

CAPITAL INCOME TAXATION, LABOUR SUPPLY

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by

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ABSTRACT

Although it is well-known that, in life cycle models of consumption and labour supply, capital income taxation affects the labour supply through the normal income effect, this interaction between capital income taxation and labour market behaviour is usually confined to the voluntary savings of consumers who wish to smooth the pattern of consumption through their lifetime. We show in this paper that the interaction may be widespread. Three channels through which capital income taxation may affect labour market behaviour are identified: first, capital income taxes may alter the lifetime labour supply when workers are constrained on hours of work; second, they may affect labour supply in the case where consumers target a certain level of lifetime consumption; finally, they may influence work effort in an efficiency wage model.

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I. INTRODUCTION

The ongoing debate on income tax reform is to a certain extent a debate on the economic effects of factor-specific taxes because income tax reform proposals involve a shift in the relative taxation of capital and labour income. Some proposals, such as the consumption-base flat tax developed by Hall and Rabushka for the US and its versions for Canada proposed by Grubel (1985) and Fortin (1995), involve a shift in factor taxation from capital income to labour income.¹ At the other end of the spectrum, proposals for a move to a comprehensive income base, such as that of Ruggeri and Vincent (1998), involve a reduction in the burden of taxation on labour income through across the board tax rate cuts financed largely by the elimination of tax preferences for that component of capital income which is currently tax-sheltered. The efficiency implications of the various tax reform proposals depend crucially on the response of those two factors to the changes in their relative levels of taxation.

Factor-specific taxes are usually assumed to affect directly only the factors to which they are applied. Although it is well-known that, in lifetime models of consumer behaviour, capital income taxation affects the labour supply by altering the magnitude of the income effect, this interaction is usually confined to the voluntary savings of consumers who wish to smooth the pattern of consumption through their lifetime. We show in this paper that the interaction between capital income taxation and labour market behaviour may be widespread and may have important policy implications. Three additional channels through which capital income taxation may affect labour market decisions are identified and analysed. First, capital income taxes may alter the lifetime labour supply when workers are constrained with respect to the hours of work while employed.

Second, they may affect the lifetime labour supply in the case where individuals target a certain standard of living in terms of lifetime consumption rather than maximizing lifetime utility. Finally, they influence work effort as modelled in an efficiency-wage model. It is shown that these interactions between capital income taxation and labour market responses tend to reduce the potential distortions from capital income taxation because increases in the taxation of capital income stimulate the labour supply or work effort at the same time as they reduce incentives to save.

This paper is organized as follows. The implications of constraints on hours of work are analysed in section II. The case of lifetime consumption targets is evaluated in section III. The interaction between capital income taxation and work effort is discussed in section IV. Section V identifies the major policy implications and section VI provides some concluding comments.

II. LABOUR SUPPLY WITH AND WITHOUT HOURS CONSTRAINTS

In this section we use a simple dynamic model of the labour supply to determine whether and how the labour supply is affected by the inability of workers to reduce hours of work in response to an increase in wage taxes and capital income taxes. In the text we use a simple graphic approach in order to highlight the implications of constraints on hours of work and of lifetime consumption targets. A more formal setup of the model is found in the appendix. We assume that the agent receives only employment income and that he tries to maximize lifetime utility. In one case, he can adjust hours of work in each period in response to changes in the after-tax real wage rate. In the other case, the hours of work are fixed in each period of employment, but he can adjust the lifetime number of hours of work by altering the time of exit from the labour force. We also assume that the

agent does not make any voluntary savings. This assumption simplifies the analysis without altering the main results. If voluntary savings are included in the cases with and without hours constraints, their income effects will be equal in magnitude and will cancel out when the two cases are compared. Finally, we assume that the government spends tax revenue to finance exhaustive expenditures which have no effect on private utility, labour supply or work effort.²

A. Without Hours Constraints

Figure 1 shows the worker's income-leisure decision in the first and last period of his working life. In panel (a), the line AB describes the budget line in the initial period before the introduction of taxation. The worker maximizes utility by working AL_0 hours and enjoying OL_0 hours of leisure. When the government introduces a wage tax at the rate $BC \setminus B_0$, the budget line rotates to AC and utility maximization would induce the worker to reallocate $L_1 L_0$ hours from work to leisure with a new equilibrium position N. Since the wage tax does not affect the relative price of present and future consumption, the adjustment to hours of work depicted in panel (a) will be reproduced in each period of the worker's employed life and his lifetime labour supply will be reduced accordingly.

