INCOME TAX DISTORTIONS AND TAX ARBITRAGE

KADIR NAGAC

Assistant Professsor of Economics, Zirve University, Turkey

Abstract - We present a simple static labor supply model with endogenous asset choice. Then, we examine how tax avoidance through asset trading affects the labor supply response and the excess burden of income tax. Furthermore, we discuss the implications of the tax policy analysis and show that a failure to account for avoidance responses may lead to errors when estimating how tax reform affects labor supply and the welfare cost of taxation. Because of tax avoidance through tax arbitrage, the progressivity of a given tax system will be less than what the formal tax system implies.

I. INTRODUCTION

How labor supply responds to taxation is one of the most intensively researched issues in public finance literature. A large number of studies have explored various dimensions of labor supply choice, and how tax reform affects hours supply. Efficiency loss caused by the distortionary tax has also been the interest of economists. In standard models the efficiency cost of taxation is entirely due to the fact that, because of the change in relative prices, individuals are induced to select socially suboptimal consumption baskets -- to substitute away from relatively highly-taxed goods to relatively lightly-taxed goods, such as leisure. A standard exercise in optimal taxation theory is to describe the tax system that minimizes these costs, or to describe the tradeoff between these costs and the distribution of welfare in the society. However, when tax avoidance is an option, labor supply predictions and efficiency cost of tax might be different than traditional analyses. Unlike previous studies I assume that taxpayers supply labor while exploiting the opportunity for tax avoidance. This paper intends to analyze how big is the labor supply distortion of an income tax compared to standard models in an environment where individuals decide how much to work and how much to avoid.

It is reasonable to talk about two distinct behavioral effects of a tax. First, real substitution responses: tax law changes relative price of different activities and that induces tax payers to respond by choosing a different consumption basket. Second, avoidance: efforts to reduce one's tax liability without altering one's consumption basket. In traditional labor economics literature only real substitution effect is considered in labor supply estimations and labor supply distortions of a tax. In this paper consider both real substitution effects of a tax and individuals tax avoidance efforts to estimate the excess burden of income tax when the only income source is labor income. There are some ways of introducing tax avoidance in the basic labor supply model. Recent interesting theoretical papers include Mayshar (1991), Feldstein (1999) andSlemrod (1998). Feldstein considers the case when tax avoidance takes the form ofconsumption of goods that are tax-favored either through deductions or exclusions, and adds these categories to a utility function that also includes leisure and non-favored consumption. Feldstein looks at the deadweight loss of the income tax. By using TAXSIM[1] model he estimates deadweight loss of 10 times more than Harberger's classic 1964 estimate. He claims that the relatively low estimated elasticity of labor supply leads this conclusion. Mayshar and Slemrod stick to the basic, two-good labor supply model, but introduce a general tax avoidance technology, intended to reflect a richer but unspecified structural model. In Slemrod's(1998) model for example, individuals can reduce their tax liabilities by involving tax avoidance activities at some cost. He looks at the comparative statistics and compares the labor supply elasticity in standard models with that of avoidance model for some specified avoidance cost functions. Slemrod and Yitzhaki (1999) looks at the tax evasion, tax avoidance and tax administration issues in a very broad way. They do not provide a model for tax avoidance instead they discuss the related literature in detail and present conceptual challenges to incorporate avoidance into standard theory.

This paper differs from Feldstein and Slemrod in the way that avoidance incorporated into the model. I assume that individuals can reduce their tax liabilities by involving in asset trading. In other words in my model individuals can buy and sell tax-favored assets and normal assets.

