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History, Inequality, and the US Home Mortgage Interest Deduction

In the decades after the Second World War, the federal government of the United States established a distinctive social policy model that depended on home mortgage lending as a stimulus to the economy, a mode of housing provision, and a vehicle for retirement savings. The key to this social model was the provision of public subsidies for private homeowners in the form of a personal income tax deduction for interest on mortgages that were used to purchase owner-occupied homes. This so-called home mortgage interest deduction, or HMID, provided the majority of American households with some housing and retirement security, but the benefits of this policy were unequally distributed. This article attempts to measure the contribution of the HMID to inequality. The approach is to apply a tax calculator to detailed microdata from the Panel Survey of Income Dynamics covering the period 1999 to 2017, in order to simulate inequality under alternative, counterfactual tax policies. The conclusion from this exercise is that the effect of the HMID on inequality depends on how the foregone tax revenues would otherwise be distributed; by simulating upper and lower bounds on the distributional profile of the policy alternatives, it is possible to conclude that the HMID approaches a maximally inegalitarian policy. This tax deduction resembles an inverted welfare state that explicitly takes from middle-income families to reward the rich. The findings supports the conventional view among social historians that mass homeownership in the United States came at the cost of more egalitarian social policy.

In the decades after the Second World War, public policy transformed the United States of America into a nation of homeowners. Congress enacted new programs to guarantee private home loans for veterans and other borrowers. Legislators appropriated funds for massive urban renewal projects that tore down multi-family rental housing in central cities, and for a highway system that opened up large suburban

tracts for single-family detached homes. Federal tax deductions provided an ongoing subsidy for debt-financed owner-occupants. Thanks to these policies, the share of households that were owner-occupied rose from 44% in 1940 to 62% in 1960 and peaked at 66% in the first decade of the twenty-first century.[1] Some comparative scholars have characterized the resulting system of "mortgage keynesianism" as a distinctively North American alternative to the European welfare state: in the decades after the war, federal subsidies for private mortgages, rather than direct public spending, provided most American households with housing and retirement security.[2]

The American mortgage-subsidy state differed from the European welfare state, however, in its deeply unequal structure. One particularly unequal element of this system was the tax treatment of owner-occupied housing. A provision of personal income tax law that came to be called the home mortgage interest deduction (HMID) permitted personal income taxpayers to deduct from their annual income the interest accrued on mortgage debts incurred to purchase a first or second home. Because the HMID rewarded the purchase of expensive houses, because it applied to second homes, and because it was structured as a deduction from income, it yielded the greatest savings for tax filers in the highest income brackets, who would otherwise have owed the most tax. This tax provision was coupled with rising – and increasingly unequal – housing values in the latter decades of the 20th century, and it is plausible to suppose that this combination may have made a substantial contribution to the growth of economic inequality in the late 20th century US.[3] The historian Nancy Kwak has blamed the HMID for contributing to the creation of a "split housing system" with a "disproportionately negative effect on racial minorities."[4] Lizabeth Cohen described the HMID as "an enormous subsidy to the homeowning middle class";[5] for Kenneth Jackson, it was an "incentive to detached-home living" that shaped the postwar spatial order for the benefit of white Americans, at the expense of ethnic and racial minorities.[6]

1 Data from United States Bureau of the Census, Historical Census of Housing Tables, www.census.gov/hhes/www/housing/census/historic/owner.html, retrieved 25 April 2020; for overviews, see Kenneth Jackson, Crabgrass Frontier. The Suburbanization of the United States, New York 1985; James T. Patterson, Grand Expectations. The United States, 1945–1974, New York 1996, p. 72–76.

2 Monica Prasad, The Land of Too Much. American Abundance and the Paradox of Poverty, Cambridge 2012, p. 93; see also Sarah Quinn, American Bonds. How Credit Markets Shaped a Nation, Princeton 2019; Edward N. Wolff, A Century of Wealth in America, Cambridge 2017, p. 148.

3 On housing values see Matthew Rognlie, Deciphering the Fall and Rise in the Net Capital Share. Accumulation or Scarcity?, in: Brookings Papers on Economic Activity 46, 2015, p. 1–69.

4 Nancy Kwak, A World of Homeowners. American Power and the Politics of Housing Aid, Chicago 2015, p. 177–178.

5 Lizabeth Cohen, A Consumer's Republic. The Politics of Mass Consumption in Postwar America, New York 2003, p. 146.

6 Kenneth Jackson, Crabgrass Frontier. The Suburbanization of the United States, New York 1985, p. 191.

Precisely *how much* did this tax deduction contribute to the growth of inequality in the late twentieth century? That question is difficult to answer because the HMID is so difficult to disentangle from other elements of US political economy. No one measured the effects of this policy at the time it was introduced because it was not introduced in a single act. A deduction for interest on *all* forms of debt was included, without debate or discussion, in the original income tax law that was passed by Congress in 1913.[7] The distinctive policy of treating *home mortgage* interest with special favor emerged only gradually from successive tax reforms that chipped away rights to deduct other forms of interest, somewhat as a statue emerges by subtraction from a block of marble. It was specifically codified as a separate deduction in the Income Tax Code of 1986, which eliminated many other deductions, and which corresponded with the beginning of period of accelerating inequality, but the historical record provides us with no clean before-and-after discontinuity that could be used to identify the discrete effect of the HMID.

