Mortgage Interest Deductions and Homeownership: An International Survey

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Abstract

The aim of this paper is to review the international evidence on the impacts of mortgage interest deductions on homeownership rates. The probability of becoming a homeowner is a function of the relative cost of owning and renting, borrowing constraints, permanent household income, and a set of taste variables. The relative cost of owning and renting is in part a function of house prices and the annual user cost of owner-occupied housing. Tax policies affect the user cost of owner-occupied housing and, in turn, the probability of becoming a homeowner. They also affect the price of housing due to capitalization effects. We draw on a number of empirical studies that have been conducted for several countries in North America, Europe, Australasia, and Asia. The empirical evidence suggests that, contrary to popular wisdom, the MID generally does not increase the ownership rate. This result is likely due to the fact that the MID is capitalized into house prices, especially where housing supply is inelastic.

Keywords: homeownership; tax policy; prices

JEL codes: R31; H31; H30

Introduction

A household’s decision whether to own or rent its dwelling is influenced by the tax and subsidy policies of the jurisdictions where it resides: national, state or provincial, and local. Similarly, the supply of housing and landlords’ choices are impacted by such policies. The outcome is that tenure choices depend on a complex set of behavioral responses to tax and subsidy policies.

In this paper we review the modeling and empirical analysis of such policies with special emphasis on the mortgage interest deduction (MID). We use a global perspective because different countries use different housing policies. Some countries allow deduction of mortgage interest, while others do not. Moreover, some countries tax the imputed rental income of owner-occupiers but then allow deduction of expenses such as mortgage interest. In the latter case, the tax benefit afforded by the MID is offset by the tax on imputed rent. For example, the United States allows for deduction of mortgage interest from income for tax purposes but does not tax imputed rent. The United Kingdom neither allows for a MID nor taxes imputed rental income. In contrast, Switzerland both taxes imputed rental income and allows for a MID.

Our review focuses on empirical studies that measure the impact of a country’s tax policies on owner occupied housing. Of particular interest are studies of the impact of changes in tax policies on the
homeownership rate. Examples of changes in policy are numerous and include the elimination of taxation of imputed rental income (as in Italy) and elimination of mortgage interest credits or MID (as in France and the U.K., respectively).

We first present a general model of tenure choice, establishing a framework to be used to evaluate existing research. Of particular interest is the proper specification of the set of policy variables in the tenure choice equation. One advantage of full specification of the tenure decision equation is that the roles of owner-occupied and rental dwelling prices become apparent. A recent emphasis of empirical work has been on the capitalization effects of tax policies. We discuss how capitalization can offset the direct effects of housing taxes and subsidies, complicating the empirical analysis.

Our review includes studies of the U.S., selected European countries, Australia, New Zealand, and Taiwan. All of the countries considered have had major changes in housing policies, the impacts of which have been analyzed. We also review a study that considers mortgage tax relief across a number of countries that are members of the Organisation for Economic Co-operation and Development (OECD). The OECD study uses a comprehensive set of determinants to model ownership rates across 15 countries that have different mortgage down payment requirements and approaches to mortgage debt relief.

One of the most important, but often neglected, aspects of housing tax policy is spatial variation in its effects. There are significant spatial variations in owner-occupied house prices, rents, and the ratio of these two both across and within countries. Thus, for example, the impact of eliminating the U.S. MID could be quite different in the Midwest than in high price coastal areas. We highlight the findings of studies that describe spatially differentiated responses to housing tax policies.

The next section presents a theoretical model of housing tenure choice, paying particular attention to the role of tax policies. That section also discusses the capitalization of taxes into house prices, including a review of the empirical literature on capitalization of the MID. Sections 3 and 4 focus on tax policies in the U.S. and other countries, respectively. A final section offers some policy conclusions.

Impacts of Housing Policies on Tenure Choice

The probability of ownership is a function of the relative costs of owning and renting, borrowing constraints, real permanent income \(X\), and “tastes” \(T\):

\[
P(Own) = f(\text{Relative Cost, Constraints, } X, T)\]

(1)
Relative cost compares the annual user cost of owning, which converts the cost of owning into a rental equivalent, to the annual cost of renting. Borrowing constraints are the down payment and mortgage payment requirements for obtaining a loan. The preference for ownership is related to various taste proxies, including demographic measures such as age and household composition. Household permanent income is another proxy for taste; income may be positively related to the desire for privacy and control over space. Housing policies affect the probability of ownership through the relative cost variable.

