of loans (Appendix Table 1). $population_{st}$ is the state-year population, and $income_{st}$ refers to the vector of state-year income measures. δ_s and θ_t are state and year fixed effects, respectively. In all specifications, standard errors are adjusted for clustering by state.

B. Results

Table 2 displays results. Panel A shows the results for all births. The first three columns pool the entire sample period and separately analyze FHA loans (Column 1), VA loans (Column 2), and combined FHA plus VA loans (Column 3). The point estimates indicate that each government-backed loan leads to between 0.3036 (for FHA) and 0.3309 (for VA) additional births, with a combined effect of both programs of 0.3124 additional births. In terms of effect sizes, our estimates imply that a one standard deviation increase in the number of loans increases births by 6 percent at the mean of the dependent variable.

One might be concerned that including the years of World War II in the sample period might bias the results, since the war had large effects on birth rates and mortgage issuance. To address that concern, column (4) focuses exclusively on FHA loans in the pre-war period (1933-

1940) and columns 5, 6, and 7 focus exclusively on the post-war period (1946-1957). Effects are larger (but less statistically precise) in the pre-war period, perhaps indicating the fertility was more responsive to the loans in those years, but the standard errors are sufficiently large that we cannot rule out symmetric effects in the pre- and post-war periods. In the post-war period, the effects sizes are similar across columns, although they are no longer statistically significant at conventional levels when only FHA loans are considered. This could be because the terms of the VA loans were more generous (i.e., no downpayment) and so young couples likely preferred these loans (and many would have been returning veterans).

Table 2 Panels B and C display results for births to White and Nonwhite mothers separately. The differences are striking. All of the total effect shown in Panel A is driven by births to White women, with the point estimates almost identical to those for total births. For births to Nonwhite women, the point estimates are considerably smaller in magnitude (about a tenth of the size), sometimes opposite signed, and none are statistically different from zero. This indicates government-backed mortgages had no discernible effect on births to Nonwhite women, consistent with racial discrimination in these programs making these mortgages unavailable to Black women.[21]

V. Instrumental Variables Approach: Supply-Side Variation in Loan Issuance

An obvious empirical concern is to what extent the state-by-year variation in issuance we exploit for identification in our two-way fixed effects models is driven by omitted variables or demand factors (i.e., borrowers seeking out such loans) which could be endogenous to

[21] As an additional specification, we estimate equation 1 including additional mortgage origination lead and lag terms. Our baseline specification relates births in year *t+1* to loans originated in year *t* because we wish to study how these loans affect the decision to get pregnant, and most births in year *t+1* were conceived in year *t*. But, of course, some births in year *t+1* were conceived in year *t+1.* There may also be lagged effects of loans on conceptions. Therefore, we estimate equation 1 including additional terms $mortgages_{st+k}$ where $k = (-1,1,2)$. Of note, k = 2 refers to the year *after* births are counted, meaning that term can be interpreted as a test for "pre-trends." The results are shown in Appendix Figure 2 for the combined FHA and VA measure. Confirming the lag structure we use in our main specification, we find positive (and statistically significant) effects on total and White births in year *t+1* from loans originated in year *t*, and smaller, positive (but not statistically significant) effects from loans originated in year *t+1*. We find null effects on year *t+1* births from loans originated in year *t-1* and year *t+2*.

childbearing decisions. This section discusses the supply factors which determined loan availability and our instrumental variables (IV) strategy which exploits these supply factors to establish causality.

A. Time Series Determinants of Issuance

Nationally, FHA and VA loan issuance fluctuates quite a bit year-to-year, particularly in the post-war period. This year-to-year variation is considerably larger than year-to-year variation in incomes per capita or in conventional (that is, not government insured) mortgage lending (Appendix Figure 2). On its face, these trends would suggest a potential role for supply-related factors which are unique to government-backed lending.

What drives this year-to-year variation in issuance? Recall that these government-backed loans are issued by private lenders, but that the terms of the loans were dictated by government policy (that is, interest rates were legislated by Congress) and were changed somewhat infrequently. This means that the interest rates on government-backed loans could not freely adjust with market developments, as yields on other investments lenders might make would. In other words, the relative profitability of FHA and VA loan issuance as compared to other investments—namely, corporate bonds – changes over time. Figure 3 compares the spread between FHA/VA interest rates (obtained from Congressional Quarterly Almanac 1968) and corporate Aaa bond yields (obtained from Moody's) with trends over time in national FHA and VA loan issuance.[22] As seen clearly in the figure, loan issuance closely follows spreads from the prior year, consistent with lenders issuing more FHA/VA loans when they are relatively more profitable than corporate bonds (and via versus). Of note, interest rate spreads with corporate bonds were known in the period to be a key factor driving issuance (See, e.g., Klaman, 1961).[23]

B. Cross-sectional Determinants of Issuance

The period we study was characterized by a regulatory environment that limited bank expansion (See Kroszner and Strahan, 2007, for a review). New banks were required to obtain a

[22] Appendix Figure 1 shows the level of FHA and VA interest rates and Aaa corporate bond yields.
[23] Fetter (2013) also examines these spreads in his analysis of VA loan issuance.

charter from the state legislature, and state legislatures severely restricted those charters and limited both inter-state expansion (banks were prohibited from operating across state lines) and intra-state expansions (banks were limited to branching to a single city or county, with some states prohibiting any branching at all). As such, banks were not able to freely expand in response to rising demand for loans. This frequently led to mismatch between the supply and demand for mortgages. Schwartz (2014) writes about this period: "…the major challenge faced had to do with regional imbalances between demand and supply of mortgage funds…In rapidly growing communities…demand for mortgages could far outstrip the amount of funds from depositors. In contrast, thrifts in older, more slowly growing communities…frequently had an excess of deposits relative to demand for new mortgages."

Following this intuition, we propose that the density of lenders across states was a constraint on loan issuance. The major lenders of government-backed mortgages in this period were commercial banks and savings and loan (S&L) associations (Green and Wachter, 2006).[24] There is considerable variation across states in the combined number commercial banks (obtained from the FDIC) and S&L associations (newly digitized data from Census Statistical Abstracts) per 1000 people in 1939 (the first year such data is available, shown in Appendix Figure 4).[25] Furthermore, lender density is highly persistent over time: the correlation between the number of lenders in a state in 1939 and the number of lenders in a state in 1957 is 0.93 (Appendix Figure 5). Together with the narrative evidence on loan supply, this persistence

[24] From 1935-1939, between about 60-70 percent of FHA originations were from commercial banks or Building and Loan Associations (the predecessor to S&L associations) (FHA Annual Report, 1940). From 1946-47, 65 percent of total FHA and VA issuance came from these institution types (Klaman, 1958). Other key issuers were life insurance companies and mutual savings banks. We do not have data on these institutions but unlike the other two institution-types, they were able to engage in some cross-state lending (Klaman, 1961).

[25] Prior to 1939, Census Statistical Abstracts do have information on the presence of Building and Loan (B&L) associations. B&L Associations were similar to S&L associations in that their primary business was to hold deposits and extend residential mortgages, and the use of the phrase "B&L Associations" was phased out and replaced by the phrase "S&L Associations." Appendix Figure 5b shows that the correlation between the number of B&L Associations in 1934 and the number of S&L Associations in 1939 (the first year S&L data are available) is very high. We interpret this as suggestive that the number of mortgage lenders also did not expand much (if at all) between 1934-1939 in the early years of the FHA program.

suggests that the number of lenders in a state in the early part of the sample (1939) was a plausible constraint on lending in our sample period.

C. Instrumental Variables Strategy

We propose that the interaction between lender presence in a state (measured in 1939) and annual variation in interest rate spreads on these loans will predict state-level loan issuance over time. In particular, we estimate the following first stage relationship as part of our IV empirical strategy:

$$mortgages_{st} = \gamma_1 spread_{t-1} * lenders_s + \gamma_2 population_{st} + \gamma_3 income_{st} + \delta_s + \theta_t + \varepsilon_{st} \qquad (2)$$

Where $spread_{t-1}$ refers to the difference between the legislated prescribed interest rate on either FHA or VA loans (or the minimum of the two for the combined measure) and the yield of Aaa corporate bonds in year *t-1*. $lenders_s$ refers to the combined number of S&L associations and commercial banks in the state in 1939. We use spreads in *t-1* because Figure 3 suggests there is a one year lag between changing spreads and issuance.[26] As before, we control for population and incomes and state and year fixed effects. The main effect of $spread_{t-1}$ and $lenders_s$ are perfectly collinear with the year and state effects and thus are omitted.

Table 3 shows the results of estimating equation (2) using OLS for FHA, VA and combined issuance for the pre-war and post-war periods. As might be expected from the visual time series evidence in Figure 3, the first stage is much weaker during the pre-war period and for FHA lending, such that the first stage F-statistics falls below conventional thresholds for identifying a strong instrument (Stock and Yogo, 2005). However, for the post-war period we find a strong relationship for VA and combined FHA and VA lending, with an F-statistic of 32.7 on VA and 23.4 on FHA and VA combined. We proceed with estimating the VA and FHA and VA combined IV models for the post-war period only.[27]

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[26] Klaman (1961) also notes this lag structure between spreads and issuance. He attributes the lagged response to the influence of a variety of other economic factors driving issuance.

[27] Klaman (1961) notes that the relationship between spreads and issuance tightened substantially in the post-war period because of the end of mortgage credit restraints (which had been in place under the Defense Production Act) and the suspension of Regulation X. He also notes that the relationship between spreads and issuance is also tighter for VA than for FHA. This would be consistent with VA loans being

D. Probing the Identifying Assumptions

The identifying assumption for these IV models to produce causal estimates is that the interaction between spreads and lender presence would not have affected childbearing except through changing government-backed mortgage issuance. The use of two-way fixed effects ensures that any effects of spreads on child-bearing trends which are common across states would not affect our estimates. For example, if spreads are related to market conditions which also alter household wealth or income, it would not be expected to bias our estimates. Similarly, our estimates would be net of any fixed differences across states that might be correlated with preferences for children; for example, if states with more lenders are more urban or high income.

Although our identifying assumptions are ultimately untestable, our instrument is similar in construction to the classic "shift-share" style instrument and recent papers propose useful tests for the plausible exogeneity of such an instrument. In particular, Goldsmith-Pinkham, Sorkin, and Swift (2020) highlight that the key assumption in shift-share research designs is the exogeneity of the "shares," which in our case would be state lender presence. Figure 4 displays the state-level correlations between our measure of lender presence (scaled by population) and crude birth rates just prior to the first FHA loan originations in 1935. There is no correlation between lender presence and birth rates in 1933 (Panel A), nor is there a correlation between lender presence and changes in birth rates from 1933-35 (Panel B). The latter supports the assumption of "parallel trends" across states according to lender presence in the few years leading up the creation of the FHA.[28]

E. IV results

We estimate the following equation using two-stage least squares:

$$births_{st+1} = \beta_1 \widehat{mortgages}_{st} + \beta_2 population_{st} + \beta_3 income_{st} + \delta_s + \theta_t + \varepsilon_{st} \quad (3)$$

where $\widehat{mortgages}_{st}$ is estimated using equation 2. Table 4 displays the results. The point estimates

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the most "marginal" for lenders because they were considered higher risk (presumably due to lower downpayment requirements and interest rates than FHA).

[28] We also estimate robustness checks were we probe the sensitivity of our results to the lender mix and timing of the shares, and find our results are robust (Appendix Table 2).

in panel A indicate that each additional VA (FHA and VA) mortgage leads to 0.3306 (0.3087) additional births. These are somewhat larger than the post-war estimate in Table 2 Columns 6-7, but about the same as the full period estimates in Table 2 Columns 2-3. The OLS estimates in Table 2 Columns 6-7 are also well inside the 95 percent confidence interval of the IV estimates. Still, if we take seriously the differences in magnitude between the OLS and IV estimates (which are not *statistically* meaningful) it would suggest that if anything, our OLS estimates are downward biased.[29] As in the OLS tables, we find the effects are entirely driven by births to White women. The magnitudes for births to Nonwhite women continue to be about a tenth of the size of the effects on white births and are not statistically different from zero.

VI. Supplemental Analyses: Robustness and Pathways

A. Robustness

We conducted a number of checks on the robustness of our estimates to additional controls and alternative model specifications. First, we consider that a possible violation of our exclusion restriction could be if institutions substitute away from government-backed mortgages and invest in conventional mortgages when spreads are lower, and conventional mortgages might independently affect birth rates. We think this is somewhat unlikely because conventional loans were considerably less affordable than FHA- and VA- backed loans—with much higher down payment requirements, as well as higher interest rates and shorter terms—and thus, were likely serving the older, wealthier borrower pool who had utilized these mortgages prior to 1935.[30] Still, to probe this further, we estimate models controlling for a

[29] There are a number of plausible explanations for this pattern. First, our IV estimates could reflect a local average treatment effect (LATE). The supply side variation we exploit in the first stage is likely to affect more "marginal" mortgage borrowers in terms of credit quality. These marginal borrowers (the "compliers") would be expected to be younger (since credit quality generally increases with age) and thus, more likely to be of childbearing age than the average mortgage borrower. This would lead the LATE uncovered in our IV strategy to be larger than the OLS estimate. Second, it could be consistent with reverse causality in our OLS estimates (wherein families who just had children and thus cannot get pregnant again this year seek out these loans). Finally, it could reflect some omitted variables which would reduce mortgage demand but raise births (e.g., wealth) or simply attenuation bias due to measurement error.

[30] Fetter (2013) Table 1 reports on conventional loan terms in 1950 and 1960 based on Census Residential finance Survey data. In 1950, the median LTV was 66 percent and in 1960, 68 percent (compared to nearly 80-90 percent for FHA/VA). In 1950 the median term was 11 years, and in 1960, 15 years (compared to 20-25 for FHA/VA). In 1950, median interest rates on outstanding mortgages were 4 percent for VA, 4.5

proxy for new conventional mortgage issuance.[31] As reported in Appendix Table 3, our main results are hardly changed and in most specifications the coefficient on the conventional lending proxy is not statistically different from zero.

Second, it is plausible that in equilibrium, the large expansion in mortgage credit availability could have led to rising home prices if housing supply was not able to keep up rising demand. As we noted earlier, these loans are generally understood to have caused a burst of new residential construction and new suburban housing developments, and the majority of the loans were used for new properties (Grebler, Blank and Winnick, 1956), which would have muted passthrough to prices. Indeed, although house prices rose during the war period, they stayed relatively flat thereafter, consistent with the expansion in supply in the post-war period (Appendix Figure 6). Still, in order to examine the effects of sub-national house prices we add as a control variable a version of the house price index produced by Lyons, Shertzer, Gray, and Agorastos (2024), who construct city-level house price indices based on millions of newspaper real estate listings for a number of major cities in the U.S. As described in Appendix A, we create a crosswalk of cities to states and construct a state-by-year level version of their series. The series is only available for 26 states in our sample and so we do not use it in our main specifications. Consistent with prior work, there is some evidence that higher house prices reduce births, but our main estimates are robust to the inclusion of this control. These are reported in Appendix Table 4.

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percent for FHA, and 5 percent for conventional loans. The reason conventional loans continued to have lower LTVs is in part because private mortgage insurance was not developed until the very end of our sample period.

[31] We hand digitized data on net mortgage lending (dollars) by S&L Associations, which we obtained from Census Statistical Abstracts (as described in the Data Appendix). This measure proxies for conventional issuance because S&L associations primary business was conventional lending (between 1946 and 1956 about 70 percent of all net issuance from S&L Associations was conventional, as can been in Appendix Figure 3b). S&L Associations also engaged in government-backed lending (and in fact were a primary player in that market, as noted earlier), and because we cannot separate conventional from federally-backed loans in these data we do not use this measure as a control in our main specifications. Note that this measure describes net issuance, not originations. However, net issuance is likely to better capture new purchase mortgages than originations for conventional mortgages because conventional mortgages carried short terms and were frequently refinanced.

Finally, another plausible omitted variable in our analysis is changes in household savings deposits. Household savings deposits at mortgage lenders might affect both household and/or mortgage lender decisions in ways that affected births. We thus estimate models adding a measure of household savings held at S&L Associations and Commercial banks. To do this, we hand digitized data on assets held at B&L Associations (1933-38) and S&L Associations (1939-1957). We obtained deposits held at commercial banks from the FDIC. These results are reported in Appendix Table 5; our main results are unchanged.

B. Additional Analyses of Pathways

We also conducted a variety of supplemental analyses to gain some insight into possible pathways via which mortgage issuance – and presumably homeownership – affected birth rates during this period. We focus on whether mortgage issuance affected three well-known patterns of household formation during the baby boom period: reductions in age at first birth, increases in completed fertility, and reductions in age at marriage (See, e.g., Bailey and Collins, 2011).

