



How GSE Affordability Targets Address Income and Racial Imbalances in Homeownership

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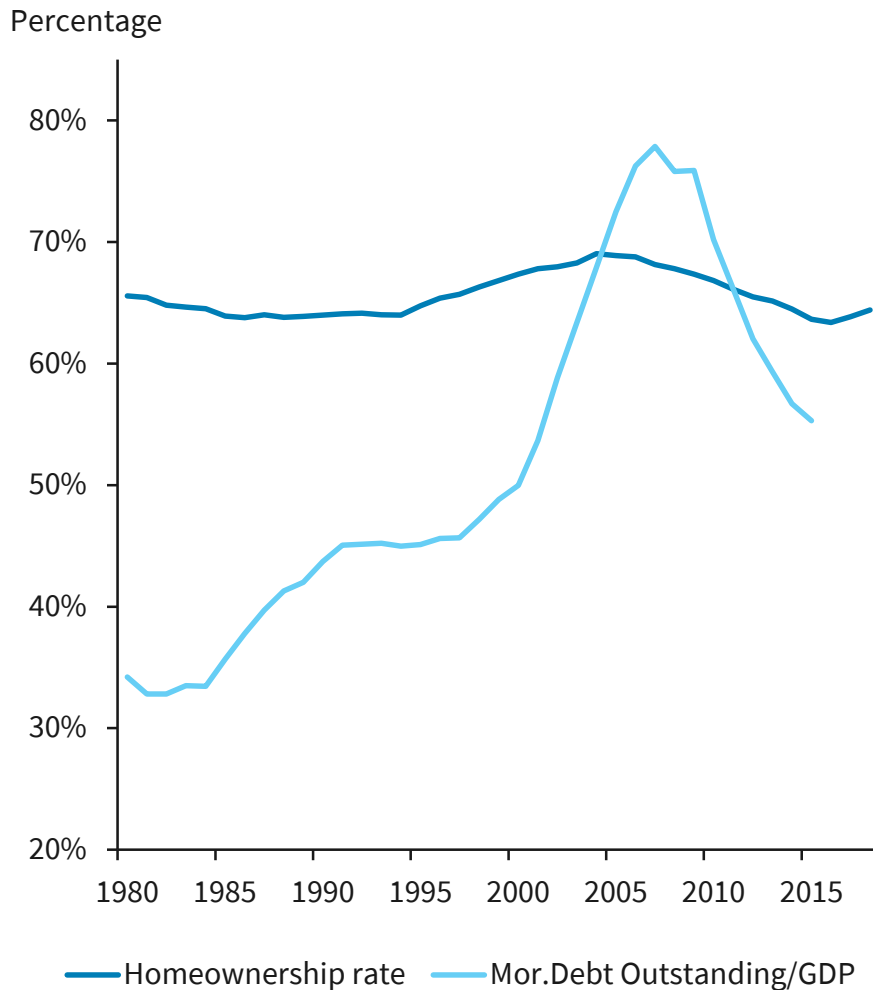
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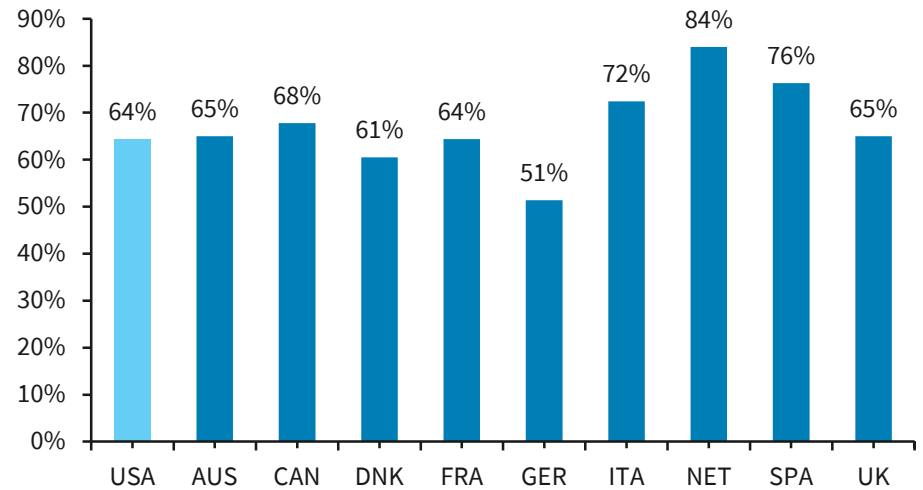
Restricted - External

