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The Effect of Proposed Tax Reforms on Metropolitan Housing Prices[1]

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Introduction

The Obama Administration proposed a series of reforms in its 2011 budget aimed at increasing the tax burden on upper-income taxpayers. The purpose of these reforms is to increase federal tax receipts and enhance tax progressivity, but may also have the unintended consequence of changing the price of housing. The goal of this paper is to simulate how the Administration's proposals will affect the equilibrium price of housing in major metropolitan areas.

In the United States, homeowners are afforded several generous tax preferences. Mortgage interest and local property taxes are deductible from taxable income, large exemptions are permitted for capital gains earned on the sale of a home, and imputed rental income is untaxed. According to the Office of Management and Budget, these tax expenditures are worth $167.3 billion in 2010 (Office of Management and Budget 2010), making tax expenditures for homeownership one of the largest in the tax code.[2]

Two of the President's proposed tax reforms would change the value of the mortgage interest and property tax deductions. One of the proposals would limit the value of itemized deductions—including interest and property taxes paid on mortgages for owner-occupied homes—to 28 percent. Another proposal would raise marginal tax rates for single taxpayers earning over $200,000 and married couples earning over $250,000.

These proposals would have opposing effects on the value of housing. In isolation, the increase in marginal tax rates would bolster housing values, since housing is a tax-preferred asset and increasing the tax rate increases the value of the preference. On the contrary, limiting the rate at which itemized deductions can be claimed places a cap on the values of the mortgage interest and property tax deductions, and negatively affects the equilibrium price of housing.

The President also proposed to raise the capital gains tax rate for upper-income taxpayers. The current tax code grants a generous exemption for capital gains due to the sale of an owner-occupied home; profits on the sale of non-commercial residential housing are subsequently rarely taxed. Thus, while the capital gains tax rate does not directly affect the expected profits from home ownership, it does affect the after-tax return to other investment and subsequently changes the opportunity cost of home ownership. A higher rate of capital gains taxation makes the tax preference on owner-occupied housing more attractive to investors.

In this paper, the separate and combined impacts of these proposals on home prices are simulated by identifying the changing characteristics of the "equilibrium" taxpayer. Results are presented for two scenarios: one where the equilibrium taxpayer—the homeowner who is indifferent between renting and owning—is in the 33 percent bracket and another where the equilibrium taxpayer is in the 35 percent bracket.

The results for the scenario where the marginal homeowner is in the 33 percent bracket are presented first. The results of this simulation are that, taken in isolation, the proposal to limit the value of the mortgage interest deduction to 28 percent would reduce metropolitan housing values by 6.9 to 15.0 percent. The proposal to raise the 33 percent

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[2] Toder, Harris, and Lim (2009) estimate the distribution of tax expenditures for homeownership.

income tax rate to 36 percent would raise housing prices by between 2.7 and 6.0 percent. And the proposal to increase the capital gains tax rate for upper-income taxpayers would raise metropolitan housing prices by between 0.9 and 2.3 percent. The combined effect of the three proposals would reduce housing prices by between 4.2 and 10.2 percent.

The scenario where the marginal homeowner is in the 35 percent bracket yields slightly more dramatic results. The results of this simulation are that, taken in isolation, the proposal to limit the value of the mortgage interest deduction to 28 percent would reduce metropolitan housing values by 9.3 to 19.6 percent. The proposal to raise the top two income tax rates to 36 and 39.6 percent would raise housing prices by between 4.2 and 9.5 percent. As before, the proposal to increase the capital gains tax rate for upper-income taxpayers would raise metropolitan housing prices by between 0.9 and 2.3 percent. The combined effect of the three proposals would reduce housing prices by between 6.1 and 14.0 percent.

The results of the simulations also show that the President's proposals do not affect all metropolitan regions equally. Regions with high tax rates and, in particular, low rent-to-price ratios, tend to experience larger changes in housing prices. Since these cities tend to be in coastal regions, the President's proposals have substantially different impacts on coastal cities compared to those located inland.