This paper aims to appraise just how much the HMID has contributed to inequality by presenting a new analysis of its distributional effects in the twenty-first century. The approach taken here resembles the approach of Oliver Hümbelin, Rudolf Farys and Tina Richard in this volume, in its use of individual-level data to simulate alternative distributions without specific tax provisions.[8] To ground the analysis of alternative distributions, it draws on the work of the social historians cited above, who have described the HMID as part of a larger social policy framework, and who have emphasized its effects on the reproduction of categorical inequalities among ethno-racial status groups.[9] I describe a model based on their assumptions, and apply it to data from the 1999 to 2017 waves of the Panel Study of Income Dynamics (PSID), with individual tax liabilities computed by the TAXSIM 27 model of the National Bureau of Economic Research (NBER).[10]

The central finding is that the HMID exacerbates inequality of income relative to almost every other feasible counterfactual. The precise magnitude of this effect is indeterminate, because that effect depends on other policy decisions, most importantly on how the foregone income tax revenue would be spent or refunded. Our

7 For a history of this provision, see Dennis Ventry, The Accidental Deduction. A History and Critique of the Tax Subsidy for Mortgage Interest, in: Law and Contemporary Problems 73, 2010, p. 233–284; see also Christopher Howard, The Hidden Welfare State. Tax Expenditures and Social Policy in the United States, Princeton 1997.

8 See in this volume: Oliver Hümbelin, Rudolf Farys, Tina Richard, Ungleichheit und Steuern. Steuerdatenbasierte Einblicke in die redistributiven Effekte des Schweizer Steuersystems.

9 I use the term "ethno-racial" here and throughout to refer to those ethnic classifications that are conventionally described as "racial" in official and unofficial discourse in the US. I intend by this admittedly cumbersome term to signal the special political and social salience of these ethnic distinctions in the US, without naturalizing them, as the terms "race" and "racial" might be assumed to do.

10 Daniel Feenberg, Elisabeth Coutts, An Introduction to the TAXSIM Model, in: Journal of Policy Analysis and Management 12, 1993, p. 189–194.

assessment of how much the HMID contributes to inequality in the US today therefore depends on what we judge to be the alternative roads not taken.

The analysis of inequality

The analysis of the incidence of the HMID begins with a model of housing market behavior. The value of the deduction to any given person depends on the amount of qualifying mortgage interest that person paid in the tax year, and the amount of qualifying mortgage interest that person paid depends, in turn, on prior decisions about whether to buy a home, how much to spend on that home, and how to finance the purchase. The person may have made these decisions with foreknowledge of how the HMID would affect the cost of buying a home. Conclusions about the overall distributional effects of the HMID, then, generally depend on counterfactual assumptions about how those decisions *would* have been made in the absence of the HMID. Those assumptions are used to identify a counterfactual baseline distribution of housing costs that is compared to the observed distribution, and the result is an estimate of how the HMID affects the distribution.

The standard approach to identifying the counterfactual baseline is a formal model of housing market behavior called the "user cost model" which assumes that competition equalizes rates of return across asset classes. The imputed rental income from homeownership, or its value to the consumer, can therefore be equated to the annual cost of homeownership, expressed as a function of tax rates, mortgage interest rates, the value of the house, and the return that could be earned on investing the equivalent capital in an alternative asset. The standard user cost model assumes a single housing market with a unique equilibrium and brackets the public sector entirely so that the effects of taxes on public spending need not be considered. Applying the model to estimate HMID incidence can yield an apparently precise point estimate of the causal effect of the HMID on net income, such as the judgment that "the average homeowner saves $1,060 as a result of the mortgage interest deduction."[11]

The approach to HMID incidence analysis proposed here also rests on the comparison of the observed distribution of resources to an assumed, counterfactual distribu-

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11 James Poterba, Todd Sinai, Tax Expenditures for Owner-Occupied Housing. Deductions for Property Taxes and Mortgage Interest and Exclusion of Imputed Rental Income, in: American Economic Review, 98, 2008, p. 88. See also James Poterba, Todd Sinai, Revenue Costs and Incentive Effects of the Mortgage Interest Deduction for Owner-Occupied Housing, in: National Tax Journal 6, 2011, p. 531–564; Andrew Hanson, The Incidence of the Mortgage Interest Deduction. Evidence from Home Purchase Loans, in: Public Finance Review 40, 2012, p. 339–359; Andrew Hanson, Hal Martin, Housing Market Distortions and the Mortgage Interest Deduction, in: Public Finance Review 42, 2013, p. 582–607.

tion of resources. To derive those counterfactuals, however, we must begin from an alternative set of assumptions that home mortgage markets are *embedded* in mixed economies; that their development is *contingent*; and that they are *segmented by status*. I will discuss the motivation of each assumption, and its implications for HMID incidence analysis, in turn.