To examine whether government-backed mortgage issuance affected age at first birth, we hand digitized data on first birth counts by mother's age (reported in 5-year age groups) from Vital Statistics publications. We construct two outcomes: the percent of first births to women under age 24 and an approximation of mean age at first birth (using the percent of births in each age group and the midpoint of the age group). We then estimate equations 1-3 using these (imperfectly measured) variables as outcomes. Appendix Table 6 displays the results. There is some evidence that these mortgages led to earlier childbearing – for White women only – although the effects are economically quite small and only statistically significant in the IV specifications.

To examine whether government backed mortgages are associated with an increase in completed fertility, we turn to data from the Decennial Census which records total children ever born. We use these data to estimate mean children ever born for ever-married women who just completed their childbearing years (ages 45-54) by state of birth and race group across two cohorts: women observed in the 1940-50 Censuses and women observed in the 1970-80 Censuses. We then compare cumulative lending by state over the baby boom period with the

change in mean children ever born by state and race group across the two cohorts. The intuition behind the cohort comparison is that women in the 1970-80 Census were 20 years old or younger in 1935 when the FHA loan was first introduced, thus, the loans we study were available to those women for nearly all of their childbearing years. Women observed in the 1940-50 Census, on the other hand, were 30 or older in 1935 so these loans were available much less of their childbearing years. Figure 5 shows the correlation between cumulative FHA and VA loan issuance by state from 1935-1957 and the state by race group changes in mean children ever born between the two cohorts of women. States with a greater number of FHA/VA loans issued per capita experienced larger increases in the mean number of children ever born for White women (panel a), but not for Nonwhite women (panel b). These patterns are consistent with access to government-backed mortgages raising completed fertility.

Finally, we examine whether government backed mortgage issuance might have led to earlier marriage.[32] We use data from the 1930 and 1960 Decennial Census which record age at first marriage. We estimate state of birth by race group means of age at first marriage for married women age 30-45 in each Census year, and compare those means between the 1930 and 1960 Censuses. Similar to the analysis of completed fertility, the women from the 1960 Census would have had access to low down payment loans in their peak-marriage formation years, whereas women in the 1930 Census would not. Figure 6 shows the correlation between cumulative FHA and VA loan issuance by state from 1935-1957 and state by race group changes in mean age at first marriage between the two cohorts of women. For White women (Figure 6a), a greater number of cumulative loans per capita is associated with earlier age at marriage (although the correlation is somewhat weak with an F-Statistic on the line of best fit of only 4.9), while for Nonwhite women (Figure 6b) there is no relationship (if anything, age at marriage

[32] Ricks (2021) examines the impact of the VA loan guaranty program on marriage rates among veterans, and provides evidence that likely veterans living in more expensive housing areas (where the lessening of the down payment requirement would have increased access to home ownership by more) had higher homeownership and marriage rates after the implementation of this program, and that these relative differences cannot be explained by differences in income or educational attainment.

appears to increase). These patterns are consistent with access to government-backed mortgages lowering age at first marriage.

VII. Final Discussion

Using newly digitized data on government-backed mortgage issuance and births from the mid-1930s through late-1950s we provide evidence that government-backed mortgages led to an increase in birth rates during the time period characterized by the so-called baby boom, presumably via the well-documented expansion in homeownership among young adults of childbearing age. We use a novel IV strategy based on supply constraints on loan issuance, the results of which support a causal interpretation of our results. To gauge the relative size of these effects as a proximate cause of the baby boom, we conduct some simple back-of-the-envelope style exercises. Over the period from 1935-1957, roughly 10 million FHA and VA mortgages were issued. Our IV and full sample point estimates suggest that would lead to an additional 3.1 million babies born. If we compare this estimate to a counterfactual where births had stayed at their pre-FHA minimum[33], this suggests that the FHA and VA mortgage programs can explain about 10 percent of the excess births that occurred during the baby boom.

Our research design isolates *direct* effects of government-backed mortgage lending on births in the mid-twentieth century. But these programs likely had additional spillover effects on housing markets and family formation which are not captured in our research design. Narratives of the period typically highlight the important link between the availability of government-backed lending and the development of affordable housing and suburbanization. For example, Rothstein (2017) describes how builders would get new development plans pre-appraised for FHA loan eligibility, hence ensuring the future homes would be available to buyers seeking FHA-insured financing. This would have lowered the risk of such projects for builders, and would explain why the FHA and VA programs are considered an important driver of suburbanization and the expansion in housing supply during this period (as well as segregation). Though outside the scope of our research design, these type of downstream effect

[33] This is similar to the van Bavel and Reher (2013) methodology for estimating the volume of the baby boom.

of the changes in mortgage finance plausibly had additional effects on births from those we estimate.[34] In addition, though only speculative, it seems plausible these changes in housing markets could help explain why young Nonwhite families also experienced an increase in home ownership and births over this time period.

Up until this point our paper has focused almost entirely on the U.S. baby boom, but the baby boom was an international phenomenon. To what extent would the explanation we offer apply to other countries? Although the exact features of the US-style mortgage that we study is somewhat uncommon internationally (fixed rates at long maturities are not typical), lenders in many countries currently offer mortgages with LTVs as high (or even higher) than what is typical in the U.S. And in fact, some of these countries had adopted high LTVs mortgages by at least the 1960s (Japelli and Pagan, 1994). Though only suggestive, Figure 7 shows the cross-country correlation between the "volume" of the baby boom (obtained from van Bavel and Reher, 2013, Table 2) and maximum mortgage LTVs as of the 1960s (obtained from Jappelli and Pagan, 1994, Table 1). There is a clear positive correlation—that is, in the countries which had adopted higher LTV mortgages by the 1960s (which Chiuri and Japelli, 2003, show is correlated with a rise in country-level young homeownership) the baby boom was larger.[35] This is consistent with our hypothesis that the low-down payment mortgages "set the stage" for the baby boom.

One puzzle about the baby boom that our paper is unable to directly speak to is why births began to fall in the 1960s (the source for our mortgage data ends in 1957). As with the baby boom, there are likely multiple explanations for this "baby bust," a critical factor almost surely being the advent and spread of modern contraceptive technology (Bailey, 2010). We note that mortgage affordability (broadly speaking) would not be expected to have continued to *boost* childbearing after the 1960s, as mortgage costs began to rise following rising mortgage interest

[34] An unpublished working paper by Hill (2014) provides evidence linking the post-war expansion in housing supply (measured from building permits) to births and marriages.
[35] The R-Squared and F-Statistic on the line of best fit in Figure 7 are 0.15 and 2.7, respectively. Omitting New Zealand (the clear outlier), the R-Squared and F-Statistics increase to 0.44 and 11.0, respectively.

rates in the mid-1960s. Indeed, from 1960 onwards the level of home ownership among women of childbearing age stalled until the Great Recession (when it fell precipitously).

One possible interpretation of our results in the context of aggregate birth trends over the last 100 years is that they could fit into a variant of Easterlin's (1966) seminal "relative income" hypothesis in which a cohort's material aspirations form not around income *per se* (which can be hard to observe across cohorts) but around visible consumer goods, key among which would be housing. In this framework, the one-time upward shift in home ownership rates in the mid-twentieth century could lead to the dramatic increase in childbearing observed in the baby boom. The stalling out of home ownership might then be expected to lead to reversion to earlier childbearing norms, as subsequent generations' material aspirations for home ownership would align with their realized experience. Intriguingly, this explanation could also fit with the decline in birth rates since the Great Recession—which has largely remained a puzzle (Kearney, Levine and Pardue, 2022)—as the post-Great Recession period featured a precipitous decline in home ownership rates among younger adults (Figure 2). For recent cohorts, their material aspirations for home ownership were not realized and this might have led to decreased childbearing. If so, this would have direct policy implications, as it would suggest that policies aimed at making home ownership more attainable for young families could be pro-natalist. That said, we note that the expansion in access to affordable credit during the period we study was accompanied by a large expansion in housing supply, which ultimately muted passthrough effects to house prices.

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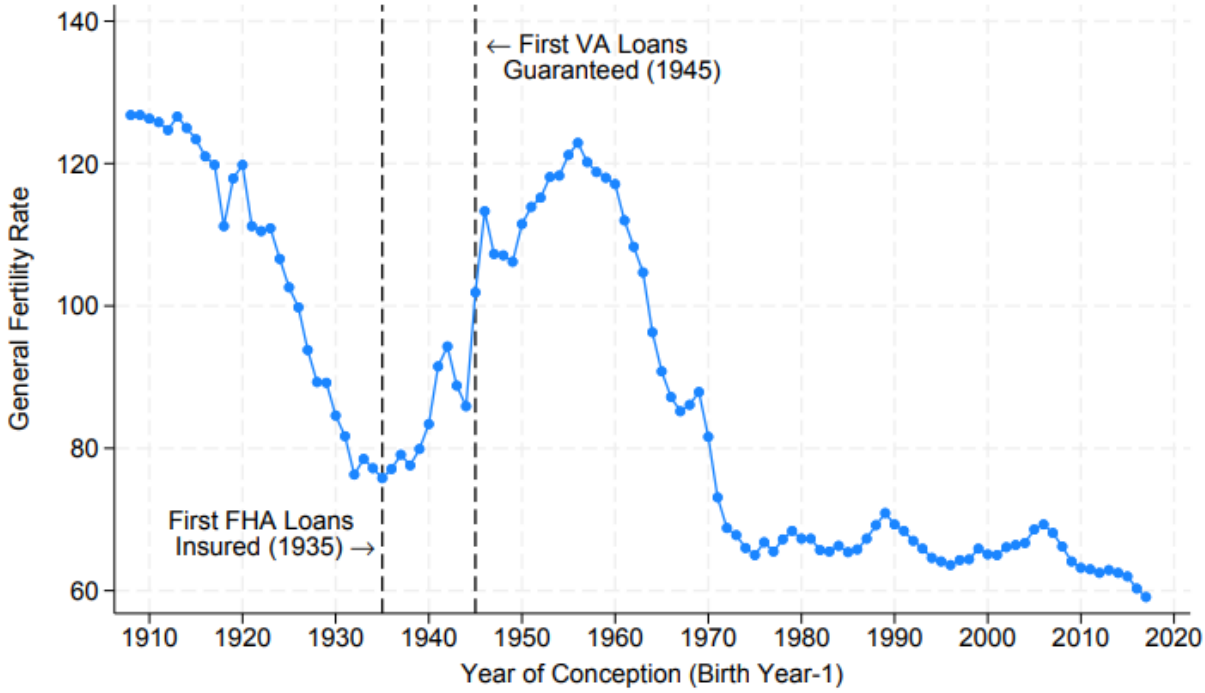
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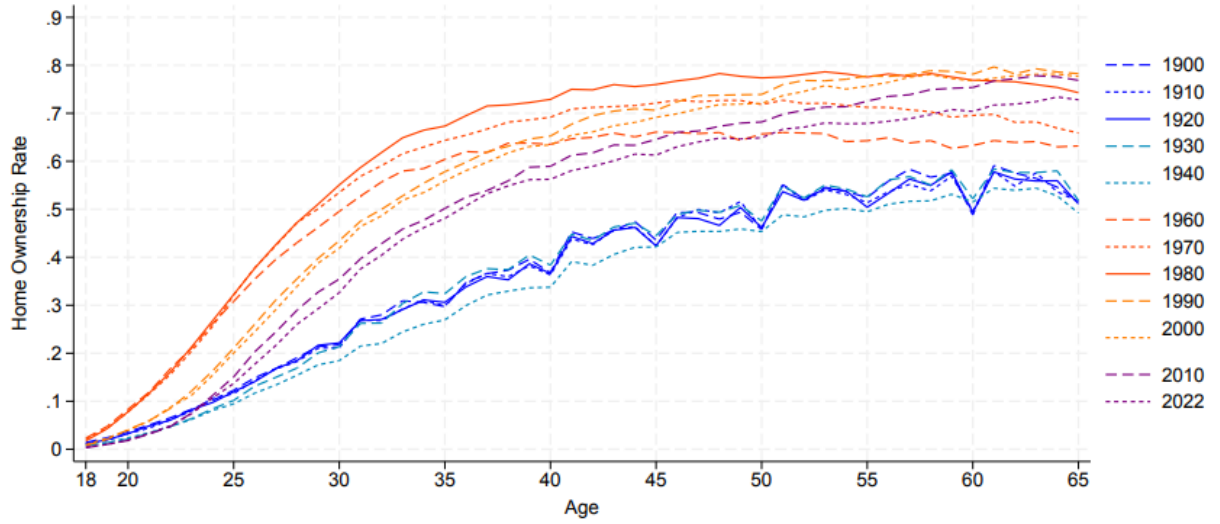
Figure 1. General Fertility Rates 1908-2020



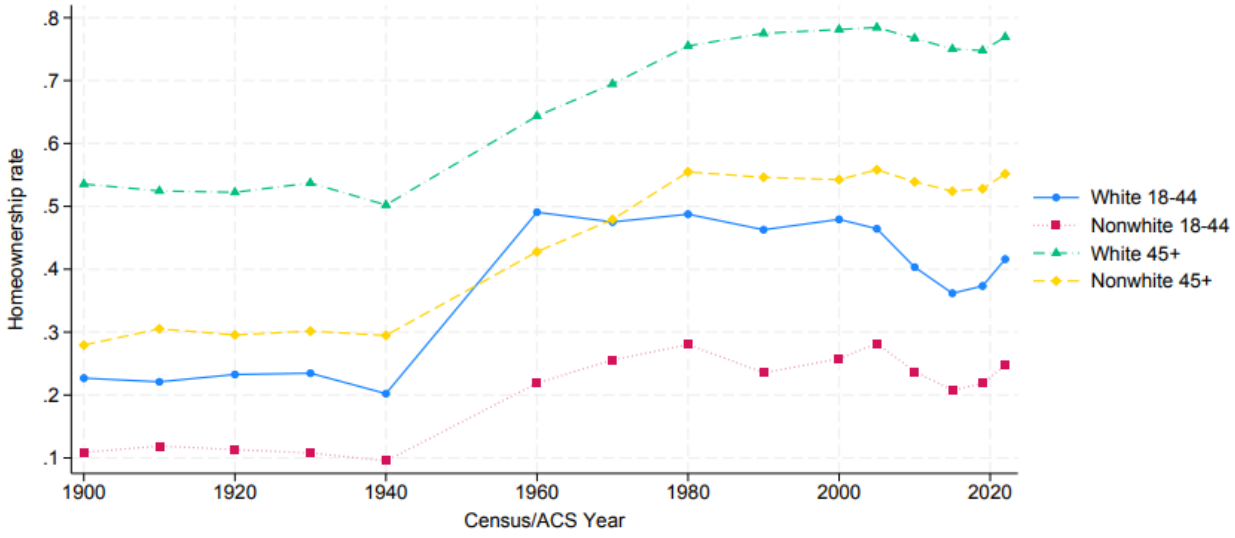
Source: NCHS Vital Statistics

Figure 2. Long Run Trends in Home Ownership, 1900-2022

(a) Age Profile of Home Ownership by Census year

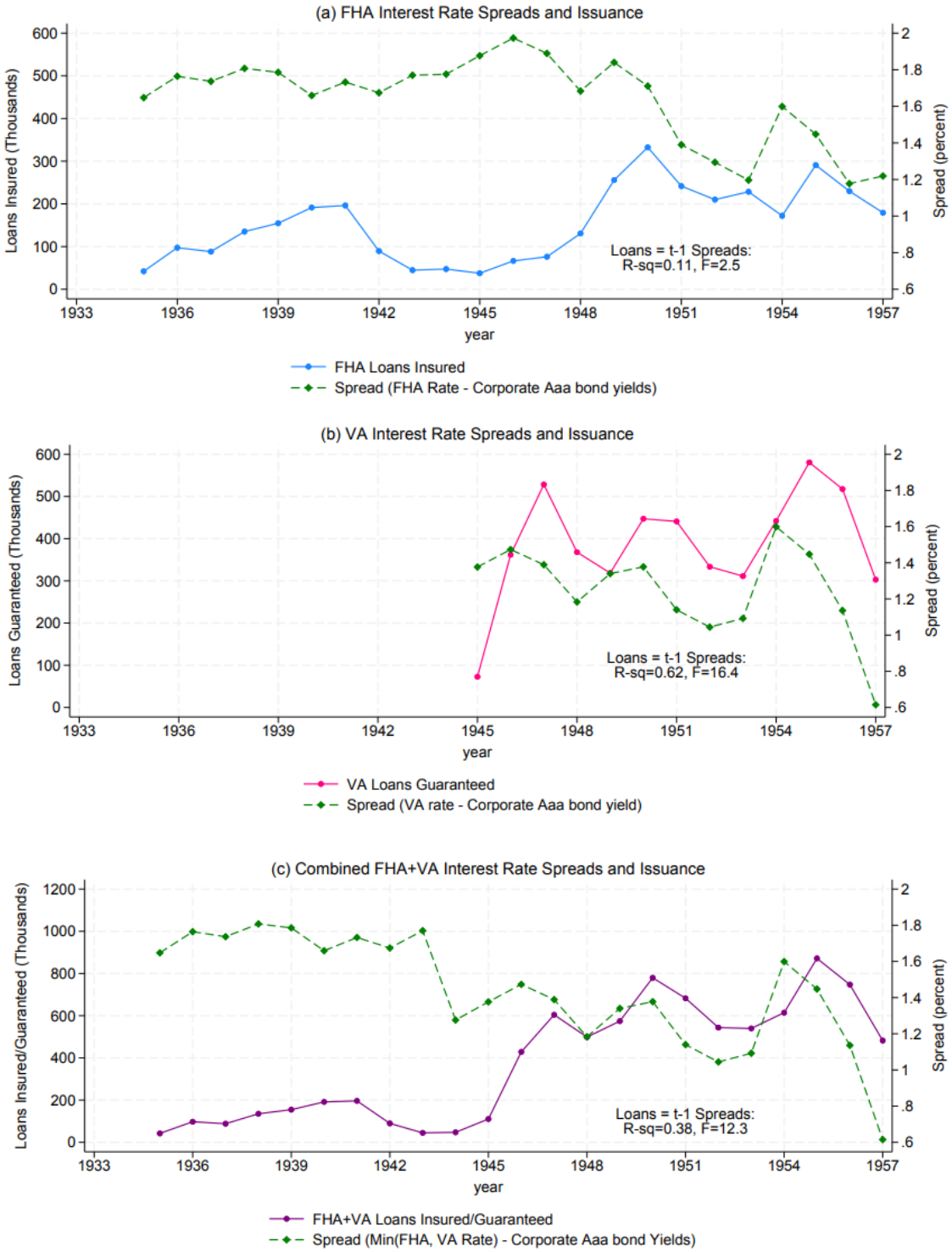


(b) Home Ownership Rates by Age, Race, and Year



Notes: Panel A displays home-ownership rates by single year of age in each Census year listed in the legend. Panel B shows home ownership over time for each race by age group listed in the legend. Only household heads and spouses in owned housing are classified as homeowners; all other adults are classified non-owners. Source: 1900-1940 and 1960-2000 Decennial Census, 2005, 2010, 2015, 2019, and 2022 ACS (1950 Census omitted due to absence of homeownership data).