The analysis is narrowly focused along several dimensions. First, the analysis measures the change in metropolitan housing prices under the extreme assumption that there is no supply response; that is, the supply of urban housing is perfectly inelastic. Second, this analysis does not incorporate the effects of households altering the ratio of home equity to the outstanding mortgage balance. Such an assumption would not hold if households either drew down other assets to pay off a mortgage, or took on more housing debt to finance other non-housing investments. Third, as mentioned above, the analysis assumes the equilibrium taxpayer is in either than 33 percent or the 35 percent tax bracket. This assumption doesn't imply that there are no homeowners in lower tax brackets; it simply implies that the taxpayer who is indifferent between renting and owning is in one of these brackets. If the marginal taxpayer is in a lower tax bracket, President Obama's tax proposals *have no effect on housing prices* because the high-income tax changes don't affect these taxpayers. Related to this point is the implied assumption that within each metropolitan market, homeowner demand for housing is determined solely by income and tax characteristics; in truth, a wide array of factors determines a household's preference for homeownership.[3] Fourth, this analysis assumes a single market for housing in each metropolitan market. If the data for each metropolitan market does not hold for the equilibrium taxpayer, the results will be biased.

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[3] The implication for a scenario in which taxable income (and marginal tax rates) is the sole determinant of the home ownership decision is that household preference for housing is increasing in income. Within each metropolitan market, all very high-income households should be homeowners and all very low-income households should be renters. Changes to the tax code induce those taxpayers on the margin to change their preference between renting and owning. Since the tax changes studied here are directed solely at high-income taxpayers, the proportion of households owning homes will only change if there are households on the margin who are affected by the proposed tax changes. See Carpozza, Green, and Hendershott (1996) for further details.

The next section provides a brief overview of the literature related to the effects of income taxes on housing prices. The following section describes the President's proposals in greater detail. A model of housing prices is then presented, followed by a description of the simulation results. The final section concludes.

Previous Studies

Several prior studies have focused on the link between taxes and the user cost of housing. Poterba (1992) shows that decreased marginal tax rates in the 1980s led to increased user cost of housing capital for high-income households relative to middle-income households, with median-income households experiencing an increase of 2.7 percentage points (10.6 percent to 13.3 percent) compared to an increase of 7.3 percentage points (from 4.3 percent to 11.6 percent) for high-income households. Anderson, Clemens, and Hanson (2007) show that the cap on deductible mortgage interest affects a very small proportion of homeowners, but that the cap has a substantial effect on the user cost of housing for those affected taxpayers.

Others have measured the effects of tax changes on housing prices. Carpozza, Green, and Hendershott (CGH 1996) simulate the effect of proposed tax reforms on housing prices. CGH find that removing the property tax deduction would lower national housing prices by 5 to 7 percent, and that this decline would increase to 17 percent if the mortgage interest and property tax deductions were concurrently eliminated. (If households responded to this tax change by paying down their mortgages, the price decline would be 13 to 15 percent.) Locally, CGH find that repealing the property tax and mortgage interest deductions induces the largest price declines in those cities with low rent-to-price ratios and high property tax rates. CGH estimate that the elimination of the property tax deduction would cause local price declines of between 2 and 13 percent, rising to 11 to 34 percent if the property tax and mortgage interest deduction are concurrently eliminated.

CGH reach the important conclusion that the effects of tax changes are fully capitalized into the price of a house. CGH test this assumption empirically by regressing the after-tax interest rate and the after-tax property tax rate on the rent-to-price ratio in 63 metropolitan areas. They find the coefficients on the net interest rate to be 1.14 and 1.09 for the net property tax rate; not statistically different than unity. These findings—combined with the observation that rents in the sample vary little relative to housing prices—indicate that the effects of tax reforms are fully-capitalized into the price of the home.

Bruce and Holtz-Eakin (2001) estimate the changes in equilibrium housing due to the implementation of a flat consumption tax. Unlike the techniques used in CGH and this study, Bruce and Holtz-Eakin assume elastic supply of and demand for housing. This assumption alters the model to allow for changes in both the price of housing and the housing stock. Using data for a representative taxpayer, the authors find that a consumption tax would increase the nominal price of housing by the full amount of the tax—assumed to be 17 percent in the simulation. Gale (2001) criticizes Bruce and Holtz-Eakin's inconsistent treatment of consumer and producer prices and the omission of the role of land. Gale calculates that including these considerations in the model would yield

price declines in real housing of between 7 to 10 percent in the short run and 2 to 6 percent in the long run.

