



Two-sector perspectives on the effects of payroll tax cuts and their financing

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ABSTRACT

This paper analyzes the consequences of lifting from labor some of the burden of taxation in a life-cycle two-sector setup where a consumption good is produced alongside a capital good. The analysis focuses on the implications of alternative ways of financing payroll tax cuts in closed and small-open neoclassical economies. In our models payroll tax cuts do not necessarily stimulate hours worked in the stationary state. We show, for example, that in the closed economy –paradoxically– long-run aggregate labor hours and the capital stock will be reduced if labor tax proceeds are replaced by capital taxation. If instead government purchases of the capital good (or government labor services) are decreased, manhours are left unchanged in the long-run, while capital formation is spurred. In the small-open economy it is only if the offsets are a fall in entitlement spending or a rise in the wealth tax that aggregate manhours are increased –otherwise steady state hours worked are invariant.

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1. Introduction

Payroll taxes and other fiscal weights imposed on labor are often blamed for being the most prominent factor at the root of the reduced manhours per worker and the elevated structural unemployment rates in continental Europe. This exegesis is provided and supported, among others, by Drèze and Malinvaud (1994), Daveri and Tabellini (2000), and Prescott (2004).

The effects of the labor tax wedge –the reduction of which is advocated as a policy panacea for stimulating labor hours, worker employment, and raising the level of economic activity (eventually also through an indirect effect on capital formation)– are, however, subject to disputable empirical and doctrinary interpretations. On the empirical ground, the evidence on the association between labor taxes and manhours/employment is not so strong or significant. See, for example, Nickell and Layard (1999), Nickell (2003), Blanchard (2004), Phelps and Zoega (2004), and Alesina et al. (2005).

Nickell and Layard (1999), and Nickell (2003) find that, while the role of labor taxes on employment and growth is undeniable from an empirical point of view, its magnitude is relatively small and cannot account for the high unemployment rates in western economies; social security systems and unions are identified as the major institutional factors behind the poor labor market performance of continental Europe. Blanchard (2004), by emphasizing that the labor productivity has increased much faster in Europe than in the U.S. in the last decades (although the differences in terms of output per capita have remained invariant), attributes the lower hours worked per capita in Europe to preferences that have favored leisure over income, and not to labor taxes. Phelps and Zoega (2004) show that the labor tax wedge and the unemployment rate are uncorrelated for a cross-section of countries; this is because the rise in labor taxation, in practice, has been accompanied by several offsetting effects, like the enlargement of the welfare state and/or the adjustment of social and private wealth.

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Alesina et al. (2005) argue that the differences between the U.S. and Europe in terms of manhours per capita cannot be ascribed to labor tax differentials, but rather to unions' policies and labor market regulations.

On the theoretical ground, while for textbook experiments (without complicating side-effects) the implications of labor taxes for hours worked and employment are quite intuitive, in more articulate experiments they are, instead, largely obscured by the simultaneous changes in other fiscal determinants of labor. This is because the accompanying budgetary regime –whether based on government spending or alternative distortionary taxation or deficit financing options– is not inconsequential for the macroeconomic effects of labor taxation. Several articles that have analyzed the consequences of labor taxes through intertemporal optimizing frameworks support this consideration by showing that widely different conclusions are reached according to the financing regime assumed; see, among others, Auerbach and Kotlikoff (1987), Judd (1987), Kotlikoff and Summers (1987), Turnovsky (1992), Hoon and Phelps (1996), Daveri and Tabellini (2000), Prescott (2004), Petrucci and Phelps (2005), and Van der Ploeg (2006).¹

In a model with infinite-lived agents and a neoclassical labor market, Judd (1987) finds, for example, that a rise in labor income taxes discourages labor supply and capital formation when tax revenues are lump-sum distributed to consumers.² Under government expenditure financing, instead, labor and capital are ambiguously affected by wage taxation if preferences are nonseparable in consumption and leisure (see Turnovsky, 1992). By employing a life-cycle simulation model of a closed economy, Auerbach and Kotlikoff (1987) discover that a higher tax on labor accompanied by a rise in public expenditure is detrimental for capital formation, but is steady state neutral for hours worked; such a tax shift contracts both employment and investment if the labor market is unionized –see Daveri and Tabellini (2000). In a similar demographic setting, Hoon and Phelps (1996) show that a payroll tax used to substitute a value-added tax leads to a reduction in labor and nonhuman wealth in a closed economy, while it leaves labor invariant in a small-open economy.³ According to Petrucci and Phelps (2005), a per employee labor subsidy (financed by either consumption or *ad valorem* payroll taxes) stimulates employment, but may depress physical capital and nonhuman wealth formation in a finite-lived open economy with incentive-wages.