The relative cost variable is the ratio of estimates of the annual cost of owning a unit of housing to the annual cost of renting the same unit of housing (quality is held constant). The cost of owning a unit equals the product of the annual cost of owning a dollar of housing, \( u \), and the asset price, \( P_h \), of the unit. The annual cost of renting the same unit equals the product of the annual cost of renting a dollar of housing, \( r \), and the asset price if the unit is rented, \( P_r \). The amount a renter pays is the product of the asset price, \( P_r \), market rent per dollar of asset value, \( r \), and the fraction \( (1 - \gamma) \), where \( \gamma \) is the fraction paid by others (e.g., a government subsidy). Thus, the cost of owning relative to renting is:

\[
\text{Relative Cost} = \frac{P_h u}{P_r r (1 - \gamma)}
\]  

The annual cost of renting a dollar of housing is computed as the landlord’s user cost, which varies from country to country depending largely on differences in tax treatment, financing costs, and expected house price changes (Hendershott, Follain, and Ling, 1987):

\[
r = (1 - \alpha)e + \alpha(1 - t)i + (\tau + \mu)(1 - t) + T_r - q(1 - t_{cg}) - d t
\]  

This cost is the sum of the after-tax cost of capital, maintenance (\( \mu \)) and property tax (\( \tau \)) expenses, annualized transaction costs per dollar of property value (\( T_r \)), less the expected after-tax capital gains, \( q(1 - t_{cg}) \), where \( q \) is expected nominal capital gains and \( t_{cg} \) is the annualized capital gains tax rate,\(^1\) and the annual equivalent rate of tax depreciation (\( d \)). The after-tax cost of capital is represented by the first two terms on the right-hand side of equation (3) where \( e \) is the required (after-tax) return on equity, \( t \) is the landlord’s marginal tax rate, \( \alpha \) is the loan-to-value ratio (LTV), and \( i \) is the debt rate. The required equity return exceeds \((1 - t)i\) by a risk premium that is higher the greater is \( \alpha \).

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\(^1\) In the U.S., the capital gains tax rate applicable to investment property is a weighted average of two tax rates. The first is a tax rate applied to recapture of accumulated depreciation (currently 25 percent in most cases), while the second is the tax rate that applies to any gains remaining after subtracting accumulated depreciation (usually 15 percent).
The annual cost of owning a dollar of owner-occupied housing is:

\[ u = (1 - t_y)(1 - \alpha)e_o + \alpha(1 - \beta_d t_d)(1 - \gamma)i + \mu(1 - \beta_t t_r) + \delta(1 - \beta_t t_r) + T_r - q(1 - \beta_{cg} t_{cg}) + (1 - \gamma) t_y \]

where \( e_o \) is the pretax required return of the owner, \( t_y \) is the tenure choice tax rate, and the various betas are the deductible fractions of mortgage debt, \( \beta_d \), maintenance, \( \beta_{mu} \) property taxes, \( \beta_t \), and capital gains, \( \beta_{cg} \). The last term is the tax on imputed rents, with \( \gamma \) being the fraction of imputed rents not taxed (unity in the U.S.). The fraction of mortgage interest not paid by the household (due to a subsidy) is \( \gamma_i \) and \( \delta \) is the fraction of property taxes that is not offset by the value of local public goods. As with the landlord’s user cost, the first two terms on the right-hand side of the equation are the costs of equity and debt financing, respectively.

In a Haig-Simon neutral income tax system, all of the betas and gammas would be zero: equity returns would be fully taxed and all costs would be both fully paid and deductible by homeowners. In this case, the MID would not be a subsidy for homeownership or housing, but an appropriate business deduction. Most countries do not have an imputed rent tax on owner-occupied housing but do apply a property tax that at least partly substitutes for such a tax. The property tax rate that is equivalent to taxing imputed rents is \( t_y r \). That is, if the renter user cost is 0.10 and the income tax rate is 0.4, then the equivalent property tax rate is 0.04 (assuming that \( \delta = 1 \) and \( \beta_t = 0 \)). Transactions costs, which are a component of (4), can occur at both purchase and sale dates. They differ across countries due to differences in brokerage fees and transfer taxes paid on sale. To obtain annual costs the total transaction cost must be annuitized over

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\(^2\) As Hendershott and Slemrod (1983) note, the relevant rate for the housing tenure decision is the average tax saving per dollar of tax-favored housing expense, not the marginal tax rate which is relevant to the housing quantity demanded decision. This tenure choice tax rate is the difference between the federal taxes the household would pay as renter and as owner, divided by the income the tax saving is based upon (the return foregone on the home purchaser’s equity stake).