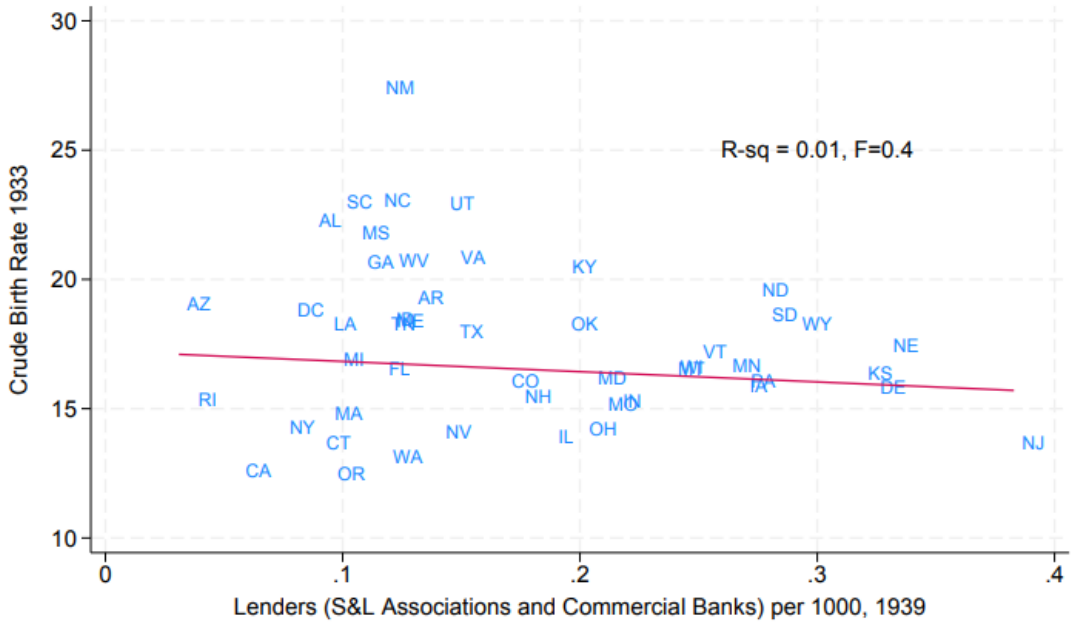
Figure 3. Relationship Between Interest Rate Spreads and Mortgage Issuance



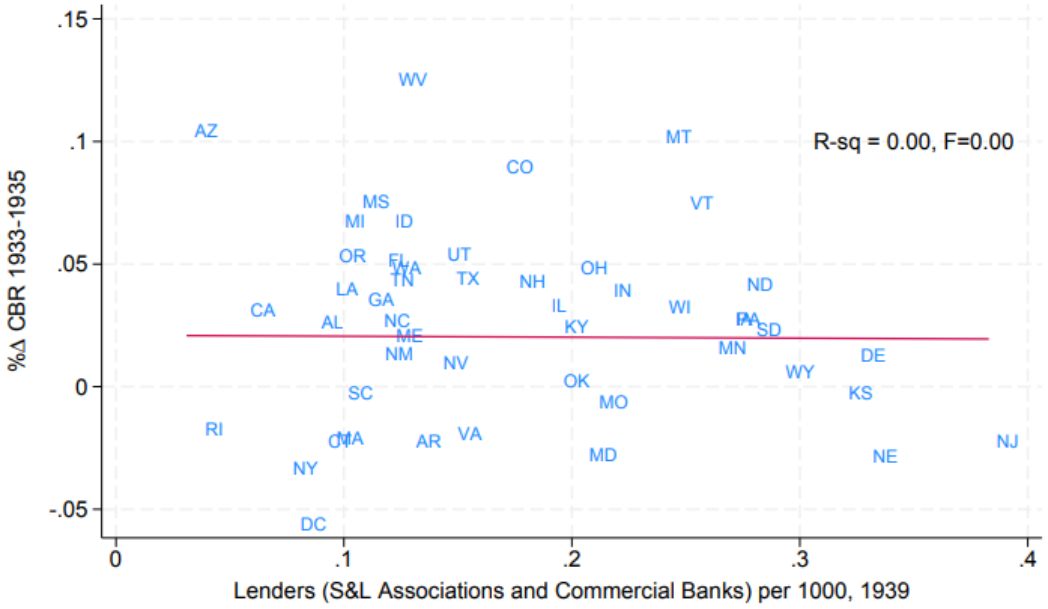
Note: Displays time series of the number of government-backed mortgages issued (left axis) and interest rate spreads (right axis), defined as the difference between congressionally legislated prescribed interest rates on government-backed mortgages and corporate Aaa bond yields. Data sources: Congressional Quarterly, Moody's, FHA Annual Reports, VA Annual Reports.

Figure 4. Correlation between Lender Density and Crude Birth Rates Prior to Government-backed Loan Availability

(a) Crude Birth Rate, 1933



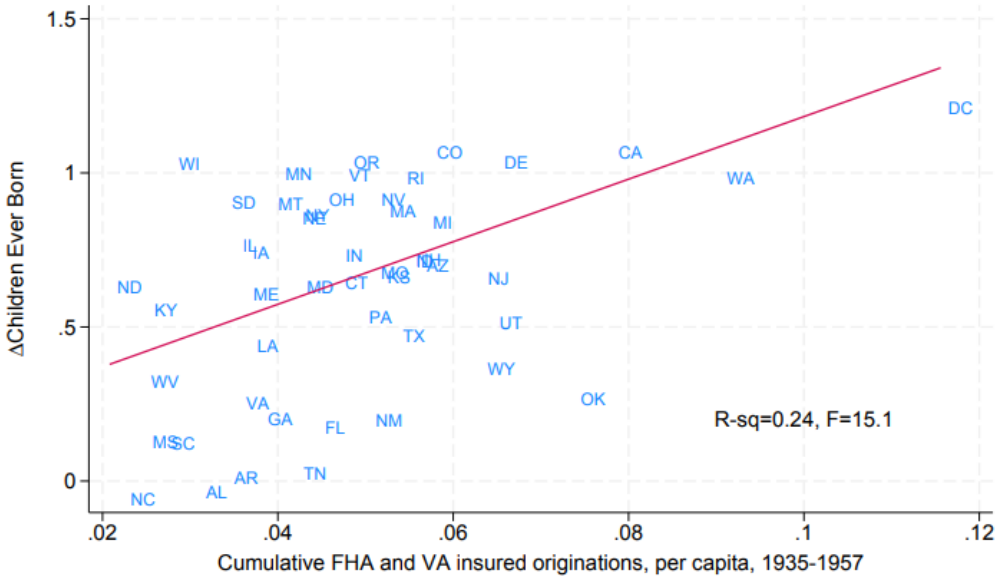
(b) Percent Change in Crude Birth Rate (CBR), 1933-1935



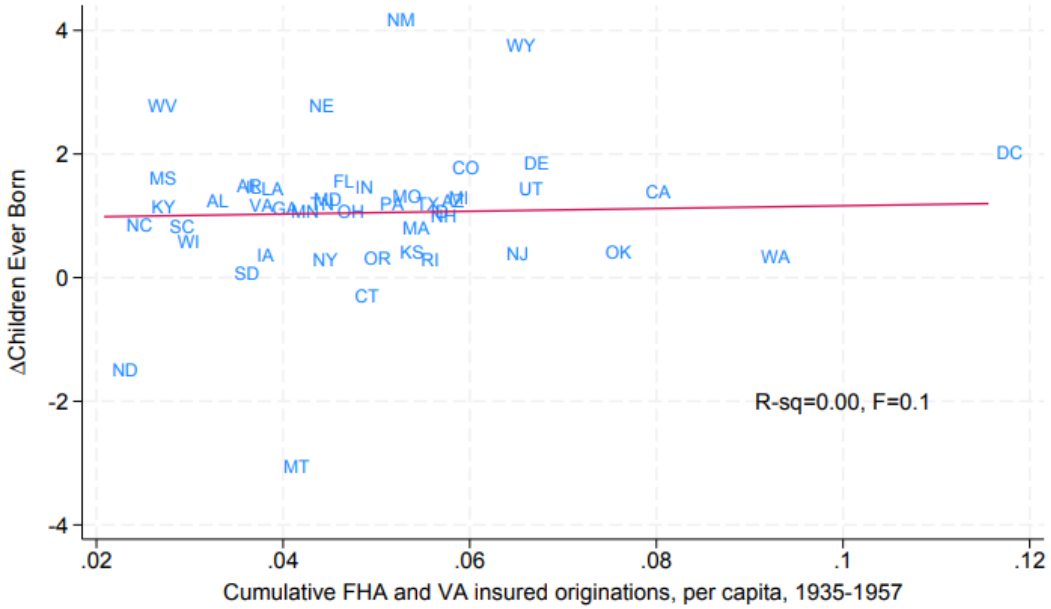
Notes: Displays the correlation between the number of lenders specializing in issuing government-backed mortgages (savings and loan associations and commercial banks) per 1000 people in and mean crude birth rates (CBR) in 1933 (panel A) or the percent change in mean CBRs from 1933-1935 (panel B). Line of best fit is weighted by 1933 population. Source: FDIC, Census, NCHS.

Figure 5. FHA and VA Loan Issuance and Completed Fertility in the Census

(a) White Women



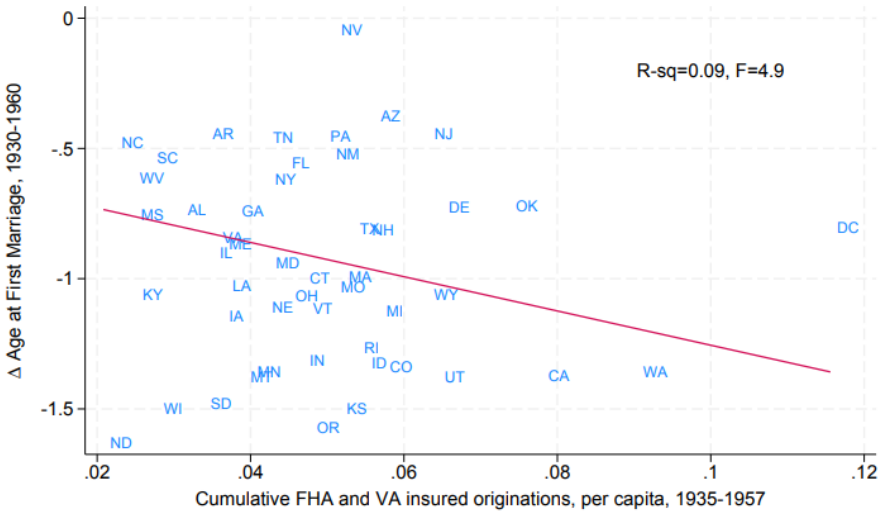
(b) Nonwhite Women



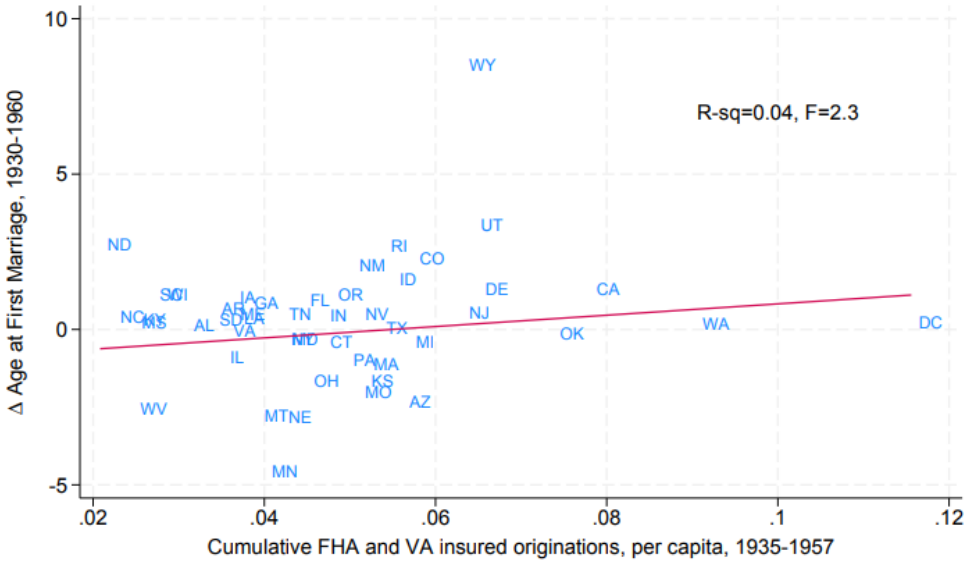
Note: Vertical axis displays the change in mean number of children ever born to ever-married women observed at age 45-54 from the 1940-50 Censuses and 1970-80 Censuses, by state of birth and race group. Horizontal axis displays cumulative FHA and VA originations divided by the 1960 population from 1935-57. Line of best fit is weighted by the 1960 population. Source: Census, FHA, and VA.

Figure 6. FHA and VA Loan Issuance and Age at First Marriage in the Census

(a) White

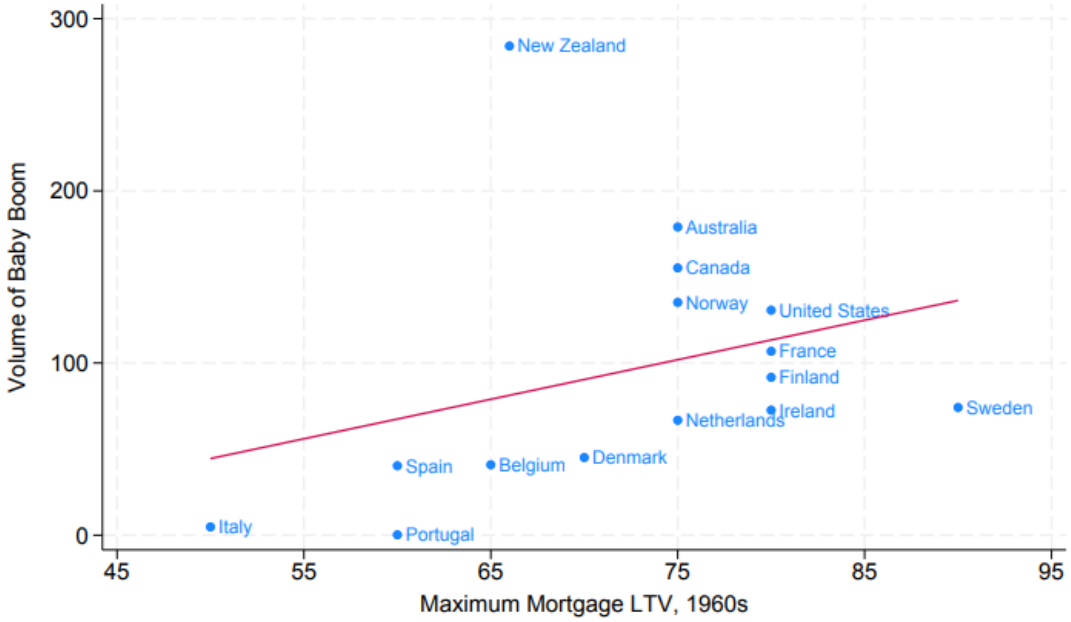


(b) Nonwhite



Note: Vertical axis displays the change in mean age at first marriage between the 1930 and 1960 Census by state of birth and race group. Sample includes 30-44 year-old married women only. Horizontal axis displays cumulative FHA and VA originations divided by the 1960 population from 1935-57. Line of best fit is weighted by the 1960 population. Source: Census, FHA, and VA.