An initial read of data suggests that the subsidies and support for US housing could lead to serious distortions without generating better outcomes

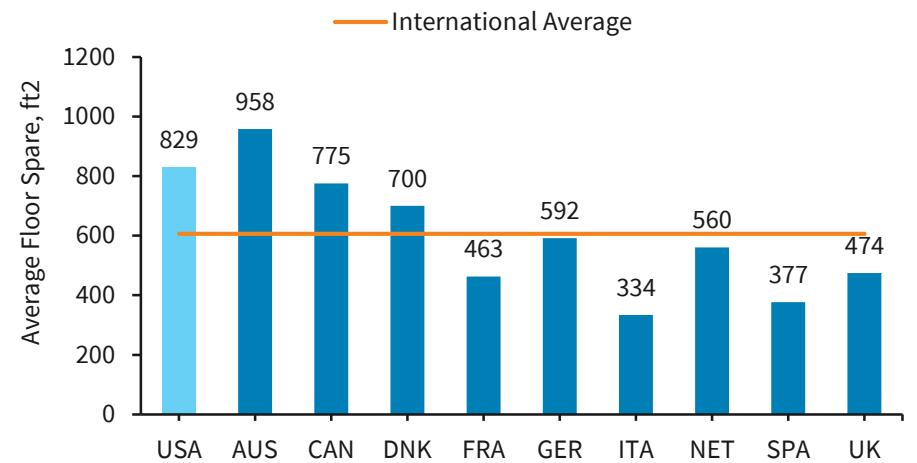
US Mortgage Debt and Homeownership



International Homeownership Levels



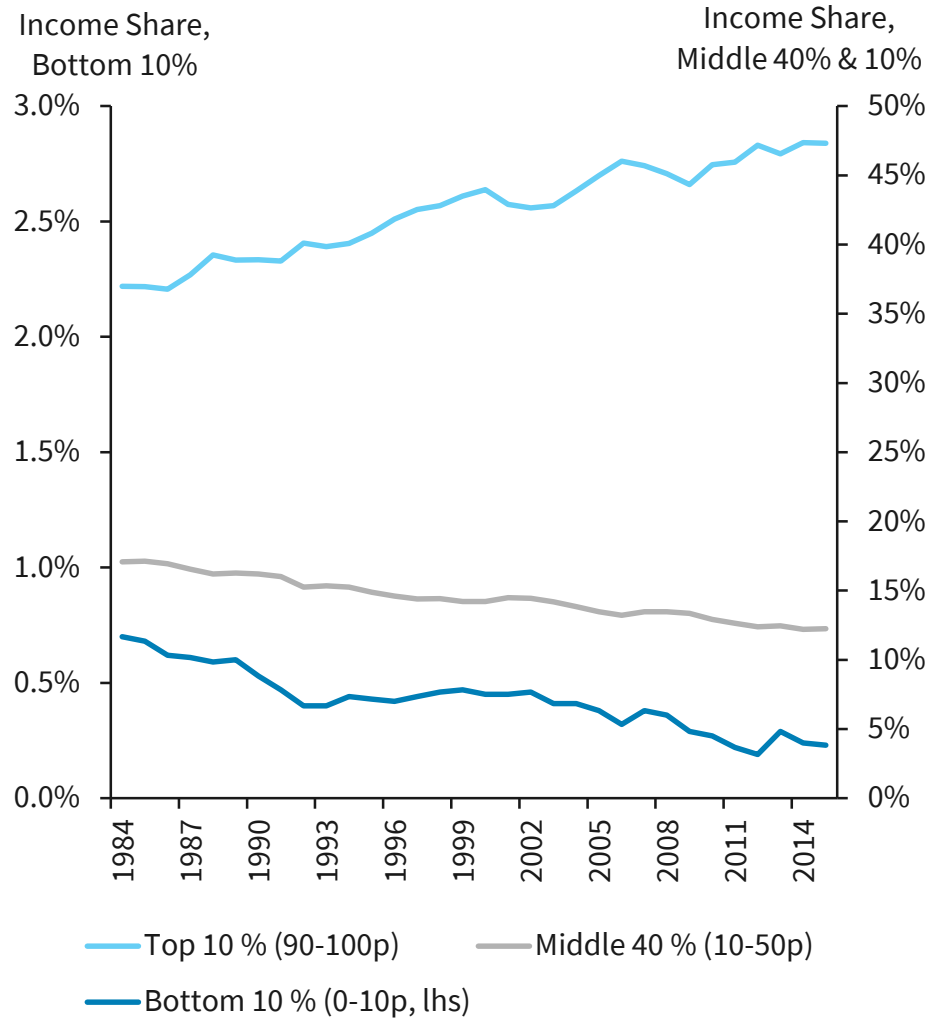
Residential Square Feet per Capita



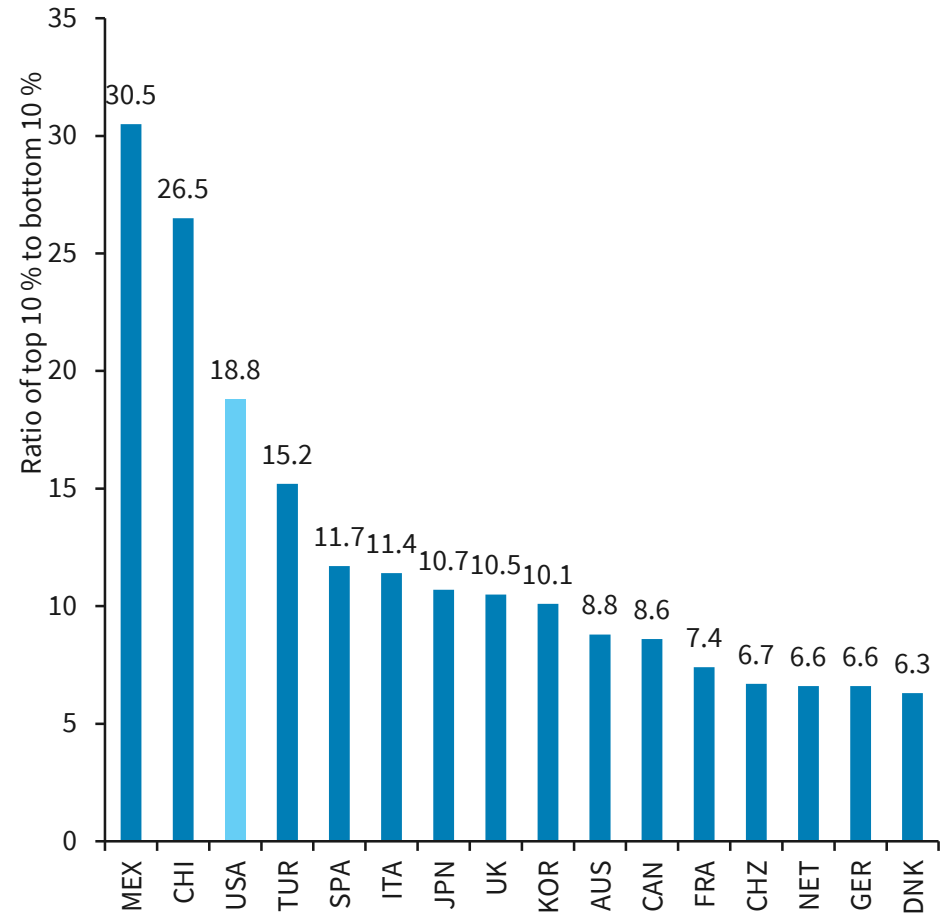
*Source for all charts: Federal Reserve, Mortgage Debt Outstanding, Data 1980-2018, ABS (Australia), CHMC (Canada), Census Bureau (USA), EMF (Europe), Statistics Bureau Japan, CommSec, RBA, UN, US Census, Barclays Research

But this may too naïve a take – the structure of the US economy is different, with higher and (generally) increasing income inequality

US Income Inequality has Increased...