The Administration's Tax Reforms

The Obama Administration's 2011 budget included a wide array of revenue proposals, from the reform of international corporate taxation to a series of temporary measures designed to stimulate the economy.[4] Included in this collection of reforms were three proposals designed to increase the tax burden on upper-income individuals, defined as married couples with income over $250,000 and single taxpayers with income over $200,000. These proposals were originally supported by President Obama during the 2008 presidential campaign, and were designed to "….reduce the deficit, make the income tax system more progressive, and distribute the cost of government more fairly among taxpayers of various income levels." (Department of the Treasury 2010, p. 132)

One of the President's proposals would allow the top two income tax rates to return to the higher levels that existed prior to the passage of the Economic Growth Tax Relief Reconciliation Act (EGTRRA). EGTRRA dropped marginal income tax rates for all taxpayers, including those in the highest tax brackets. Under EGTRRA, taxpayers previously in the 39.6 percent bracket were subject to a tax rate of 35 percent while those in the 36 percent bracket were subject to a tax rate of 33 percent. These lower rates are scheduled to expire at the end of 2010.

In the 2011 budget, President Obama proposed to reinstate the 36 and 39.6 percent tax rates. Married taxpayers with income over $250,000 and single taxpayers with income over $200,000 would be subject to the higher rates. The 28 percent bracket would be expanded to include those previously in the 33 percent bracket but without enough income to qualify for the 36 percent rate.

A similar proposal in the President's budget would impose higher tax rates on capital gains and dividends for upper-income taxpayers. Under the President's plan, the same taxpayers subject to higher statutory income tax rates (married filers with income over $250,000 and single filers with income over $200,000) would also be subject to a 20 percent rate on long-term capital gains and qualified dividends. Taxpayers with income beneath these thresholds would be subject to the 2010 rates of 0 or 15 percent.

The higher long-term capital gain and dividend rates would generally not apply to owner-occupied housing, which would continue to be treated preferentially under the tax code. The current rules—established by the Taxpayer Relief Act of 1997—allow married filers to deduct $500,000 in capital gains on the sale of an owner-occupied home; single filers can deduct $250,000. This rule exempts most housing-related capital gains from taxation.

A third proposal aimed at increasing the tax burden on upper-income taxpayers is a limitation on itemized deductions. Since itemized deductions reduce taxable income, one dollar of itemized deductions is worth more to a taxpayer in a high statutory bracket relative to a taxpayer in a lower bracket. The Obama Administration proposed to limit the value of itemized deductions for high-income taxpayers by placing a cap on the rate at

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[4] These proposals are described in Department of the Treasury (2010) and Altshuler et al. (2010).

which itemized deductions can reduce tax liability. Under the President's proposal, itemized deductions can reduce tax liability by a maximum of 28 percent, even if the taxpayer is in a higher statutory tax bracket. This provision would limit the rate at which housing-related itemized deductions, including mortgage interest and property taxes paid, could reduce the tax liability of upper-income taxpayers.

The President also proposed a complimentary limitation on the ability of high-income taxpayers to utilize itemized deductions.[5] The Administration's proposal would reinstate the pre-2001 rules for limiting the amount of itemized deductions that could be claimed by high-income individuals. Specifically, itemized deductions claimed by high-income taxpayers would be reduced by 3 percent of the amount by which taxable income exceeds the Administration's high income thresholds; the maximum reduction would be capped at 80 percent of itemized deductions. The effects of this particular proposal are not modeled here.

A Model of Taxation and Housing Prices

If there were no tax preference for homeownership, determining the equilibrium price of housing would be a relatively simple exercise. Consumers purchase units of housing if the expected cost of homeownership—interest payments, property taxes, maintenance costs, and net appreciation—is lower than the market rate of renting. In equilibrium, consumers continue to invest in housing until the rental rate equals the cost of homeownership.

This decision is complicated by tax preferences for homeownership. Since taxpayers can both deduct property taxes and mortgage interest paid, a taxpayer's marginal tax rate is a critical aspect of the user cost of homeownership. Furthermore, the homeownership decision is more complicated than simply whether to invest in housing or not; consumers must also decide what proportion of a house should be financed. The financing decision means that consumers consider not only the tax preference for homeownership, but also the expected after-tax return to other non-housing investments.

