



The direct incidence of corporate income tax on wages[☆]

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ABSTRACT

A stylised model is provided to show how the direct effect of corporate income tax on wages can be identified in a bargaining framework using cross-company variation in tax liabilities, conditional on value added per employee. Using data on 55,082 companies located in nine European countries over the period 1996–2003, we estimate the long run elasticity of the wage bill with respect to taxation to be -0.093 . Evaluated at the mean, this implies that an exogenous rise of \$1 in tax would reduce the wage bill by 49 cents. Only a weak evidence of a difference for multinational companies is found.

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1. Introduction

A central issue in the distribution of tax burdens is the effective incidence of the corporation tax, which on average across the EU for example, typically accounts for around 10 per cent of tax revenue. The incidence of the tax is clearly of importance for distributional analysis of taxation, which typically simply ignores corporation tax. It is also crucial in identifying the effects of taxes on corporate profit in open economies. The standard model with mobile capital and immobile labour implies that, in a small open economy, a source-based tax on capital is wholly passed onto labour, and that welfare would be improved by shifting towards a tax directly on labour. The incidence of corporation tax has been studied for nearly 50 years in theoretical, and in Computable General Equilibrium (CGE), models.¹ Nonetheless, despite its policy relevance, until very recently it received virtually no econometric investigation.

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¹ In a 1994 survey of North American tax professionals undertaken by Slemrod (1995), 75 per cent of respondents believed that corporate income taxes are largely passed on to workers and consumers.

This paper re-examines the extent to which taxes on corporate income are passed on to workers. We make two main novel contributions. First, we model a new mechanism by which corporate taxes may be passed on in lower wages: the wage bargain.² We differentiate two aspects of the effective incidence of the tax. We identify the *direct* incidence of the tax: given the pre-tax profit of the firm, a higher tax bill will directly reduce the quasi-rent over which the workers and the company can bargain. The *indirect* incidence instead has an effect on wages through determining the level of pre-tax profit, by affecting either investment or output prices. Second, we test the size of this effect using unconsolidated firm-level accounting data for over 55,000 companies in nine major European countries over the period of 1996 to 2003. Variations in tax payments and effective tax rates arise due to both differences across countries and over time in the legal tax system, and due to firm-specific factors. We identify the *direct* effect of taxation using all of these sources of variation.

We do not attempt to estimate the *indirect* effect. The key problem with attempting to do so is that any control variables that could be included in estimating a single wage equation are themselves likely to be affected by taxation. For example, higher corporate taxes may induce lower capital investment, leading to lower labour productivity and a lower wage. So it is not possible to identify the *indirect* effect of taxation in a single wage equation that controls for labour productivity: it would also be necessary to identify how labour productivity is affected by taxation, which leads back in the direction of a general equilibrium model. On the other hand, clearly there can be other reasons for variation in labour productivity. So excluding labour productivity, or any other variables affected by taxation, from the equation would create an omitted variable bias. Because of this dichotomy, in this paper we control for other factors, and interpret the resulting effect of taxation as the *direct* effect.

The literature on the incidence of taxes on corporate income dates back to Harberger (1962), who developed a model of a closed economy with a corporate sector and a non-corporate sector, and analysed the introduction of a tax only in the corporate segment of the economy. He showed that the incidence of the tax depended on a number of factors, including the elasticities of substitution between labour and capital used in each sector, and between the goods produced in each sector. His main conclusion was that under reasonable assumptions, the tax is borne by all owners of capital, across both segments of the economy, as it drives down the post-tax return to capital. A number of more complex CGE models with a larger number of sectors generate similar results (see, for example, Shoven (1976)).

However, these results depend crucially on, among other things, the assumption of a closed economy, which restricts the supply of capital to the economy. As noted above, if capital is perfectly mobile between countries, but labour is not, then the results can be very different. Bradford (1978) and Kotlikoff and Summers (1987) showed that the introduction of a tax on corporate income in a home country tends to reduce the world rate of return to capital, and tends to shift capital from the home country to the rest of the world. This shift in capital reduces the return to labour in the home country, and increases the return to labour abroad. As the home country becomes small relative to the rest of the world, the effect on the world rate of return diminishes towards zero. There remains an exodus of capital, and the domestic labour force effectively bears the entire burden of the tax. Indeed given a deadweight loss induced by the outward shift of capital, the cost to the home country labour force can exceed the tax revenue generated. This suggests that a small open economy would be better off taxing immobile labour directly, compared to imposing a tax which distorts the allocation of capital (Gordon, 1986).

A number of recent contributions have developed more sophisticated general equilibrium models of the long-run incidence of taxes on corporate income in an open economy (Randolph, 2006; Gravelle and Smetters, 2006; and Harberger, 1995, 2006). Randolph (2006) considered a model with two countries and five sectors, with three of the sectors being taxed only in the domestic country. Of critical importance in the model are the assumptions about factor mobility, supply elasticities, and the relative capital intensities of the different sectors. Under reasonable assumptions, Randolph (2006) found that the domestic labour force and owners of domestic capital bear the tax burden roughly in proportion to their factor income shares: labour bears 73 per cent of the tax burden. Where the domestic economy is large (as for the United States), the tax also affects the foreign country by increasing wages and reducing the return to capital. Gravelle and Smetters (2006) allowed for a form of imperfect competition with the possibility that tradable goods are not perfect substitutes across countries. This effectively reduces the mobility of capital, and increases the extent to which owners of capital bear the tax burden.

Of course these models exclude several factors that may be important. In a recent survey, Auerbach (2006) noted a number of such factors including dynamics, investment incentives, corporate financial policy, choice of organisational form and alternative forms of imperfect competition. In this paper, we extend the literature by drawing on many studies of wage determination to investigate how taxes on corporate income can play a role in the wage bargain. Instead of making the simple assumptions that the aggregate stock of labour is fixed, and that labour is paid its marginal product, we investigate the wage bargain at the firm level. To do so, we introduce a tax on corporate income into the basic efficient bargaining framework of McDonald and Solow (1981), in which the firm and the labour force bargain over both wages and employment.

This generates a previously unexplored channel through which corporate taxes can affect wages. Companies operating in imperfect competition may bargain over the proportion of quasi-rents paid out in wages. We introduce into the bargain a standard tax on domestic corporate income, which is levied on profit net of wages and an allowance for capital expenditure. We refer to the impact of the tax through the wage bargain itself – conditional on value added – as a *direct* effect, which reduces the size of the quasi-rent available to bargain over. Our model specification enables us to identify this effect empirically at the level of an individual firm. We distinguish this from *indirect* effects of the tax, which can arise

² Subsequent to the earliest version of this paper, others have now followed a similar approach. See, for example, Felix and Hines (2009).

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