Figure 7. International Comparison: Adoption of Higher LTV mortgages by 1960s and the size of the Baby Boom



Notes: Displays correlation between maximum mortgage LTVs available in the 1960s and the volume of the baby boom by country. Volume of baby boom is defined as the sum of all excess births per 1000 people that occurred during the baby boom against the counterfactual of no recovery in birth rates from the minimum of the interwar period. Source: Maximum Mortgage LTV from Japelli and Pagano, 1994, Table 1. Volume of baby boom from van Bavel and Reher, 2013, Table 1.

Table 1. Summary Statistics

	Full Sample (1933-1957)		Pre-War (1933-1940)		Post-War (1946-1957)	
	Mean	SD	Mean	SD	Mean	SD
Births Counts (t+1,Thousands)						
All	62.9	62.1	45.0	40.0	77.6	73.7
White	54.7	56.6	39.6	37.6	67.0	66.9
Nonwhite	8.2	10.5	5.4	7.8	10.6	12.1
Number of Loans (Thousands)						
FHA	2.9	4.9	1.8	3.7	4.1	5.7
VA	4.1	9.0			8.4	11.5
FHA+VA	7.0	12.7			12.5	16.1
Dollar Volume of Loans (Millions, $)						
FHA	20.5	39.1	7.7	16.3	34.4	50.4
VA	34.4	85.7			70.9	112.8
FHA+VA	54.9	118.3			105.3	155.0
Loans at S&L	27.4	72.9	-4.9	24.5	58.4	93.5
Income (Thousands, $)						
Farm	237.0	250.4	99.8	87.9	321.7	292.7
Nonfarm	3374.4	5217.8	1246.5	1834.5	5099.0	6584.7
Wage and Salary	2329.1	3653.4	830.3	1172.3	3504.6	4632.7
Proprieters	569.2	690.0	202.2	214.4	832.7	826.1
Other Controls						
Population (Thousands)	2886.2	2900.8	2624.3	2620.1	3129.6	3152.4
Savings (Thousands, $)	2761.0	5162.8	1135.7	2388.7	3890.8	6202.3
House Price Index (1948=1)	0.89	0.19	0.74	0.19	1.04	0.09

Notes: Sources are NCHS, FHA, VA, BEA, and Census

Table 2. OLS Estimate of FHA and VA Mortgage Lending and Births

	Full Sample (1933-1957)			Pre-War (1933-1940)	Post-War (1946-1957)		
	FHA	VA	Combined	FHA	FHA	VA	Combined
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. All Births (t+1)							
No. of Mortgages$_{st}$	0.3036	0.3309	0.3124	0.6071	0.1509	0.1634	0.1480
	(0.0940)***	(0.0703)***	(0.0459)***	(0.2856)**	(0.0927)	(0.0559)***	(0.0496)***
B. White Births (t+1)							
No. of Mortgages$_{st}$	0.2777	0.3565	0.3219	0.5877	0.1606	0.1552	0.1464
	(0.0909)***	(0.0901)***	(0.0654)***	(0.2694)**	(0.0877)*	(0.0513)***	(0.0477)***
C. Nonwhite Births (t+1)							
No. of Mortgages$_{st}$	0.0310	-0.0288	-0.0101	0.0195	-0.0019	0.0102	0.0054
	(0.0314)	(0.0429)	(0.0346)	(0.0423)	(0.0194)	(0.0123)	(0.0095)
Observations	1210	1210	1210	384	586	586	586

Note: Estimated according to equation 1. All models include total population, farm income, nonfarm income, wage and salary income, proprietors' income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, and Census. * p<0.1, ** p<0.05, ***p<0.01.

Table 3. First Stage Relationship Between Supply Constraints and Government-backed Loan Issuance

	Pre-War (1933-1940)	Post-War (1946-1957)		
	FHA	FHA	VA	Combined
	(1)	(2)	(3)	(4)
$Lenders_s$*$Spread_{t-1}$	0.4841	2.6647	11.4769	12.2908
	(0.3429)	(1.0602)**	(2.0076)***	(2.5409)***
F-Stat	1.9	6.3	32.7	23.4
N	384	586	586	586

Notes: Estimated according to equation 2. All models include controls for total population, farm income, nonfarm income, wage and salary income, proprietor's income, state and year fixed effects. Mortgages in thousands. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01

Table 4. Instrumental Variables Estimates: Government-backed Mortgage Lending and Births in Post-war period

	VA	Combined
	(1)	(2)
A. All Births (t+1)		
No. of Mortgages$_{st}$	0.3306	0.3087
	(0.1066)***	(0.1100)***
B. White Births (t+1)		
No. of Mortgages$_{st}$	0.2941	0.2746
	(0.1008)***	(0.1022)***
C. Nonwhite Births (t+1)		
No. of Mortgages$_{st}$	0.0355	0.0332
	(0.0271)	(0.0261)
First Stage F Statistic	32.7	23.4
Observations	586	586

Notes: Estimated according to equation 3 for post-war period (1946-1957). All models include controls for total population, farm income, nonfarm income, wage and salary income, proprietors' income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of residence. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix for "Did the Modern Mortgage Set the Stage for the U.S. Baby Boom?"

(for online publication only)

1. Data Construction

a. FHA Loan Data

The FHA data we collected were sourced from FHA Annual Reports from 1935-1960. We used physical bound volumes for the data collection process, which we sourced from the University of Maryland library and the Federal Reserve Board's library. Alternatively, one can view scans of the FHA Annual reports online from the Federal Reserve Bank of St. Louis FRASER program.[36]

We are interested in the Title II, Section 203 loans on 1-4 family properties. We look at loans on both new and existing properties. We exclude from our loans counts other FHA loan programs (including renovation loans and multi-family loans). Our measure also excludes the small number of loans on 1-4 family properties made through Title I, Section 8. We collected the total number of loans and total dollar volume of loans by state and year. Both are recorded as cumulative since program inception in 1935. Appendix Table 7 lists the source table and page number that formed our source data for each year. Appendix Figure 7 displays an example scan of the 1936 source data.

From 1942-44 loans on new and existing homes are reported separately and we collect both and sum them. After 1955 we do not have the amount (dollars) of Section 203 loans separate from the amount of total FHA loans so we impute them from (a) the ratio of the number of Section 203 loans to the total number of loans in each year and (b) the ratio of the average loan size for 203 loans compared to total loans in 1954.

The data show cumulative loans since program inception. We convert this into annual originations by differencing. In particular we assume: $loans_{st} = \sum_{1935}^{t} loans_s - \sum_{1935}^{t-1} loans_s$. Our measure thus measures new originations in a given year. The vast majority of FHA loans were used for home purchases (as opposed to refinances).

b. VA Loan Data

We collected the VA data from VA Annual Reports from 1946-1958. These reports can be found on the VA website. Exact URLs for each report are listed in Appendix Table 8. Table 8 also lists the source table and page number where that table was found in each year. Appendix Figure 8 displays an example scan of the source data from 1949.

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[36] These can be found at https://fraser.stlouisfed.org/title/annual-report-federal-housing-administration-6278?browse=1930s.

We collected data on the number of loans guaranteed and the amount of those loans by state and year. As with the FHA data, these data are reported as cumulative totals since program started and we use the same procedure to construct our measure of annual originations.

The VA data are reported by Fiscal Year, (July of year *t-1* to June of year *t*). Once we have a measure of annual (fiscal year) issuance, we then assign to calendar years by apportioning fiscal years into halves and summing, except that we assume there were no loans in 1944 (the program did not start issuing loans until November 1944, as documented in the 1945 report).

We are missing data on the number of loans for year 1946 (but we do have amounts), so we apportion the cumulative number of loans into FY46 and FY47 using the within-state ratio of the amounts of the loans. Some loans assigned to a particular state branch office go to properties in nearby states. For example, some loans assigned to Washington, DC branch are for properties in Maryland and Virginia suburbs of DC. We do not attempt to correct for this discrepancy.

C. Birth Data

We use four different series of birth counts in our analysis. All are based on NCHS Vital Statistics data for the period 1933-1960. The original data can be found on the NCHS website in annual Vital Statistics reports.[37] Some of the data we use we digitized ourselves, but some was digitized by others.

i. Birth counts by state of occurrence and race, 1933-1939

Prior to 1939 there is no information on birth counts by state of residence (our preferred measure). We thus use information on birth counts by state of occurrence and race in this period, which we obtained from Eriksson et al, 2018 via ICPSR 37076.[38] We use the "published" birth count series. For all births we use the sum of white and nonwhite births because the all births series appears to undercount births in New York state (similar to the Bailey et al, 2016 data, as described below).

ii. Birth counts by state of residence and race, 1940-1960

Sheridan Fuller digitized these data for Fuller (2024) and shared them with us. A research assistant at the Federal Reserve Board cross-validated the numbers with the source data (see Appendix Figure 9 for an example scan of the birth data).

iii. Birth counts by state of occurrence, 1933-1960

These data were collected by Bailey et al, 2016 and are available from ICPSR 36603. These data are at the county-level and we collapse to the state level. Of note, there are some years in which

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[37] The URL is: https://www.cdc.gov/nchs/products/vsus/vsus_1939_1964.htm and https://www.cdc.gov/nchs/products/vsus/vsus_1890_1938.htm

[38] The URL is: https://doi.org/10.3886/ICPSR37076.v1

these data are not complete or adjustment need to be made. Specifically, from 1930-34 and 1939-1945 the New York state total are incorrect. This in part because of double counting in New York City (as noted in the Bailey et al, 2016 documentation). Data for Massachusetts is also missing from 1953-54 and 1956. We refer back to the original Vital Statistics report data and replace the incorrect state totals for those states and years.

iv. First birth counts by state of residence and age group, 1946-1958.

We digitized these data from NCHS reports. In each year for each state and race group we collected total first births by age-group (in 5-year intervals, plus not reported). Appendix Table 9 lists the specific table source for each report year. We use these data to construct (a) the percent of first births in each 5-year age-group and (b) mean age at first birth, using the mid-point of each 5-year age group combined with (a). In particular, the mean age at first birth is calculated as: $age_{str} = \sum_a \frac{firstbirths_{stra}}{firstbirths_{str}} * meanage_a$ where *a=(10-14, 15-19, …, 45-49, 50)*. These data are not available for Massachusetts.

D. Savings and Loan Association Data (Number of Associations, Mortgages, and Assets)

We collected data on the total number of associations, total assets, and total mortgage loans outstanding (dollars) in each state and year from 1939-1960 (except 1940 which was missing). These data were sourced from Census Statistical Abstracts, which can we found online on the Census Website.[39] We interpolate between the 1939 and 1941 data to estimate 1940. For the period 1932-1938, we also collect the same data for Building and Loan (B&L) Associations, which were the predecessor to S&L associations (both primarily held deposits and extended mortgage loans). Appendix Table 10 lists the table and page numbers for the source data.

We use the total mortgage loans outstating data to construct data on net flows of S&L Association mortgage loans, defined as total loans outstanding(t)-total loans outstanding(t-1). This is not the same as originations but is a rough proxy for new purchases (since it would importantly exclude refinances).

E. Commercial Bank Data (Number of Banks and Deposits)

The FDIC has digitized data on commercial banks by state going back to 1934. You can find the data on their website.[40] We use the Commercial Banks Financials 1934-1970 series and use data on the number of banks reporting and total deposits. The FDIC data do not have information on mortgage lending in the period we study. We also supplement the FDIC data with commercial bank counts for 1932-33 from the Census Statistical Abstracts for 1933 (Table 243 on Page 236) and 1934 (Table 247 on Page 236), which we digitized.

F. House Price Data

[39] The URL is: https://www.census.gov/library/publications/time-series/statistical_abstracts.html.
[40] The URL is: https://banks.data.fdic.gov/bankfind-suite/historical.html

We construct a state by year house price index using the city-level house price indices developed by Lyons, Shertzer, Gray, and Agorastos (2024). Their measure is based on millions of newspaper real estate listings for a number of major cities in the U.S. We create a crosswalk from cities to states to create a state-by-year series. Of note, some cities cross state borders (for instance, the New York and DC metropolitan areas) and some states have more than one city included in this dataset (for instance, California and Texas). We thus create a crosswalk of cities to states by assigning states a weighted measure of relevant city indices according to household population shares in the 1950 Census (the Lyons et al, 2024 series is indexed to 1948). Only 26 states have any residents of cities covered by the index.

G. Other data

We obtained information on legislated interest rates on FHA and VA loans from Congressional Quarterly Almanac 1968.[41] We use the "prescribed" interest rate.

We obtained seasoned Aaa corporate bond yields from Moody's which we downloaded via FRED on an annual basis (averaged from monthly data).[42]

We obtained total personal income by state and year from the Bureau of Economic Analysis (BEA) using their custom data extract function on the BEA website.[43] We extract the following data by state and year from the SAINC1 tables: wage and salary income, proprietor's income, farm income and nonfarm income separately.

We obtained population data by state and year from intercensal population estimates. These data can be found on the Census website.[44]

H. Data Validation Exercises

We validated the data in a number of ways. We performed extensive checks for any outliers or distinctive trend breaks. This analysis included visual examination of graphs of the following: (1) state-level time trends of all data (loan numbers, loan amounts, births, number of banks, number of S&Ls, etc.), (2) state-level time trends of all data on a per-capita basis (using the population data), (3) year-by-year distributions of all data, both in levels and on a per-capita basis, (4) state-level time trends and year-by-year distributions of implied average loan amounts (amount of loans divided by number of loans). When outliers were identified, the original source data was referenced to cross-check the data.

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[41] "FHA, VA Housing Interest Rates." In CQ Almanac 1968, 24th Ed. 14-174-14-175. Washington DC: Congressional Quarterly 1969. http://library.cqpress.com/cqalmanac/cqal68-1283488.

[42] Moody's, Moody's Seasoned Aaa Corporate Bond Yield [AAA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/AAA

[43] The data extract tool can be found at: https://apps.bea.gov/itable/?ReqID=70&step=1. Choose annual state personal income (SAINC1) and the relevant years/states.

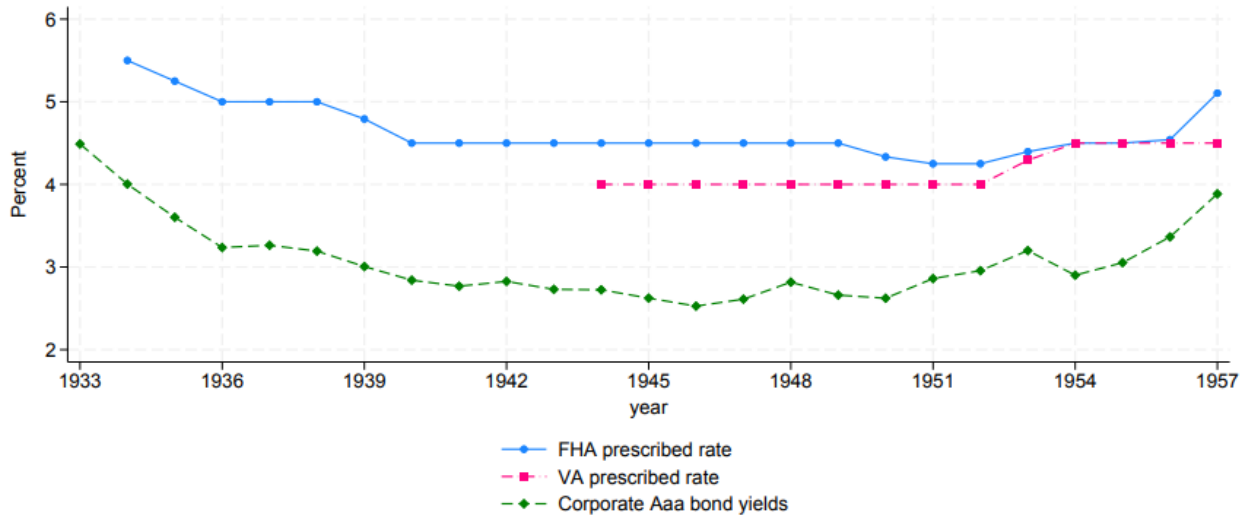
[44] The url is: https://www.census.gov/data/tables/time-series/demo/popest/pre-1980-state.html.