\(^3\) Tiebout (1956) argued that households select their residential location based on a comparison of a jurisdiction’s local tax and public services levels. Hamilton (1975) extended the argument to include property taxes on residential housing and strict zoning laws. He showed that households will sort into communities such that the value of the locally provided governmental services equals the amount of the property tax. In this case, the property tax should be viewed as the price of local public services, and thus this model argues that property taxes will not distort housing consumption.

\(^4\) Poterba and Sinai (2008) argue that the default and prepayment options embedded in the mortgage rate should not be included in the user cost because there are offsetting benefits, similar to the discussion of the exclusion of the property tax rate because of the link between local public goods and local property taxes.

\(^5\) Details about tax deductibility for various countries can be found in International Monetary Fund (2011) and Cheung (2011).
the period of expected occupancy, which likely varies with household type (Haurin and Gill, 2002).  

To the extent that debt and equity costs are treated differently, a critical variable for the user cost of owner-occupancy is the LTV. If debt usage is penalized (e.g., imputed rent is not taxed and mortgage interest is deductible), the higher the LTV, the higher is the user cost, while if debt usage is subsidized (e.g., a high \( \gamma \)), the higher the LTV, the lower the user cost. However, the LTV itself depends on the differential treatment of debt and equity (Hendershott, LaFayette, and Haurin, 1997; Follain and Melamed, 1998; Hendershott and Pryce, 2006; Hendershott, Ong, Wood, and Flatau, 2009). In particular, the lower is \( \beta_d \) (the more mortgage debt is tax-penalized), the lower the LTV should be; the higher is \( \gamma \) (the more debt is subsidized), the higher the LTV should be.

Two borrowing constraints are imposed by lenders, a minimum down payment requirement and a limit on the ratio of the mortgage payment to income. Haurin, Hendershott, and Wachter (1997) find that the down payment constraint enters the tenure choice equation in the form of a “gap” variable, where the gap is a measure of the difference between a household’s desired amount of housing and the amount that can be purchased given the household’s wealth. This gap depends on three factors: the variables that influence a household’s demand for housing in the absence of constraints (e.g., income and real house price), the minimum down payment ratio (which is time and country specific), and the household’s real net wealth (\( W \)). Both the down payment constraint and the mortgage payment constraint are more likely to bind in regions where real house prices are relatively high. On the other hand, the higher is real net wealth, the less likely are the constraints to bind. While wealth depends on many factors, the most relevant for our analysis is the level of house prices.

Hendershott, LaFayette, and Haurin (1997) estimate how borrowers can adjust the LTV in order to minimize the impact of borrowing constraints. If the mortgage payment constraint binds and the wealth constraint does not, the household will increase the down payment, loosening the mortgage payment constraint. The household might also be able to reduce this constraint by selecting an adjustable rate mortgage rather than one with a fixed rate.

Measuring the effects of an actual or hypothetical change in taxation of owner-occupied housing on the homeownership rate requires calculation of the change in user costs, the change in house price, and finally estimation of equation (1). As equation (4) indicates, governments affect the tenure decision through

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6 More mobile (younger) households are more likely to rent because their expected annualized transaction costs are high.
tax variables and policies reflected in the betas and gammas. Analysis of tenure choice should account for all of these factors. Ideally, the analysis would also account for behavioral responses to tax policy changes at the level of households, including changes in their LTV ratios and responses to changes in house prices caused by capitalization of the tax change.

The importance of a capitalization effect can be seen in equation (2), where the numerator of the relative cost term is the product of the price per unit of owner-occupied housing and the user cost. The dependency of the user cost on housing policy variables is described in equation (4). However, to the extent that there is capitalization of the policy change in house prices, the impact will be partially or completely offset. The result is that the relative price of owner-occupancy will change less than predicted solely by the direct effect on user costs, and the likelihood of a household owning will be less affected.

Capozza, Green, and Hendershott (CGH, 1996) estimate the price impacts in 63 metropolitan areas of eliminating the mortgage interest and property tax deductions in the context of proposals for fundamental reform of the U.S. income tax using data from the 1970, 1980 and 1990 Censuses. We focus on their results that assume revenue neutrality achieved by reducing marginal tax rates. In equilibrium the annual user cost of owner-occupied housing multiplied by the house price equals the annual rent for equivalent housing (equation (2)). CGH posit that rents would likely be unaffected by elimination of the deductions. Consequently, any change in user cost has to be compensated for by a change in house price to maintain equilibrium. This implies that no change in the quantity of housing occurs; that is, supply is perfectly inelastic, which maximizes price capitalization effects. Their model also implies that elimination of the deductions would have no effect on the ownership rate. Taking into account the switch from debt to equity financing that would result from eliminating the mortgage interest deduction, CGH conclude that the average price decline across the 63 metropolitan areas is 13 percent (based on 1990 data). House price effects vary dramatically with higher priced cities having greater price effects. The decline in house prices among MSAs had a range of 8 percent in El Paso to 26 percent in Honolulu.