Embeddedness. Large-scale mortgage markets are only viable in the context of mixed economies with substantial public spending. I call this the embeddedness assumption because it is consistent with Karl Polanyi's influential assertion that real estate markets are "embedded" in nonmarket institutions.[12] Polanyi went beyond the conventional view that market exchange presupposes some legal or normative order to make the stronger claim that no such normative order can be sustained in the absence of complementary, non-market modes of distributing resources. Polanyi reasoned that without such a safety net, any systemic failure in the housing market might cause mass death by exposure, or at least displace enough people to destroy the trusting human relationships that are necessary for the reproduction of society.

The embeddedness assumption imposes a constraint on the simulation of counterfactual worlds without the HMID. Such counterfactuals, to be sociologically tenable, must include a public sector that spends money. Another way to say this is that the additional tax revenues that would be collected in the absence of the HMID cannot be assumed to vanish into the ether. If the average homeowner would pay $1'060 in additional taxes in the absence of the HMID, for example, the embeddedness assumption implies that at least some of that additional tax revenue might be spent on something, and might accrue to someone as income, so that the net benefit of the HMID per homeowner might be less than $1,060. Our conclusions about the distributional impact of the HMID will depend on our assumptions about how the federal government would spend the counterfactual taxes that would otherwise be collected.

Contingency. There are multiple possible equilibria for any housing market, associated with different feasible policy frameworks in which it might be embedded. I call this the assumption of "contingency," following the historian Ajay K. Mehrotra, who uses the term to emphasize "the contested nature of pivotal decisions, the possibilities of numerous critical junctures, and the potential paths not taken" in the

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12 Karl Polanyi, The Great Transformation, Boston 1944. See also Greta Krippner, Anthony Alvarez, Embeddedness and the Intellectual Projects of Economic Sociology, in: Annual Review of Sociology 33, 2007, p. 219–240; Kurtulus Gemici, Karl Polanyi and the Antinomies of Embeddedness, in: Socio-Economic Review 6, 2008, p. 5–33; Nathanael Lauster, The Death and Life of the Single-Family House. Lessons from Vancouver on Building a Livable City, Philadelphia 2016.

history of taxation.[13] Some recent comparative works, for example, have emphasized variation over across national contexts in the institutional arrangements for housing finance.[14] Others, focused on the US, have aimed to discover the critical junctures at which peculiar features of the US mortgage market crystallized.[15] The contingent nature of such turning points is a consistent theme in the works of historians of American tax policy; Dennis Ventry, in a definitive article on the history of the HMID, has characterized it as "the accidental deduction."[16]

The assumption of contingency implies that the question of HMID incidence will not have a unique solution. There is more than one tenable counterfactual scenario for how things might be organized in the absence of this policy. The appropriate aim of incidence analysis, therefore, is not an absolute statement about who benefits how much from this deduction, but instead a relative statement about who benefits compared to a given counterfactual scenario without it. Some recent work in the economic analysis of HMID incidence adopts this position in practice, by comparing the observed distribution of housing costs with the HMID to the simulated distribution of housing costs under a variety of alternative scenarios.[17] I generalize this approach by simulating bounds on the distribution of the HMID relative to logically tenable counterfactual scenarios at egalitarian and inegalitarian extremes.

Status segmentation. Buyers who belong to different status groups may face different prices for housing of equivalent quality; they may even be prevented altogether from competing for housing of equivalent quality. A "status group" here is a group of people who are perceived to share one or more characteristics that confer a common position in a widely shared ranking of honor or esteem.[18] Sociologists have identified several mechanisms that can segment markets by status. Tastes may vary systematically across status groups in part because the desire to maintain status group boundaries affects taste – including perhaps especially taste in housing.[19] People making expensive and risky purchases such as homes often seek out trusted

13   Ajay K. Mehrotra, Making the Modern American Fiscal State. Law, Politics, and the Rise of Progressive Taxation, 1877–1929. New York 2013, p. 24.

14   Manuel Aalbers, Place, Exclusion, and Mortgage Markets, Oxford 2001; Kurtulus Gemici, Beyond the Minsky and Polanyi Moments. Social Origins of the Foreclosure Crisis, in: Politics and Society 44, 2008, p. 15–43.

15   Brian J. McCabe, No Place Like Home. Wealth, Community and the Politics of Homeownership, New York 2016; Prasad (note 2); Quinn (note 2); Greta Krippner, Capitalizing on Crisis. The Political Origins of the Rise of Finance, Cambridge 2011.

