

REFLECTIONS ON THE EXCISE TAX EFFECTS OF THE PROPERTY TAX

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INTRODUCTION

THE INCIDENCE OF THE PROPERTY TAX IS AMONG the more controversial and important issues that remain unresolved in state and local public finance. In a recent review, Fischel, Oates, and Youngman (2011) describe the understanding of the incidence of local property taxes as being in, what they describe as, a sad state. At the core of the debate — as discussed at length by Fischel (2001) and Zodrow (2001b) — is the question of whether the property tax is best viewed as a non-distortionary benefit tax (the “traditional view”) or a distortionary tax on the use of capital in the production of housing and other goods (the “capital tax view” or “new view”). This paper does not address this controversial issue as it simply assumes the validity of the capital tax view of the property tax. Instead, given this assumption, it examines one of the key implications of this view — that local differentials around the average level of property taxation in the national economy cause “excise tax effects” that are reflected in some combination of changes in local consumer prices and factor returns.

The capital tax view was developed initially by Mieszkowski (1972) as an extension of the Harberger (1962) model of national tax incidence to a multi-jurisdictional setting. It was further extended by Zodrow and Mieszkowski (1986), who derived all of the main results of the capital tax view in an explicit general equilibrium model of state and local tax incidence that included features emphasized in the literature based on the celebrated Tiebout (1956) model. These model characteristics included a wide variety of characteristics associated with local public service provision and property taxation, such as competition among local jurisdictions with endogenous tax and expenditure policies, differing individual tastes for public services, community segregation by taste for public services, and a simple form of land use zoning.

Unlike many analyses that examine the effects of the residential property tax, these derivations of the capital tax view take into account the facts that the property tax applies to both residential and

nonresidential property and is used by virtually all jurisdictions in the country. Within a general equilibrium context that abstracts from any potential effects of the property tax on saving and capital accumulation by assuming that the national capital stock is fixed, the capital tax view implies that the incidence of the property tax has two elements: (1) a profits tax component that reflects the average rate of property taxation in the nation and is borne by all capital owners as a reduction in the after-tax rate of return to capital, and (2) excise tax components that reflect variations about the average property tax rate, with above-average tax rates reflected in some combination of higher consumer prices and lower returns to labor and land, coupled with offsetting effects in relatively low-tax jurisdictions.

Much attention has been focused on the profits tax component of the incidence of the property tax under the capital tax view, especially since it implies that the tax is highly progressive; this result is in marked contrast to the traditional view of the tax as a tax on housing consumption that is a roughly proportional tax. By comparison, the excise tax effects of the property tax have received relatively little attention in the literature.¹ This does not, however, imply such effects are quantitatively unimportant. In particular, in a recent analysis of aggregate property tax burdens in the United States, Gravelle (2007) estimates excise tax effects amount to 30-40 percent of the total burden of the property tax. Using the data set consisting of effective property tax rates for 49 states and DC, she measures the excise tax effects as the weighted average of deviations from the national average effective property tax rate.

MODELING THE EXCISE TAX EFFECTS OF THE PROPERTY TAX

In his seminal contribution, Mieszkowski (1972) suggests the excise tax effects of a general property tax imposed on all uses of capital will primarily be reflected in higher consumer prices. Assuming perfect capital mobility, he argues that changes in

wages will be relatively small, as labor is partially mobile and the demand for labor will increase since it can be substituted for taxed capital. He also notes that although changes in land values are likely to be substantial from the perspective of land owners, they cannot be large in the aggregate due to the relatively low share of land rents in total costs. Accordingly, Mieszkowski predicts that commodity prices will rise so that at least 75 percent of the excise tax effects of the property tax will fall on consumers.

This is roughly consistent with the traditional view of the incidence of the tax that argues from a partial equilibrium perspective that the property tax is fully shifted forward into housing prices and the prices of nonhousing goods (Zodrow, 2001a; Wildasin, 1986). Specifically, Wildasin (1986) shows that the full forward shifting result obtains exactly within the context of a model in which capital is perfectly mobile and labor and land are both immobile, if the demand elasticity for the taxed good equals the elasticity of substitution in production between capital and the fixed factor. In this case, the reduction in demand for the immobile factor due to tax-induced commodity price increases, and the associated reductions in output demands, is precisely offset by increases in demand for the immobile factor due to substitution away from the taxed mobile factor; these offsetting effects leave the price of the immobile factor unchanged, resulting in full forward shifting of the property tax. In addition, an early empirical analysis by Wassmer (1993) also supports Mieszkowski's prediction. His results suggest that 87 percent of the excise tax effects of a general property tax are shifted forward as higher prices for housing and other goods. Note that much of the discussion of the distributional effects of the property tax has, at least implicitly, been based on such results. For example, Youngman (2002) and Fisher (2009b) note that much of the concern about the regressivity of the property tax is based on the assumption that the residential portion of the tax, and perhaps much of the nonresidential portion as well, is shifted forward in the form of higher consumer prices, implying the tax is regressive, at least when measured with respect to annual income.