Holtz-Eakin (1996) takes exception to the assumption of no quantity effect. He has separate user costs for building and land components, which allow quantity effects to vary with the elasticities of supply of land and buildings. Using a numerical simulation approach, Holtz-Eakin finds a much smaller price impact than that reported by CGH. This approach is developed further in Bruce and Holtz-Eakin (1999), where the simulated house price effect of eliminating the deductions is less than two percent (although in some scenarios the price effect could be much larger). There is a large short-run impact, but this is dampened as
supply responds.

**Tax Policies and Homeownership in the U.S.**

The fundamental income tax concessions for homeownership in the U.S. are the non-taxation of imputed rent and the exemption of most capital gains from taxation. If imputed rent was taxed, mortgage interest and property taxes would naturally be considered deductible expenses. However, in the absence of an imputed rent tax, the mortgage interest and property tax deductions are considered to be tax expenditures. The impacts of non-taxation of imputed rent and exemption of capital gains on the homeownership rate have received very limited attention in the literature. This is likely because the main policy debate has not revolved around the possibility of taxing imputed rent or eliminating the capital gains exemption. Instead, the policy question has been defined in terms of whether the mortgage interest and property tax deductions should be retained, with some emphasis on the MID given its larger potential impact on tax revenue.

The MID became part of the U.S. federal tax code in 1913 at a time when tax rates were very low and a large proportion of households paid no income tax (Baer, 1975). Stansel and Randazzo (2011) summarize the history of the MID’s tax expenditure since inception, including the broadening of the income tax during World War II, increases in tax rates and reductions in exemptions, the massive postwar growth in homeownership during the 1940-1970 period, and the sharp rise in mortgage interest rates through 1980.

A major change was the Tax Reform Act of 1986, which raised the standard deduction and substantially reduced the percentage of households that itemized their deductions, effectively reducing the tax expenditure of the MID (Hendershott, Follain, and Ling, 1987; Follain and Ling, 1991). Subsequently the amount deducted grew again, especially during the housing and homeownership boom from 1996 to 2007. The amount of nominal tax expenditures as estimated by the Joint Committee on Taxation more than doubled from 2000 to 2010 (Stansel and Randazzo, 2011). The amount of mortgage interest deducted was $433 billion in 2009, claimed on 36.9 million tax returns (Internal Revenue Service, 2011). The current limit on the mortgage amount for which a household can deduct interest is $1.1 million.

The federal income tax treatment of homeownership costs has been subject to regular criticism by economists. One theme has been distortion of capital allocation due to the reduction in the cost of owner-

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8 Details of the current tax law related to mortgage debt are contained in Joint Committee on Taxation (2011).
occupied housing relative to other assets. Hendershott (1983) and Taylor (1998) have documented this
distortionary effect. Others have advanced proposals to tax imputed rental income from owner-occupied
housing (see, e.g., Simons, 1938; Goode, 1960; Laidler, 1969; Berkovec and Fullerton, 1992; Vickrey, 1993).
A subsequent theme has been the appropriateness of deducting expenses when imputed income is not
taxed. Many have argued in favor of removing the deduction, but Woodward and Weicher (1989) defend
the MID on the grounds that it equalizes the cost of debt and equity financing.

Recent assessments of the deductions have tended to focus on their efficacy with respect to the
policy objective of increasing the homeownership rate (e.g., Bourassa and Grigsby, 2000). Noting that the
main beneficiaries of the deductions are not households on the margin between renting and owning, some
have advocated replacing the deductions with tax credits (Follain, Ling, and McGill, 1993; Dreier, 1997;
Green and Vandell, 1999; President’s Advisory Panel on Federal Tax Reform, 2005). It is argued that tax
credits would be more effective than tax deductions in providing a broad-based housing subsidy because
many households do not itemize deductions.