We also cross-validate our data using other sources. For the birth data, we compare across the four sources to check the total number of births in a year or year-race group are the same. Appendix Figure 10 shows the results. We see the time series is quite smooth for our preferred sources (Eriksson et al, 2018, ICPSR 37076, unadjusted for 1933-39) and Sheridan Fuller's data (SF) for 1940-1967. There are some differences with the Bailey et al (2016) series totals by race because not all counties report the data. However, our adjusted measure (described above) matches the other total birth count data exactly.

For the loan data, we look at two separate sources for aggregate loan volumes, shown in Appendix Figure 11. The Savings and Loan Factbook (1960) has FHA, VA, and Conventional Mortgage originations for 1940-1960. Klaman (1958) has estimates of net flows (in dollars) by year of FHA, VA loans, and for S&L Associations. Note that net flows are not the same as the originations data we collect, but we think they are still a useful barometer of new purchase trends, particular for conventional lending since much of those originations are refinances (refinances are uncommon for FHA/VA). Our data matches the trends in both series quite well. They are somewhat different in levels for FHA, but we suspect this is because the other two sources do not limit their series to Title II, Section 203 loans. The year-to-year variation for FHA, however, looks similar across sources. We are also just a bit different on VA loans, but this likely can be explained by our conversion from fiscal to calendar years. For mortgages at S&L associations, our net flows measure is exactly the same as Klaman (1961).

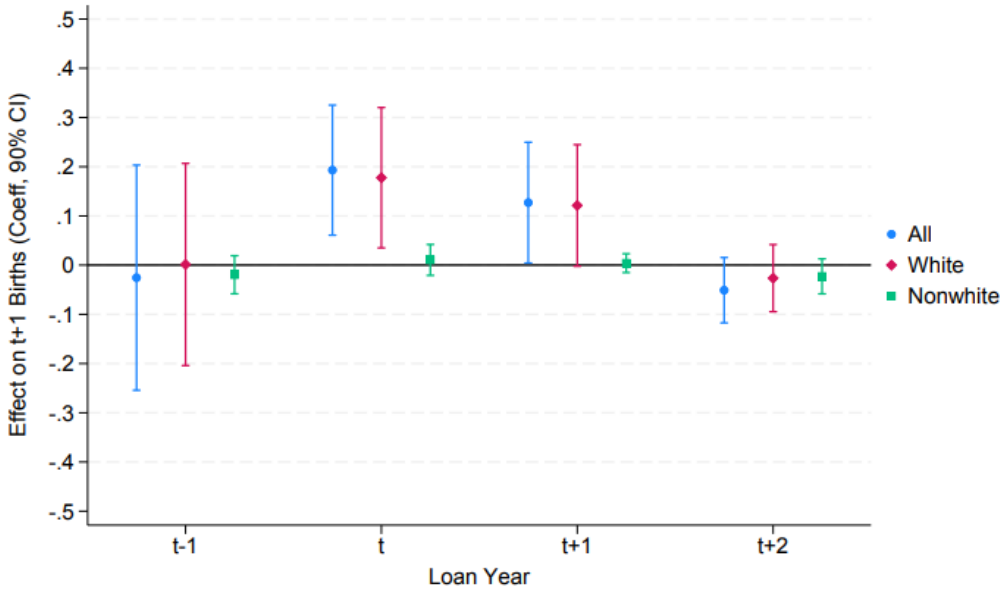
2. Additional Figures and Tables

Appendix Figure 1. FHA and VA Legislated Interest Rates and Corporate Bond Yields



Source: FHA Annual Reports, VA Annual Reports, Congressional Quarterly, and Moody's

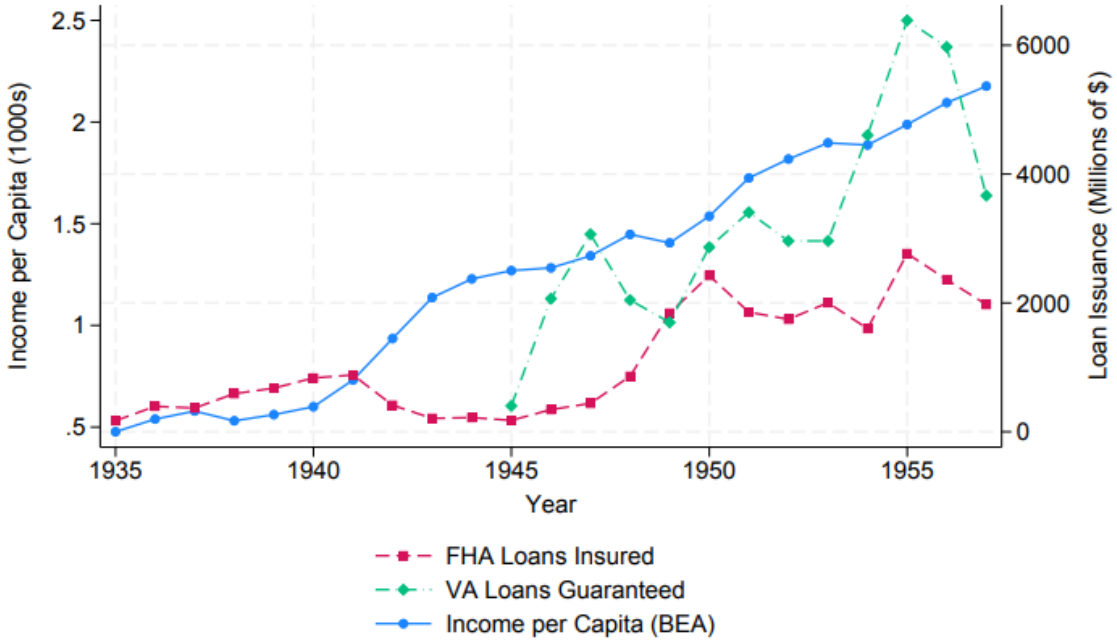
Appendix Figure 2: Lead and Lag Effects of Combined FHA and VA Loan Originations on Births



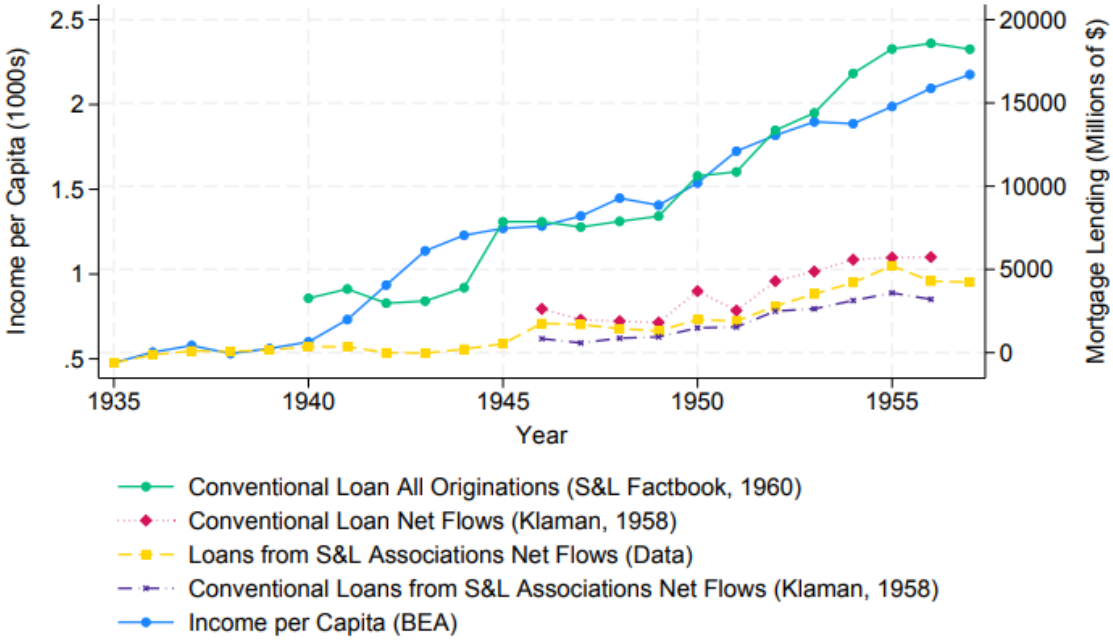
Notes: Displays coefficients and 90 percent confidence intervals based on estimating equation 1 with additional lag and lead terms ($mortgages_{st+k}$ where k= -1, 1, 2), where t+k is indicated on the horizontal axis. Data sources are NCHS, FHA, VA, BEA and Census.

Appendix Figure 3. Trends in Income per Capita and Loan Issuance by Type

(a) Government-Backed Loans and Income

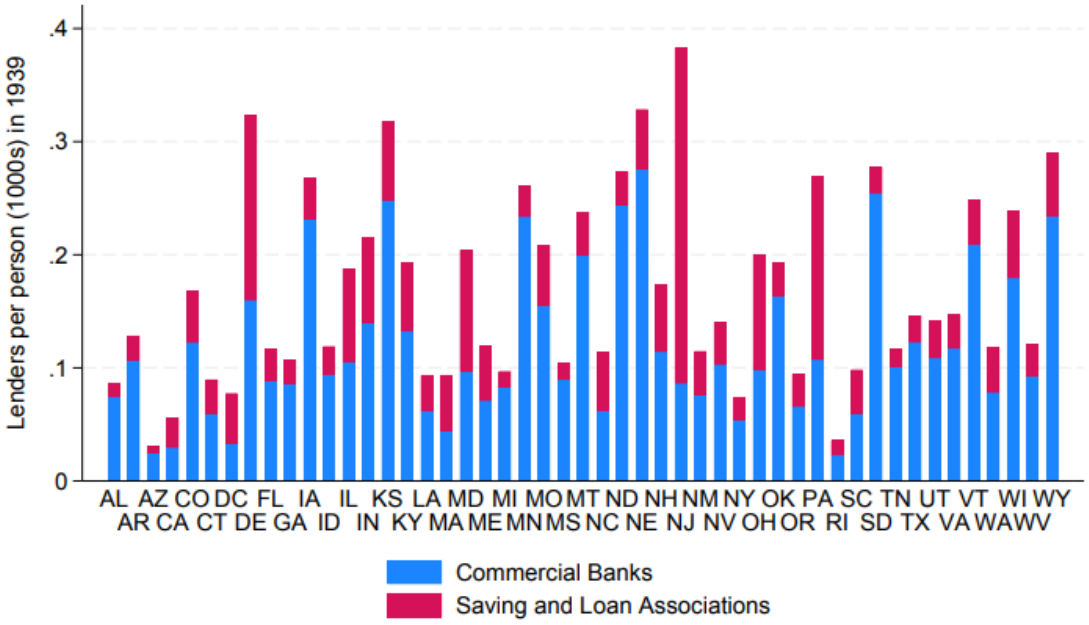


(b) Conventional Loans and Income



Notes: Data sources are FHA, VA, BEA, Census, Saving and Loan Factbook 1960 and Klaman (1958).

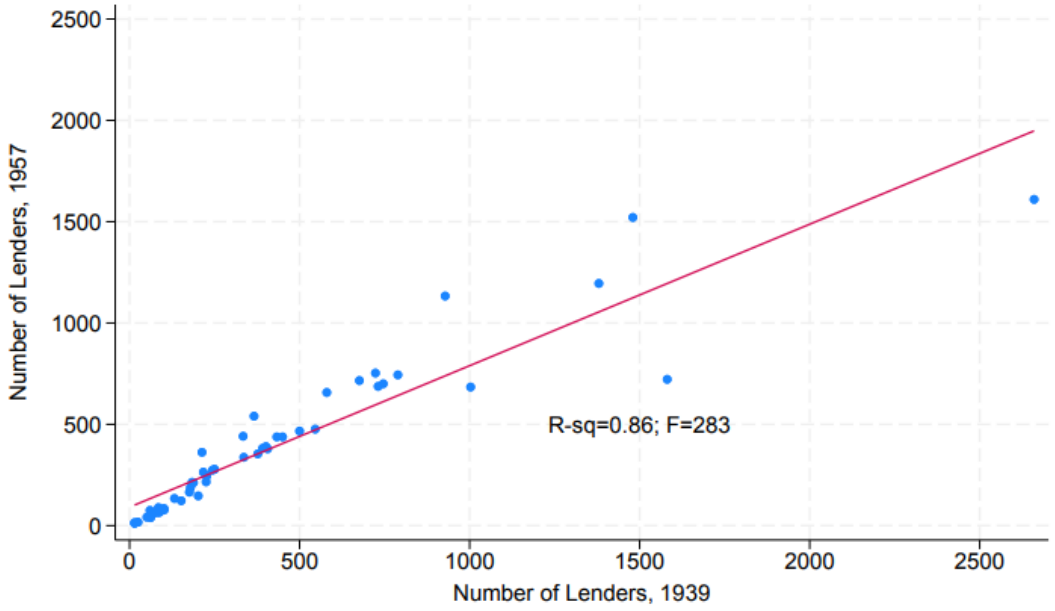
Appendix Figure 4. Lenders Per Capita by State, 1939



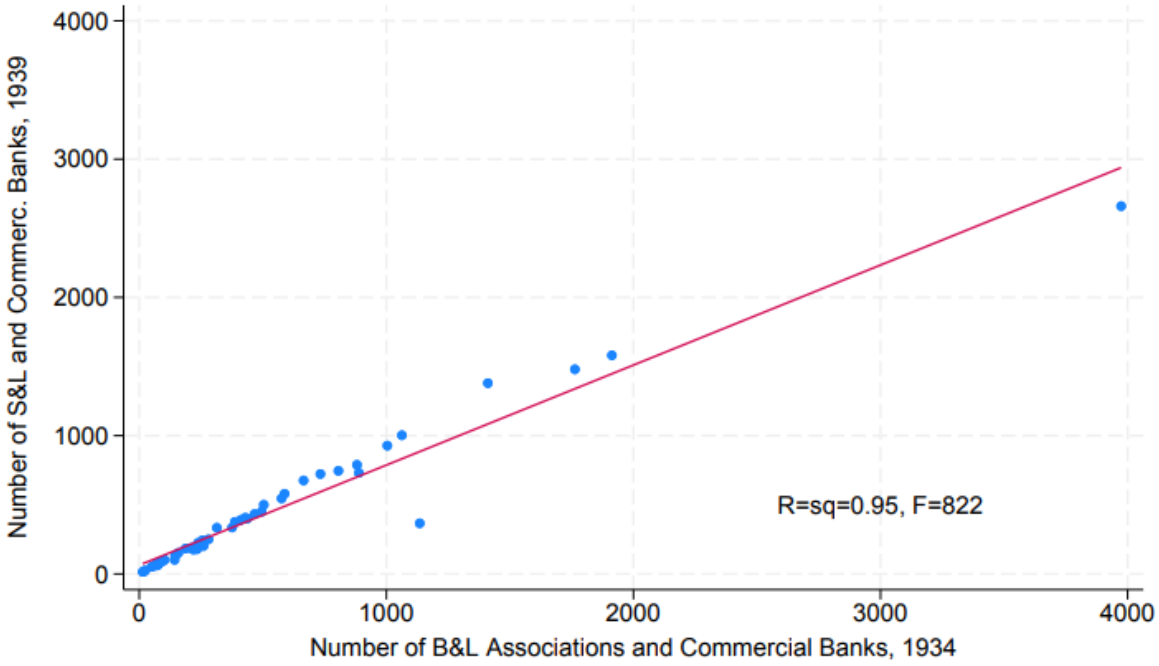
Source: Commercial Banks (FDIC), Savings and Loan (S&L) Associations (Census Statistical Abstract 1941 and 1959), Building and Loan (B&L) Associations (Census Statistical Abstract 1937), Population (Census)

Appendix Figure 5. Persistence in Lender Presence over Time

(a) Lenders in 1939 and 1957

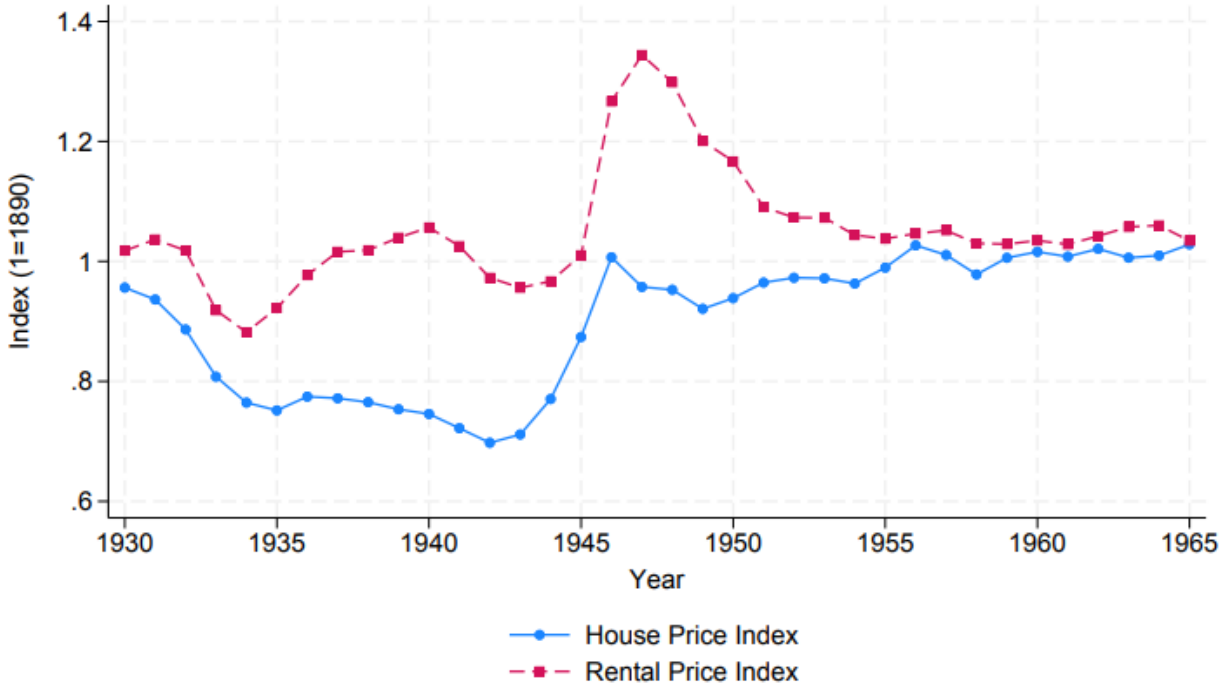


(b) Lenders in 1934 and 1939



Source: Commercial Banks (FDIC), Savings and Loan (S&L) Associations (Census Statistical Abstract 1941 and 1959), Building and Loan (B&L) Associations (Census Statistical Abstract 1937).