In this paper, we investigate the consequences of lifting from labor some of the burden of taxation in nonaltruistic life-cycle two-sector economies. We focus on the effects of payroll tax cuts on manhours worked, nonhuman wealth, sectorally employed inputs, and asset and factor prices in a context where a consumption good is produced alongside a capital good, and diversified accommodating schemes for the government budget are employed. The analysis considers both closed and small-open neoclassical economies with no equilibrium unemployment, where wages adjust to equate labor supply and demand, and changes in labor are only due to variations in hours worked.

The simultaneous consideration of three analytical features renders our analysis of payroll taxes original: the two-sector production structure of the economy, the various ways of financing labor tax reductions, and the nonaltruistic OLG demographics. Regarding the first aspect, instead of considering the standard neoclassical one-sector growth model, which, although simplifying, is sometimes restrictive, we use a model of fixed investment incorporating differences in the relative labor intensiveness in the consumer and capital-good sectors, as in Uzawa (1961, 1964). In such a two-sector structure, the adjustment of the relative price of the capital good (absent in one-sector models) plays a crucial role for the transmission of labor tax shifts, their differential consequences on the various sectors of the economy, and wealth formation.

There is almost a total lack of studies that consider the consequences of taxation in a two-sector model *à la* Uzawa (1961, 1964). To the best of our knowledge, the implications of factor taxes and the question of tax incidence are studied in this type of two-sector economy only by Itaya (1991) in an infinitely-lived model with an inelastic labor supply. There are no studies that analyze labor taxation in life-cycle two-sector models with the capital and consumption-good decomposition.

As the analysis of labor taxes has generally considered simple financing schemes, a more detailed understanding of the role played by the budgetary regimes accompanying the tax shifts is required, as many offsetting effects that may arise risk annihilating the expected goals of the policy actions. The financing regimes we analyze are rather articulate as the labor tax cuts are accompanied either by shrinking the welfare state through the reductions in welfare entitlements and in government purchases of the different goods or, alternatively, by raising other distortionary taxes, like taxes on physical capital, consumption and nonhuman wealth.

Moreover, the life-cycle demographics allow us to distinguish between intra- and intergenerational consequences of the policy experiments studied and focus on the role played by nonhuman wealth for the adjustment of the macroeconomic system.

Contrary to what is perentorily asserted by the supply-siders, the general discovery of the paper is that payroll tax cuts do not necessarily stimulate hours worked in the long-run, as in Auerbach and Kotlikoff (1987), and Hoon and Phelps (1996). *A long-run labor stimulation at aggregate level strictly depends on the budgetary regime and the type of economy.* However, permanent changes in the tax rate on labor impact on aggregate manhours in the short-run, whether or not hours are asymptotically affected. In general, payroll taxes are more effective in terms of physical capital and nonhuman wealth formation than in terms of hours worked stimulation.

In the *closed economy* we show –paradoxically– that long-run aggregate labor hours and the capital stock will be reduced if labor tax proceeds are replaced by capital taxation. If instead government purchases of the capital good (or government labor services) are decreased, manhours are left unchanged in the long-run, while capital accumulation is spurred. Hours worked, nonhuman wealth and capital formation are stimulated if the payroll tax cut is offset by cuts in welfare entitlements, public spending on the consumption good or the value-added tax. In the *small-open economy* it is only if the offsets are a fall in entitlement spending or a rise in the wealth tax that aggregate manhours and the capital stock are increased –otherwise steady state hours worked are invariant, while nonhuman wealth and capital may be stimulated. In the small-open economy, payroll tax shifts imply a high short-run volatility of hours worked.

¹ These contributions employ dynamic general equilibrium setups. Analyses of labor taxation based on partial equilibrium models are provided, for example, by Pissarides (1998) and Layard et al. (2005).

² Adverse effects of the labor tax wedge on the factors of production and output are obtained by Prescott (2004) in the same type of setup.

³ The Hoon and Phelps (1996) results are independent of the labor market structure as they hold in a competitive-wage model and a labor-turnover model of the 'natural rate'.

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