Model

In this section a tax avoidance model is presented with two risky assets and endogenous labor supply. Consider an individual with an hourly wage rate *w,* labor supply l, and a timeendowment of *z* hours. The utility function is, $u(c, z-l)$, quasi-concave, and twicecontinuously differentiable. The government imposes an income tax schedule *T*(*B*),where *B* is

[1] TAXIM is a tax simulation model developed by NBER.

taxable income. The only thing that distinguishes my set-up from the standard, static labor supply model is that agents can buy and sell assets with different tax status. More specifically, I assume that an individual has some wealth *W*, which is to be allocated betweena tax-exempt (denoted *X*) and a fully taxable asset (denoted *D*). so , $W = X + D$. There is a constraint on short sales of the tax-exempt asset, implying that $X \geq 0$, but people may go short in the taxable asset. This condition guarantees that agents can't take advantage of arbitrage opportunity caused by different asset return rates and also recognizes the fact that low-income individuals generally face a credit constraint. I assume that tax exempt asset, X, yields r^h with probability of p and r^l with probability of (1-p). Taxed asset yields d with no uncertainty. With this assumption tax exempt and taxed assets are no longer perfect substitutes. In other words individuals do not trade assets only by looking at their relative return, they also take the risk they bear into account while making their portfolio. Labor supply has a crucial role in determining the welfare cost of tax. When individuals jointly decide how much to work and how much to avoid at the same time, welfare cost of tax will be different than what standard models estimate. With endogenous labor supply optimization problem becomes;

$$\underset{X,l}{Max}\, EU \quad \text{s.t. } X \geq 0$$

$$EU = pU[r^h X + wl + (W - X)d - T(wl + (W - X)d), l] + (1-p)U[r^l X + wl + (W - X)d - T(wl + (W - X)d), l]$$

Now taxable income is $B = wl + (W - X)d$.

First order conditions are:

l:

$$w(1 - T'(B)) = -\frac{pU_2(c^h, l) + (1-p)U_2(c^l, l)}{pU_1(c^h, l) + (1-p)U_1(c^l, l)} \tag{1}$$

X:

$$\frac{U_1(c^l, l)}{U_1(c^h, l)} = -\frac{p[r^h - d(1 - T'(B))]}{(1-p)[r^l - d(1 - T'(B))]}$$

if X>0 (2)

$$\frac{U_1(c^l, l)}{U_1(c^h, l)} > -\frac{p[r^h - d(1 - T'(B))]}{(1-p)[r^l - d(1 - T'(B))]}$$

if X=0 (3)

Where

$$c^h = r^h X + wl + (W - X)d - T(wl + (W - X)d)$$

$$c^l = r^l X + wl + (W - X)d - T(wl + (W - X)d)$$

$U_1(c^h, l)$ is the first derivative of utility function with respect to consumption. $U_2(c^h, l)$ is the first derivative of utility function with respect to labor. Labor supply decision is not independent of tax avoidance. Labor supply and tax avoidance are determined by solving first order conditions simultaneously. Equation (2) implies that avoidance decision(buying positive amount of X) depends not only on tax function and other parameters but also on preferences.

Equations (3) determines whether people choose to avoid or not(i.e X>0 or X=0) . Equation (4) is obtained from equation (3) for X=0.

$$pr^h + (1-p)r^l > d(1 - T'(wl + Wd)) \tag{4}$$

This condition guarantees interior solution. That is; expected return on tax exempt asset, X, is greater than the effective(after tax) return on taxed asset. To see the effect of an increase in W on avoidance decision, we need to see how marginal tax, $T'(.)$, is effected by W. As W increase, asset income, Wd, increases and labor income, wl, decreases because of income effect on labor. Thus we can not directly see how $T'(.)$ changes as W changes. However if we think asset income and labor income together as taxable income, $B = wl + Wd$, it is easy to see that as taxable income, B, increases people are more likely to become avoider.[2]

Lets define V^{tax} as indirect utility function obtained in equilibrium with tax. In order to find the welfare loss caused by taxation, equivalent variation of tax is solution to the following problem.

$$V^{tax} = \underset{X,l}{Max}\; pU[r^h X + wl + (W - X)d - EV, l] + (1-p)U[r^l X + wl + (W - X)d - EV, l] \tag{5}$$

Equation (13) is the maximization problem in no-tax equilibrium. Note that both labor supply and asset choice are endogenous in the maximization problem in (5).