Appendix Figure 6. House Prices and Rental Prices



Source: Lyons et al., 2024.

Appendix Figure 7. Example of FHA Source Data, 1936

TABLE 3.—*Mortgages accepted for insurance, by States, through Dec. 31, 1936, based on property location*

State	New homes		Existing homes		Total	
	Number	Amount	Number	Amount	Number	Amount
Alabama	629	$2,403,439	1,051	$3,172,350	1,680	$5,575,789
Arizona	393	1,663,417	504	1,419,279	897	3,082,696
Arkansas	604	1,955,020	874	2,097,940	1,478	4,052,960
California	8,841	41,600,172	12,240	47,173,044	21,081	88,773,216
Colorado	261	1,022,580	723	1,919,644	984	2,942,224
Connecticut	782	3,862,785	512	2,420,360	1,294	6,283,145
Delaware	185	1,093,550	213	991,150	398	2,084,700
District of Columbia	274	2,109,600	340	2,380,590	614	4,490,190
Florida	2,162	9,325,664	1,274	4,191,082	3,436	13,516,746
Georgia	1,079	4,240,027	1,119	3,837,250	2,198	8,083,277
Idaho	395	1,339,340	327	845,500	722	2,184,840
Illinois	1,741	9,701,535	4,828	19,148,345	6,569	28,849,880
Indiana	930	4,275,978	3,907	11,987,620	4,837	16,263,598
Iowa	327	1,397,035	1,189	3,515,844	1,516	4,912,879
Kansas	939	3,419,645	2,202	5,318,247	3,141	8,737,892
Kentucky	434	2,210,069	918	3,641,412	1,352	5,851,481
Louisiana	400	1,392,625	547	1,998,270	947	3,390,895
Maine	68	270,400	363	1,021,630	431	1,292,030
Maryland	800	4,218,090	1,829	7,083,890	2,629	11,301,980
Massachusetts	471	2,919,210	1,489	7,006,777	1,960	9,925,987
Michigan	3,372	19,023,530	3,563	13,299,815	6,935	32,323,345
Minnesota	638	2,492,300	1,993	6,277,329	2,631	8,769,629
Mississippi	910	3,021,088	926	2,406,469	1,836	5,427,557
Missouri	1,284	6,363,152	3,416	13,248,145	4,700	19,611,297
Montana	207	882,491	287	809,970	494	1,692,461
Nebraska	158	650,250	573	1,800,460	731	2,450,710
Nevada	117	500,175	213	727,330	330	1,227,505
New Hampshire	64	288,450	511	1,775,941	575	2,064,391
New Jersey	3,554	19,251,568	5,342	24,915,903	8,896	44,167,471
New Mexico	251	877,000	202	585,575	453	1,462,575
New York	5,449	26,847,767	3,051	13,433,534	8,500	40,281,301
North Carolina	976	4,163,950	823	3,160,899	1,799	7,324,849
North Dakota	123	411,750	345	899,705	468	1,311,455
Ohio	2,346	13,362,995	7,480	27,956,029	9,826	41,319,024
Oklahoma	669	2,977,830	987	2,865,862	1,656	5,843,692
Oregon	229	801,400	467	1,159,300	696	1,960,700
Pennsylvania	2,258	11,687,934	6,622	23,327,198	8,880	35,015,132
Rhode Island	162	729,490	419	1,741,190	581	2,470,680
South Carolina	447	1,736,304	385	1,383,204	832	3,119,508
South Dakota	179	591,800	400	924,180	579	1,515,980
Tennessee	1,048	3,844,445	1,798	6,236,410	2,846	10,080,855
Texas	3,124	12,390,807	2,264	7,433,492	5,388	19,824,299
Utah	508	1,906,320	1,196	3,526,145	1,704	5,432,465
Vermont	65	288,250	513	1,547,840	578	1,836,090
Virginia	1,333	6,311,508	2,111	8,287,486	3,444	14,598,994
Washington	679	2,473,990	1,507	3,968,955	2,186	6,442,945
West Virginia	422	2,010,500	493	1,844,510	915	3,855,010
Wisconsin	1,187	6,371,549	885	3,803,505	2,072	10,175,054
Wyoming	217	725,440	584	1,312,573	801	2,038,013
Alaska	37	183,300	42	121,860	79	305,160
Hawaii	203	749,790	75	237,160	278	986,950
United States total	53,931	254,343,304	85,922	312,188,198	139,853	566,531,502

[1] This total is the net cumulative total since the beginning of operations, comprising all mortgages accepted less those that had expired as of Dec. 31, 1936. Of the total expired commitments reported by insuring offices, 1,455, amounting to $5,712,471, had not been tabulated in Washington by State location of property at this date. Consequently, the cumulative total for the United States exceeds by this number and amount the net cumulative total of 138,398 mortgages for $560,819,031 reported by insuring offices on Dec. 31, 1936, as shown in summary of operations, p. 26.

Appendix Figure 8. Example of VA Source Data, 1949

TABLE 88.—NUMBER AND AMOUNT OF GUARANTEED AND INSURED LOANS REPORTED CLOSED AND DISBURSED

By Purpose of Loan, Branch Area, and State

Cumulative through June 25, 1949

Branch area and State	Number of loans				Amount of guaranty and insurance				Amount of loans			
	Total	Home	Farm	Business	Total	Home	Farm	Business	Total	Home	Farm	Business
TOTAL	1,622,873	1,464,107	51,522	107,244	$4,170,185,219	$3,952,004,335	$91,051,064	$127,129,820	$3,773,513,426	$3,238,144,916	$197,739,968	$337,628,543
BOSTON, MASS.	134,490	123,168	1,389	9,933	364,141,875	349,141,905	2,651,032	12,348,938	816,309,459	779,531,516	6,237,882	30,540,061
Connecticut	20,511	19,327	34	1,150	63,064,824	61,819,829	110,956	1,134,039	143,385,203	139,895,031	265,252	3,224,920
Maine	11,853	9,977	405	1,471	22,316,910	19,955,434	579,398	1,782,078	45,805,113	40,375,323	1,400,556	4,029,234
Massachusetts [1]	72,625	67,933	135	4,557	208,567,620	202,810,747	367,288	5,389,585	477,211,406	462,988,560	838,706	13,384,140
New Hampshire	12,156	10,564	185	1,407	26,484,822	24,001,295	417,887	2,065,650	56,322,812	50,383,203	894,548	5,045,061
Rhode Island [1]	11,389	10,615	9	765	31,899,537	30,728,841	27,250	1,143,446	68,308,671	65,504,731	68,600	2,735,340
Vermont	5,956	4,752	621	583	11,808,162	9,825,769	1,148,253	834,140	25,276,254	20,384,668	2,770,220	2,121,366
NEW YORK, N. Y.	157,429	137,114	2,286	18,029	426,258,012	405,917,884	4,614,605	15,725,523	973,765,751	911,750,277	10,199,595	51,815,879
New York:												
Albany	19,094	16,460	651	1,983	45,798,111	41,794,248	1,342,120	2,661,743	97,829,409	88,327,857	3,016,056	6,485,496
Buffalo	32,184	29,799	620	1,765	89,892,125	85,863,609	1,249,256	2,779,260	192,896,110	183,428,550	2,696,780	6,770,780
New York City	81,518	69,532	50	11,936	236,557,480	229,372,320	138,420	7,046,740	571,128,081	540,008,468	334,354	30,785,259
Syracuse	21,784	18,655	963	2,166	51,539,753	46,652,352	1,880,509	3,006,892	109,148,273	97,715,622	4,148,105	7,284,646
Puerto Rico	2,849	2,668	2	179	2,470,543	2,235,355	4,300	230,888	2,763,878	2,269,880	4,300	489,698
PHILADELPHIA, PA	191,807	181,533	2,313	7,961	497,449,239	481,264,221	5,261,365	10,923,653	1,045,574,448	1,007,103,526	11,148,376	27,322,546
Delaware	4,097	3,828	119	150	11,945,166	11,399,780	304,050	241,366	24,631,837	23,454,412	631,558	545,867
New Jersey	57,191	55,773	90	1,328	166,480,245	164,625,206	275,577	1,579,462	358,099,302	352,670,052	620,833	4,808,417
Pennsylvania: [2]												
Philadelphia	53,907	52,283	101	1,523	140,052,510	138,160,501	266,463	1,625,546	290,728,566	285,874,961	624,954	4,228,651
Pittsburgh [2]	46,753	43,287	911	2,555	115,402,924	109,850,386	1,888,293	3,664,245	241,167,311	228,096,328	4,125,866	8,945,117
Wilkes-Barre	29,859	26,362	1,092	2,405	63,568,394	57,228,378	2,426,982	3,913,034	130,947,432	117,007,775	5,145,165	8,794,494
RICHMOND, VA.	109,315	101,934	1,783	5,598	278,415,763	267,431,262	3,857,855	7,096,646	587,359,053	561,801,889	8,131,748	17,425,416
District of Columbia [3]	17,702	16,179	5	1,518	57,826,158	56,414,681	17,000	1,394,477	139,389,127	135,437,230	36,000	3,915,897
Maryland [3]	24,178	22,819	207	1,152	65,223,299	63,516,843	538,353	1,168,103	135,088,655	130,621,534	1,160,856	3,306,265
North Carolina	28,456	27,079	460	917	65,473,149	62,910,029	1,051,919	1,491,201	132,055,221	126,443,364	2,195,629	3,396,228
Virginia [3]	27,649	25,459	748	1,442	66,012,578	62,245,152	1,687,991	2,079,435	133,918,239	125,636,798	3,545,383	4,736,058
West Virginia [3]	11,330	10,398	363	569	23,900,579	22,344,557	592,592	963,430	46,927,811	43,662,963	1,193,880	2,070,968

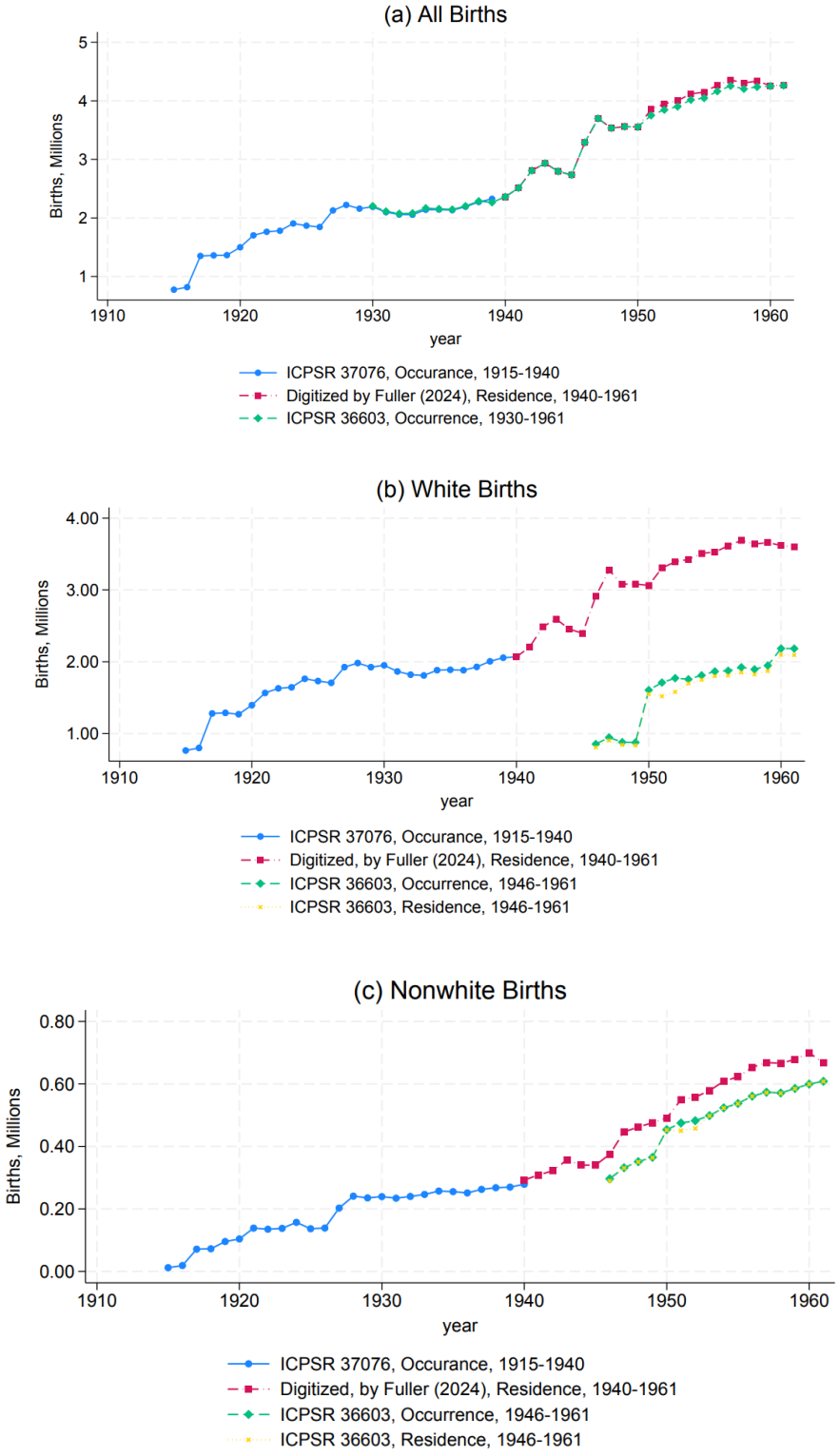
Appendix Figure 9. Example of Birth Source Data, 1946

TABLE 7B.—LIVE BIRTHS BY AGE OF MOTHER, RACE, NATIVITY OF WHITE MOTHER, AND BIRTH ORDER (EXCLUDING STILLBIRTHS): EACH STATE, 1946