The financing decision is sometimes overlooked in studies of housing prices. Taxpayers with high marginal tax rates may opt to finance a large proportion of their housing investment with debt due to the generous deduction for mortgage interest and the preferred tax rates on capital gains for non-housing returns. These investors can then invest equity that is not devoted to the down-payment on the home to other investments, which are also taxed at preferred rates under the existing tax code. Thus, tax rates on non-housing investment also influence the equilibrium price of housing.

Given these considerations, homeowners purchase housing until the implicit rent is equal to the user cost of capital. Here, the user cost of capital is the sum of the after-tax interest payments, the after-tax cost of property tax payments, and the opportunity cost of investing elsewhere. This equilibrium condition can be expressed as:

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[5] EGTRRA gradually phased-out the limitation on itemized deductions. In 2006 and 2007, itemized deductions were reduced by 2 percent of AGI above the threshold and by not more than 53.33 percent. In 2008 and 2009 the limitation was curtailed further: itemized deductions were reduced by 2 percent of AGI above the threshold and by not more than 26.67 percent. EGTRRA repealed the limit on itemized deductions in 2010, but it is scheduled to revert to its pre-2006 level in 2011.

(1)
$$R = [(1-\gamma t^{y})\alpha i + (1-t^{y})t^{p} + (1-t^{cg})(1-\alpha)r - g + m]P$$

Where R is rent, γ is the deductible portion of mortgage interest and property taxes, α is the proportion of the house that is financed, i is the mortgage interest rate, r is the return to other investments, g is the rate of appreciation of the home, m represents maintenance costs, and P represents price of housing. Property tax rates are represented by t^{p}, combined state, local, and federal income taxes are represented by t^{y}, and combined taxes on investment income are represented by t^{cg}.

Tax rates are defined to account for the deductibility of state income taxes paid. Income tax rates are defined as $t^{y} = t^{f} + (1 - t^{f}) t^{s}$ where t^{f} represents the statutory federal tax rate and t^{s} represents the statutory state tax rate. Similarly, taxes on non-housing investments are defined as $t^{cg} = t^{inv} + (1 - t^{inv}) t^{s}$ where t^{inv} represents the federal tax rate on capital gains and dividends.

If the supply of housing is elastic, determining the change in housing for a given change in tax policy is difficult. However, as noted by CHG (1996), an investment in housing represents both the structure (which is supplied elastically) and the land (which is not supplied elastically). Thus, in the short-run, an increase in marginal tax rates will be capitalized into the price of the house without affecting market rents.

Given constant market rents, the equilibrium condition can be rewritten as:

(2)
$$\frac{P_1}{P_0} = \frac{\dfrac{R}{P_0}}{\dfrac{R}{P_0} + \left[\alpha i - \gamma_1 \alpha i t_1^{y} + t^{p} - t^{p}\gamma_1 t_1^{y} + (1-t_1^{cg})(1-\alpha)r\right] - \left[\alpha i - \gamma_0 \alpha i t_0^{y} + t^{p} - t^{p}\gamma_0 t_0^{y} + (1-t_0^{cg})(1-\alpha)r\right]}$$

Subscripts represents time period and superscripts on tax rates again indicate the type of tax (i.e. t^{i} indicates income tax rate, t^{p} indicates property tax rate, and t^{cg} indicates capital gains tax rate). Appreciation and maintenance costs are not dependent on tax parameters and are assumed to be equal across periods, and thus cancel out in equation (2).

The change in equilibrium housing prices, calculated as $1 - P_1/P_0$, can be determined for various metropolitan areas. Given variation in rent-to-price ratios, property tax levels, and state and local income tax levels, the change in prices as a result of the Administration's proposed tax changes can vary substantially across cities.

Model inputs for each metropolitan area are shown in Table 1. Data on rent-to-price ratios are derived from Campbell et al. (2009). The authors utilize data from the Decennial Census of Housing to calculate rent-to-price ratios in 23 metropolitan markets. Implicit rents are determined by first regressing market rents on a set of hedonic housing characteristics, then using the estimated coefficients from the regression to predict implicit rents for owner-occupied housing. In each metropolitan area, the reported rent-to-price ratio is calculated as the mean predicted implicit rent over the mean housing

value. Implicit rent and reported housing prices are then indexed forward to year-end 2007[6]; this paper utilizes the 2007 metro-level rent-to-price data.