We now add a tax on savings. This tax reduces the rate at which future consumption is discounted, thus altering the time profile of consumption over a worker's lifetime of employment, but does not alter the relative price of leisure and work. In this case, capital income taxation does not interact with the taxation of labour income by altering the latter's effect on labour supply.³ One tax influences the intertemporal decision between present and future consumption while the other tax affects the temporal decision between work and leisure. This conclusion does not hold when workers are

constrained with respect to the hours of work in each period of employment and can only change the lifetime hours of work by adjusting their time of exit from the labour force.

B. With Hours Constraints

The first working period with hours constraints is depicted in panel (a) of Figure 1. In response to the imposition of the wage tax $BC \setminus B_0$, the worker can no longer move from equilibrium position M to equilibrium position N , but is forced to move from point M to point P with OL_0 hours of leisure and OY_0 amount of income, which now becomes a corner solution. The worker would like to reduce hours of work by L_1L_0 ; instead, he is forced to give up that desired leisure and is compensated at the after-tax wage rate yielding additional income of Y_0Y_1 . What the institutional constraint on hours of work has done is to take a non-taxable amount of leisure and monetized it thus transforming it into taxable income. This institutional constraint has effectively made the marginal amount of leisure L_1L_0 subject to taxation thus creating a level playing field for work and leisure at the margin. This constraint, however, has not altered the relative price of work and leisure, therefore, it has postponed but not eliminated the worker's acquisition of additional leisure. In the last period of employment, the worker can bypass this constraint by using the additional income from the extra hours of work in order to purchase extra leisure.

The situation where the constraint applies only to the first period is depicted in panel (b) of Figure 1. In this period the worker's budget line is represented by the line ADE . This line has the same slope as AC in panel (a) because the after-tax wage rate remains unchanged, but the worker now has non-labour income of $AD = Y_0Y_1$, i.e. the compensation for the unwanted reduction in leisure in the

first period. Since the hours constraint does not alter either the relative price of leisure and work or the relative price of present versus future consumption, the amount of income AD will be used to restore the desired balance between work and leisure over the worker's lifetime. In the absence of constraints, the agent would have worked AL_1 hours in each period and received income of OY_1 in both periods. Because of the hours constraint, the agent works AL_0 in the first period, but carries monetized leisure of $AD = Y_0Y_1$ to the last period. He can now obtain total income of OY_1 in the last period by earning only OY_2 from employment. The equilibrium position is reached at R which is associated with hours of work AL_2 .

Adding a tax on capital income reduces the value of monetized leisure during the years of work under hours constraints that is available to purchase leisure in the last period of employment. In terms of panel (b) of Figure 1, this means that the monetized leisure (i.e., the only savings from period 1) is reduced to, say, AF . The net result is that the budget line shift downward to AFG , the equilibrium position moves from R to S and the number of hours of work increase to AL_3 . In the presence of hours constraints, the taxation of capital income increases that number of hours of work by L_2L_3 compared to the constrained case without capital income taxation. This is the case because capital income taxes reduce the rate of return and increase the price of leisure in terms of current consumption - future leisure is implicitly taxed through the capital income tax which applies to the income saved to purchase it. As a result, the labour supply increases in the last working period.

Thus, in the presence of constraints on hours of work, capital income taxation affects the labour supply in the opposite directions. It introduces a distortion in the intertemporal allocation of consumption in favour of present consumption, but it also reduces the distortion in the intertemporal allocation of consumption and leisure by reducing the tax advantage of leisure. In the presence of

hours constraints, capital income taxation reduces the distortionary effects of labour taxes.