16   Ventry (note 7).

17   Hal Martin, Andrew Hanson, Metropolitan area home prices and the mortgage interest deduction. Estimates and simulations from policy change, in: Regional Science and Urban Economics 59, 2016, p. 12–23; Hanson/Martin (note 11).

18   Max Weber, Class, Status, Party, in H. H. Gerth, C. Wright Mills (eds.), From Max Weber. Essays in Sociology, New York 1946, p. 186–187.

19   Pierre Bourdieu, The Social Structures of the Economy, Cambridge 2005; David Halle, America's Working Man. Work, Home, and Politics among Blue-Collar Property Owners, Chicago 1984.

brokers,[20] and relations of trust and brokerage often conform to the boundaries between status groups. Status boundaries also may be enforced by practices of geographic exclusion, such as legal zoning rules or extralegal violence, which block opportunities for market exchange.[21]

All of these mechanisms were present in US housing markets in the 20th century. Survey research in the late 20th century found that potential renters and homebuyers of all ethno-racial groups ranked neighborhoods according to a status hierarchy in which white neighbors are perceived as more desirable than others.[22] Mortgage lenders offered different terms to borrowers depending on their perceived race.[23] Real estate brokers steered homeowners of different ethno-racial groups to different neighborhoods.[24] Sellers discriminated on the basis of perceived race.[25] The result of all of these practices was a degree of housing segregation by ethno-racial status that has been pervasive, unusually durable, and extreme relative to other forms of spatial segregation.[26]

This all implies that the elasticity of mortgage interest with respect to the availability of the HMID may vary systematically with the status of the borrower. Conventional models of HMID incidence typically incorporate the responsiveness of home prices or mortgage terms to the availability of the HMID, but they generally omit all information about ethno-racial status, and thereby implicitly assume all potential buyers are competing for mortgage loans and homes on the same terms in the same market. To be consistent with the assumption of status-segmented markets, any model of HMID incidence should instead, at a minimum, permit some of the relevant parameters to vary by status.

20 Paul DiMaggio, Hugh Louch, Socially Embedded Consumer Transactions. For What Kinds of Purchases Do People Most Often Use Networks?, in: American Sociological Review 63, 1998, p. 619–637.

21 Edna Bonacich, A Theory of Ethnic Antagonism. The Split Labor Market, in: American Sociological Review 37, 1972, p. 547–559.

22 Camille Zubrinsky Charles, Processes of Racial Residential Segregation, in Alice O'Connor, Chris Tilly, Lawrence Bobo (eds.), Urban Inequality. Evidence from Four Cities. New York 2001, p. 217–271.

23 Douglas S. Massey, Jacob S. Rugh, Justin P. Steil, Len Albright, Riding the Stagecoach to Hell. A Qualitative Analysis of Racial Discrimination in Mortgage Lending, in: City and Community 15, 2016, p. 118–136.

24 John Yinger, Closed Doors, Opportunities Lost. The Continuing Costs of Housing Discrimination, New York 2015.

25 Beryl Satter, Family Properties. Race, Real Estate, and the Exploitation of Black Urban America, New York 2010.

26 Carl Nightingale, Segregation. A Global History of Divided Cities, Chicago 2012; Douglas Massey, Jonathan Tannen, A Research Note on Trends in Black Hypersegregation, in: Demography 52, 2015, p. 1025–1034.

Data and analytical approach

The foregoing discussion implies three methodological desiderata. First, a model should compare the observed distribution of tax and housing costs to multiple counterfactual scenarios. Second, it should incorporate explicit assumptions about the distribution of federal spending into those scenarios. Third, it should model housing costs under the assumption that housing and mortgage markets may be segmented by status.

I apply these principles to the estimation of the incidence of the HMID from 1999 to 2017, using data from the PSID, a nationally representative, longitudinal survey of families that is commonly used in studies of housing and social policy.[27] It includes sufficiently detailed data on income and housing expenditures to permit estimates of the value of the HMID to individual respondents. All aggregate results reported here use cross-sectional survey weights to approximate totals for the U.S. population as a whole. To estimate state and federal income taxes paid, I rely on code published by Sarah Kimberlin, Jiyoon Kim and Luke Shaefer,[28] with my own updates to take advantage of the TAXSIM 27 calculator. This method uses information about age and family relationships in the PSID to assign co-resident individuals to tax units and tax filing statuses (either as dependents, as unmarried individual tax filers, or as married couples filing jointly). Then the tax items computed for each tax unit are aggregated to the level of the co-resident family unit, and assigned to the record of the family member designated by the PSID as the family unit head. I model the counterfactual tax liability in the absence of the HMID by invoking the TAXSIM model a second time for each respondent, setting mortgage interest to zero.