Some empirical work has focused on the impact of removing the mortgage interest and property tax
deductions and replacing them with tax credits. Using household survey data for 1970, Rosen (1979)
simulates the impact of replacing the deductions with a tax credit equal to 25 percent of the value of the
deductions. He predicts that homeownership rates would increase for lower income households and
decrease for upper income households. Although not reported, it appears that the overall impact on the
ownership rate was close to zero. Green and Vandell (1999) use household survey data for 1990 and
simulate the impact of replacing the housing deductions with a revenue-neutral tax credit that is a fixed
amount for all homeowners. They find that the ownership rate would have grown by 3 to 4.6 percentage
points, depending on assumptions about the impact on LTV ratios and whether wealth constraints are taken
into account. The difference in results is likely at least in part due to the different credits: Rosen’s is a
percentage of existing household deductions while Green and Vandell give a flat dollar amount per
household. The latter are giving a relatively greater credit to lower income households whose
homeownership choice is more sensitive to a credit than to higher income households whose choice is less
sensitive.

Several studies have estimated the impacts of removing the deductions without considering the
impacts of replacing them with a credit. Rosen and Rosen (1980) use aggregate national data for 1949 to
1974 and conclude that removal of the housing deductions would have resulted in a four percentage point
reduction in the ownership rate in 1974. Similarly, Hendershott and Shilling (1982) use aggregate national data for 1955 to 1979 and conclude that removal of the deductions would have resulted in about a five percentage point reduction in the ownership rate. More recent research has consistently estimated smaller impacts from removal of the deductions. Using national aggregate data for 1956 to 1979, Rosen, Rosen, and Holtz-Eakin (1984) found that eliminating the deductions would have resulted in a 0.4 percentage point reduction in the ownership rate. These authors suggest that the earlier estimates were too high in part because their estimates of marginal income tax rates were too high. Based on a time series analysis of national data for 1970 to 1988 and a cross-sectional analysis of state data for 1980, Rosen (1989) concluded that the homeownership rate in the U.S. in 1988 would have been 1.0 to 1.6 percentage points lower in the absence of the mortgage interest deduction. Using a general equilibrium model, Berkovec and Fullerton (1992) conclude that eliminating the mortgage interest deduction would have only trivial impacts on ownership rates for households at all levels of income. Bourassa and Yin (2006) use 1989 American Housing Survey for 11 metropolitan areas and conclude that eliminating the deductions would have reduced the ownership rate of young households by less than one percentage point. One characteristic of all of these studies of the impacts of eliminating the MID is that they neglect the likelihood that the deduction is at least partly capitalized into house prices. Eliminating the deduction increases the annual user cost per dollar of investment on one hand and decreases the price of housing on the other hand. The focus of empirical work has tended to be solely on the former effect, hence downwardly biasing the impact on ownership rates of removal of the deductions.

Two recent studies attempt to overcome this problem. Bourassa and Yin (2008) allow owner occupiers’ housing demand to be a function of the user cost, meaning that the housing demand curve shifts downwards when the housing deductions are removed. They examine both the effects of eliminating the deductions and the effects of replacing them with the tax credit proposed by the President’s Advisory Panel on Federal Tax Reform (2005). Using 1998 American Housing Survey data for 11 metropolitan areas, Bourassa and Yin focus on young adults because they are most likely to be on the margin between renting and owning. Eliminating the deductions without replacing them by a credit would have a small positive impact (one percentage point) on ownership rates in all of the metropolitan areas studied, but the effects would be greatest in supply-constrained cities such as those in California. Their estimated impacts ranged

\[9\] Although they do not provide an empirical estimate of the impact of removing the deductions, Glaeser and Shapiro (2003) imply that the impact would be small. They point out that the value of the ownership tax subsidy is closely related to the inflation rate, which has varied dramatically over time. They regress the U.S. homeownership rate (quarterly, 1965 to 2001) on the inflation rate and various control variables and find no relationship between the inflation rate and the ownership rate.
from 0.2 percent in Birmingham to 2.8 percent in San Francisco. Replacing the deductions with a credit would have no impact on the ownership rate of the young adults in the sample because the credit would be capitalized into house prices just like the MID. This result contrasts with that of Green and Vandell (1999) in part because Green and Vandell’s credit is more targeted to households at the margin between owning and renting and possibly also because their user cost and borrowing constraint measures are not as elaborate as those of Bourassa and Yin.

