

EXPANDING MODELING CAPACITY ON TAX EXPENDITURES FOR HOMEOWNERSHIP

Technical Methodology Report

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ABSTRACT

This report describes the Tax Policy Center (TPC) Microsimulation Model's revamped home mortgage interest deduction (MID) module. The TPC tax model uses the module for simulating proposals that reform the MID. The new MID module improves upon the prior one in accounting for potential changes in portfolio behavior, providing options to allow taxpayers to pay down mortgage debts with their financial assets. The new MID module is the basis for the recent brief, "[Effects of Tax Incentives on Homeownership](#)."

OVERVIEW

In 2019, about 10 percent of individual taxpayers claimed itemized deductions on their federal income tax returns, and 8.4 percent claimed a home mortgage interest deduction (MID). Under current law, taxpayers can deduct interest on up to \$750,000 in acquisition debt incurred after December 16, 2017 used to buy, build, or improve their primary or a secondary designated residence. The Tax Cuts and Jobs Act (TCJA) reduced this cap on the deduction from \$1 million for tax years 2018 through 2025. For the same time period, taxpayers can no longer deduct the interest paid on an additional \$100,000 of a loan secured by their home unless the loan proceeds were used to buy, build, or substantially improve the home, no matter when the indebtedness was incurred. The higher MID cap is restored after 2025.

The tax benefits of the MID accrue disproportionately to high-income taxpayers for two main reasons. First, the value of the MID depends on a taxpayer's marginal income tax rate. A taxpayer in the top income tax bracket of 37 percent would save \$37 whereas someone in the 12 percent bracket would save only \$12 from \$100 of additional mortgage interest deductions. Second, most low-income and many middle-income taxpayers do not benefit from the MID because the standard deduction is larger than the sum of all their potential itemized deductions, so they do not claim the MID at all, even if they are paying interest on a home mortgage. At the very top of the income distribution, however, the benefit of the MID declines as a share of income because housing costs rise less than proportionately with income and because of the cap on qualified mortgage indebtedness.

The TCJA reduced the number of taxpayers claiming the MID, leading to a benefit even more concentrated among higher-income taxpayers, by nearly doubling the standard deduction and limiting the annual deduction for non-business state and local income and property taxes to \$10,000.

Reforming the itemized deduction for home mortgage interest has long been a topic of tax policy discussion because it is a large tax expenditure but a poor incentive for moderate income households to purchase a home. At the same time, the MID encourages high-income households to take out big loans to buy more expensive houses. Reform proposals can take many forms, including but not limited to repealing the MID and replacing the MID with a tax credit.

This report describes the Tax Policy Center (TPC) Microsimulation Model's revamped MID module. The TPC model relies on the MID module for simulating proposals that reform the itemized deduction for home mortgage interest, with an option to allow taxpayers to pay down mortgage debts with their financial assets. Allowing for mortgage paydown is a supplement to conventional revenue and distributional estimates of MID reforms, which do not account for potential changes in portfolio behavior.

Repealing the MID could prompt taxpayers to sell financial assets, such as bonds and stocks to pay down their mortgage debt because, by doing so, they could reduce their income tax liability without changing their net wealth or housing consumption. The new MID module allows for simulating the effects of MID repeal with

different paydown assumptions. The potentially smaller taxable asset holdings that resulted from a paydown decision would offset some of the federal tax revenue gains from taxing home mortgage interest. Taxpayers with higher levels of financial assets would be more responsive to paydown incentives than less well-off taxpayers because they have larger amounts of financial assets available to pay down their mortgages. Therefore, the new MID module could address a source of potential overestimation of both revenue gains and increased progressivity associated with repeal of the MID.

CAPACITY TO ACCOUNT FOR THE EFFECTS OF MORTGAGE PAYDOWN

Revenue Effects

With the current-law mortgage interest deduction, some taxpayers choose to borrow money to pay for houses while at the same time holding financial assets, such as bonds and stocks. In essence, taxpayers borrow money via a mortgage to invest in financial assets because the financial assets they continue to hold could have been used to pay some portion of the purchase price of the house. For these people, their perceived net after-tax gains from these investments should be larger than the net cost of additional borrowing to finance them. If the MID were repealed, however, the cost of borrowing to indirectly fund purchases of stocks and bonds would increase. In response, many people would be able to reduce their income tax liability without changing either their housing consumption or net wealth by selling off some financial assets to reduce their mortgage debt.¹ This would reduce both their mortgage interest payments and their taxable income from assets. Because mortgage interest payments would no longer be tax deductible, while income from assets would remain taxable, this paydown behavior would reduce both their income tax liability and federal income tax revenues. As a result, accounting for mortgage paydown behavior would reduce the estimated gain in federal tax revenue from repealing the MID.