III. LABOUR SUPPLY WITH LIFETIME CONSUMPTION TARGET

We now replace the institutional constraint on hours of work with a constraint imposed by the agent's choice. In this case, agents have complete flexibility to vary their hours of work in each period in response to changes in after-tax wages. However, instead of maximizing their lifetime utility they set a target for the standard of living they wish to maintain throughout their life, independently of the source of financing.

This case is worth considering because it may represent the behaviour of a large portion of the population which, because of its labour force attachment and its wealth, may be quite responsive to major tax reforms. According to a survey conducted in 1996 by Royal Trust, 39% of affluent baby-boomers - a large cohort of taxpayers with high incomes, high saving rates and high levels of assets - consider "having enough money to stop working" the highest symbol of success. One may interpret this revealed preference for leisure as an indication that these agents target a certain level of consumption over their lifetimes. Once that target is achieved, they withdraw from the labour market. Targeting consumption is a variation of the targeting of savings. In either case, the agent chooses to save a portion of his annual income in order to achieve a certain level of wealth, similar to saving for precautionary purposes. Target savers and target consumers differ only with respect to their labour force attachment. The former continue to work after achieving the target level of wealth while the latter retire from gainful employment. Empirical studies such as Carroll (1992), Engen (1994) and Kennickell and Starr-McCluer (1994)) suggest that this type of saving is

unresponsive to changes in rates of return. Therefore, in our analysis of this case, we will assume that the target level of wealth and the corresponding rate of saving are independent of the rate of return and, consequently, of the rate of capital income taxation. In this case, capital income taxation affects only the timing of exit from the labour force and it generates economic effects by altering the lifetime labour supply rather than the rate of saving.

Panel (a) of Figure 2, which reproduces a portion of Figure 1(a), shows the equilibrium hours of work after the imposition of the wage tax but before the capital income tax. For the given wage rate, the agent will work AL_1 hours in each period except the last and will earn income of OY_1 . Assuming that a portion of this income is saved to meet the future consumption target, Panel (b) shows the last period when the agent has accumulated sufficient wealth to yield income of $AP = OY_4$, which is less than OY_1 by the amount of savings. At this point, the desired level of consumption can be purchased without the need of employment income and the equilibrium position is achieved at point P. This case is similar to the one involving constrained hours because in both cases the agent faces the same after-tax wage in the first and last periods, and has savings that he plans to use for the purchase of leisure. In the target consumption case, however, the equilibrium in the last period involves a corner solution.

The introduction of a tax on capital income leaves the relative price of leisure and work unaffected. If savings are entirely directed at facilitating early retirement from the labour force and, therefore, are unresponsive to the rate of return, the reduction in the rate of return on the income saved resulting from the capital income extends the number of hours of employment over the agent's lifetime required to achieve the target consumption. In panel (b), this effect is represented by a shift in the level of savings from AP to AS resulting in a budget line AST and an equilibrium position at

Q associated with AL_4 hours of work. These additional hours of work represent the increase in the agent's lifetime labour supply induced by the imposition of the capital income tax.

The above analysis suggests that the response of a large portion of affluent baby-boomers to a reduction in capital income taxes would significantly reduce their lifetime labour supply by advancing the date at which they reach the target wealth level which allows them to quit employment. The reduction of this group's lifetime labour supply will be larger if the reduction in capital income taxes is financed through an increase in the taxation of labour income, as it would happen under the Hall-Rabushka type of flat tax.

IV. WORK EFFORT

In the previous two cases, workers respond to changes in wage taxes by adjusting their hours of work, either immediately or in the last period of work. These cases fall into the neo-classical framework where wage flexibility serves as the mechanism for clearing labour markets. Some economists have noted that wages are not so flexible and have proposed various explanations for the observed wage rigidity. These explanations include institutional rigidities, such as minimum wage laws and the power of labour unions, and the notion that lower wages may not benefit a firm if they induce workers' responses that will end up reducing profits. In models of wage rigidity known as efficiency wage models, firms are assumed to be concerned not with the level of wages but with hourly wages per effective unit of labour.