Property tax rates are derived from county-level data published by the Tax Foundation. Using the 2007 American Community Survey, the Tax Foundation published data on property tax rates for owner-occupied housing in each county in the United States with a population in excess of 65,000. Each county's property tax rate is calculated as the median property tax paid divided by the median housing price.

State income tax rates in 2007 were also derived from the Tax Foundation, which annually publishes state individual income tax rates. Many states have a graduated income tax system; in general, the highest marginal tax rate was chosen. The lone exception to this pattern was California, which in 2007 maintained a top marginal rate of 10.3 percent on taxable income in excess of $1,000,000. In this case, the second-highest marginal rate of 9.3 percent was selected.

There is limited public data on the ratio of mortgage debt to house price at the time of mortgage origination. As such, this paper assumes that 80 percent of every equilibrium home is financed with debt and 20 percent is financed with equity; this assumption is the same as that made by Anderson et al. (2007). This proportion is appropriate for high-income taxpayers in metropolitan regions who likely have large amounts of equity available for a down-payment, and who are more likely to have paid off a larger portion of their mortgage. One difficulty in estimating this parameter is determining the time at which the home ownership decision is made. If the simulated tax changes induce renters to become homeowners, then the relevant proportion is the anticipated downpayment. Conversely, if the tax changes induce homeowners to become renters, then the relevant proportion is the existing loan to value ratio of the home. Fortunately, the results are not particularly sensitive to this assumption.[7]

Mortgage rates were determined by the average value in 2007 according to the Primary Mortgage Market Survey produced by Freddie Mac. Mortgage rates are assumed to be constant across metro areas. The average 30-year fixed mortgage in 2007 was 6.34 percent with 0.4 points; the average mortgage rate was not adjusted to account for average points. The risk-adjusted rate of return on non-housing assets was assumed to equal the interest rate on 30-year fixed mortgages. Such an assumption is consistent with the notion that investments of equal risk bear equal average rates of return.

Results

The effect of President Obama's proposed tax reforms on housing prices can be decomposed into three distinct effects. One, the higher proposed marginal tax rates are expected to increase equilibrium housing prices by increasing the value of itemized

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[6] Campbell et al. (2009) index implicit rent using the Bureau of Labor Statistics data on the growth rate of market rents. The authors index housing prices using the Federal Housing Financing Agency repeat transactions home price index. Nominal growth rates are converted to real growth rates by deflating these indices using the measure of CPI minus shelter.

[7] Under the scenario where the equilibrium taxpayer is in the 33 percent bracket, the median decrease in housing prices is 9.1 percent if 90 percent of the home is financed with debt, 7.7 percent if 80 percent of the home is financed with debt, and 5.9 percent if 70 percent of the home is financed with debt. A similar pattern exists for the scenario where the equilibrium taxpayer is in the 35 percent bracket.

deductions for housing expenses. Two, the limitation on itemized deductions is expected to decrease equilibrium housing prices by limiting the value of itemized housing deductions. And three, the increase in the tax rate on capital gains is expected to increase the price of housing by lowering the after-tax return to non-housing investment relative to housing investment.

The combined effect of these proposed tax changes depends on the marginal tax rate of the household on the margin. If the taxpayer at the margin is in the 35 percent tax bracket, then the effects of the itemized deduction limitation and increase in marginal tax rates are each larger—in absolute terms—than if the taxpayer is in the 33 percent bracket. If the marginal taxpayer is in a lower tax bracket than the 33 percent bracket, then the President's policies have no theoretical effect on housing prices.

Simulated changes in housing prices for each distinct tax change are presented below, in addition to the combined effects of all three tax reforms. Results are presented for two scenarios: the first scenario assumes the marginal taxpayer is in the 33 percent tax bracket; the second scenario assumes the marginal taxpayer is in the 35 percent tax bracket. In 2007, the 33 percent rate applied to married households' taxable income between $160,850 and $349,700 and to single households' taxable income between $195,850 and $349,700. The 35 percent rate applied to all taxable income above $349,700.

