section 5 considers further extensions of the analysis and section 6 concludes.

2. The model

The economy is represented as a standard general equilibrium model with perfect competition. Two traded goods are produced using capital and two different types of labour.

Consumers have identical tastes and own the same quantity of capital. They are endowed with just one of the two types of labour required in production. Hence they can be divided into two homogeneous categories according to the type of labour they offer. The indirect utility function for consumers of type i is

$$V\left(\pi^1, \pi^2, \omega^i, I\right) \tag{2.1}$$

where π^j is the consumer price of good j, ω^i is the consumer wage for labour of type i, and I is lump-sum income, i.e.

$$I = (1+\rho)\,\overline{K} + b \tag{2.2}$$

where ρ is the consumer interest rate, $\overline{K}$ is the capital endowment and b is a lump-sum tax or subsidy. The population is normalised to 1 and n denotes the fraction of consumers of type 1.

As regards production, I assume constant returns to scale and rule out joint production. In order to maintain mathematical tractability and to avoid complications that are of secondary importance, I also assume that each type of labour is a sector-specific input, so that the same superscript denotes both a productive sector and the type of consumer supplying labour in that sector (hence $i = 1, 2$). Further, I adopt the non-restrictive convention that the producer wage is higher in sector 1 and refer to labour of type 1 as *skilled* labour.

The government implements a social welfare functional,

$$W\left(nV\left(\pi^1,\pi^2,\omega^1,I\right),(1-n)\,V\left(\pi^1,\pi^2,\omega^2,I\right)\right), \tag{2.3}$$

through the uniform lump-sum transfer b and through taxes on both commodities and income from productive factors.

Labour is internationally immobile. A tax on labour income inserts a wedge between consumer and producer wages. Using Latin letters to denote producer prices:

$$\omega^i = w^i\left(1-t_L\right) \tag{2.4}$$

where t_L is the ad-valorem tax on labour income.

Capital is perfectly mobile across countries. Capital income is taxed in the country where it originates according to the *source* principle. A source-based tax, t_S, creates a wedge between the rental rate of capital paid by domestic producers, r, and the world interest rate, r^*:

$$r = r^* + t_S. \tag{2.5}$$

Traded goods are taxed where they are produced according to the *origin* principle. An origin-based tax, t_O^i, imposes a wedge between the world price for good i, p^{i*}, and the producer price:

$$p^i = p^{i*} - t_O^i. \tag{2.6}$$

The model can easily accommodate *destination*-based commodity taxes, which are paid where a good is actually sold. A destination-based tax, t_D^j, raises the consumer price above the world price:

$$\pi^i = p^{i*} + t_D^i. \tag{2.7}$$

By contrast, the static framework does not allow to analyse taxes on capital income levied in the country where the recipient is located according to the *residence* principle. A residence-based tax, t_R, results in a wedge between the world interest rate and the return on capital received by domestic consumers:

$$\rho = r^* - t_R. \tag{2.8}$$

Given that consumers supply capital inelastically, a residence-based tax on capital income is equivalent to lump-sum taxation. In section 5 I show that the model can readily be extended to generate an elastic savings supply and that all the results hold when both optimal residence-based capital taxes and destination-based commodity taxes are levied.

A final remark is needed to justify the absence of personalised lump-sum taxes. It is usually argued that such taxes are infeasible since the government can directly observe neither the individual wage nor the labour supply, but only labour income. However, when all the workers of a specific type work in just one sector, optimal lump-sum taxes can be implemented without knowing the individual type of worker by taxing skills at the firm level with differentiated wage-bill taxes. Hence, in order to sustain the infeasibility of differential lump-sum taxation in the present model, I must introduce the additional assumptions that the government cannot observe the sector in which each individual works and that it cannot levy differentiated taxes on labour at the firm level. These assumptions are clearly unrealistic but they are not restrictive since all the results of the paper carry over to the more general case in which each sector uses both types of labour, as illustrated in section 5. An additional remark may further clarify the informational structure of the model. The optimal tax formulas derived in the paper assume knowledge of wage levels and elasticities, but only require *anonymous* information on the wage distribution at the *firm level*. Such information is not sufficient, however, to implement optimal lump-sum taxation since personalised lump-sum taxes can be levied only on the basis of the wage distribution at the *individual level*.

3. Optimal linear taxation of labour

From (2.5) it is apparent that an increase in source-based taxes translates into an identical increase in the producer interest rate, while leaving the consumer interest rate unaffected. As a result, source-based taxes cannot redistribute income by exploiting differences in consumers' saving behaviour as, for example in Haufler (1997) and Lopez et al. (1996). Nonetheless, the change in the producer interest rate modifies the demand for labour and induces a variation in equilibrium wage levels. Given constant returns to scale and no-joint production, the final effect on wages can be retrieved from the equilibrium conditions in production. The zero profit conditions for the two sectors are

$$c^1(w^1, r) = p^1 \tag{3.1}$$

$$c^2\left(w^2, r\right) = p^2 \tag{3.2}$$

where c^i represents the unit cost function. In the absence of commodity taxes, producer prices, p^i, are equal to the given world price levels, so that equilibrium wages are functions of the producer interest rate only. Implicit differentiation and application of Shephard's lemma entail