Online Appendix

The New Deal, Race, and Home Ownership in the 1920s and 1930s

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The appendix offers more detail on the construction of the dataset, the calculation of the impact on home ownership of the change in mean housing policy values, and the full probit results. To examine the relationships between the programs and black and white home ownership we develop a data set with repeated cross-sections of households from the IPUMS one-percent samples of census households for the years 1920, 1930, and 1940 (Ruggles, et. al. 2008). The households are matched with measures of the New Deal, demographics, and economic activity in 460 State Economic Areas (SEAs). SEAs rather than counties were used because the 1940 IPUMS surveys do not yet report county data and only report information at the SEA level. The SEAs were created by Donald Bogue and Calvin Beale (1953) to group counties within states with similar economic characteristics. Data on the SEA demographics in census years are aggregated from county data in the ICPSR 2896 data set compiled by Michael Haines (2004). The values of FHA loans, HOLC loans, public works and relief grants, and PWA public housing grants were reported at the county level from the Office of Government Reports (OGR) (1939), and then aggregated to the SEA level. Average state income per capita in 1967 dollars for the years between census years is based on data for 1919 through 1938 developed by Martin (1939) and data for 1929 through 1940 from the Bureau of Economic Analysis website. Crop income per capita in 1967 dollars was calculated from the National Agricultural Statistics Service (2010) annual state data on prices and output for 18 crops. The 18 crops included buckwheat, cotton, corn, flaxseed, hay, hops, oats, peanuts, potatoes, rice, rye, sugar beets, sweet potatoes, sugar cane, hay, tobacco, and wheat. The annual value of federal farm loans by state is from the annual reports of the Federal Farm Loan Board from 1917

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through 1932 and the Farm Credit Administration from 1933 to 1939. The states with mortgage moratoria were reported in Skilton (1943) and are listed in Appendix Table 1. All dollar values were adjusted to 1967 dollars using the Consumer Price Index from U.S. Bureau of the Census (1975, series E-135, pp. 210-211).

Information for the New Deal programs from the OGR at the SEA level was aggregated for the period from July 1, 1933 through June 30, 1939 with no individual year data. The Farm Credit Administration information from the OGR did not have full information on the federal mortgage loans made between 1917 and 1933. Therefore, we used state level information for the farm loans, where we could split it out annually and also take into account the amounts loaned before the New Deal started in 1932. The Federal Land Banks began loaning mortgage funds to farmers in 1917. We have annual information by state from 1917 through 1939 for their loans and the loans from the Federal Land Bank Commissioner after 1933. Congress voted appropriations for emergency crop and seed loans between 1920 and 1932. We have information annually for 1931 and 1932 and for the period 1921 through 1929. When the Farm Credit Administration was formed in 1933, it formalized the emergency crop and feed loan program, added production credit associations and provided drought relief loans in 1934 and 1935. We used the average farm loans for 1931 through 1939 for 1940 observations for 1921 through 1929 for 1930 observations and the average for 1917 through 1919 for 1920 household observations.

For 1940 observations the average income and crop income was for the period 1931 to 1939, which coincided with the information on SEA level New Deal programs. For 1930 households, it was the average for 1921 to 1929 for both. For 1920 households the crop income was the average for 1911 to 1919. State income measures were not available before 1919, so we used the 1919 value multiplied by 0.928, which was the ratio of the national average GDP per capita from 1911 to 1919 to the 1919 figure for national estimates of GDP per capita.

I. Calculating the Percentage Change in Probability of Homeownership Associated with the Change in the Mean of Policy Variable between the 1920s and 1930s in Table 1

For ease of description of how this calculation was made for each policy variable, the FHA measure is used as an example. In calculating the percentage change in probability of home ownership associated with the change in the mean value of FHA loans insured between 1934 and 1939 per nonfarm home owner as of 1930, we used the same means for the 1920s and the 1930s for both blacks and whites. This choice was made so that the change in probabilities was being driven by the marginal effects from the probit analysis and not differences in the means used. The change in the FHA mean of policy measures used for whites and blacks in the nonfarm sector is the change in the national weighted mean between the 1920s and 1930s using the number of white nonfarm households in each SEA in 1940 as the weight. The change in the mean of policy measures used for whites and blacks in the farm sector is the change in the national weighted mean using the number of white farm households in each SEA in 1940 as the weight.