Economists have proposed a variety of explanations for the firm's willingness to pay wages above the competitive level ((see, for example, Salop (1979), Weiss (1980) and Shapiro and Stiglitz

(1984)), In the efficiency wage model developed by Phelps (1994), a major determinant of work effort is the ratio of labour income to non-labour income, where the latter includes government transfer payments as well as income from capital. In Phelps's model, the constraints on the hours of work are not relevant for the worker's behaviour because his choice is between working at the same job or being unemployed while looking for another job. Capital income taxation does affect labour market behaviour, as in the neoclassical model with constraints, but it operates through a different channel.

When income from savings is not taxed and a tax rate t is imposed on labour income and unemployment benefits, Phelps's work effort function can be approximated by ⁴

$$(1) \quad e = \left[\frac{w(1-t) + m}{upw(1-t) + (1-u)w'(1-t) + m} \right]^\sigma$$

where e is work effort, w is pre-tax labour income, p is the replacement rate from unemployment compensation, u is the unemployment rate, w' is the wage rate with another firm, m is other non-labour income (including income from capital) before tax, and σ is the elasticity of work effort with respect to the ratio of income while attached to this firm to expected income if laid off.

An increase in the wage tax rate t reduces the return to work effort in the current job or in an alternative job; it will also reduce net income from unemployment if the replacement rate is based on after-tax wages or if the benefit is treated as a wage replacement and is taxed as wages (the case shown in expression 1). Under these conditions, for a worker without non-labour income ($m=0$), the

increase in wage taxes would reduce both the return to labour and the income while unemployed by the same proportion, therefore, it would have no effect on work effort.

For a worker with positive non-labour income ($m > 0$), the wage tax increase will lower the ratio of labour to non-labour income and, therefore, will reduce work effort. This result is similar to that in the neoclassical model, constrained or unconstrained, except that in the latter the adjustment is made in the number of hours worked, either immediately or postponed. In the neoclassical model, there is no increase in unemployment, because of the flexibility of wages, but there are negative effects from the reduction in labour supply. In Phelps's model there is an increase in effective labour costs, a reduction in the demand for labour and higher structural unemployment.

When capital income is taxed at the same rate as labour income, Phelps's work effort expression becomes

$$(2) \quad e = \left[\frac{w(1-t) + m(1-t)}{upw(1-t) + (1-u)w'(1-t) + m(1-t)} \right]^\sigma$$

It is evident that imposing an income tax at the same rate on labour and capital income leaves expression (2) unchanged and, therefore, has no effect on work effort. This is because the income tax does not alter the ratio of labour to non-labour income. In Phelps's efficiency wage model, the tax on capital income neutralizes the potentially negative effect of the wage tax on work effort. Therefore, it generates efficiency effects in opposite directions: it distorts the saving decision, by changing the relative price of present versus future consumption, but it eliminates the distortion of the wage tax by restoring the ratio of labour to non-labour income.

This result parallels that in the constrained neo-classical model. In Phelps's model, an increase in the rate of a comprehensive income tax (wage tax plus capital income tax) is neutral with respect to work effort. In the neo-classical model, the addition of a capital income tax to a wage tax in the presence of constraints on hours of work, or targeted consumption, reduces the potential negative effects of the wage tax on labour supply.

V. IMPLICATIONS

The interaction between capital income taxation and labour market behaviour analysed in the previous sections has important implications for tax policy analysis and the evaluation of alternative tax policy options.

1. Labour Market Structure.

The foregoing discussion suggests that capital income taxes may affect the labour supply through a variety of channels potentially involving a large portion of the labour force. The magnitude of that effect depends partly on the strength of constraints on hours of work. These constraints are least effective for the self-employed, contract workers and low-wage workers with unstable employment. They are more binding for permanent employees, especially those employed in the public sector.