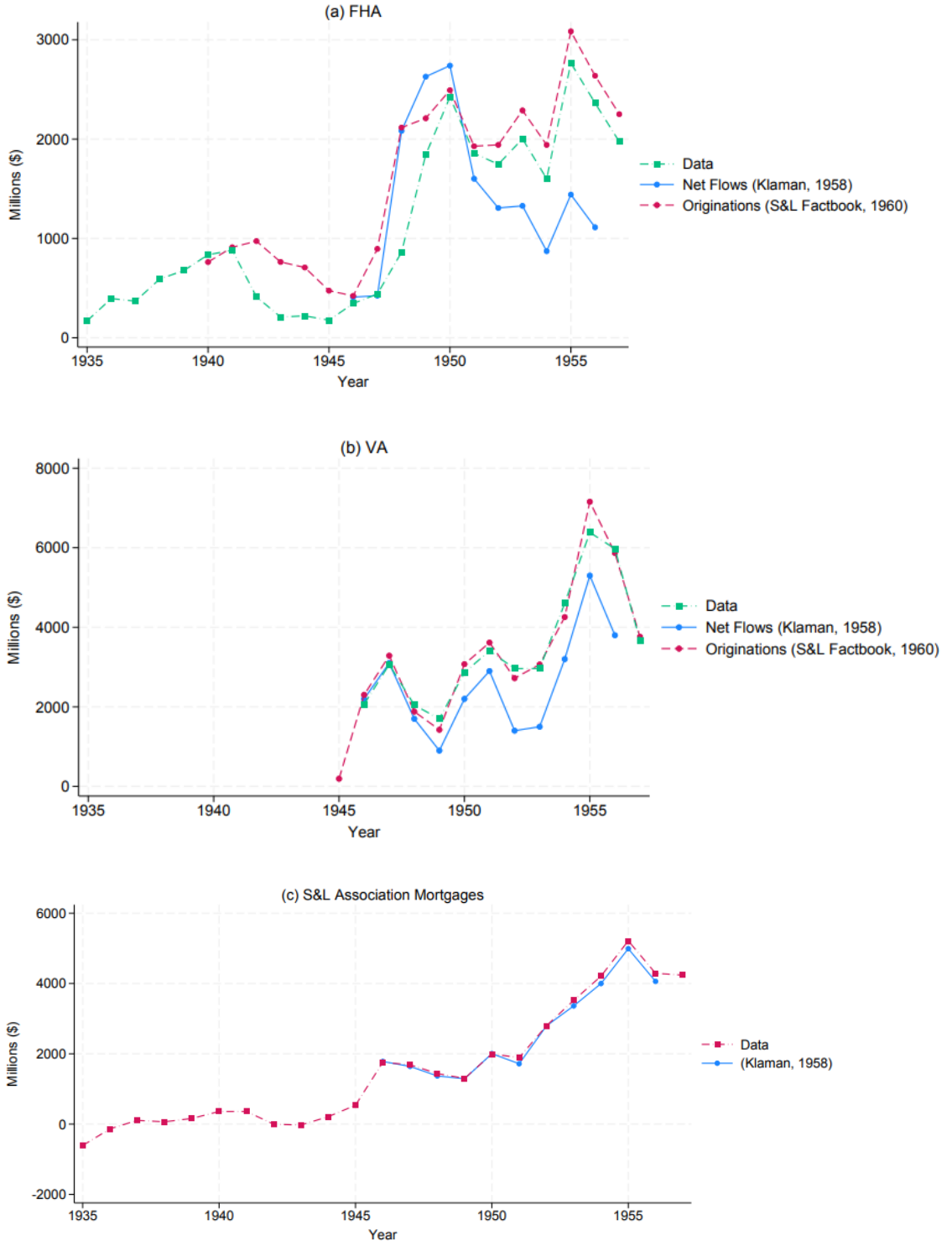
(By place of residence. Birth order refers to number of children born alive to mother. Births to white mothers whose nativity is not stated are not shown separately, but are included in "Total births," and in "White." "Negro" is shown separately only in those States where the total number of births so classified was 100 or more. "Other races" may be obtained in these States by subtracting "Negro" from "Nonwhite")

AREA, AGE OF MOTHER, RACE, AND NATIVITY OF WHITE MOTHER	Total births	BIRTH ORDER (EXCLUDING STILLBIRTHS)										
		First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth and over	Not stated
ALABAMA												
Total births	79,863	21,979	17,619	11,007	7,164	5,050	3,596	2,611	1,929	1,427	2,760	4,521
10 to 14 years	205	148	38	-	-	-	-	-	-	-	-	19
15 to 19 years	13,004	7,595	3,407	853	198	48	4	-	-	-	-	903
20 to 24 years	25,612	8,654	7,359	4,320	2,103	980	324	139	40	21	9	1,463
25 to 29 years	18,658	3,384	4,253	3,179	2,444	1,878	1,255	672	354	161	115	983
30 to 34 years	12,154	1,334	1,904	1,780	1,493	1,270	1,128	949	697	469	573	597
35 to 39 years	7,464	487	710	741	756	670	686	641	617	559	1,229	368
40 to 44 years	2,072	82	98	96	115	148	159	177	207	181	705	108
45 to 49 years	195	4	2	6	7	8	10	10	12	19	109	8
50 years and over	4	-	-	-	-	-	-	-	-	-	2	2
Not stated	495	93	88	62	50	48	30	23	12	17	20	72
White	51,944	16,821	12,683	7,260	4,389	2,797	1,831	1,234	900	624	941	2,464
10 to 14 years	41	36	4	-	-	-	-	-	-	-	-	1
15 to 19 years	7,083	4,788	1,548	286	40	9	-	-	-	-	-	388
20 to 24 years	17,231	7,334	5,281	2,454	902	315	70	18	5	3	-	849
25 to 29 years	12,954	2,975	3,513	2,398	1,633	982	513	206	75	26	15	618
30 to 34 years	8,257	1,153	1,635	1,416	1,121	875	656	462	301	162	113	343
35 to 39 years	4,748	404	580	593	576	476	452	395	384	286	428	189
40 to 44 years	1,364	73	86	85	93	119	117	136	144	130	328	55
45 to 49 years	98	2	2	2	4	3	8	7	6	14	49	1
50 years and over	1	-	-	-	-	-	-	-	-	-	-	1
Not stated	217	56	34	28	20	18	15	6	5	3	7	25
Native white	51,773	16,737	12,642	7,236	4,382	2,784	1,831	1,233	900	623	940	2,455
10 to 14 years	40	36	3	-	-	-	-	-	-	-	-	1
15 to 19 years	7,042	4,779	1,547	286	40	9	-	-	-	-	-	381
20 to 24 years	17,166	7,298	5,262	2,448	901	314	70	18	5	3	-	847
25 to 29 years	12,911	2,947	3,506	2,392	1,633	982	513	206	75	26	15	616
30 to 34 years	8,211	1,145	1,628	1,409	1,120	874	656	461	301	162	113	342
35 to 39 years	4,728	401	574	588	572	475	452	399	384	286	429	188
40 to 44 years	1,361	73	86	83	92	119	117	136	144	129	327	55
45 to 49 years	98	2	2	2	4	3	8	7	6	14	49	1
50 years and over	1	-	-	-	-	-	-	-	-	-	-	1
Not stated	215	56	34	28	20	18	15	6	5	3	7	23
Foreign-born white	163	82	41	23	7	2	-	1	-	1	-	6
10 to 14 years	1	-	1	-	-	-	-	-	-	-	-	-
15 to 19 years	10	8	1	-	-	-	-	-	-	-	-	1
20 to 24 years	65	35	19	5	1	1	-	-	-	-	-	2
25 to 29 years	43	28	7	6	-	-	-	-	-	-	-	2
30 to 34 years	25	8	7	7	1	1	-	1	-	-	-	-
35 to 39 years	19	3	6	5	4	-	-	-	-	-	-	1
40 to 44 years	2	-	-	-	1	-	-	-	-	1	-	-
45 to 49 years	-	-	-	-	-	-	-	-	-	-	-	-
50 years and over	-	-	-	-	-	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-	-	-	-	-	-
Nonwhite	27,919	5,158	5,136	3,747	2,775	2,253	1,765	1,377	1,029	803	1,819	2,057
10 to 14 years	164	112	34	-	-	-	-	-	-	-	-	18
15 to 19 years	5,951	2,805	1,859	567	158	39	4	-	-	-	-	519
20 to 24 years	8,381	1,320	2,078	1,866	1,201	665	254	121	35	18	9	614
25 to 29 years	5,704	409	740	781	811	896	742	466	279	135	100	365
30 to 34 years	3,917	181	269	334	372	395	472	487	396	307	460	254
35 to 39 years	2,716	83	130	148	180	194	234	242	253	273	800	179
40 to 44 years	708	9	12	13	20	29	42	41	63	51	375	53
45 to 49 years	97	2	-	4	3	5	2	3	6	5	60	7
50 years and over	3	-	-	-	-	-	-	-	-	-	2	1
Not stated	278	37	34	34	30	30	15	17	7	14	13	47
Negro	27,901	5,156	5,134	3,747	2,775	2,249	1,763	1,374	1,027	802	1,819	2,057
10 to 14 years	164	112	34	-	-	-	-	-	-	-	-	18
15 to 19 years	5,951	2,805	1,859	567	158	39	4	-	-	-	-	519

Appendix Figure 10. Comparison of Birth Counts Across Data Sources



Appendix Figure 11. Comparison of Mortgage Data with External Aggregates



Notes: Displays comparison between aggregated trends based our data and external aggregates. Klaman (1958) are net flows and Savings and Loan Factbook (1960) are originations. Source: FHA, VA, Census, Klaman (1958) and Savings and Loan Factbook (1960).

Appendix Table 1. Dollars of Loans

	Full Sample (1933-1957)			Pre-War (1933-1940)	Post-War (1946-1957)				
	FHA	VA	Combined	FHA	FHA	VA	Combined	VA (IV)	Combined (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(10)
A. All Births									
Amt. of Mortgages$_s$	0.0243	0.0069	0.0106	0.1327	0.0220	0.0133	0.0151	0.0359	0.0327
	(0.0165)	(0.0079)	(0.0053)*	(0.0615)**	(0.0134)	(0.0046)***	(0.0044)***	(0.0125)***	(0.0125)***
B. White Births									
Amt. of Mortgages$_s$	0.0238	0.0120	0.0142	0.1289	0.0250	0.0146	0.0168	0.0319	0.0290
	(0.0163)	(0.0101)	(0.0075)*	(0.0578)**	(0.0127)*	(0.0043)***	(0.0044)***	(0.0114)***	(0.0113)**
C. Nonwhite Births									
Amt. of Mortgages$_s$	0.0013	-0.0053	-0.0036	0.0037	-0.0023	-0.0014	-0.0016	0.0039	0.0035
	(0.0064)	(0.0046)	(0.0041)	(0.0090)	(0.0035)	(0.0014)	(0.0016)	(0.0031)	(0.0029)
First Stage F-Stat								18.8	14.2
N	1210	1210	1210	384	586	586	586	586	586

Notes: Estimated according to equations 1 (columns 1-7) or 2 and 3 (columns 8-9). All models include controls for total population, farm income, nonfarm income, wage and salary income, proprieters income, state and year fixed effects. Births in thousands and mortgages in millions of nominal dollars. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 2. Alternate Specifications of Shares in IV

	VA				Combined			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. All Births (t+1)								
No. of Mortgages$_{st}$	0.3591	0.2966	0.3090	0.3625	0.3468	0.2665	0.2883	0.3424
	(0.0916)***	(0.1417)**	(0.1089)***	(0.1136)***	(0.0953)***	(0.1395)*	(0.1114)***	(0.1178)***
B. White Births (t+1)								
No. of Mortgages$_{st}$	0.3282	0.2533	0.2779	0.3244	0.3169	0.2276	0.2593	0.3064
	(0.0775)***	(0.1413)*	(0.1059)***	(0.1028)***	(0.0783)***	(0.1367)*	(0.1068)**	(0.1042)***
C. Nonwhite Births (t+1)								
No. of Mortgages$_{st}$	0.0301	0.0420	0.0275	0.0361	0.0291	0.0377	0.0257	0.0341
	(0.0327)	(0.0260)	(0.0266)	(0.0322)	(0.0323)	(0.0241)	(0.0252)	(0.0316)
Instrument	S&L$_{1939s}$* Spread$_{t-1}$	Banks$_{1939s}$* Spread$_{t-1}$	Lenders$_{1944}$ $_s$* Spread$_{t-1}$	Lenders$_{1934s}$ * Spread$_{t-1}$	S&L$_{1939s}$* Spread$_{t-1}$	Banks$_{1939s}$* Spread$_{t-1}$	Lenders$_{1944}$ $_s$* Spread$_{t-1}$	Lenders$_{1934}$ $_s$* Spread$_{t-1}$
First Stage F Statistic	16.7	28.2	56.2	18.6	15.6	24	39.2	13.3
Observations	586	586	586	586	586	586	586	586

Notes: Estimated according to equations 2 and 3, but using instrument listed in table. All models include controls for total population, farm income, nonfarm income, wage and salary income, proprieters income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. Lenders includes B&L associations and commerical banks in 1934, and S&L associations and commercial banks in 1944. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 3. Adding a Proxy for Conventional Lending

	Full Sample (1933-1957)			Pre-War (1933-1940)	Post-War (1946-1957)				
	FHA	VA	FHA+VA	FHA	FHA	VA	FHA+VA	VA (IV)	FHA+VA (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. All Births									
No. of Mortgages$_{st}$	0.3088	0.3340	0.3165	0.5670	0.1875	0.1433	0.1450	0.2880	0.2567
	(0.0932)***	(0.0718)***	(0.0469)***	(0.2776)**	(0.0874)**	(0.0511)***	(0.0388)***	(0.1245)**	(0.1149)**
S&L Mortgages ($)$_{st}$	0.0076	0.0087	0.0095	0.0198	0.0250	0.0189	0.0212	0.0158	0.0207
	(0.0256)	(0.0264)	(0.0251)	(0.0092)**	(0.0130)*	(0.0135)	(0.0129)	(0.0146)	(0.0126)
B. White Births									
No. of Mortgages$_{st}$	0.2801	0.3581	0.3242	0.5530	0.1882	0.1416	0.1443	0.2668	0.2378
	(0.0901)***	(0.0912)***	(0.0667)***	(0.2621)**	(0.0818)**	(0.0474)***	(0.0398)***	(0.1174)**	(0.1075)**
S&L Mortgages ($)$_{st}$	0.0032	0.0045	0.0052	0.0181	0.0188	0.0127	0.0151	0.0101	0.0146
	(0.0260)	(0.0262)	(0.0248)	(0.0086)**	(0.0126)	(0.0127)	(0.0124)	(0.0136)	(0.0123)
C. Nonwhite Births									
No. of Mortgages$_{st}$	0.0338	-0.0273	-0.0083	0.0140	0.0068	0.0041	0.0046	0.0210	0.0187
	(0.0292)	(0.0419)	(0.0331)	(0.0439)	(0.0154)	(0.0150)	(0.0099)	(0.0385)	(0.0345)
S&L Mortgages ($)$_{st}$	0.0044	0.0042	0.0043	0.0018	0.0059	0.0057	0.0058	0.0054	0.0057
	(0.0082)	(0.0079)	(0.0080)	(0.0019)	(0.0069)	(0.0071)	(0.0070)	(0.0074)	(0.0068)
First Stage F-Stat								32.1	25
N	1206	1206	1206	380	586	586	586	586	586

Notes: Estimated according to equations 1 (columns 1-7) or 2 and 3 (columns 8-9). All models include controls for total population, farm income, nonfarm income, wage and salary income, proprieters income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. S&L Mortgages ($) refers to the dollar flow of mortgages at S&L Associations (1939-1957) or B&L Associations (1933-1938). Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 4. Adding a Measure of House Prices

	Full Sample (1933-1957)				Pre-War (1933-1940)		Post-War (1946-1957)					
	FHA	VA	FHA+VA	None	FHA	None	FHA	VA	FHA+VA	None	VA (IV)	Combined (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. All Births												
No. of Mortgages$_{st}$	0.2658	0.2644	0.2609		0.6552		0.1229	0.1235	0.1166		0.4326	0.3965
	(0.0939)***	(0.0742)***	(0.0390)***		(0.3561)*		(0.1103)	(0.0566)**	(0.0481)**		(0.2037)**	(0.2017)**
House Price Index$_{st}$	-6.8130	-6.7955	-6.5661	-7.0501	3.8168	2.6250	-4.9550	-5.2763	-4.5303	-5.7699	-4.0409	-1.5564
	(2.4129)***	(2.3318)***	(2.3243)***	(2.4235)***	(4.6430)	(3.7752)	(6.9108)	(6.7762)	(6.7133)	(6.7382)	(6.9477)	(6.9427)
B. White Births												
No. of Mortgages$_{st}$	0.2600	0.3067	0.2878		0.6560		0.1490	0.1195	0.1232		0.3826	0.3507
	(0.0911)***	(0.0941)***	(0.0653)***		(0.3313)*		(0.1035)	(0.0527)**	(0.0479)**		(0.1844)**	(0.1796)*
House Price Index$_{st}$	-4.1641	-4.1007	-3.8622	-4.3961	4.5769	3.3837	-2.3923	-2.9028	-2.0716	-3.3804	-1.8511	0.3466
	(2.5173)	(2.2563)*	(2.2648)	(2.5148)*	(4.1075)	(3.2993)	(5.9275)	(5.8964)	(5.8213)	(5.8369)	(6.0658)	(6.0891)
C. Nonwhite Births												
No. of Mortgages$_{st}$	0.0059	-0.0389	-0.0245		-0.0006		-0.0254	0.0035	-0.0066		0.0575	0.0527
	(0.0380)	(0.0549)	(0.0442)		(0.0421)		(0.0236)	(0.0132)	(0.0099)		(0.0461)	(0.0446)
House Price Index$_{st}$	-2.6226	-2.6653	-2.6734	-2.6279	-0.7613	-0.7601	-2.5342	-2.3516	-2.4353	-2.3653	-2.1356	-1.8056
	(1.5758)	(1.5286)*	(1.5392)*	(1.5661)	(0.9777)	(0.9344)	(1.7490)	(1.6675)	(1.6963)	(1.6643)	(1.6738)	(1.7821)
First Stage F-Stat											8.2	7
N	635	635	635	635	200	200	310	310	310	310	310	310