Changes in probabilities in probit analysis can vary based on the starting prediction. For the white nonfarm predictions in the absence of the FHA, each white nonfarm household is given their individual values for the right-hand side variables and the national means for the SEA variables with the exception that a zero is inserted for the FHA because there was no FHA spending in the 1920s. The predicted probabilities are then averaged across households. We then insert the FHA mean value of $804 for each household, and then average the predicted probabilities. The same procedures were followed for black nonfarm households, white farm households, and black farm households.

II. Additional Results from the Probit Analysis

Appendix Tables 2 and 3 contain the means and standard deviations for the black farm, black nonfarm, white farm, and white nonfarm household samples. The means for SEA level variables

change across the samples because the number of households from each SEA varies across the samples. When calculating the change in predicted probability of home ownership in Table 1 in the paper, we used the SEA means for the nonfarm white sample from Appendix Table 2 and for the farm white sample from Appendix Table 3.

The probit coefficients and standard errors for all variables except the SEA dummies are reported for the farm and nonfarm regressions in Appendix Table 4. The farm results are reported in two columns the "White" column shows the coefficients for variables not interacted with the black dummy variable. The "Black Difference" column shows the coefficients and standard errors for the variables interacted with black dummies. The latter set of coefficients shows the difference between the black and white coefficients.

Appendix Table 5 provides the average marginal effects of the households from the samples using the probit estimates in Appendix Table 4. The marginal effects of a variable for white households are the average marginal effects of the white households in the sample of the variable. The marginal effects of a variable for the black households are the average marginal effects of both the variable plus the interaction of that variable. If a marginal effect is statistically significant for black households, it indicates that the marginal effect is statistically different from zero, not necessarily statistically different than the white marginal effect.

In addition, the marginal effects on the black interaction terms are displayed in Appendix Table 6 with standard errors for the marginal effects below. As noted by Chunrong Ai and Edward C. Norton (2003), the estimates of the marginal effects take into account that the interaction effect is conditional on the other independent variables which is not the case in linear models. In Table 1 of the paper, black interaction marginal effects that are statistically different from zero are marked with an *a* superscript.

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APPENDIX TABLE 1—STATES ADOPTING MORTGAGE MORATORIA

Arizona	Arkansas	California	Delaware	Idaho
Illinois	Iowa	Kansas	Louisiana	Michigan
Minnesota	Mississippi	Montana	Nebraska	New Hampshire
New York	North Carolina	North Dakota	Ohio	Oklahoma
Oregon	Pennsylvania	South Carolina	South Dakota	Texas
Vermont	Wisconsin			

Notes: Oregon and West Virginia were not included in Lee J. Alston and Randal R. Rucker's (1987) list of states that had imposed mortgage moratoria.

Source: Skilton (1943)