I model the counterfactual distribution of housing costs in the absence of the HMID by replacing observed values of mortgage interest paid in the tax year with simulated values of mortgage interest that *would be* paid absent the existence of a HMID. The simulated values are computed from a hierarchical linear regression model that treats the mortgage interest that the respondent deducted from federal taxes as a function of the maximum marginal subsidy rate (MSR) that a taxpayer in that state could expect from the combined state and federal HMID for very high-income taxpayers. The maximum MSR is equivalent to the marginal combined state and federal income tax rate on an additional dollar of mortgage interest for very high-income taxpayers, and it is exogenous to the deductible mortgage interest reported by

27 Katherine McGonagle, Narayan Sastry, Using the Panel Study of Income Dynamics to Analyze Housing Decisions, Dynamics, and Effects, in: CityScape 18, 2016, p. 185–199.

28 Sara Kimberlin, Jiyoon Kim, H. Luke Shaefer, An Updated Method for Calculating Income and Payroll Taxes from PSID Data Using the NBER's TAXSIM. For PSID Survey Years 1999 through 2011. Ann Arbor 2015.

any individual PSID respondent.[29] The dependent variable is deductible mortgage interest; it is equal to zero for respondents who did not have mortgage debt, and it is transformed so that coefficients can be read as semi-elasticities.[30] The equation thus models the total effect of HMID on mortgage interest, possibly via effects on the decision to take out a mortgage, on the value of the home, and on the interest rates available to the respondent. The intercept is permitted to vary across states, in keeping with state-level variation in mortgage subsidies, and across persons, who are observed repeatedly. Each observation represents a person-year, and all dollar-denominated variables are converted to constant 2018 dollars using the consumer price index research series. The models have the form:

Equation 1.

$$\text{mortgage interest}_{i,j,t} =$$
$$\alpha + \beta_1 * \text{MSR}_{j,t} + \beta_2 * \text{black}_i + \beta_3 * \text{other race}_i + \beta_4 * \text{black}_i * \text{MSR}_{j,t} + \beta_5 * \text{other race}_i * \text{MSR}_{j,t}$$
$$+ \beta_6 * \text{income} + \beta_7 * \text{age}_{i,t} + \beta_8 * \text{female}_i + \beta_9 * \text{education}_{i,t} + \beta_{10} * \text{family size}_{i,j} + \delta_t + \upsilon_i + \upsilon_j + \varepsilon_{i,j,t}$$

The letter i indexes individuals, t indexes observations, and j indexes states. The Greek letter α is a constant term, δ is a dummy variable for the calendar year of observation t, and υ_i, υ_j and ε are normally distributed errors at the levels, respectively, of the individual respondent i, the state j, and the individual observation. After modeling the dependence of reported mortgage interest on the MSR (represented by the slope coefficient β_1), I use the resulting equation to compute the counterfactual mortgage interest for each respondent if the MSR were set to zero.

The assumption of status-segmented markets is incorporated by permitting the coefficient of the MSR to vary across three ethno-racial status groups, corresponding to white, black, and other self-reported ethno-racial identities. Ethno-racial status was assigned based on the responses of the individual recorded in the PSID as the family unit "head." Families were coded as "white" if white was the first and only ethno-racial identity that the head reported when asked; they were coded as "black" if the head reported black as his or her first response, either alone or in combination with other categories; and all other responses and response patterns were coded as "other." The control variables age and education are measured in years; family size is the total number of persons in the family unit; and income is measured as the inverse hyperbolic sine of pre-tax family income (including market income and gov-

29   Daniel Feenberg, Maximum State Income Tax Rates, 1977–2017, National Bureau of Economic Research, Cambridge, http://users.nber.org/~taxsim/state-rates/ 2019.

30   I apply the inverse hyperbolic sine transformation, $\sinh^{-1}(x) = \ln (x + (x^2+1)^{1/2})$ which reduces skewness, permits direct estimation of elasticities, and is defined for all real-valued x.

Table 1: Hierarchical linear regression models of deductible mortgage interest, with random intercepts and coefficients at the level of the state

	Model parameters		Descriptive statistics		
	Coefficient	Standard error	Range	Mean	Std. Dev.
MSR (%)	.0226	.0127	[33.6–47.6]	39.7	2.94
Ethno-racial status (white = reference)					
Black = 1	-.516	.384	[0–1]	.13	.34
Other ethno-racial status = 1	1.29	.679	[0–1]	.09	.29
Ethno-racial status and MSR					
Black * MSR	-.0112	.00957			
Other ethno-racial status * MSR	-.045	.0169			
Income (sinh^{-1} \$)	.108	.00519	[0–16.5]	10.7	3.09
Age (years)	.0263	.00130	[16–104]	50.2	17.4
Female = 1	-.925	.0494	[0–1]	.29	.46
Education (years)	.219	.00849	[0–17]	13.4	2.7
Family size (persons)	.352	.0112	[1–14]	2.3	1.4
Constant α	-4.08	.555			
	Standard deviation	Share of residual variance			
person-level υ_i	2.32	37.8%			
state-level υ_j	.336	0.8%			
observation-level $\varepsilon_{i,j,t}$	2.96	61.4%			

Year-specific intercepts are omitted from the table. Dependent variable is the inverse hyperbolic sine of deductible mortgage interest. Descriiptive statistics are weighted to adjust for unequal sampling probabilities.

ernment transfers) reported to the PSID. Table 1 reports the results from fitting these models to the set of family unit heads in the PSID.