In contrast to the analyses of the effects of the property tax under the capital tax view cited above, many studies of the excise tax effects of the tax assume that it is imposed on the use of capital and land in a single sector. These studies also typically examine property tax incidence from a long-run

perspective, as they assume land is flexible across uses in different sectors and labor (if considered at all) is perfectly mobile across jurisdictions (although often fixed in total supply). Production in these models typically involves only two factors. We begin by discussing several of these studies.

Studies that Assume Property Taxation in a Single Production Sector

Sullivan (1984), for example, develops a general equilibrium regional model with a fixed capital stock and explores the long-run efficiency and distributional consequences of replacing an existing land tax with an "industrial property tax" that exempts housing. Specifically, his model has three production sectors (an industrial tradable good, residential housing, and agriculture) competing for the use of land, which is rented out to the highest bidder by absentee landlords. Sullivan thus effectively assumes land is perfectly mobile across alternative uses in the taxing jurisdiction (although fixed in total supply), and he also assumes labor, while fixed in total supply, is perfectly mobile within and between cities. Housing is produced with only capital and land while the agricultural sector, which is not subject to the property tax, is represented by an exogenous bid function for the use of land. In one central case, Sullivan analyzes a closed regional economy that is comprised of three identical cities. He finds that household welfare declines in the taxing jurisdiction due to increases in housing prices and decreases in wages, but he does not consider the division of burden between consumers and labor. The welfare of landowners, however, increases as the property tax, which is only partially borne by land, is substituted for a land tax, which is borne entirely by land. This tax substitution generates an excess burden of nearly 5 percent of property tax revenues in the model.

The analysis by Sullivan is somewhat unusual among models in which the property tax is imposed on a single production sector in that it exempts housing from tax. By comparison, most other studies consider the incidence of a property tax that is imposed only on residential housing; these include the analyses of Hobson (1986), Lin (1986), Brueckner (1981), Leroy (1976), and Arnott and Mackinnon (1977). For example, Hobson (1986) constructs a model of a residential property tax in which household income is exogenous and land is owned by absentee landlords. He assumes that households are perfectly mobile, so that the excise

tax effects associated with local property tax differentials are fully capitalized into land rents. The distribution of the burden of the average rate of tax across communities depends on what assumption is made regarding the supply of land. If land is fixed in total supply, capital bears the average rate of tax across communities, and differentials around this average rate of taxation are borne by land. However, if the supply of land is variable, the tax burden is borne by capital, land, and housing consumers. The extent of forward shifting is lessened the greater the elasticity of housing demand is relative to the elasticity of substitution between capital and land in housing production. In addition, capital bears more (less) than the average rate of tax if the housing demand elasticity is greater (smaller) than the substitution elasticity.

Lin (1986) constructs a two-sector long-run model of residential property tax incidence in which individuals are perfectly mobile. In this case, the imposition of the tax results in higher housing prices and lower land prices in the taxing jurisdiction, but somewhat unexpectedly also results in higher wages. The latter result occurs because the increase in the residential property tax causes owners to shift land use from housing to the untaxed nonhousing sector. This reduces the labor-land ratio and enhances the marginal productivity of labor in the nonhousing sector, resulting in higher wages and lower land rents. Lin shows that, as the number of communities increases, the assumption of perfect mobility of residents implies that changes in the wage rate and land rent will be small, and that, as long as the income-compensated demand for housing is not perfectly inelastic, the percentage increase in the housing price is less than the percentage increase in the tax rate, implying less than full forward shifting.

Brueckner (1981) analyzes the incidence of a residential property tax using a general equilibrium model with perfect labor mobility across jurisdictions. In his model, there are two jurisdictions and two sectors (housing and wood). Wood is produced using labor and land, while housing is produced with land and wood. Land can be reallocated across sectors, but its total supply is fixed in each of the two jurisdictions. Households are perfectly mobile with a fixed utility level and must work in the jurisdiction in which they reside. The property tax is modeled as an ad valorem tax on housing services, equivalent to a uniform property tax on all housing inputs. Within this context, the imposi-

tion of the property tax in one of the jurisdictions raises housing prices in both jurisdictions. In the taxing jurisdiction, the wage increases (as in the Lin model) and land rents decrease, while opposite results occur in the non-taxing jurisdiction as the increase in the property tax rate drives labor to the non-taxing jurisdiction. In addition, land in the taxing jurisdiction is shifted from housing to wood production. The reduced supply of labor, combined with an increased amount of land used in the wood sector, raises the marginal productivity of labor and lowers the marginal productivity of land in the wood production in the taxing jurisdiction. Similar arguments apply for the non-taxing jurisdiction.

