PAYROLL TAX INCIDENCE WHEN THE TAX VARIES BY JURISDICTION: THE CASE OF THE U.S. UNEMPLOYMENT INSURANCE TAX

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Abstract

Standard treatment of payroll tax incidence suggests that labor, both because of inelastic supply and because workers value the benefit financed by the tax, bears most of the tax. This note considers the special case of the U.S. unemployment insurance tax, which is a payroll tax that varies by jurisdiction (states). The model set forth in this paper allows for differing degrees of both labor mobility and substitutability between types of labor and capital. Contrary to the standard treatment, this paper predicts that some types of labor will avoid this particular type of payroll tax completely. (JEL J3, J64)

Introduction

The usual textbook treatment of payroll tax incidence is a partial-equilibrium analysis applied to a single labor market. When workers value the benefit generated by the tax, the standard incidence result [see Gruber (1997)] is:

$$\frac{dw}{w} = \frac{\eta_D - q\eta_S}{\eta_S - \eta_D}$$

(1)

where $w$ is the wage rate; $\tau$ is the tax rate; $\eta_D$ and $\eta_S$ are the relevant labor demand and supply elasticities; and $q$ is the relative value that employees place on the tax paid by the employer (where $0 < q < 1$).

The theory makes sense when the tax under consideration applies uniformly to the entire labor market, as is the case with the U.S. social security tax. In this regard, it is argued that workers who are strongly attached to the labor market likely bear much of the tax, both because the elasticity of supply is low (particularly for prime-age men) and because $q$ is likely to be high (as workers expect to collect social security benefits upon retirement).

The partial-equilibrium approach does not seem a useful framework for analysis, however, when applied to other types of U.S. payroll taxes such as the unemployment insurance tax levied on employers. This tax is anything but uniform across workers. Unemployment insurance systems are administered by the states.¹ Tax rates vary geographically with some states levying higher tax

¹ Unemployment insurance is overseen at the federal level. All employers are subject to a federal unemployment insurance tax of 6.2% on a federal taxable wage base of $7,000. Most of this, with the exception of .8%, is credited back to the states as long as the states have in place their own unemployment insurance systems meeting a variety of broad federal guidelines. All states meet these guidelines and therefore we have, in effect, a patchwork of state-run UI systems. See Levine (1997) for an excellent discussion of unemployment insurance financing in the United States.
rates than others. Unemployment insurance taxes, in contrast to the social security tax, are applied to a low taxable wage base. Unlike social security, worker mobility across state lines should be a factor in determining incidence of the unemployment insurance tax. Finally, \( q \) is likely to be much closer to 0 than to 1 in the case of unemployment insurance, as workers hope not to collect unemployment insurance benefits and many workers may not even be aware that the tax is collected on their behalf from employers.

Because the system of unemployment insurance financing as it exists in the United States does not fit the underlying assumptions of the standard, partial-equilibrium type of analysis of a payroll tax, a different approach to the question of its incidence seems warranted. The model presented below takes such an approach and shows that when different tax structures by region coupled with worker mobility are accounted for, one arrives at significantly different conclusions regarding the incidence on wages of this type of payroll tax.

The Model

Mieszkowski (1972) launched the school of thought known as the “new view” of the property tax in the public finance literature. Property taxes in the United States are levied by local jurisdictions. Tax rates and methods of property valuation vary widely across jurisdictions. In these senses, then, the property tax looks like the U.S. unemployment insurance tax. That is, the unemployment insurance tax is a tax on a factor of production for which rates and methods of determination vary across local jurisdictions (states in this case). Given these similarities, I propose a Mieszkowski type of model to analyze the payroll tax incidence of unemployment insurance.

Begin by considering some particular geographic area, proceeding, say, from an initial assumption that areas impose no payroll tax or that all areas impose the same payroll tax. Suppose that the area in question produces a homogeneous commodity, \( X \), for export to the rest of the economy. \( X \) is produced using three factors of production—capital (\( K \)), and type A and type B labor. Capital is assumed perfectly mobile, type B labor is assumed perfectly immobile, and the degree of type A labor mobility is left open. Because of the mobility assumptions, factor payment to \( K \) must be equalized throughout the economy, while payments to type A and type B labor may diverge in the area in question from what is paid elsewhere. The production function is assumed subject to constant returns to scale and it is further assumed that good \( X \) is sold in a perfectly competitive product market. The following model then characterizes the economy of the area in question:

\[
X = f(K, A, B) \\
X = g(P_X) \\
K = K(r, w_A, w_B, X) \\
A = A(r, w_A, w_B, X) \\
A^S = A^S(w_A) \\
P_XX = rK + w_A A + w_B B
\]

Production Function  
Demand for Good X  
Conditional Factor Demand Equation for K  
Conditional Factor Demand Equation for A  
Supply of Type A Labor to the area  
Price Relation for X

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2 For example, Utah had the lowest average unemployment insurance tax rate at .49 percent of taxable wages in 2002, while Pennsylvania had the highest average rate at 3.66 percent. [See U.S. Department of Labor (2005).]

3 For example, the median state taxable wage base in 2002 was $9,000 compared to average annual wages of $36,488. [See U.S. Department of Labor (2005).]