The results are consistent with the hypothesis of status-segmented housing markets. As expected, a greater subsidy rate is associated with greater mortgage interest, but the elasticity of mortgage interest with respect to the MSR varies across three ethno-racial groups. The baseline level of expected mortgage interest is lowest for black respondents, reflecting their historical exclusion from mortgage markets. The average responsiveness to the HMID is greatest for white white respondents, with a semi-elasticity of .023, whereas for black respondents it is .023-.011=.012. The expected semi-elasticity is negative for "other race" respondents, 023-.045= -.022, implying that they reported the least mortgage interest when mortgages were most tax-advantaged.

I use the resulting counterfactual estimates of tax and housing expense in the absence of the HMID to compute income net of income tax, payroll tax, and housing expense under alternative counterfactual scenarios. I report measures of the distribution of net income, including Gini coefficients and ratios of the median income of white families to the median income of black families. All measures of income refer to family income (including market income and government transfers), standardized on the square root of family size, a common convention in studies of the effects of social policy on poverty and inequality.[31] Housing expenditures for the purposes of these comparisons include rent, property taxes, and mortgage interest payments; in the counterfactual no-HMID scenarios, the mortgage interest payments are replaced by predicted values from Equation 1, under the counterfactual assumption that the MSR equals zero.

The assumptions of contingency and embeddedness are incorporated by simulating alternative distributions of federal tax revenue that would be collected if respondents could not claim the HMID. I simulate two counterfactual scenarios that illustrate a range of possible conclusions about the distributional effects of the HMID. The first is the scenario represented by some conventional incidence analysis in which the income tax rate structure is held constant, and federal revenues are therefore greater than in the presence of the HMID, but the additional revenue collected from borrowers who cannot claim the HMID is neither spent nor applied to federal debt service. I call this the "Treasury Hoard" scenario, to characterize the implicit assumption that the additional revenue simply disappears into the Treasury and accrues to no individual. The second is a scenario in which federal income tax revenues are held constant, and tax rates are therefore lower than they would be in the presence of the HMID; specifically, I assume every taxpayer's personal income

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31 See for example Timothy Smeeding, Lee Rainwater, Poor Kids in a Rich Country. America's Children in Comparative Perspective. New York 2003.

tax obligation is reduced by the same proportion. This simulates one version of a base-broadening tax reform that would eliminate the deduction in exchange for lower rates across the board. I call this the "Lower Rate" scenario.

I also estimate two extreme counterfactual scenarios to establish outer bounds on how the embeddedness assumption might affect our estimates of the effects of the HMID on income inequality. The first is the maximally egalitarian scenario, in which the tax rate structure remains the same, and the additional revenue accruing to the federal government in the absence of an HMID is distributed tax-free among families beginning with those who report the least adjusted gross income to the Internal Revenue Service (IRS), in accord with John Rawls's maximin principle.[32] (The additional revenue collected because of the absence of the HMID is distributed to the poorest family, until its income is equal to that of the next poorest family; then the remaining revenue is distributed equally to these two poorest families until their incomes are equal to that of the third poorest family; and so on, until the additional revenue is exhausted.) I call this scenario "Rawlsian." The second is the maximally inegalitarian scenario, in which the tax rate structure remains the same, and the additional revenue accruing to the federal government in the absence of an HMID is distributed tax-free to the single family reporting the greatest adjusted gross income to the IRS. This is the opposite of the Rawlsian scenario; I call this scenario "Maximally inegalitarian."

The distributional effects of the HMID

How much does the HMID contribute to inequality among American families' well-being? That depends on how the tax revenue foregone as a result of this deduction would otherwise be used. Graph 1 illustrates this point with line graphs of the Gini coefficient of standardized net family income, for the observed distribution and for each of the four simulated counterfactual scenarios described in the previous section. The graph reports the distribution of disposable income net of federal taxes and housing expenditures, to capture the indirect effect of the HMID on disposable income via its effects on the cost of housing. The Rawlsian and Maximally Inegalitarian scenarios are indicated with solid gray lines; the Treasury Hoard and Lower Rate scenarios are indicated with dotted gray lines. The solid black line describes the observed disposable income with the HMID. In the year 2017, the simulated Gini coefficients range from 0.460 to 0.483, with the observed Gini coefficient of 0.480 in the middle. Whether the HMID increases or decreases inequality of disposable income depends on the alternative scenario to which it is compared. We

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32   John Rawls, A Theory of Justice, Cambridge 1971.

