

Using Asset Prices to Measure the Welfare Costs of Corporate Taxes

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January 28, 2010

Abstract

This paper presents a novel measure of the marginal welfare cost of corporate income taxes using asset prices. We uncover a mechanism through which corporate income taxes amplify the responses of consumption and investment to exogenous shocks. The asset pricing measure allows us to capture the impact of corporate income taxes on both the volatility of the economy and the marginal valuation of goods in different time periods. We start from an economy characterized by higher taxes and compare the lifetime utility of a representative household in that economy with the one in an economy with marginally lower taxes. We measure the marginal welfare cost of taxes as the fraction of initial consumption forgone to return the household to the lifetime utility in the economy with higher taxes. We then relate this measure of welfare cost to the differences in the market value of two securities, which are respectively claims to the consumption streams for a representative agent in two economies with marginally different tax rates. This difference in the market value can also be considered as the normalized price of a long-lived security which represents a claim to the marginal change in consumption due to the marginal increase in the tax rate.

We find that the magnitude of the marginal welfare cost is fairly large if we set the tax rate close to the actual U.S. rate, at which the forgone consumption can be as high as 30% of the initial consumption. We show that the marginal welfare cost of corporate income taxes increases with the tax rate. The shape of the marginal cost curve is determined by three factors. The first factor is *distortion*, which is caused by inefficient allocation of resources.

This factor is present in a deterministic economy. The second factor is *insurance*. Since the amount of consumption distortion is typically procyclical, the negative correlation between the distortion and the stochastic discount factor reduces the value of the security which is the claim to the marginal change in consumption. As a result, the marginal welfare cost of corporate income taxes is reduced as well. Gordon and Wilson (1989) argue that the welfare cost of corporate taxes is overstated if this insurance mechanism is ignored. The third factor is *amplification*. In Santoro and Wei (2010), we describe a mechanism which amplifies the responses of consumption and investment to exogenous shocks in an economy with corporate income taxes. These amplified responses cause variations in the marginal value of future goods relative to the present, and affect the marginal value of distortion and the magnitude of the insurance component. The latter two factors are present in a stochastic economy.

The impact of these three factors—distortion, insurance and amplification—crucially depends upon the presence of uncertainty in the economy. We compare our stochastic economy with an economy with no uncertainty. In a deterministic economy, the upward slope of the marginal cost curve reflects different degrees of distortion to consumption at various tax rates. However, in a stochastic economy, insurance and amplification mechanism also come into play. We find that the marginal cost curve of taxes in the deterministic economy and that in the stochastic economy cross at a medium tax rate, with the marginal cost curve in a stochastic economy staying above that of a deterministic economy for medium to high tax rates. Our results indicate that as the tax rate increases, the insurance factor, which reduces the welfare cost of corporate income taxes, is dominated by the combined effects of the distortion and amplification factors.

The marginal welfare cost of corporate income taxes also depends on the frictions in preference, production and labor supply. For example, the amplification factor prevails when there exist strong habit persistence and high capital adjustment costs, thus leading to higher welfare cost of corporate income taxes.