Hilber and Turner (2010) provide further analysis of the impact of eliminating the tax deductions. Using longitudinal data from the U.S. Panel Survey of Income Dynamics for 1984 through 2007, they are able to take into account changes over time and across space (states) in income tax rates. They focus particularly on the role of the elasticity of housing supply on capitalization of the interest and property tax deductions, using an index of land use regulatory restrictiveness as a proxy for inelasticity. They conclude that:

the MID does have an impact on individual homeownership decisions—both positive and negative—depending on the restrictiveness of land use regulations at the place of residence and the income status of the household: in places with more elastic housing supply, the MID has a positive effect on homeownership attainment, but only for higher income groups, increasing their likelihood of homeownership by about 3.6 to 5 percentage points depending on income status, with the effect being stronger for high-income than moderate-income households. In contrast, regardless of regulatory status, the MID has no impact on the homeownership attainment of low-income households. In more restrictive places, the mortgage tax subsidies have a significant adverse impact: they reduce the likelihood of homeownership, with this effect being slightly more negative for moderate-income households (−3.7 percentage points) than high-income households (−3.4 percentage points).

Hilber and Turner’s conclusions are consistent with the fact that itemization of deductions is less likely among moderate and low income households in the U.S. (see, e.g., Bourassa and Grigsby, 2000). Thus there is no direct benefit of the MID and ownership is not subsidized. If the households live in Midwestern and Southern metropolitan areas, house prices are little affected by the MID because housing supply elasticities are large. The regional concentration of the use of the MID is supported by

10 The income tax rate at which deductions are assumed to be taken is an estimate of the marginal tax rate rather than the tenure choice tax rate.
Gyourko and Sinai (2003) and Brady, Cronin, and Houser (2003). Thus, the ownership rates of low and moderate income households are likely little affected by the MID in these areas. High income households in these areas enjoy the tax savings due to the MID, but any house price increases for higher quality housing are likely very modest. The positive impact on ownership is likely small because few high income households are on the margin between renting and owning.

For low and moderate income households that live in the Northeast and West, ownership rates are relatively low because of the relatively high price of owner-occupied housing (which is highly correlated with these metropolitan areas’ low housing supply elasticities). The percentage of low and moderate income households directly benefiting from the MID is relatively small as few itemize deductions. If the housing market is segmented by income, house prices for low quality housing would not be affected, but if arbitrage occurs then low quality housing will have a higher price. The net impact of the MID on low income households in these areas is likely either no change or a reduction in their homeownership rate. Higher income households in the Northeast and West likely own high price housing and they itemize deductions, yielding a relatively large direct benefit from the MID. However, the inelasticity of housing supply suggests that house prices are higher because of the MID. These effects are offsetting, yielding an ambiguous effect on the homeownership rate.

In summary, empirical studies of the effects of the mortgage interest deduction on the homeownership rate in the U.S. have found varying impacts. The more carefully that these studies control for general equilibrium effects, such as capitalization of the deduction into house prices, the smaller the impact of the deduction. In some cases, such as Bourassa and Yin (2008) or Hilber and Turner (2010), the deduction is found to reduce ownership rates for precisely those groups that it would need to be assisting if it were to have a positive impact on homeownership rates.

**Tax Policies and Homeownership in Other Countries**

Table 1 gives ownership rates and mortgage interest deductibility for selected countries. Although a number of countries with ownership rates higher than in the U.S. allow deductibility of mortgage interest, the country with the highest ownership rate—Singapore—does not and the four countries that are perhaps the most comparable to the U.S.—Australia, Canada, New Zealand, and the United Kingdom—also do not.

11 Brady, Cronin, and Houser find that the average size of the MID varies from a low of $5,700 in the West North Central division and $5,900 in the East South Central to $7,438 in New England and $10,000 in the Pacific division (1995 data). They conclude that two-thirds of the regional variation in the average MID results from regional differences in housing prices and state and local income and property taxes.
A regression of the ownership rate on a dummy variable for mortgage interest deductibility gives an insignificant result for the dummy variable ($p = 0.63$). The dummy variable remains insignificant ($p = 0.17$) even if Taiwan, Belgium, The Netherlands, and Switzerland are treated as not having MIDs because the existing deduction is not targeted at owners (Taiwan) or is offset by taxation of imputed rent (Belgium, The Netherlands, and Switzerland).

Of course, even if there was a significant relationship between the MID and the ownership rate in a simple regression, that would ignore all of the other relevant economic, financial, demographic, and policy differences across countries. For example, although Singapore does not have a mortgage interest deduction, it is perhaps in a class by itself with respect to the extent to which its government has promoted homeownership. Since the 1960s, Singaporeans have been allowed to use their mandatory retirement (Central Provident Fund) savings to purchase apartments built by the government at subsidized prices and with subsidized interest rates (see, e.g., http://mycpf.cpf.gov.sg). Another example is Australia, which has focused on cash subsidies to first-time home buyers as a means of encouraging ownership. New Zealand is an interesting case because its MID, which allowed deduction of the first five years of interest for first homes, was abolished in 1984 as part of a major reform of the country’s economic and fiscal system (Stephens, 1993). New Zealand’s reforms included simplification of the individual income tax system, flattening of marginal tax rates, and introduction of a value added tax. The New Zealand case illustrates the point that questions about the efficacy of the MID become moot if tax simplification becomes the overriding objective of policy makers.