Variable	White Households			Black Households		
	1920	1930	1940	1920	1930	1940
Household Owns Residence	0.4257	0.4770	0.4266	0.2259	0.2731	0.2411
Household Family Size	3.8418	3.6846	3.4297	3.2858	3.3919	3.4055
Head of Household in Labor Force	0.8506	0.8468	0.8123	0.9190	0.9058	0.8204
Head of Household is Literate	0.9493	0.9668	0.8736	0.7312	0.8337	0.8040
Head of Household is Male	0.8659	0.8645	0.8444	0.7695	0.7555	0.7317
Head of Household Age	44.945	45.484	46.684	41.489	41.636	43.822
Head of Household is Married	0.7880	0.7912	0.7624	0.6576	0.6551	0.6098
Head of Household is Native Born	0.7015	0.7440	0.7986	0.9802	0.9761	0.9781
Number of Children Present in Household	1.7588	1.6109	1.4015	1.2642	1.2898	1.3287
Number of Household (Live-in) Employees	0.0348	0.0299	0.1207	0.0120	0.0068	0.2871
Spouse is in Labor Force	0.0438	0.0698	0.1016	0.1913	0.2116	0.1870
Household is in Metropolitan Area	0.5788	0.6360	0.6489	0.4439	0.5604	0.5872
Percent Black in SEA	5.9492	6.2498	6.7647	26.990	23.464	22.678
Percent Foreign Born in SEA	16.410	13.596	10.841	6.5619	6.6958	5.7502
Percent Illiterate in SEA	4.7336	3.4984	4.5938	10.2783	6.9680	7.1706
FHA Loan Value Insured per Nonfarm Homeowner in 1930	0	0	0.8040	0	0	1.2216
HOLC Loans 1933-1936 per Nonfarm Homeowner in 1930	0	0	0.8767	0	0	1.1746
PWA Public Housing Grants 1933-1939 per Nonfarm Population in 1930	0	0	0.0057	0	0	0.0169
Public Works Grants 1933-1939 per Person in 1930	0	0	0.1022	0	0	0.1034
Relief Grants 1933-1939 per Person in 1930	0	0	0.2366	0	0	0.2282
AAA Grants 1933-1937 per Farmer in 1930.	0	0	0.1002	0	0	0.0878
Federal Farm Mortgage Loans per Farm Population in Prior Census	0.0064	0.0086	0.0276	0.0041	0.0064	0.0145
Federal Farm Non-Mortgage Loans per Farm Person in 1930	0	0.0004	0.0205	0	0.0013	0.0127
Federal Non-Farm, Non-Housing Loans, 1932-1939 per Person in 1930	0	0	0.1547	0	0	0.1953
State Mortgage Moratorium, 1933-1934	0	0	0.6878	0	0	0.5769
Average State Income since previous Census per Person in Prior Census	1.2272	1.3591	1.2556	0.9519	0.9805	0.9377
Average State Crop Income since Last Census Per Farm Person in Prior Census	0.2464	0.2095	0.1451	0.1700	0.1560	0.1084
Observations	157,345	200,545	252,278	13,462	16,769	21,486

Notes: All monetary figures are reported in thousands of dollars and adjusted for inflation using 1967 as the base year.

Variable	White Households			Black Households		
	1920	1930	1940	1920	1930	1940
Household Owns Residence	0.6468	0.5941	0.5781	0.2283	0.1966	0.2045
Household Family Size	4.5553	4.4052	4.1930	4.7791	4.6561	4.8396
Head of Household in Labor Force	0.9681	0.9619	0.8837	0.9856	0.9815	0.9181
Head of Household is Literate	0.9390	0.9489	0.9184	0.5847	0.6726	0.6571
Head of Household is Male	0.9529	0.9501	0.9310	0.8965	0.8945	0.8856
Head of Household Age	45.372	46.704	48.138	42.809	43.135	44.658
Head of Household is Married	0.8515	0.8484	0.8324	0.8121	0.7950	0.7816
Head of Household is Native Born	0.8829	0.8991	0.9186	0.9991	0.9991	0.9939
Number of Children Present in Household	2.3974	2.2371	2.0334	2.5222	2.3205	2.3657
Number of Household (Live-in) Employees	0.0545	0.0389	0.1069	0.0170	0.0105	0.0788
Spouse is in Labor Force	0.0220	0.0205	0.0333	0.2197	0.1639	0.1275
Household is in Metropolitan Area	0.0791	0.0986	0.1287	0.0255	0.0439	0.0654
Percent Black in SEA	10.129	9.7102	9.4612	46.398	43.195	41.955
Percent Foreign Born in SEA	7.1183	5.0194	3.9915	0.9470	0.5539	0.6068
Percent Illiterate in SEA	6.1459	4.8286	5.2880	17.2407	12.648	11.3198
FHA Loan Value Insured per Nonfarm Homeowner in 1930	0	0	0.4217	0	0	0.5468
HOLC Loans 1933-1936 per Nonfarm Homeowner in 1930	0	0	0.4566	0	0	0.5350
PWA Public Housing Grants 1933-1939 per Nonfarm Population in 1930	0	0	0.0015	0	0	0.0016
Public Works Grants 1933-1939 per Person in 1930	0	0	0.1115	0	0	0.0824
Relief Grants 1933-1939 per Person in 1930	0	0	0.1573	0	0	0.0930
AAA Grants 1933-1937 per Farmer in 1930.	0	0	0.1597	0	0	0.1128
Federal Farm Mortgage Loans per Farm Population in Prior Census	0.0073	0.0092	0.0249	0.0039	0.0064	0.0078
Federal Farm Non-Mortgage Loans per Farm Person in 1930	0	0.0009	0.0181	0	0.0016	0.0114
Federal Non-Farm, Non-Housing Loans, 1932-1939 per Person in 1930	0	0	0.1096	0	0	0.1185
State Mortgage Moratorium, 1933-1934	0	0	0.6497	0	0	0.6415
Average State Income since previous Census per Person in Prior Census	1.0283	1.0160	0.9519	0.8002	0.6507	0.6256
Average State Crop Income since Last Census Per Farm Person in Prior Census	0.2416	0.2208	0.1392	0.1424	0.1387	0.0921
Observations	57,192	55,663	61,785	10,431	9,691	10,051