These differences suggest that empirical studies should uncover higher labour supply elasticities for the self-employed than for permanent employees. These are the results derived recently by Showalter (1995). In his analysis of the labour supply response of managers to income tax changes,

Showalter estimated a labour supply elasticity of .18 for high-income self-employed managers. However, he found a zero elasticity for high-income managers employed in the private sector and a negative elasticity for high-income government managers. Showalter concluded that “particular work arrangements might be important for estimating labour supply elasticity.” Our analytical results suggests that, over the lifetime, it is not just work arrangements and flexibility with respect to hours of work that affect labour supply responses to wage taxes, but also their interaction with capital income taxes.

2. Modelling Tax Policy Simulations

The economic effects of changes in the tax structure are increasingly being analysed with the help of computable general equilibrium (CGE) models. In these models, the entire labour force is often represented by a single worker, only the labour supply response is taken into consideration and this response is approximated by an average labour supply elasticity which is assumed to be equal for all workers ((see, for example, Ballard, Shoven and Whalley (1985)). This approximation does not portray realistically the labour market because it is well-known that labour supply elasticities differ by age, sex and occupation ((see Killingsworth (1983) and Phipps (1993)). CGE simulations performed by Souissi, Vincent, Ruggeri and Beausejour (1997) have shown that, for certain tax changes such a move from a multiple-rate to a single rate tax, the bias in the estimated efficiency effects using a single labour supply elasticity may be fairly large. The analysis developed in this paper suggests that this bias may be even larger if we include the interaction between capital income taxes and the labour response of different workers.⁵

3. Marginal Cost of Public Funds (MCPF)

As in the case of studies evaluating the economic effects of tax changes through the use of CGE models, studies which measure the cost to society of raising an additional dollar of government revenue (MCPF) usually incorporate a single agent and implicitly assume the separation of the effects of factor-specific taxes. CGE-based estimates of the MCPF for various taxes generally show that, in closed economies, increases in capital taxes generate the highest social costs and that income tax increases are more distortionary than wage taxes increases ((see, for example, Ballard, Shoven and Whalley (1985)). Our analysis suggests that this ranking of taxes in terms of MCPF may be misleading because it is based on methodology which ignores the effects of capital income taxes on labour market behaviour. A portion of the labour force faces constraints on hours of work, especially those employed in the public sector broadly defined and in large corporations. According to the Royal Trust survey, another portion includes agents with target consumption. It was shown that, in those cases, capital income tax increases reduce the distortionary effects of wage taxes, thus partly or totally offsetting the negative effects on savings. A similar offsetting effect from capital income tax increases is generated when workers respond to changes in after-tax wage rates by adjusting work effort instead of hours of work.

4. Tax Reform

As mentioned in the introduction, proposals for tax reform involve a move to a flat-rate consumption-base tax at one end of the spectrum and a shift to a comprehensive income base at the

other end. The first set of proposals involves a shift of tax burdens from capital income to labour income while the second set would reduce the taxation of labour income relative to capital income.

Consumption-base flat taxes have been defended primarily on efficiency grounds as they are expected to stimulate domestic savings and investment, thus raising the growth rate of output and improving living standards. Our analysis suggests that, to the extent that there are agents whose behaviour conforms with the assumptions in the three cases evaluated in this paper, the expected efficiency gains may not fully materialize. The higher tax burden on labour income will reduce efficiency, either through lower labour supply or reduced work effort, savings will not increase as expected if there are agents whose savings are unresponsive to changes in the rate of return, such as those with saving or consumption targets, and there may be additional negative effects on labour supply if agents are constrained with respect to hours of work or set consumption targets.

The same conditions will tend to reduce the potential distortionary effects from a move to a comprehensive income base associated with revenue-neutral across the board cuts in statutory rates. The reduction in the relative taxation of labour income will stimulate labour supply and work effort. This effect will be magnified by the increase in the relative taxation of capital income for agents with the behaviour patterns described in this paper. At the same time, the negative effects of the increase in the relative taxation of capital income would be mitigated by the existence of agents with lifetime consumption targets.