...And is Higher vs. Other Developed Economies



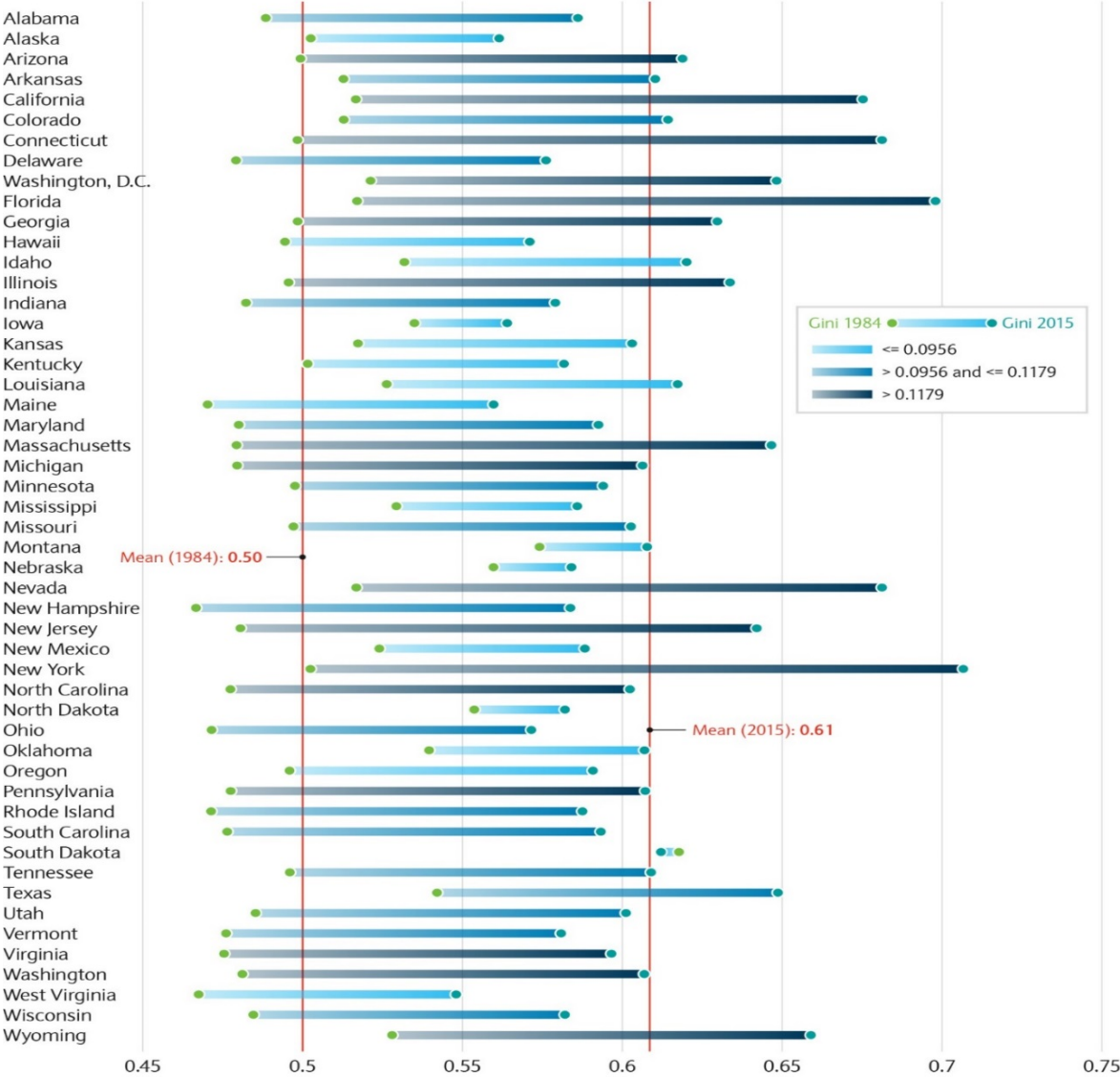
* Note: The chart shows the share of all income received by the top 10%, divided by the share of income received by the bottom 10% for each country (S90/S10). Source for all charts: World Inequality Database (WID), OECD Income Distribution Database, Data 2013-2015, Barclays Research