Notes: Estimated according to equations 1 (columns 1-10) or 2 and 3 (columns 11-12). All models include controls for total population, farm income, nonfarm income, wage and salary income, proprieters income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. House Price Index is Lyons et al, 2024 city level index, weighted to state-level using 1950 Census household counts. Sample restricted to states in which some of the population lives in a city covered by house price index. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Record, Moody's and Lyons et al, 2024. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 5. Adding a Measure of Saving Deposits at S&L Associations and Commercial Banks

	Full Sample (1933-1957)			Pre-War (1933-1940)	Post-War (1946-1957)				
	FHA	VA	FHA+VA	FHA	FHA	VA	FHA+VA	VA (IV)	Combined (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. All Births									
No. of Mortgages$_{st}$	0.3127	0.3271	0.3096	0.4354	0.1694	0.1534	0.1436	0.3299	0.2954
	(0.0952)***	(0.0661)***	(0.0459)***	(0.2256)*	(0.0909)*	(0.0416)***	(0.0431)***	(0.1277)**	(0.1203)**
Savings$_{st}$	0.0015	0.0012	0.0012	0.0018	0.0014	0.0006	0.0009	0.0000	0.0006
	(0.0006)**	(0.0008)	(0.0008)	(0.0006)***	(0.0016)	(0.0016)	(0.0016)	(0.0019)	(0.0017)
B. White Births									
No. of Mortgages$_{st}$	0.2734	0.3564	0.3180	0.4433	0.1595	0.1697	0.1495	0.3278	0.2936
	(0.0902)***	(0.0879)***	(0.0666)***	(0.2066)**	(0.0900)*	(0.0465)***	(0.0496)***	(0.1106)**	(0.1048)***
Savings$_{st}$	0.0011	0.0008	0.0009	0.0017	-0.0001	-0.0009	-0.0006	-0.0014	-0.0009
	(0.0006)*	(0.0007)	(0.0007)	(0.0006)***	(0.0012)	(0.0012)	(0.0012)	(0.0015)	(0.0012)
C. Nonwhite Births									
No. of Mortgages$_{st}$	0.0447	-0.0327	-0.0092	-0.0078	0.0164	-0.0123	-0.0016	0.0037	0.0033
	(0.0312)	(0.0420)	(0.0332)	(0.0469)	(0.0164)	(0.0170)	(0.0129)	(0.0333)	(0.0299)
Savings$_{st}$	0.0004	0.0004	0.0004	0.0001	0.0014	0.0014	0.0014	0.0014	0.0014
	(0.0003)	(0.0003)	(0.0003)	(0.0001)	(0.0008)*	(0.0008)*	(0.0008)*	(0.0008)*	(0.0008)*
First Stage F-Stat								29.9	24.9
N	1162	1162	1162	200	586	586	586	586	586

Notes: Estimated according to equations 1 (columns 1-10) or 2 and 3 (columns 11-12). All models include controls for total population, farm income, nonfarm income, wage and salary income, proprieters income, state and year fixed effects. Births and mortgages in thousands. Births measured by state of occurrence 1933-1939 and state of residence 1940-1957. Savings is the sum of deposits at commercial banks and assets of S&L assocations, measured in thousands of dollars. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Record, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 6. Measures of Age at First Birth

	Percent of First Births to Women Under Age 24					Mean Age at First Birth				
	FHA	VA	FHA+VA	VA (IV)	FHA+VA (IV)	FHA	VA	FHA+VA	VA (IV)	FHA+VA (IV)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. All Births (t+1)										
No. of Mortgages$_{st}$	-0.0219	0.0089	-0.0021	0.0531	0.0495	0.0002	-0.0006	-0.0003	-0.0050	-0.0047
	(0.0185)	(0.0109)	(0.0098)	(0.0265)**	(0.0251)**	(0.0019)	(0.0011)	(0.0011)	(0.0028)*	(0.0026)*
N	574	574	574	574	574	574	574	574	574	574
First Stage F-Stat				31.8	22.9				31.8	22.9
B. White Births (t+1)										
No. of Mortgages$_{st}$	-0.0194	0.0068	-0.0025	0.0520	0.0485	0.0000	-0.0005	-0.0003	-0.0043	-0.0040
	(0.0184)	(0.0100)	(0.0092)	(0.0273)*	(0.0258)*	(0.0018)	(0.0010)	(0.0010)	(0.0031)	(0.0029)
N	574	574	574	574	574	574	574	574	574	574
First Stage F-Stat				31.8	22.9				31.8	22.9
C. Nonwhite Births (t+1)										
No. of Mortgages$_{st}$	-0.2193	-0.1000	-0.1331	-0.3453	-0.3218	0.0205	0.0106	0.0132	0.0273	0.0254
	(0.1066)**	(0.0823)	(0.0815)	(0.2761)	(0.2561)	(0.0112)*	(0.0075)	(0.0079)*	(0.0231)	(0.0213)
N	573	573	573	573	573	573	573	573	573	573
First Stage F-Stat				31.8	22.9				31.8	22.9

Notes: Estimated according to equations 1 and 2. All models include controls for total population, farm income, nonfarm income, wage and salary income, proprietors income, state and year fixed effects. Percent of first births to women under age 24 in percentage points, Mean at first birth in years, and mortgages in thousands. Standard errors in parentheses adjusted for clustering by state. Data sources are NCHS, FHA, VA, BEA, Census, Congressional Quarterly, and Moody's. * p<0.1, ** p<0.05, ***p<0.01.

Appendix Table 7. FHA Data Source List

Report year	Data years	Page number	Table Number	Table Name	Columns collected
1935	1935	49	Appendix	Volume of mortgage insurance by states, through December 31, 1935	Total, number and amount
1936	1936	29	3	Mortgages accepted for insurance by states, through December 31, 1936, based on property location	Total, number and amount
1937	1937	44	8	Net mortgages accepted for insurance by states, through December 31, 1936, based on property location	Total, number and amount
1938	1938	55	2	State volume of insured loans: new volume of home mortgages accepted for insurance…cumulative 1934-1939	Net small home mortgages (sec 203), number and amount
1939	1939	31	2	State volume of insured loans: new volume of home mortgages accepted for insurance…cumulative 1934-1938	Title II, Sec 203 mortgages on 1-to 4-family homes
1940	1940	8	2	State volume of insured loans: new volume of home mortgages accepted for insurance…cumulative 1934-1939	Title II, Sec 203 mortgages on 1-to 4-family homes, number and amount
1941	1941	30	12	State distribution of new and existing home mortgages: net number and face amount of 1- to 4- family home mortgages accepted for insurance by FHA, cumulative 1935-1941	Title II, Sec 203 mortgages on 1-to 4-family homes, number and amount
1942	1942	32	14	State distribution of new and existing home mortgages: number and face amount of of net firm commitments issued by FHA under sections 603 and 203 to insure 1- to 4- family homes, cumulative 1935-1942	Title II, Sec 203 mortgages on new and existing homes, number and amount
1943	1943	27	7	State distribution of new and existing home mortgages: number and face amount of of net firm commitments issued by FHA under sections 603 and 203 to insure 1- to 4- family homes, cumulative 1935-1943	Title II, Sec 203 mortgages on new and existing homes, number and amount
1944	1944	15	6	State distribution of new and existing home mortgages: number and face amount of of net firm commitments issued by FHA under sections 603 and 203 to insure 1- to 4- family homes, cumulative 1935-1944	Title II, Sec 203 mortgages on new and existing homes, number and amount
1945	1945	14	5	State distribution of new and existing home mortgages: number and face amount of 1- to 4- family home mortgages insured by FHA under sec. 203, cumulative 1935-1945	Total all homes, number and amount
1946	1946	28	5	State distribution of new and existing home mortgages: number and face amount of 1- to 4- family home mortgages insured by FHA under sec. 203, cumulative 1935-1946	Total all homes, number and amount
1947	1947	21	5	State distribution of new and existing home mortgages: number and face amount of 1- to 4- family home mortgages insured by FHA under sec. 203, during 1947 and cumulative, 1935-1947	1935-1947, number and amount
1948	1948	25	6	State Distribution of all home mortgages: Number and face amount of home mortgages by FHA under secs. 203 and 603, cumulative through 1948	Sec. 203, number and amount
1949	1949	27	7	State Distribution of all home mortgages: Number and face amount of home mortgages by FHA under secs. 203 and 603, cumulative through 1949	Sec. 203, number and amount
1950	1950	31	7	State Distribution of all home mortgages: Number and face amount of home mortgages by FHA under all sections, cumulative through 1950	Sec. 203, number and amount
1951	1951	36	8	State Distribution of FHA-insured Home Mortgages, 1935-1951	Sec. 203, number and amount
1952	1952	39	11	Volume of FHA-insured home mortgages by State location, 1935-52	Sec. 203, number and amount
1953	1953	35	11	Volume of FHA-insured home mortgages by State location, 1935-53	Sec. 203, number and amount
1954	1954	56	30	Volume of FHA-insured home mortgages by State location, 1935-54	Sec. 203, number and amount; total, number and amount
1955	1955	44	II-15	Volume of FHA-insured home mortgages by State location of property, 1935-55	Total, number and amount; sec 203 cases
1956	1956	28	III-14; III-15	Volume of FHA-insured mortgages and loans, by State location of property, 1934-56, Number of FHA-insured home mortgages by State location of property, by section, 1935-56	Total, number and amount; sec 203 cases
1957	1957	29	III-14	Volume of FHA-insured home mortgages by State location of property, by section 1935-57	All section, number and amount; sec 203 number
1958	1958	30	III-14	Volime of FHA-insured home mortgages by state location of property, by section 1935-58	All section, number and amount; sec 203 number
1959	1959	32	III-14	Volime of FHA-insured home mortgages by state location of property, by section 1935-59	All section, number and amount; sec 203 number
1960	1960	32	III-13	Volume of FHA-insured home mortgages by State location of property, by section 1935-60	All section, number and amount; sec 203 number

Appendix Table 8. VA Data Source List

Report URL	Report Year	Data year	Page number	Table number	Table title	Columns used
https://www.va.gov/vetdata/docs/FY1946.pdf	1946	Fy 1946	168	73	Number and amount of loans and loan commitments, by branch area and purpose of loan, cumulative through 28 June 1946	Amount of loans - home
https://www.va.gov/vetdata/docs/FY1947.pdf	1947	Fy 1947	208-211	84	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1948.pdf	1948	Fy 1948	228-230	82	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1949.pdf	1949	Fy1949	236-239	88	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1950.pdf	1950	Fy1950	265-267	94	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1951.pdf	1951	Fy1951	284-285	97	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1952.pdf	1952	Fy1952	264-265	85	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1953.pdf	1953	Fy1953	282-283	94	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1954.pdf	1954	Fy1954	254-255	69	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1955.pdf	1955	Fy1955	248-249	70	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1956.pdf	1956	Fy1956	265-266	72	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1957.pdf	1957	Fy1957	254-255	76	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home
https://www.va.gov/vetdata/docs/FY1958.pdf	1958	Fy1958	236-237	66	Number and amount of guaranteed and insured loans reported closed and disbursed by purpose of loans, by branch area state, cumulative through June	Number of loans-home, Initial amount of loans-home

Appendix Table 9. Birth Data Source List

Publicatin	PDF Link	Page numb	Table num	Table Title
1946	cdc.gov/nchs/data/vsus/VSUS_1946_2.pdf	147 (155)	7b	Live births by age of mother,race, nativity of white mothe, and birth order (excluding stillbirths): Each State, 1946
1947	cdc.gov/nchs/data/vsus/VSUS_1947_2.pdf	129 (139)	6b	Live births by age of mother, race, nativity of white mother, and birth order: Each State, 1947
1948	Vital Statistics of the United States 1948 (cdc.gov)	129 (137)	6b	Live births by age of mother, race, nativity of white mother, and birth order: Esch State, 1948
1949	Vital Statistics of the United States 1949 (cdc.gov)	129 (138)	6b	Live births by age of mother, race, nativity of white mother, and birth order: Each State, 1949
1950	Vital Statistics of the United States 1950 (cdc.gov)	238 (244)	22b	Live births by age of mother, birth order, race, and nativity of white mother: each state, 1950
1951	cdc.gov/nchs/data/vsus/VSUS_1951_1.pdf	232	26b	Live births by age of mother, birth order, race, and nativity of white mother: each state, 1951
1952	Vital Statistics of the United States 1952 (cdc.gov)	204 (264)	24b	Live births by age of mother, birth order, race, and nativity of white mother: each state, 1952
1953	Vital Statistics of the United States 1953 (cdc.gov)	218 (273)	24b	Live births by age of mother, birth order, race, and nativity of white mother: each state, 1953
1954	cdc.gov/nchs/data/vsus/VSUS_1954_1.pdf	218	24b	Live births by age of mother, live-birth order, race, and nativity of white mother: Each State, 1954
1955	cdc.gov/nchs/data/vsus/VSUS_1955_1.pdf	223	26b	Live births by age of mother, live-birth order, race, and nativity of white mother: Each State, 1955
1956	Vital Statistics of the United States 1956 (cdc.gov)	218	25b	Live births by age of mother, live-birth order, race, and nativity of white mother: Each State, 1956
1957	Vital Statistics of the United States 1957 (cdc.gov)	234	30b	Live births by age of mother, live-birth order, race, and nativity of white mother: Each State, 1957
1958	Vital Statistics of the United States 1958 (cdc.gov)	277	40b	Live births by age of mother, live-birth order, race, and nativity of white mother: Each State, 1958

Appendix Table 10. Savings and Loan Association Source List

Report year	Data year	Page number	Table number	Table title	Columns used
1935	1932, 1933	252	270	Building and loan assocations: number, membership, total assets, and mortgage loans	Associations, total assets, mortgage loans
1937	1934, 1935	257	274	Building and loan assocations: number, membership, total assets, and mortgage loans	Associations, total assets, mortgage loans
1939	1936, 1937	269	284	Building and loan assocations: number, membership, total assets, and mortgage loans	Associations, total assets, mortgage loans
1940	1937, 1938	272	286	Building and loan assocations: number, membership, total assets, and mortgage loans	Associations, total assets, mortgage loans
1941	1939	302-304	305, 306	Operating savings and loan associations	305 - Total assets, amount of mortgage loans; 306-number of associations
1942	1941	310-312	309, 310	Operating savings and loan associations	309-Total assets, amount of mortgage loans, 310-number of associations
1943	1942	342-344	359, 360	Operating savings and loan associations	359-total assets, mortgages; 360-number of associations
1944-45	1943	362-365	379-380	Operating savings and loan associations	379-total assets, mortgages; 380-number of associations
1946	1944	416-419	443-444	Operating savings and loan associations	443-total assets, mortgages; 444-number of associations
1947	1945	428-431	450-451	Operating savings and loan associations	450- total assets, mortgages; 451-number of associations
1948	1946	436-439	454-455	Operating savings and loan associations	454- total assets, mortages; 455-number of associations
1949	1947	454-457	474-475	Operating savings and loan associations	474-total assets, mortgages; 475-number of associations
1950	1948	408	462	All savings and loan associations	Number of associations, total assets, mortgage loans
1951	1949	407	458	All savings and loan associations	Number of associations, total assets, mortgage loans
1952	1950	414	475	All savings and loan associations	Number of associations, total assets, mortgage loans
1953	1951	445	483	All savings and loan associations	Number of associations, total assets, mortgage loans
1954	1952	471	513	All savings and loan associations	Number of associations, total assets, mortgage loans
1955	1953	460	532	All savings and loan associations	Number of associations, total assets, First mortgage loans
1956	1954	456	533	All savings and loan associations	Number of associations, total assets, first mortgage loans
1957	1955	457	544	All savings and loan associations	Number of associations, total assets, first mortgage loans
1959	1956, 1957	457	569	All saving and loan associations	Number of associations, total assets, first mortgage loans
1961	1958, 1959	454	592	All saving and loan associations	Number of associations, total assets, first mortgage loans
1962	1960	463	603	All saving and loan associations	Number of associations, total assets, first mortgage loans