Marginal Taxpayer is in the 33 Percent Bracket

If the marginal taxpayer is in the 33 percent tax bracket before the implementation of the proposed reforms, the effect of increasing the marginal tax rates is substantial (Table 2). I look first at the proposal to reinstate the 36 and 39.6 marginal tax rates. As marginal income taxes rise, the value of the mortgage interest deduction increases as well. Equilibrium housing prices increase by between 3.5 percent (Denver) and 8.0 percent (Honolulu). The median increase in housing prices is 5.1 percent.

Cities with higher income tax rates have smaller simulated increases in housing values, while the effect is opposite for cities with higher property tax rates. However, a locality's rent-to-price ratio is the most important determinant of the level of its increase in equilibrium housing prices; effects from the variation in city-level tax rates were small compared to the role of rent-to-price ratios. As such, cities with low rent-to-price ratios—Boston, Los Angeles, and San Francisco—tended to see larger increases in the equilibrium price of housing due to an increase in marginal tax rates.

The Administration's proposal to limit the ability of high-income taxpayers to deduct certain housing costs would also have a significant effect on housing values. The imposition of this limitation, which would limit not only the deducibility of mortgage interest but also property taxes paid, leads to steep drops in the equilibrium price of housing. Cities experience housing price decreases that range from 8.7 percent (Denver) to 18.7 percent (Honolulu). The median decrease is 11.8 percent.

As with increases in the income tax rate, a locality's rent-to-price ratio is also the most important determinant of the size of its price decrease due to the itemization limitation. Coastal cities with higher rent-to-price ratios tend to show price decreases in excess of 13 percent, while cities in the interior with lower rent-to-price ratios show less

severe drops. Higher state income and property tax rates both lead to larger simulated price declines, although the effect of tax rates was small relative to those of rent-to-price ratios.

Like the increase in marginal income tax rates, the proposed increase in the capital gains and dividend tax rate lead to higher housing prices. The results show that the effect of an increased capital gains rate is small relative to the other proposed tax changes. Increasing the capital gains tax rate to 20 percent for upper-income taxpayers is simulated to raise the price of housing by between 1.1 percent (Houston) and 3.0 percent (Honolulu). The median increase in housing prices in this simulation is 1.7 percent. These results hold for both the scenario where the marginal taxpayer is in the 33 percent bracket and the scenario where the marginal taxpayer is in the 35 percent bracket.

Rent-to-price ratios again play the most important role in determining the effect of a change in capital gains rates. Cities with low rent-to-price ratios experience a relatively high simulated increase in the housing price due to the change in the capital gains rate: low rent-to-price areas San Francisco, New York, Los Angeles, and Honolulu were the only cities with simulated increases in excess of 2.5 percent.

The combined effect of the Administration's proposed tax reforms is significant. The median combined house price effect among the 23 metropolitan areas studied is a decrease of 7.7 percent. The most precipitous simulated drop is 12.6 percent in Los Angeles, with several other coastal cities—Honolulu, San Francisco, New York, and Portland—showing expected decreases in excess of 10 percent. Milwaukee, with a simulated drop of 10.0 percent, was the only inland city with a double-digit decrease.

A locality's rent-to-price ratio was the most important determinant in the simulated price change. In the measuring the combined effect of the tax changes on housing prices, a lower rent-to-price ratio yielded a higher decrease in prices. Since coastal cities tend to have lower rent-to-price ratios, they are also more likely to have larger price drops. Milwaukee, with a low rent-to-price ratio relative to other inland cities, had the largest simulated price reduction of among non-coastal cities.

Marginal Taxpayer is in the 35 Percent Bracket

The price effects in a scenario where the marginal taxpayer is in the 35 percent bracket are similar to the previous scenario, but more severe (Table 3). The Administration's proposal to increase the top marginal income tax rates is simulated to increase housing prices by between 5.5 percent (Denver) and 12.8 percent (Honolulu), with the median change being 8.1 percent. Coastal cities exhibit a 3 percentage point larger increase relative to inland cities (10.2 percent versus 7.2 percent).

The limitation on itemized deductions causes a price drop of between 11.6 percent (Denver) and 24.1 percent (Honolulu). The median decrease in prices was 15.6 percent. Coastal cities with low rent-to-price ratios experienced a substantially larger drop relative to inland cities, with coastal cities housing prices falling by 19.5 percent compared to just 14.5 percent for inland cities.

