Optimal Capital Income Taxation Under Capital-Skill Complementarity

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This paper analyses the implications of capital-skill complementarity for optimal capital taxation from the perspective of a redistributive government. To do so, we build two infinite horizon incomplete markets models which are identical except for their aggregate production functions. In both models, there are two types of workers: skilled and unskilled. The first model features a production function with capital-skill complementarity whereas the second model has a standard Cobb-Douglass production function. Under capital-skill complementarity, a decrease in the stock of aggregate capital decreases the skill premium, thereby creating indirect redistribution from the skilled agents to the unskilled ones. This creates an additional motive to tax capital in the model with complementarity. Thus, optimal capital tax rate is higher in the economy with capital-skill complementarity.

To evaluate the quantitative significance of capital-skill complementarity for optimal capital taxation, we calibrate each model separately to match the U.S. economy along selected dimensions under existing capital and labor income taxes. Then, we solve for optimal capital and labor taxes in both models. The optimal capital income tax rate is 54% in the model with capital-skill complementarity and 42% in the model without complementarity. We find that optimal labor income taxes are approximately equal in the two models at 38%.

In the baseline model, we assume that a worker’s skill type is exogenous. Currently, we are working on relaxing this assumption. We expect that the quantitative effect of capital-skill complementarity on optimal capital tax rate is going to be smaller in the case with endogenous skill choice since decreasing the skill premium by increasing capital taxes will now reduce the fraction of skilled workers, which is not desirable.


Keywords: Capital taxation, capital-skill complementarity, inequality.

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