The three cases analysed in this paper affect the relative evaluation of the distortionary effects of alternative tax reform proposals. They tend to reduce the potential benefits of consumption-base flat taxes and weaken the potential economic costs of a move to a comprehensive income base. Whether the change is large enough to make the latter proposals preferable on efficiency grounds

depends on the share of taxpayers who are subject to the institutional constraints and behavioural patterns described in the three cases evaluated in this paper.

VI. CONCLUSIONS

This paper identified three channels through which capital income taxation may affect labour market decisions and their implications for tax policy analysis. The first case involved a constraint on hours of work within a neo-classical framework. The second case assumed that agents have a lifetime consumption target. The last case involved an efficiency wage model developed by Phelps (1994).

The analysis shows that in all three cases, capital income taxes affect labour market behaviour in a manner that it increases labour supply or work effort thereby reducing the distortionary effect caused by a wage tax. The implications are that, in these cases, the efficiency costs of capital income taxation may be lower than previously thought due to the positive spillover effect to the labour market. Whether the interaction between capital income taxes and labour market behaviour identified in this paper generate efficiency effects which are sufficiently large to alter the relative desirability of different tax reform proposals can be determined only through careful empirical investigations.

Endnotes

1. These proposals involve the replacement of the existing personal and corporate income taxes with the combination of a payroll tax on individuals and a cash-flow tax on businesses. They also replace the existing progressive structure of statutory rates in the personal income tax with a single rate. The net results of this change are a lower effective tax rate on capital income, a higher effective tax rate on labour income and shift of the tax burden from high to low and/or middle income taxpayers. Details on the economic effects of these tax reform proposals are found in Ruggeri and Vincent (1998).
2. This assumption simplifies the analysis by eliminating the income effect that would be generated if the revenue were spent on lump-sum transfers, but does alter the conclusions.
3. There would be an income effect in the presence of voluntary savings, which we have eliminated for simplicity of exposition (see discussion in the text).
4. See Marchildon, Sargent and Ruggeri (1996) for more elaborations of the model.
5. This interaction is not captured by partial equilibrium analysis or static CGE models. Therefore, when interpreting estimates of the economic effects of different tax changes derived through those models it must be kept in mind that the results may incorporate potentially large biases.