Graph 1: Gini coefficients of standardized disposable family income net of housing expense, with (boldface) and without the home mortgage interest deduction
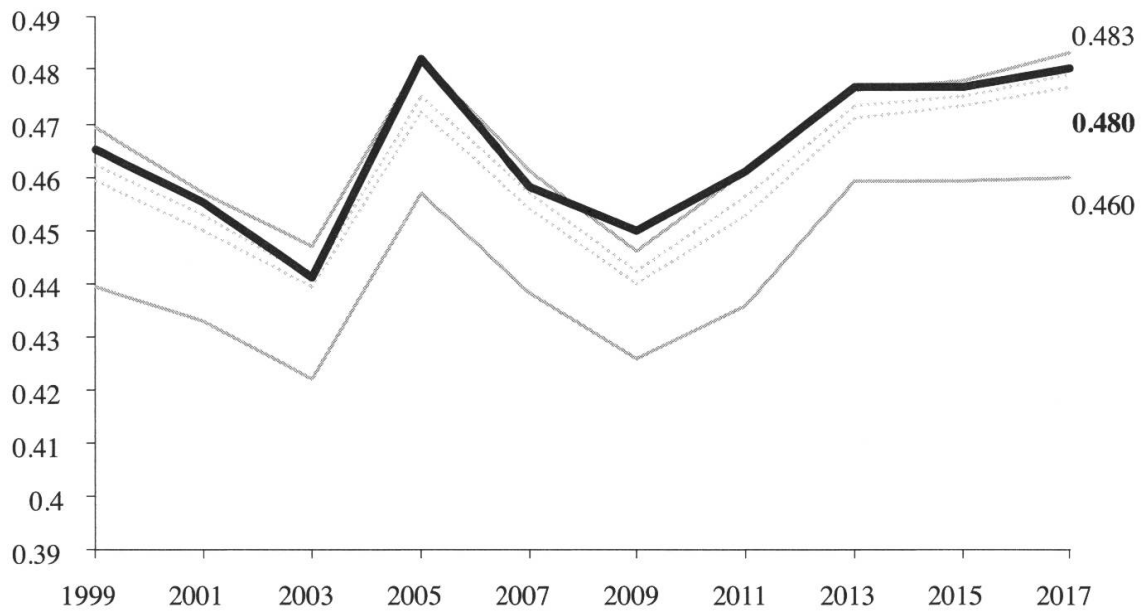
Graph 2: White/black income ratios with (boldface) and without the home mortgage interest deduction, for standardized family disposable income net of housing expense
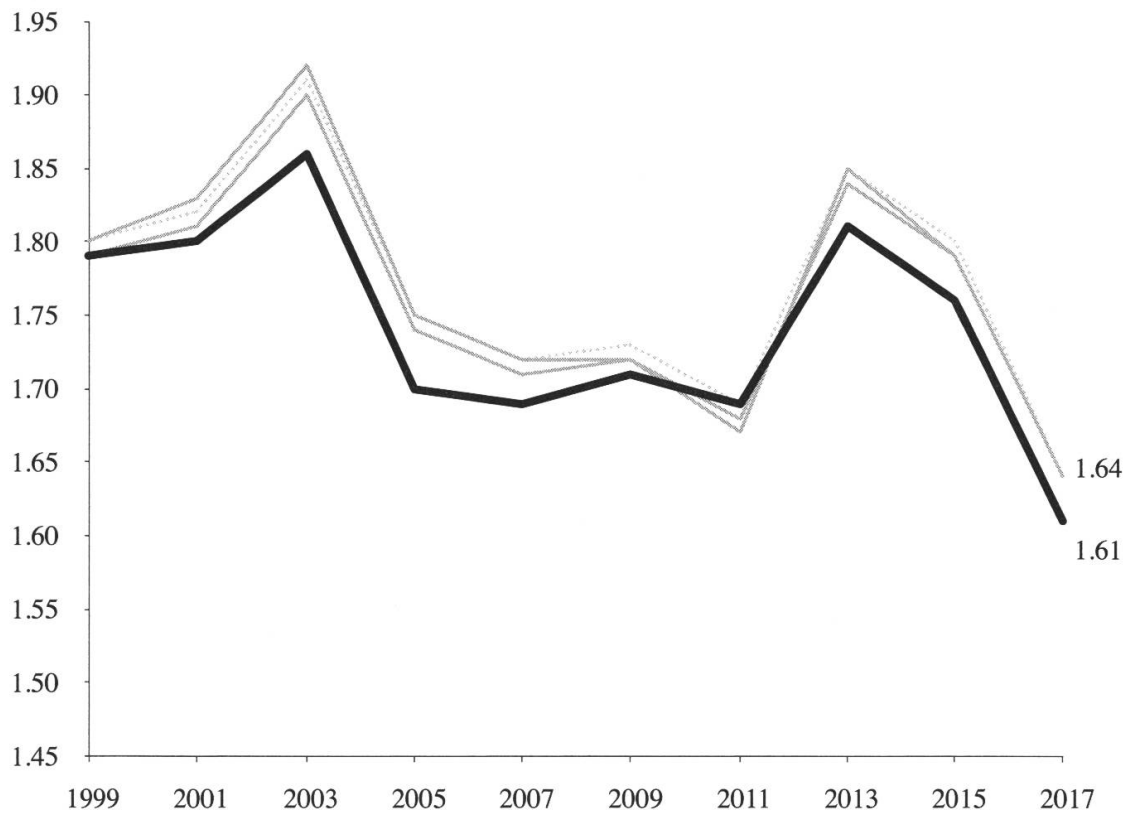
can infer that most of the net effect of the HMID on disposable income comes from its effect on federal revenues—and specifically from the foregone possibilities for other tax rebates or social spending that it entails. A maximally Rawlsian alternative could reduce the Gini coefficient of standardized disposable family income by as much as two percentage points. Compared to this alternative, the Treasury Hoard scenario contemplated in much of the conventional incidence literature would underestimate the contribution of the HMID to inequality.