Notes: All monetary figures are reported in thousands of dollars and adjusted for inflation using 1967 as the base year.

Variable	Non-Farm Households		Farm Households	
	White	Black Interaction	White	Black Interaction
Household Family Size	0.114***	-0.042***	0.037***	-0.027**
Head of Household in Labor Force	-0.010	-0.011	0.202*	-0.330
Head of Household is Literate	0.101***	0.185***	0.414***	-0.008
Head of Household is Male	-0.013	-0.166***	-0.360***	0.162**
Head of Household Age	0.030***	0.002***	0.036***	-0.005***
Head of Household is Married	0.175***	0.085**	-0.072***	0.044
Head of Household is Native Born	-0.075*	0.022	-0.118***	-0.055
Number of Children Present in Household	-0.082***	0.028***	-0.058***	0.042***
Number of Household (Live-in) Employees	0.133***	-0.149***	0.031**	-0.008
Spouse is in Labor Force	-0.142***	0.097***	0.046*	-0.165***
Household is in Metropolitan Area	-0.162***	-0.218*	0.070*	-0.199*
Percent Black in SEA	0.011*	-0.026***	0.005	-0.013
Percent Foreign Born in SEA	0.004	-0.009	0.010***	0.006
Percent Illiterate in SEA	-0.018**	0.021*	-0.006	0.003
FHA Loan Value Insured per Nonfarm Homeowner in 1930	0.067***	-0.011	0.059	0.060
HOLC Loans 1933-1936 per Nonfarm Homeowner in 1930	-0.011	-0.037	-0.005	-0.282*
PWA Public Housing Grants 1933-1939 per 1930 Nonfarm Population	-1.905**	0.199	-1.060	6.390
Public Works Grants 1933-1939 per Person in 1930	0.001	-0.104	0.105	-0.153
Relief Grants 1933-1939 per Person in 1930	-0.030	0.183	-0.224	0.262
AAA Grants 1933-1937 per Farmer in 1930.	0.000	0.340	-0.129*	0.362
Federal Farm Mortgage Loans per Farm Population in Prior Census	-1.100**	2.046	-1.803**	5.916
Federal Farm Non-Mortgage Loans per Farm Person in 1930	1.385***	-3.307	-0.631	-2.337
Federal Non-Farm, Non-Housing Loans, 1932-1939 per Person in 1930	0.067***	-0.011	0.059	0.060
State Mortgage Moratorium, 1933-1934	0.007	-0.025	0.069**	-0.008
Average State Income since previous Census per Person in Prior Census	0.293***	-0.087	0.328***	-0.618**
Average State Crop Income since Last Census Per Farm Person in Prior Census	0.421**	0.492	0.096	-0.015
Constant / Black	-2.331***	-0.972*	-1.622***	0.131
Year Dummies	Included	Included	Included	Included
SEA Dummies	Included	Included	Included	Included

Notes: All monetary figures are reported in thousands of dollars and adjusted for inflation using 1967 as the base year. * Significant at the 10 percent level, ** Significant at the 5 percent level, and *** Significant at the 1 percent level.