However, a standard model that treats asset choice as exogenous would find the equivalent variation as follows.

$$V^{tax} = \underset{l}{Max}\; pU[r^h \bar{X} + wl + (W - \bar{X})d - EV', l] + (1-p)U[r^l \bar{X} + wl + (W - \bar{X})d - EV', l]$$

Again V^{tax} is indirect utility in taxation equilibrium, $\bar{X}$ is the optimal amount of tax exempt asset in taxation equilibrium. Avoidance model which treats X endogenous gives people more flexibility in no taxation equilibrium. So, intuitively it is easy to see

[2] Right hand side of equation 4 decreases with B since marginal tax increases with taxable income. Individuals with high taxable income satisfy equation 4 and avoid some tax while low taxable income individuals don't satisfy equation 4.

that $EV' < EV$. That is standard models underestimates welfare loss (equivalent variation) of income tax. This result follows from the fact that standard models do not recognize suboptimal allocation of assets.

CONCLUSION

In conclusion, this paper intends to fill a gap in the public finance literature by exploring the labor supply distortions magnitude when individuals avoid income tax. Not considering the avoidance opportunities may lead to bias in labor supply responses of an income tax. Therefore, incidence analyses and optimal tax analyses are prone to bias if avoidance opportunities affect labor supply response to taxation. In an environment where individuals simultaneously decide how much labor to supply and how much to avoid, I analyze people's avoidance and labor supply decision and efficiency loss of taxation. When there is one risky asset which is tax favored and a riskless asset wealthier people are more likely to avoid tax. Labor supply elasticity and efficiency loss of tax is different than what standard models would estimate. In avoidance model efficiency loss of taxation is greater compared to what standard model estimate which coincides what Feldstein(1999) finds. This is mainly because tax distorts not only labor supply but also portfolio choice. Since labor supply choice is jointly made with asset choice, I believe labor supply elasticity which is very crucial for calculating welfare cost of tax will also be different than what standard models would calculate. A further analyses is required to show this.

REFERENCES

[1] Auerbach, A., Slemrod, J., 1997. The economic effects of the tax reform act of 1986. Journal of Economic Literature 35, 589-632.

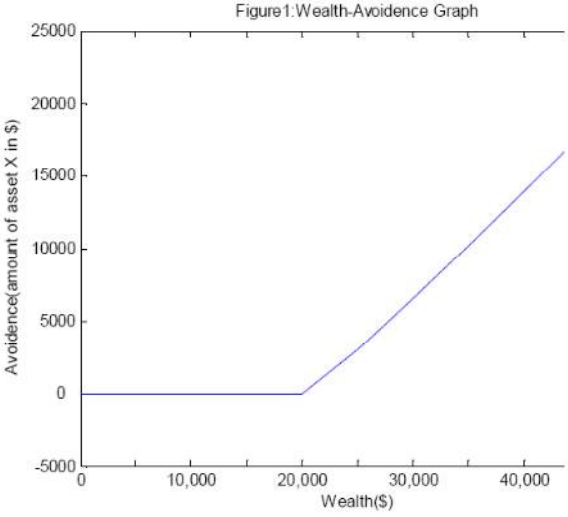
[2] Martin Feldstein, 1999, The Review of Economics and Statistics, Vol 81, No. 4

[3] Feldstein, M., 1995b. Tax avoidance and the deadweight loss of the income tax. NBER Working paper no. 5055, March.

[4] Mayshar, J., 1991. Taxation with costly administration. Scandinavian Journal of Economics 93, 75-88.

[5] Slemrod, J., 1998. A general model of the behavioral response to taxation. NBER Working Paper No. 6582.

Figure1:Wealth-Avoidence Graph



★★★