Progressivity of Distribution

Higher-income taxpayers currently benefit the most from the MID. Repealing the MID would take away these benefits, making the tax system more progressive. However, because higher-income taxpayers have the greatest potential to paydown their mortgage debt from existing assets, they would be less affected if they were responsive to the tax law change. Therefore, when accounting for a paydown, the MID repeal would still make the tax system more progressive, but by a lesser amount than if the paydown behavior was ignored.

ASSUMPTIONS AND DATA

Assets Sold for Mortgage Paydown

In order to account for taxpayers' potential paydown behavior, we need to identify which assets are likely to be sold to pay down mortgage debt. We assume that a taxpayer would either pay down by only selling tax-exempt

municipal bonds and taxable bonds, or by selling tax-exempt municipal bonds, taxable bonds, and stocks. They would not use cash to pay down their mortgages because cash, which always provides a lower expected return than other assets, is held as a precautionary balance or for liquidity instead of for investment purposes. They would not sell down non-financial assets, such as real estate and shares in active business investments, because these assets are not close substitutes for financial assets and their sale often involves significant transaction costs.

We calculate the mortgage paydown under two scenarios. In the first scenario, we assume that tax units would pay down their mortgages using tax-exempt and taxable bonds in the same proportion. More specifically, for each tax unit: (1) a decline in mortgage debt is accompanied by an equal decline in the sum of tax-exempt² and taxable bonds; and (2) the ratio of tax-exempt bonds and taxable bonds holding remains fixed. This paydown behavior would reduce a tax unit's interest income from taxable bonds. In the TPC model, taxable interest includes interest from both cash (including near-cash like financial instruments such as money market funds and bank deposits) and bonds, and since we assume taxpayers would not pay down mortgages using cash, we further calculate the share of taxable bond interest in all taxable interest.³

In the second scenario, we assume that: (1) a tax unit would first pay down mortgages using tax-exempt and taxable bonds proportionally (as in the first scenario); and (2) if the desired amount of mortgage paydown is larger than the sum of available tax-exempt and taxable bonds, the tax unit would then pay down the mortgage by selling stocks. This would reduce the tax unit's interest income from taxable bonds, as well as its dividends and realized capital gains from stocks.

Extent of Mortgage Paydown

After identifying which assets are plausible for mortgage paydown, we need to determine the extent of paydown, measured as the percentage decline in mortgage debt if the MID is repealed. There is no consensus on the size of the paydown response in the existing literature. In TPC's accompanying chartbook,⁴ we analyze three potential paydown responses: paying down as much as 100 percent, 50 percent, and 25 percent of home mortgage debt. For all potential responses, the actual percentage decline in mortgage debt is constrained by the amount of available financial assets. We estimate effects of 25 percent and 50 percent paydown assumptions, which are consistent with estimated elasticities in the existing literature, and also examine a 100 percent paydown assumption to quantify the upper bound.

Three studies explicitly estimate the change in mortgage debt from repeal of the mortgage interest deduction. Munroe (2014) uses data on home mortgage originations and from the Survey of Consumer Finances from 1995 through 2008 and estimates that repeal would lower mortgage debt by about 20 percent. Dunskey and Follain (2000) use a panel of Survey of Consumer Finances data for the years 1983 through 1989 and find a larger effect: repeal of the deduction would reduce mortgage debt by an estimated 37 percent. Hendershott and Pryce (2006) exploit the large changes in the system of subsidies in the UK from 1974 through 1993 to

estimate that eventual repeal of the mortgage interest deduction would reduce mortgage debt by between 20 and 50 percent.

Another study estimates elasticities of mortgage demand with respect to the pre-tax interest rate. Defusco and Paciorek (2017) find semi-elasticities of the pre-tax interest rate of -0.023 to -0.03, which at a 5 percent interest rate, implies an elasticity of -0.10 to -0.15. This is at the lower end of estimates. Other studies estimate elasticities of mortgage demand with respect to the subsidy rate.⁵ Dunsky and Follain (2000) find an elasticity with respect to the subsidy rate of -1.13. This is at the upper end of estimates. The study most directly applicable to the current effort is Gervais and Pandey (2008). Those authors use data from the 1998 Survey of Consumer Finances to investigate how consumers rebalance their portfolios, including mortgage debt, in response to differences in subsidy rates. Their elasticity estimates for mortgage debt with respect to the subsidy rates vary from -0.54 to -1.40, with a preferred estimate of -0.70. Gruber et al (2017) examine a Danish tax reform and find an elasticity for all consumer debt with respect to a change in the mortgage subsidy rate of -0.12 to -0.29. The effect on just mortgage debt would be larger, although mortgage debt is the largest component of consumer debt. Looking across all of these studies, we conclude that the elasticity for mortgage demand with respect to the subsidy rate may fall within the range of -0.50 to -0.70.