Leroy (1976) analyzes the incidence of a residential property tax in a model with two goods (rental housing and nonhousing goods) with housing produced from capital and land that are subject to a uniform property tax. The effects of the property tax on land rents depend on the elasticity of substitution between land and capital. If this elasticity is equal to one, land rents are unaffected by the tax, and the burden of the property tax is borne entirely by tenants as the tax is fully shifted forward. If the elasticity of substitution between capital and land is smaller than one, an increase in the property tax leads to a decrease in the demand for land. On the other hand, if the elasticity is greater than one, an increase in the property tax leads to an increase in land demand. In addition, Leroy shows that the tax-induced increase in housing prices increases with increases in the financial intensity of capital (the share of gross capital costs in total costs) in housing.

Arnott and Mackinnon (1977) developed a spatial model of the incidence of a residential property tax in a city facing a perfectly elastic supply of capital and a perfectly elastic supply of land, modeled as an agricultural sector with a fixed land price and a flexible urban/agricultural land border. These assumptions insure renters bear the full burden of the capital and land portions of the property tax.

However, the focus of these papers on the effects of the imposition of the property tax on a single sector may be misplaced since, as stressed in the derivations of the capital tax view, a central feature of the property tax is that it applies to both residential and nonresidential (or business) properties, typically at the same rate. Thus, the excise tax effects of the property tax should be examined in a model that applies the tax to both residential and nonresidential property. This is especially impor-

tant since the characteristics of the two sectors are typically quite different, as residential housing is a highly capital intensive nontradable good with a price that is locally determined, while the nonresidential sector is likely to be more labor intensive and to produce tradable goods that face much more national or international price competition—indeed, this sector may be most accurately characterized as facing a nationally or internationally determined fixed price. We turn next to two studies that follow this approach.

Studies that Consider Uniform Property Taxation using a Multi-Sector Approach

In an early contribution, Wilson (1984) considers a general property tax imposed on capital and land in both tradable and nontradable sectors, with both sectors employing capital, labor, and land. His analysis takes a long-run, general equilibrium view of property tax incidence, as labor is perfectly mobile between regions but is fixed in total supply, and land is fixed in supply in each region but is perfectly mobile between production sectors. Capital is also mobile between jurisdictions and fixed in total supply. Wilson focuses on the excise tax effects of the property tax on the prices of the nontradable good in the presence of perfectly mobile households that are heterogeneous in non-wage income. He shows, within this context, the elasticity of demand for the nontradable good is infinite, as households with different incomes can migrate costlessly between regions in response to any difference in non-traded good prices until this difference is eliminated. The property tax thus does not give rise to a differential in the prices of nontradable goods across the two jurisdictions; that is, perfect mobility of labor across jurisdictions implies the absence of excise tax effects in the form of higher prices for nontradable goods. Although Wilson does not address incidence issues directly, presumably land bears all or most of the burden of the property tax in his model.

Note, however, that even a two-sector approach will miss two essential features of the property tax as it is applied in the United States. First, as shown in the two-sector model constructed by Muthitacharoen and Zodrow (2008), the excise tax effects of the property tax differ significantly depending on whether the nontradable goods sector is relatively capital intensive (e.g., residential housing) or relatively labor intensive (e.g., services). In the latter case, the results regarding the incidence

of the property tax — such as lower prices in the nontradable goods sector — can be counterintuitive. Second, agricultural property, especially land, is typically taxed very lightly, implying the need to include a relatively low-tax or tax-exempt sector in the model.

Muthitacharoen and Zodrow (2012) address these concerns by analyzing the excise tax effects of the property tax in the context of a small, open economy model with four production sectors and three factors of production (capital, labor, and land) in each sector. The property tax is assumed to apply to both capital and land used in the production of housing and two of the nonhousing goods, broadly defined as manufacturing and services, while the fourth production sector, agriculture, is assumed to be exempt from property taxation.² The goods produced in the housing and services production sectors are assumed to be nontradable with prices that are determined locally. In the other two sectors, manufacturing and agriculture, the goods are assumed to be tradable, with prices that are determined in national or international markets and are thus fixed from the perspective of the taxing jurisdiction. Note that this setting draws on some recent studies of the incidence of the corporate income tax in the international taxation literature, which has shown that a many-sector, many-factor approach provides important insights into tax incidence analysis that are not captured in the standard two-sector, two-factor model, especially when some goods are tradable while others are not (Gravelle and Smetters, 2006; Harberger, 2008).