With a panel of data across states and time, we examine the relationship between homeownership, inequality, and the GSE affordability targets

Data Description

Data	Description and Source
Home-ownership Rate	Available at the state-year level, defined as owner occupied homes divided by total occupied homes Source: Census Bureau, Department of Housing and Urban Development
Income inequality	Available at state-year level. Defined as the Gini coefficient based on pre-tax gross income, excluding capital and entrepreneurial income. Source: Frank-Sommeiller Price Series, https://www.shsu.edu/eco_mwf/inequality.html
Race	Percent black population, by state year (1996-2015). Source: US Census Bureau
Controls	State and time fixed effects. Country (macro) variables: gross domestic product (GDP), unemployment rate, industrial production, average household size, federal funds target rate, average mortgage rate and total mortgage debt outstanding. Our state-level controls are median income, population count and new housing permits

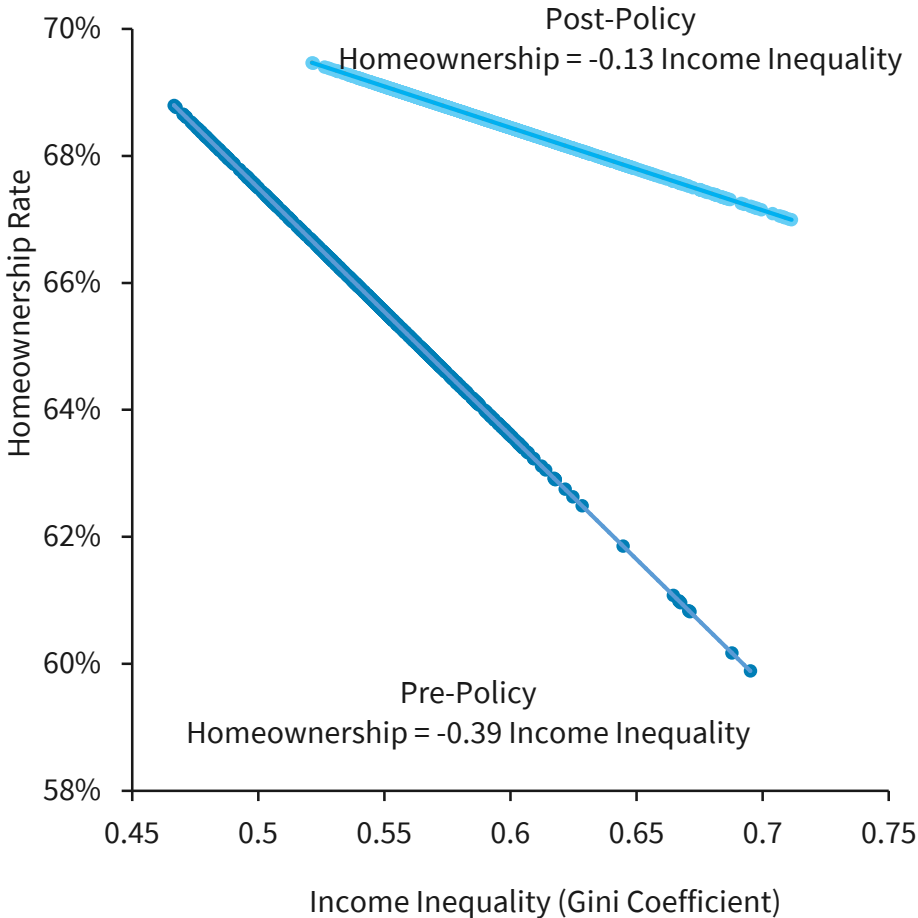
Substantial Variation in These Metrics



Source for all charts: Frank-Sommeiller-Price Series (1984-2015), Barclays Research

Result 1: Higher income inequality is strongly associated with lower homeownership, but the advent of GSE affordability targets reduced this sensitivity by 40-60%