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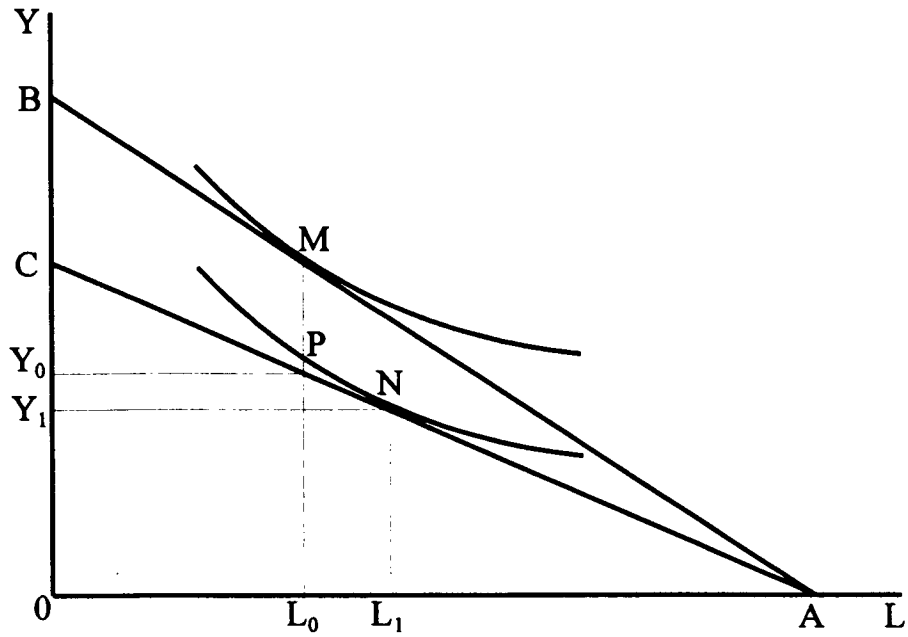
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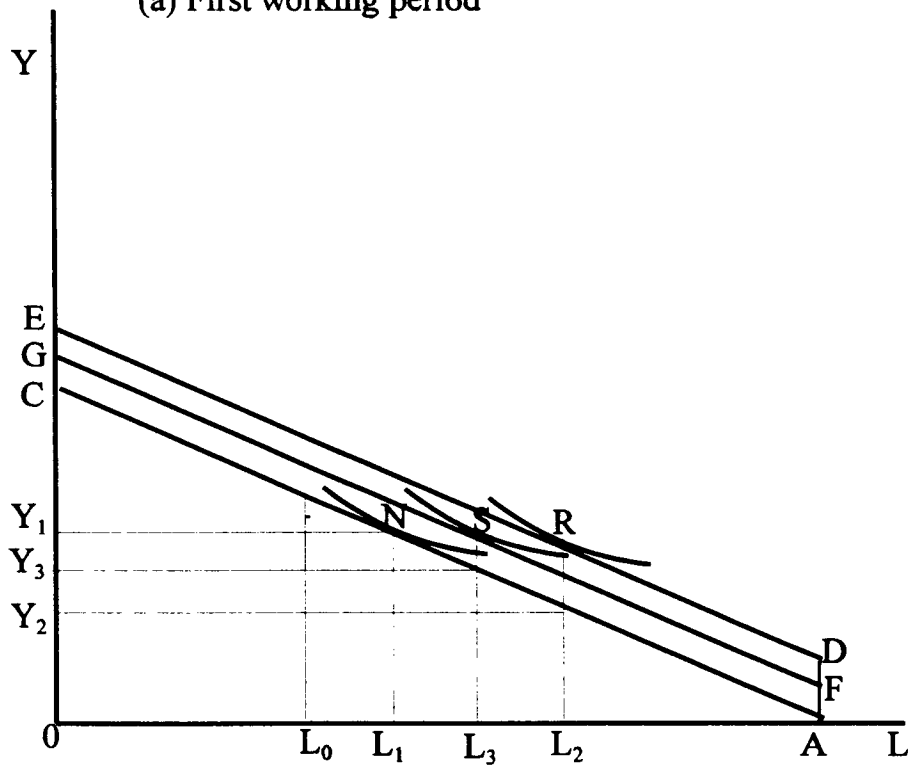
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Figure 1: Labour Supply with Hours Constraints