The combined effect of the Administration's tax reforms would to reduce housing prices by a median value of 10.7 percent in this scenario. The combined city-level decreases range from 7.4 percent (Houston) to 17.3 percent (Los Angeles). Coastal cities

have a simulated decrease of 13.5 percent: almost four percentage points higher than inland cities. Following the trend described earlier, the cities with the lowest rent-to-price ratios—San Francisco, Los Angeles, Honolulu—experienced the largest drops in equilibrium housing price.

Conclusion

This study simulates—for 23 metropolitan areas—the change in equilibrium housing prices due to the Obama Administration's recently-proposed tax reforms. Simulated results show that the price effects of each tax reform in isolation are substantial. If the marginal taxpayer is in the 33 percent tax bracket, higher income tax rates raise the equilibrium price by 5.4 percent; the limitation on deductibility of mortgage interest and property taxes paid decreases the equilibrium price by an average of 12.8 percent; and the increase in capital gains taxes is simulated to increase the mean equilibrium housing price by 1.8 percent. The magnitude of the price effects is larger in coastal cities with relatively low rent-to-price ratios and high income tax rates. The changes in equilibrium price levels are even more dramatic if the marginal taxpayer is assumed to be in the 35 percent bracket.

These results depend on several strong assumptions. First, these estimates assume that the supply of metropolitan housing is perfectly inelastic and that there is no supply response. As such, the estimates can be considered short- or intermediate run estimates, depending on what one believes about the supply curve for metropolitan housing. Second, these calculations assume that the rent-to-price ratio for each metropolitan market is homogeneous. Third, the calculations imply that household preference for housing is based entirely on tax characteristics, interest rates, and the (homogeneous) rent-to-price ratio in each metropolitan area. Lastly, these estimates are based on the assumption that tax changes are fully capitalized into the price of housing and that there are no effects on rent. All of these assumptions are subject to debate.

Despite these caveats, the model adapted in this paper is novel because it allows for the various tax changes to affect the equilibrium price of housing. While there have been several studies examining the effects of limiting the mortgage interest deduction or increasing income tax rates on the price of housing, capital gains and dividend tax rates are rarely—if ever—modeled as part of the housing decision.

These simulations add to a body of work that can serve to augment the criteria for evaluating tax reforms. While none of the President's proposed tax reforms are directed at changing the value of housing, it is clear that under certain assumptions, the proposals would have dramatic effects on housing prices. Any proposal that would reduce home values even more than they have currently fallen—roughly 30 percent on a national basis since October 2007—would likely put more homeowners underwater and increase the number of defaults and foreclosures, further weakening an already decimated housing sector.

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Table 1: Housing and Tax Characteristics by Metropolitan Area

Metro Area	Rent-Price Ratio	State Income Tax Rate	Local Property Tax Rate
Atlanta	0.044	6.00	1.02
Boston	0.027	5.30	0.77
Chicago	0.034	3.00	1.21
Cincinnati	0.041	6.87	1.44
Cleveland	0.048	6.87	1.84
Dallas	0.052	0.00	2.09
Denver	0.047	4.63	0.53
Detroit	0.044	3.90	1.79
Honolulu	0.020	8.25	0.25
Houston	0.056	0.00	2.21
Kansas City	0.048	6.00	1.21
Los Angeles	0.021	9.30	0.48
Miami	0.028	0.00	0.87
Milwaukee	0.035	6.75	2.13
Minneapolis	0.039	7.85	1.08
New York	0.024	6.85	0.44
Philadelphia	0.035	3.07	0.87
Pittsburgh	0.046	3.07	2.23
Portland	0.029	9.00	0.91
San Diego	0.029	9.30	0.50
San Francisco	0.023	9.30	0.50
Seattle	0.029	0.00	0.78
St. Louis	0.041	6.00	1.13

Source: Campbell et al. (2009), Tax Foundation (2009), and Tax Foundation (2010).