The HMID is more inegalitarian than most other alternative ways of spending or rebating that much tax revenue. The observed Gini coefficient in Graph 1 closely approximates the most unequal simulated alternative, corresponding to the Maximally Inegalitarian scenario in which the HMID is assumed to be replaced by a federal subsidy targeted to the single richest family in the survey sample. This tax deduction resembles an inverted social policy that explicitly takes from middle-income families to reward the rich.

By contrast, the analysis implies uncertainty about whether and how much the HMID exacerbates income inequality among ethno-racial groups. Graph 2 illustrates the findings by reporting the ratio of median standardized net family income of white and black survey respondents (the "W/B Ratio") under each scenario. The HMID appears to reduce the W/B Ratio in some years, and increase it in others, relative to every other scenario considered here. This finding differs from an earlier study that found the HMID to increase the W/B ratio, based on a cross-sectional analysis of the 2011 wave of the PSID; the estimated effect of the HMID in that study may be confounded with differences among housing submarkets in the severity of the mortgage foreclosure crisis, which that affected housing values at the time of that survey wave.[33] The longer view described here suggests an equivocal conclusion: the HMID *may* affect ethno-racial inequalities in net household income, but the direction of the short-term effect appears to be small and dependent on the conjuncture, and the long-run effect is unclear.

Concluding implications

The approach to incidence analysis taken here leaves aside many questions of potential interest concerning the tax treatment of mortgage interest in the US. While the simulations presented here have shown that the HMID may increase housing expenditures relative to a no-HMID counterfactual, for example, I have not attempted to adjudicate how much of that increased spending accrues to mortgage lenders

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33 Isaac William Martin, The Most Regressive Social Policy? The Economic Sociology of the Home Mortgage Interest Deduction. Working Paper, San Diego 2017.

(who may charge higher interest rates) or builders (who may charge higher prices for homes). Any indirect or long-term effects of the HMID on investment incentives, savings, or the distribution of wealth—and on inequalities of wealth based on access to more and less advantaged places—are also ignored in the approach taken here. When it comes to such long-run effects of the HMID, a comparative historical study of the United States and the United Kingdom, which has eliminated its equivalent tax deduction, might be informative. Such research might yield new insights into how the HMID affects the well-being of Americans on average, and, given the importance of housing as a vehicle for savings in the US, it might yield new insights into the effects of the HMID on ethno-racial stratification. It is unlikely, however, to change the core finding that the HMID exacerbates inequality of disposable income relative to most other conceivable ways of redistributing that much revenue.

Should egalitarians support repeal of the HMID? The answer depends on what would replace it, and on what axis of inequality is most salient. Consider the transition to the most inegalitarian scenario—repeal of the HMID, and its conversion into a massive revenue windfall for one rich family. This scenario illustrates the possibility, in principle, that HMID repeal could increase inequality. To be sure, even this scenario would equalize disposable family income between the median white and black families in the United States, but it would do so almost entirely by redistributing income among white families, further enriching the family at the top, while leveling the income of the median white family down toward the income of the median black family. Few egalitarians will find any reason to admire a tax reform that trades away the HMID for other tax reductions that benefit only the richest.

The most general implication of this analysis is that studies of taxation and inequality should take the work of historians seriously. Social historians have described this tax deduction as part of a larger project of federal state-building that relied on federal subsidies to construct a distinctive social model dependent on home mortgage lending as a stimulus to the economy, a mode of housing provision, and a vehicle for retirement savings. They have emphasized that this system was stratified from the start by class and by ethno-racial status.[34] They have stressed that the "accidental deduction" was only one of many historical possibilities, and that the development of mass homeownership ultimately came at the cost of more egalitarian social policy.[35] If we take arguments such as these seriously, we should allow them to affect the assumptions and choices we make in modeling the effects of taxation on inequality in the present. How any given tax policy affects inequality depends on how the revenue is spent, and it depends on a comparison of what is, to what could have been.

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34 The work of Jackson (note 6) is canonical on all of these points; see also Patterson (note 1) and the sources cited therein.
35 Ventry (note 7).