Panel Regression Before/After Targets



Regression Results

$$Y_{s,t} = \alpha_s + \delta_t + \beta Gini_{s,t} + \epsilon_{s,t}$$

where s denotes US states and t time period

	Homeownership 1984-1995	Homeownership 1996-2015
Gini coefficient, β	-0.39*** [-0.49, -0.28]	-0.13*** [-0.18, -0.07]
Controls	No	No
State Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	612	1020
Data	1984-1995	1996-2015

Key Takeaways

Gini Rose Over 4pts from 1996 to 2015

- *Based on “before” – rise in inequality would have driven c. 160bp decline in homeownership*
- *But actually c. 50bp – decline of roughly 2/3*
- *Robust to other specifications, with slightly lower effect*

Note: The regression table gives the result of estimating the model: $Y_{s,t} = \alpha_s + \delta_t + \beta Gini_{s,t} + \epsilon_{s,t}$, where s denotes US states and t time period. Significance at the 95 % confidence level is denoted by ***. Standard errors are adjusted for heteroscedasticity.
Source for all charts: US Census Bureau, FRB New York (1984-2015).

Result 2: The effect of income inequality on homeownership varied with the level of the target

Interact Gini Coefficient with Target

$$Y_{s,t} = \alpha_s + \beta Gini_{s,t} + \theta Gini_{s,t} \times Target_t + \varphi Z_t + \gamma X_{s,t} + \varepsilon_{s,t}$$

where s denotes US states and t time period

Homeownership 1996-2015	
Gini coefficient	-0.14** [-0.19, -0.08]
Gini × Target	0.089** [0.02, 0.16]
Controls	Yes
State Fixed Effects	Yes
Year Fixed Effects	No
Observations	1020
Data	1996-2015

The coefficient of the interaction term suggests that higher affordability targets mitigate more the negative impact of income inequality on homeownership

When Target = 20% a 1 pp increase in Gini reduces homeownership by $-0.14 + 0.089 \times 0.20 = -0.12$ pp

When Target = 0% a 1 pp increase in Gini reduces homeownership by 0.14pp

When Target reaches the maximum of 100%, the effect is still negative, but considerably lower $-0.14 + 0.089 \times 1 = -0.051$ pp

Note: The table gives the result of estimating the model: $Y_{s,t} = \alpha_s + \beta Gini_{s,t} + \theta Gini_{s,t} \times Target_t + \varphi Z_t + \gamma X_{s,t} + \varepsilon_{s,t}$ where s denotes US states and t time period. Significance at the 95 % confidence level is denoted by ***. Standard errors are adjusted for heteroscedasticity

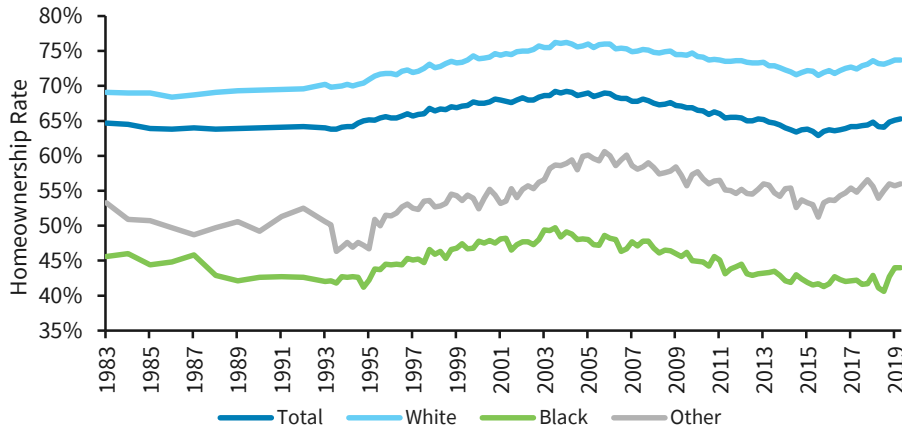
Source for all charts: HUD Reports (1996-2008), FHFA Annual Performance Reports (2009-2015), US Census Bureau, FRB New York (1996-2015).