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12 Greece remained classified as having an MID due to the fact that the imputed rent tax applies only to large dwellings.

13 However, evidence suggests that it is doubtful that Australia’s subsidies have been any more effective than those in the U.S. appear to be. Bourassa, Haurin, Haurin, and Hendershott (1994) concluded that the subsidies merely allowed young Australians who were likely to become homeowners to do so a bit earlier than they otherwise would. Bourassa and Yin (2006) simulated application of Australian-style grants in lieu of the MID to their U.S. sample of young adults and found that the grants were no more effective at encouraging ownership than the deduction.
Table 1. Ownership Rates and Mortgage Interest Deductibility for Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
<th>Mortgage interest is deductible</th>
<th>Country</th>
<th>Percentage</th>
<th>Mortgage interest is deductible</th>
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Notes:
\textsuperscript{a} Although Taiwan has a mortgage interest deduction, it is tied to another deduction that is available to renters (Bourassa and Peng, 2011).
\textsuperscript{b} Belgium, Greece, Poland, The Netherlands, and Switzerland all have imputed rent taxes, although Greece’s applies only to large dwellings (Cheung, 2011).
\textsuperscript{c} France abolished mortgage interest credits for first-time buyers in 2011. Those had been instated in 2007.

European countries illustrate a wide range of housing policies. Twelve of the 16 European countries listed in Table 1 provide for some kind of MID, while four—France, Germany, Poland, and the U.K.—do not. Whereas most countries do not tax imputed rent, it is taxed in Belgium, The Netherlands, and Switzerland. Tax policies have changed in a number of countries. In recent decades the MID in the U.K. and mortgage tax credits in France were abolished, and the taxation of imputed rents in Italy and Spain was eliminated (for principal residences). Such changes in tax policies make for fertile ground to study the impacts on homeownership rates.
Hilber (2007) analyzes homeownership in 15 European countries. Variables affecting the owner user cost include dummy variables for the removal of the taxation of imputed rents (in Spain in 1999 and Italy in 2000) and of mortgage interest tax credits in France (1998) and of the mortgage interest deduction in the U.K. (gradually from 1972 through 2001). Removal of imputed rent taxation is estimated to have increased the homeownership rate in Spain and Italy, while removal of tax credits and MID in France and the U.K., respectively, had a positive impact (France) or no impact (U.K.) on the homeownership rate. One possible interpretation of these results is that capitalization effects were greater in France and the U.K. than in Spain and Italy. The result pertaining to the U.K. could also be due to the fact that as mortgage relief was progressively phased out, the actual impact on ownership during the period envisaged by Hilber (1994 to 2001) was limited.

The U.K. case is interesting as the country experienced a substantial restructuring of housing finance during the period 1975 to 2000, including removal of the MID (called mortgage tax relief in the U.K.). The first limitation to mortgage interest deductibility was put in place in 1972 when the maximum debt for which interest could be deducted was set at £25,000; this significantly affected only the purchases of high value units. The limit was raised to £30,000 in 1983. High inflation subsequently caused the real value of the MID to decline rapidly. Tax relief was finally abolished in 2000. Gibb and Whitehead (2007) report that the MID fell from representing 38 percent of interest on owner-occupiers’ mortgages in 1975 to 30 percent in 1985, 19 percent in 1990, and 9 percent in 1995.

The homeownership rate in the U.K. increased from 52.7 percent in 1974 to 66.8 percent in 1994 (Gale, 1997) and 68.3 percent in 2001. It is difficult, however, to disentangle the impacts that the various policy and economic changes had on the ownership rate. During this period, general economic conditions were more favorable for buying a house; for example, the mortgage interest rate fell. The liberalization of financial markets made it also easier to access mortgage debt. Income tax rates declined, raising after-tax income. Also, property taxes fell substantially during this period. Last but not least, this period saw the introduction of the right to buy as well as of supply and demand subsidies (Hendershott, Pryce, and White, 2003; Gibb and Whitehead, 2007).