Muthitacharoen and Zodrow show that, within an intermediate-run time frame in which land supplies are fixed in each sector and labor is mobile across production sectors but fixed within the taxing jurisdiction, the excise tax effects of the property tax fall primarily on labor and land; for example, in their benchmark case, 64 percent of the tax burden borne by local residents is concentrated on the sources side of incidence, and over 75 percent of this is due to a decline in labor income. This result — which differs markedly from the results of full forward shifting discussed above — obtains because the reallocation of labor across sectors in response to the tax puts downward pressure on wages in all production sectors and therefore mitigates the forward shifting of the tax burden in the two nontradable sectors. In addition, a small portion of the tax burden is exported to other jurisdictions through declines in net rents

earned by non-resident owners of land used in the nonresidential production sectors.

Muthitacharoen and Zodrow (2012) also show that assumptions regarding labor mobility play the key role in determining the burden of the excise effects of the property tax. They illustrate that the result typical of the traditional view in which the excise effects of the tax are primarily reflected in higher consumer prices can also be obtained in their model if it is modified to include completely immobile labor. Thus, adding partial labor mobility to their four-sector model in the form of intersectoral labor mobility (with a fixed aggregate supply of labor) is sufficient to eliminate the full forward shifting (and indeed over-shifting) into consumer prices of the tax that occurs with immobile labor.³ Indeed, the assumption of partial mobility of labor results in most of the tax burden being borne on the sources side, primarily by labor. Finally, when labor mobility is complete rather than partial — that is, when it is expanded to include interjurisdictional mobility so that backward shifting to labor is impossible — the extent of forward shifting to consumers increases substantially, with about three-quarters of the total tax burden that is borne by local residents falling on consumers of housing and services.

CONCLUSION

The capital tax view of the property tax concludes that the incidence of the property tax can be divided into two main components — 1) the profits tax effect, which implies that, to a first approximation, capital on average bears the full burden of the property tax, and 2) excise tax effects, which imply that property taxes that are high relative to the national average are borne by local consumers or local owners of production factors, with offsetting effects in jurisdictions with relatively low property taxes. In this paper, we assume the validity of the capital tax view and examine the literature on the excise tax component of the property tax.

Most studies on these excise tax effects focus exclusively on the effects of the imposition of the property tax within a single sector, typically residential housing or, in some cases, an industrial sector. However, as emphasized in the derivations of the capital tax view, a central feature of the property tax is that it applies to both residential and nonresidential properties (although agriculture is a common exception), typically at the same rate.

This implies that, as in the case of the average or profits tax component of the burden of the property tax, the excise tax effects of the tax should be examined in a setting that applies the property tax uniformly to all production sectors (other than agriculture). This is especially important as the characteristics of the two sectors with respect to the capital intensity of production and tradability of the final product are typically quite different. Wilson (1984) and Muthitacharoen and Zodrow (2012) both consider a general property tax that applies to capital and land in both residential and nonresidential sectors. Although the two papers are quite different in focus and in their model structures, both find that the forward shifting component of the excise tax effects of the property tax can be much less important than suggested by Mieszkowski (1972) and the traditional view of the property tax. More generally, assumptions regarding labor mobility play the central role in determining the burden of the excise tax effects of the property tax, which can vary from virtually full backward shifting to labor and land to over-shifting to consumers.

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Notes

- ¹ See Fisher (2009a) for a recent review of the effects of the property tax that discusses these excise tax effects at some length.
- ² Although this assumption is only an approximation, it is nevertheless fairly realistic as agricultural property typically benefits from very generous treatment under the property tax in the United States. These benefits include the valuation of agricultural property according to its current actual use, which is typically much lower than its market value, assigning a lower assessment ratio for agricultural property, and providing various tax credits or exemptions to qualified farmers (National Conference of State Legislatures, 2002).

³ With labor completely immobile, an increase in the property tax raises aggregate labor income as the wage losses experienced by labor in the taxed tradable goods sector are completely offset by gains to labor in the nontradable goods sectors. Although housing land rents decline, the aggregate change on the sources side remains positive. The increases in the prices of nontradable goods thus imply over-shifting of the tax burden to consumers.

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