Capital tax reform, corporate finance, and economic growth and welfare

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Abstract

Recent empirical studies have revealed a strong impact of tax changes on corporate finance. Yet, models of economic growth usually neglect financial structure of the representative firm. In order to investigate whether the consideration of firm finance modifies the estimated outcome of capital tax reforms, a corporate sector is introduced in three popular models of economic growth. The paper explores analytically the impact of taxation on structures of finance and production and gives a quantitative reassessment of growth and welfare effects of tax reforms in the U.S. economy. A general result is that standard models of exogenous and endogenous growth overestimate the growth effect and underestimate the welfare gain from tax reform.
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1. Introduction

Many empirical studies and calibration exercises find that a capital tax reform has only a small effect on the long-run growth rate of an economy. But it may have strong effects on investment—or more generally on factor allocation—and therewith on the level of the growth path and on welfare. Recent microeconometric studies have also found robust support for Modigliani and Miller's (1963) proposition that corporate taxation favors debt finance while personal taxation favors equity finance. Since financial decisions of firms are usually neglected in models of economic growth, the

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question occurs whether the consideration of corporate finance modifies the estimated investment, growth, and welfare effects of tax reforms.[1]

In order to answer this question the paper combines two strands of literature: studies on welfare effects of taxation in models of economic growth (which so far do not explicitly consider a corporate sector and the possibility of debt financing) and studies on taxation and corporate finance in general equilibrium models (which so far do not consider the calculation of welfare effects of tax reform). The introduction of a corporate sector in a general equilibrium framework is built upon work by Turnovsky (1982, 1990), Sinn (1987), and Osterberg (1989). The studies by Turnovsky and Sinn, however, are concerned with a corner solution for the debt ratio (which is one, zero, or an institutionally determined maximum value). Since this prevents a calibration of the model with actual data and thereby a quantitative assessment of growth and welfare effects, I follow Osterberg and employ a cost of leverage function that generates an endogenously explained interior solution for the debt ratio.[2]

The following section introduces a corporate sector in a dynamic general equilibrium model, which contains the special cases of exogenous growth, one-sector endogenous growth and two-sector endogenous growth. Section 3 discusses the exogenous growth model, obtains general correlations between interest rates and leverage and between leverage and the structure of production, and derives a rule for optimal dividend payouts. Section 4 calibrates the model with U.S. data and provides a quantitative assessment of welfare effects of tax reforms.[3] Parameters of the cost of leverage function are found for which the model approximates the finding of Gordon and Lee (2001): a one percentage point increase in corporate taxes raises the average firm's debt asset ratio by 0.4 percentage points. The results are compared with the ones obtained in an otherwise identical economy that neglects adjustment of corporate finance.

Sections 5 and 6 discuss the one-sector growth model (where new human capital is produced by investing goods) and the two-sector growth model (where new human capital is produced by investing time) considering explicitly a corporate sector and endogenous finance.[4] In both cases a corporate tax reform has a smaller impact on investment and long-run growth and (due to a smaller negative transitional effect) a larger impact on welfare than suggested by the corresponding standard models. Approximately, considering corporate finance reduces the growth effect and enlarges the welfare effect by between 30 and 50 percent each. With respect to private capital tax

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[1] For the empirical correlation of fiscal policy and growth see e.g. Levine and Renelt (1992), Tanzi and Zee (1997), or Mendoza et al. (1997). For quantitative results from calibration exercises see e.g. Lucas (1990) and Stokey and Rebelo (1995). Studies on the correlation between the structure of finance and taxation are provided by Rajan and Zingales (1995), Graham et al. (1998), and Gordon and Lee (2001).

[2] A similar approach of deriving an interior solution has been followed by Steigum (1983), Auerbach (1984), Chirinko (1987), and Kanniainen and Södersten (1994). See Barnea et al. (1981) for a thorough introduction of such a function as an agency costs function.

[3] Studies of welfare effects of tax reforms in the neoclassical growth model without corporate sector are inter alia provided by King and Rebelo (1990), Cooley and Hansen (1992), and Mendoza and Tesar (1998).

[4] Tax reforms in the one-sector growth model without corporate finance have been discussed inter alia by King and Rebelo (1990) and Mendoza et al. (1997). Kim (1998) also considers financial structure of firms but assumes a constant debt asset ratio, which is unaffected by tax policy. Lucas (1990), Laitner (1995) and Grüner and Heer (2000) provide welfare calculations of tax reforms in the two-sector model.