Switzerland is also an interesting case because it has the lowest homeownership rate in Western Europe. Imputed rents are taxed, while mortgage interest and other expenses are deductible (Bourassa,

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14 The right to buy policy, which was introduced in 1980, gave local housing authority tenants the right to purchase their homes at a discount related to the length of time in the tenancy.
Hoesli, and Scognamiglio, 2010). Bourassa and Hoesli (2010) use household survey data to investigate reasons for the low ownership rate. They estimate a tenure choice equation and use it to simulate a number of hypothetical changes to taxation and other policies, underwriting criteria, and price levels to assess the importance of those variables in explaining the ownership rate. They conclude that high house prices—relative to household incomes and wealth—and the tax on imputed rent are the most important causes of Switzerland’s low ownership rate. Removing the imputed rent tax while retaining the deductions would increase the ownership rate by nine percentage points. This assumes no capitalization of the deductions.\(^{15}\) Removing both the tax and the deductions reduces the ownership rate by about one percentage point, reflecting the fact that mortgage interest and other housing expenses on average exceed imputed rent because the latter is calculated conservatively (probably at a 30 to 40 percent discount relative to market rate).

Andrews and Caldera Sanchez (2011) cast a wider net by analyzing changes in ownership rates in OECD countries over roughly the 1994-2004 decade using household level micro datasets. Their modeling incorporates a comprehensive range of determinants of ownership, including the age and structure of households, borrowing constraints, the taxation of housing, and the subsidization of rental housing. During the decade studied, aggregate ownership rose by over three percentage points, on average, with the increase ranging from negative two points (Australia) to plus seven (Canada). In one of their analyses, they use data from 15 countries (12 European countries plus Australia, Canada, and the U.S.) to assess the impact of changes the maximum LTV (i.e., the minimum down payment) and differences in MID policies.

The authors concentrate on segments of the population that likely represent marginal buyers: households in the second income quintile and households ages 25 to 34 in that quintile. They measure mortgage tax relief as the wedge between the market debt rate and the actual after-tax debt financing cost—the product of the market interest rate, the debt beta (the effective tax deductibility of interest payments), and the household’s tax rate. Unfortunately, the wedge variable was available for 2009 only. Because the variable has no time variation, it is not included directly in the estimation. Rather, it is entered interactively with the maximum LTV, allowing the response to increases in that maximum (due to “financial deregulation”) to vary with the degree of debt relief.

The estimation results are consistent with theory. A ten percentage point increase in the maximum

\(^{15}\) Bourassa and Hoesli (2010) were unable to identify a relationship between user cost and housing demand and, as a consequence, could not quantify a capitalization effect.
LTV raises the ownership rate for those in the second income quintile by 1.9 percentage points; for those ages 25 to 34, the increase is over twice as great, 4.4 percentage points. These results are measured at the average level of debt taxation (tax relief). When tax relief is “half a standard deviation more generous,” the 4.4 point increase is reduced to 3.2 points. This suggests that capitalization of debt relief into house prices reduces the potential income tax benefit from a higher LTV.

Conclusions

The aim of this paper is to help inform the U.S. debate about the impacts of tax concessions, particularly the mortgage interest deduction, on homeownership. In a model of housing tenure choice, we show how the MID and other housing tax policies influence the relative cost of owning and renting through the annual user cost. The relative cost ratio is also a function of the price of housing and tax policies affect the price of housing through capitalization of tax benefits.

Consistent with theory, the U.S. empirical literature shows that, while the MID can lower the user cost of housing, the tax savings are capitalized into house prices, particularly in places where the supply of housing is relatively inelastic (CGH, 1996; Bourassa and Yin, 2008; Hilber and Turner, 2010). Thus the removal of the MID would lower house prices in such locations and a price decline could increase affordability (reducing the required down and mortgage payments) sufficiently to increase homeownership. The loss of deductions would be greater among high income households, but such households are likely to be owners in any case. Low income households who are more likely to be on the margin between renting and owning are less likely to itemize deductions and thus would be less affected by the elimination of the MID, and the price effects on low income housing would likely be small or nonexistent.

Recent international empirical research supports the findings of U.S. studies. Hilber (2007) concludes that the removal of mortgage relief in France had a positive impact on ownership, while the removal of MID in the U.K. had no significant impact on ownership. In their study of 15 OECD countries, Andrews and Caldera-Sanchez (2011) find that more generous mortgage tax relief reduces the positive benefits of an increase in the maximum LTV (a decrease in the down payment). These findings are consistent with the idea that, while the MID reduces the annual user cost of owner-occupancy per dollar of investment, capitalization of the MID has an impact on house prices that offsets the tax benefit.
References