Those elasticities may be converted into rough estimates of the reduction in mortgage demand. Marginal tax rates of 24 percent to 37 percent imply that repeal of the mortgage interest deduction would increase the after-tax interest rate by 32 percent ($100/(100-24) - 1$) to 59 percent ($100/(100-37) - 1$). Using the elasticity estimates of -0.70, these imply desired reductions in mortgage debt holding ranging from 22 to 41 percent.

Rates of Return of Assets

Finally, after we have the assumptions for the assets used for paydown and the extent of paydown, we calculate the rates of return on assets. Instead of directly imputing assets to tax units, we calculate implied values of mortgage debt and financial asset holdings based on mortgage interest payments and taxable incomes from assets reported on tax returns, combined with assumed rates of return. The new MID module makes the following rate assumptions for year 2019: mortgage interest rate = 3.94%, interest rate on tax-exempt bonds = 3.38%, the interest rate on taxable bonds = 3.8%, the dividend payout rate on stocks = 1.93%, and the ratio of realized capital gains on stocks to asset value = 5.0%.⁶

We use the 30-year fixed mortgage rate to represent the average mortgage interest rate. We calculate the ratio between the eight-year (from 2012 to 2019) average Aaa bond interest rate and the average mortgage rate, and then apply this ratio to calculate a proxy for the interest rate on taxable bonds. To calculate the share of taxable interest that is interest on bonds, we need the weighted interest rate on cash, which we calculate as the weighted average of interest rates on checking accounts, money market accounts, saving accounts, and certificates of deposit.⁷ For each year of data published from the Statistics of Income division of the Internal Revenue Service, the return on stocks was calculated as the ratio of average gains to average basis.⁸ The

annualized rate of return was then calculated by dividing the return by an estimate of the average holding period for stocks.

CHARTBOOK DEMONSTRATION OF HOW THE NEW MORTGAGE INTEREST DEDUCTION MODULE CAN BE USED

To demonstrate how this new module can be used, TPC has released a chartbook, [“Effects of Tax Incentives on Homeownership,”](#) which provides updated estimates of the distributional effects of the home mortgage interest deduction, shows how these estimates could change if people pay down their home mortgages in response to an elimination of the deduction, and provides estimates of revenue-neutral reform alternatives that replace the deduction with a tax credit.

NOTES

- ¹ One unexplored implication of this paydown behavior is a possible change in the risk profile of asset holdings.
- ² Because of the tax preference and because the supply of tax-exempt bonds is limited to those issued by state and local governments, tax-exempt bonds sell at a premium; that is, they pay a lower interest rate than taxable bonds of comparable maturity and risk. The lower yield of tax-exempt bonds can be viewed as an “implicit tax” on bondholders. Because of this lower yield, elimination of the mortgage interest deduction can make the return on tax-exempt bonds lower than the interest rate paid on mortgage debt.
- ³ Our calculation shows that taxable bond interest accounts for approximately 86 percent of all taxable interest. We use the 2016 Survey of Consumer Finances data to calculate the relative weights of cash and bonds holding, and assume the relative weights remain the same in 2019. We use the rate of returns from cash and taxable bonds in 2019. For the rate assumptions, see the section “Rate of Returns of Assets”.
- ⁴ See Urban-Brookings Tax Policy Center. “[Effects of Tax Incentives on Homeownership](#)” (July 2020).
- ⁵ In the simplest case, the subsidy rate is 1 minus the marginal tax rate.
- ⁶ We calculate the rates using data from Economic Report of the President (2020), 2016 Survey of Consumer Finances (SCF), and Federal Reserve Bank of St. Louis.
- ⁷ We calculate the average interest rate generated by cash holdings to be 0.173%, using the weights calculated from SCF 2016 data (assuming the weights remain the same in 2019), and interest rates of different cash holdings in 2019 from the Federal Reserve Bank of St. Louis.
- ⁸ The basis of stock is its purchase price minus any commissions or fees paid.

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