Table 2: Effect of Administration's Tax Proposals on the Equilibrium Price of Housing
Marginal Taxpayer is in the 33 Percent Bracket

Metro Area	Increase Top 2 Marginal Tax Rates	Limit Itemized Deductions to 28 Percent	Increase the Capital Gains and Dividend Tax Rates	All Proposals Combined
Atlanta	4.1%	-10.3%	1.4%	-6.6%
Boston	6.6%	-15.1%	2.3%	-9.6%
Chicago	5.6%	-12.5%	1.8%	-7.7%
Cincinnati	4.6%	-11.7%	1.5%	-7.7%
Cleveland	4.2%	-10.8%	1.2%	-7.1%
Dallas	4.3%	-9.1%	1.2%	-5.3%
Denver	3.5%	-8.7%	1.3%	-5.3%
Detroit	4.7%	-10.9%	1.4%	-6.9%
Honolulu	8.0%	-18.7%	3.0%	-12.5%
Houston	4.1%	-8.7%	1.1%	-5.1%
Kansas City	3.8%	-9.7%	1.2%	-6.2%
Los Angeles	7.6%	-18.5%	2.8%	-12.6%
Miami	6.9%	-13.6%	2.3%	-7.8%
Milwaukee	6.2%	-14.7%	1.7%	-10.0%
Minneapolis	4.5%	-11.8%	1.5%	-7.8%
New York	7.0%	-16.4%	2.6%	-10.7%
Philadelphia	5.1%	-11.6%	1.8%	-7.0%
Pittsburgh	4.9%	-11.1%	1.4%	-7.0%
Portland	5.9%	-15.0%	2.0%	-10.2%
San Diego	5.6%	-14.6%	2.1%	-9.8%
San Francisco	7.2%	-17.6%	2.6%	-12.0%
Seattle	6.4%	-12.7%	2.2%	-7.2%
St. Louis	4.4%	-11.0%	1.5%	-7.1%
Minimum	3.5%	-8.7%	1.1%	-5.1%
Maximum	8.0%	-18.7%	3.0%	-12.6%
Mean	5.4%	-12.8%	1.8%	-8.2%
Median	5.1%	-11.8%	1.7%	-7.7%
Inland Cities	4.6%	-10.9%	1.4%	-6.9%
Coastal Cities	6.4%	-14.9%	2.3%	-9.7%

Source: Author's calculations.

Table 3: Effect of Administration's Tax Proposals on the Equilibrium Price of Housing
Marginal Taxpayer is in the 35 Percent Bracket

Metro Area	Increase Top 2 Marginal Tax Rates	Limit Itemized Deductions to 28 Percent	Increase the Capital Gains and Dividend Tax Rates	All Proposals Combined
Atlanta	6.4%	-13.8%	1.4%	-9.3%
Boston	10.5%	-19.7%	2.3%	-13.5%
Chicago	8.9%	-16.6%	1.8%	-10.9%
Cincinnati	7.3%	-15.4%	1.5%	-10.7%
Cleveland	6.6%	-14.3%	1.2%	-10.0%
Dallas	6.7%	-12.3%	1.2%	-7.7%
Denver	5.5%	-11.6%	1.3%	-7.6%
Detroit	7.3%	-14.5%	1.4%	-9.7%
Honolulu	12.8%	-24.1%	3.0%	-17.2%
Houston	6.4%	-11.8%	1.1%	-7.4%
Kansas City	6.0%	-12.9%	1.2%	-8.8%
Los Angeles	12.2%	-23.8%	2.8%	-17.3%
Miami	10.9%	-18.0%	2.3%	-11.3%
Milwaukee	9.8%	-19.3%	1.7%	-13.7%
Minneapolis	7.1%	-15.6%	1.5%	-10.9%
New York	11.2%	-21.3%	2.6%	-14.9%
Philadelphia	8.1%	-15.4%	1.8%	-10.1%
Pittsburgh	7.7%	-14.8%	1.4%	-9.9%
Portland	9.3%	-19.6%	2.0%	-14.0%
San Diego	8.9%	-19.0%	2.1%	-13.6%
San Francisco	11.4%	-22.8%	2.6%	-16.5%
Seattle	10.1%	-17.0%	2.2%	-10.5%
St. Louis	7.0%	-14.7%	1.5%	-10.0%
Minimum	5.5%	-11.6%	1.1%	-7.4%
Maximum	12.8%	-24.1%	3.0%	-17.3%
Mean	8.6%	-16.9%	1.8%	-11.5%
Median	8.1%	-15.6%	1.7%	-10.7%
Inland Cities	7.2%	-14.5%	1.4%	-9.8%
Coastal Cities	10.2%	-19.5%	2.3%	-13.5%

Source: Author's calculations.