Affordability Targets Introduced in 1993

Years	Goals	Years	Goals	Years	Goals
1993-1995	30%	1996	40%	2009	43%
Transitional Period		1997-2000	42%	2010	27%
		2001-2004	50%	2011	27%
		2005	52%	2012	23%
		2006	53%	2013	23%
		2007	55%	2014	23%
		2008	56%	2015	24%

Result 3: This benefit was highly concentrated in states with the largest black populations

Homeownership Varies by Race...

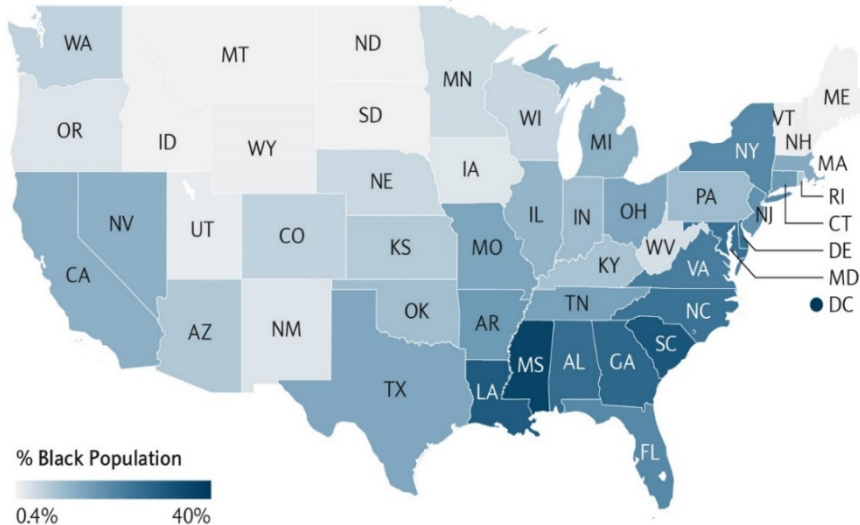


States with Large Black Populations Benefited from the Affordability Targets

$$Y_{s,t} = \alpha_s + \beta Gini_{s,t} + \theta Gini_{s,t} \times Target_t + \lambda Gini_{s,t} \times Black_{s,t} + \mu Gini_{s,t} \times Black_{s,t} \times Target_t + \varphi Z_t + \gamma X_{s,t} + \varepsilon_{s,t}$$

where s denotes US states and t time period

...And Racial Mix Varies by State and Time



Homeownership 1996-2015

Gini coefficient	-0.07*** [-0.12, -0.01]
Gini × Target	0.03 [-0.23, 0.27]
Gini x % Black Population	-0.24** [-0.28, -0.10]
Gini × Target x % Black Population	0.15** [0.03, 0.28]
Controls	Yes
State Fixed Effects	Yes
Year Fixed Effects	No
Observations	1020

Note: Total refers to homeownership for all races: Black, White, Hispanic, Asian and Native American. Data for 1994-2020 is quarterly, data for 1983-1993 is annual. The annual data come from the March demographic supplement of the Current Population Survey. For the quarterly data, the source is the corresponding three monthly Current Population Surveys/Housing Vacancy Surveys. Significance at the 95 % confidence level is denoted by ***. Standard errors are adjusted for heteroscedasticity.

Source for all charts: Frank-Sommeiller-Price Series (1984-2015), Census Bureau – Current Population Survey (2019), Barclays Research.

Summary

- Link between higher income inequality and lower home ownership is strong, particularly before the introduction of affordability targets.
- Targets are surprisingly effective at mitigating the downwards drag on homeownership from inequality. Given the sharp rise in the Gini coefficient in the US after the targets, the impact on homeownership is material (over 100bp). Suggests that other forms of support (eg FHA) not sufficient
- Most of the benefit goes to states with the highest black populations. True at the county level too, although without individual data we cannot confirm the beneficiaries of the targets
- Constraint associated with higher inequality is unclear, but the link to race may be informative: less inter-generational support, less stable wages are possibilities
- Measurement of inequality – after tax/transfer should include efforts like the affordability targets

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WPX 5 1/4 10/15/27, Market Weight (USD 100.75, 02-Oct-2020)

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WPX 5 7/8 06/15/28, Market Weight (USD 103.00, 02-Oct-2020)

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