Variable	Non-Farm Households		Farm Households	
	White	Black	White	Black
Household Family Size	0.039*	0.019*	0.011*	0.002*
Head of Household in Labor Force	-0.003	-0.005	0.061*	-0.028
Head of Household is Literate	0.034*	0.074*	0.125*	0.087
Head of Household is Male	-0.004	-0.046*	-0.109*	-0.043*
Head of Household Age	0.010*	0.008*	0.011*	0.007*
Head of Household is Married	0.060*	0.068*	-0.022*	-0.006
Head of Household is Native Born	-0.026*	-0.014	-0.036*	-0.037
Number of Children Present in Household	-0.028*	-0.014*	-0.018*	-0.004*
Number of Household (Live-in) Employees	0.045*	-0.004*	0.009*	-0.005
Spouse is in Labor Force	-0.049*	0.012*	0.014*	-0.026*
Household is in Metropolitan Area	-0.055*	-0.097*	0.021*	-0.029*
Percent Black in SEA	0.004*	-0.003*	0.002	-0.002
Percent Foreign Born in SEA	0.001	-0.002	0.003*	0.003
Percent Illiterate in SEA	-0.018*	0.000	-0.002	-0.001
FHA Loan Value Insured per Nonfarm Homeowner in 1930	0.023*	0.015*	0.018*	0.026
HOLC Loans 1933-1936 per Nonfarm Homeowner in 1930	-0.004	-0.013	-0.002	-0.062*
PWA Public Housing Grants 1933-1939 per 1930 Nonfarm Population	-0.650*	-0.443	-0.321	1.150*
Public Works Grants 1933-1939 per Person in 1930	0.000	-0.027	0.032	-0.010
Relief Grants 1933-1939 per Person in 1930	-0.010	0.040	-0.068*	0.008
AAA Grants 1933-1937 per Farmer in 1930.	0.000	0.088*	-0.039*	0.050
Federal Farm Mortgage Loans per Farm Population in Prior Census	-0.375*	0.246	-0.546*	0.888
Federal Farm Non-Mortgage Loans per Farm Person in 1930	0.473*	-0.499	-0.191	-0.641
Federal Non-Farm, Non-Housing Loans, 1932-1939 per Person in 1930	-0.007	0.005	-0.010	-0.092
State Mortgage Moratorium, 1933-1934	0.002	-0.005	0.021*	0.013
Average State Income since previous Census per Person in Prior Census	0.100*	0.054*	0.099*	-0.063
Average State Crop Income since Last Census Per Farm Person in Prior Census	0.144*	0.237*	0.029	0.018
Year Dummies	Included	Included	Included	Included
SEA Dummies	Included	Included	Included	Included

Notes: All monetary figures are reported in thousands of dollars and adjusted for inflation using 1967 as the base year.
* Significant at the 10 percent level.

Variable	Non-Farm Households	Farm Households
FHA Loan Value Insured per Nonfarm Homeowner in 1930	-0.003	0.017
HOLC Loans 1933-1936 per Nonfarm Homeowner in 1930	-0.011	-0.082*
PWA Public Housing Grants 1933-1939 per 1930 Nonfarm Population	0.061	1.852*
Public Works Grants 1933-1939 per Person in 1930	-0.032	-0.004
Relief Grants 1933-1939 per Person in 1930	0.056	0.076
AAA Grants 1933-1937 per Farmer in 1930.	0.104*	0.105
Federal Farm Mortgage Loans per Farm Population in Prior Census	0.624	1.715
Federal Farm Non-Mortgage Loans per Farm Person in 1930	-1.010*	-0.678
Federal Non-Farm, Non-Housing Loans, 1932-1939 per Person in 1930	0.012	-0.114
State Mortgage Moratorium, 1933-1934	-0.008	-0.002
Average State Income since previous Census per Person in Prior Census	-0.027	-0.179*
Average State Crop Income since Last Census Per Farm Person in Prior Census	0.150	-0.004

Notes: All monetary figures are reported in thousands of dollars and adjusted for inflation using 1967 as the base year.
* Significant at the 10 percent level.