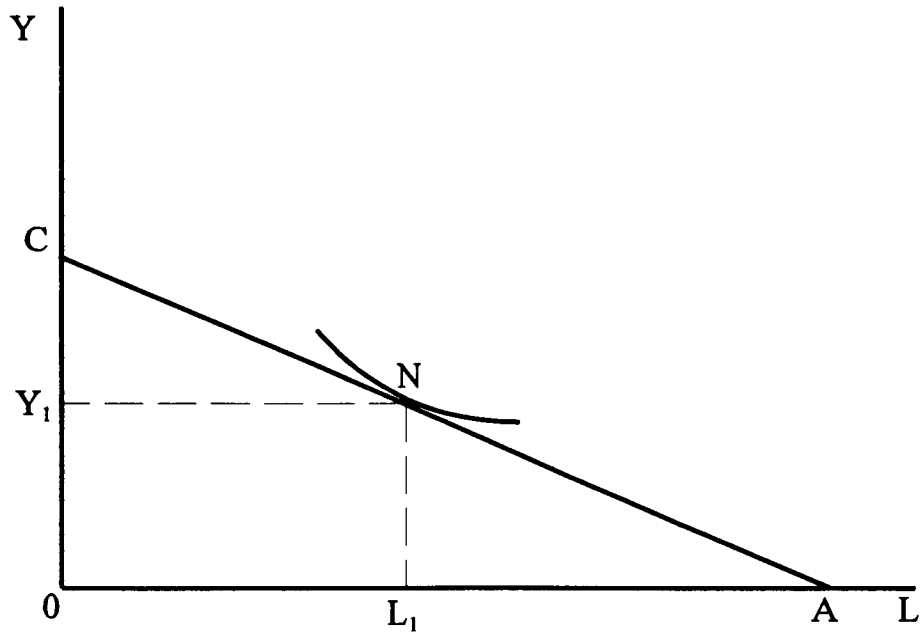


(a) First working period

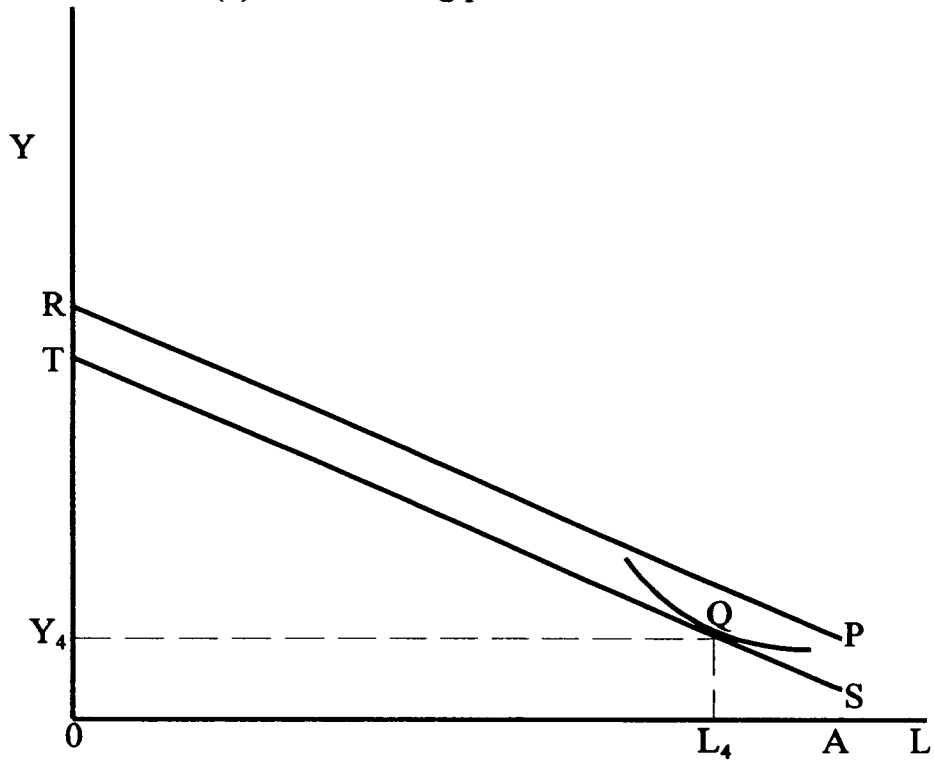


(b) Last working period

Figure 2: Labour Supply with Consumption Target



(a) First working period



(b) Last working period

Appendix

A Two-period Model of Consumption and Labour Supply

The consumer is assumed to choose consumption and hours of leisure in each period to maximize a two-period (lifetime) utility function that is strongly separable over time, subject to a budget constraint. Let utility be a concave function $U(C(t), L(t))$, where $C(t)$ is consumption and $L(t)$ is leisure in period t . The consumer's problem is to choose $C(t)$ and $L(t)$ in each period to maximize the lifetime utility function

$$(1) \quad \sum_{t=1}^2 \frac{1}{(1+\theta)^{t-1}} U(C(t), L(t))$$

Subject to the budget constraint

$$(2) \quad C(1) + \frac{C(2)}{1+r} = w_1 h(1) + \frac{1}{1+r} w_2 h(2) + m$$

where θ is the rate of time preference, r is the after-tax interest rate, w_t is the after-tax wage rate in period t , $h(t) = L^* - L(t)$ is hours of work in period t with L^* being the total number of hours in each period and m is non-labour income.

Letting λ be the Lagrange multiplier associated with the budget constraint, we derive the first-order conditions:

$$(3) \quad U_1(C(t), L(t)) = \left(\frac{1+\theta}{1+r}\right)^{t-1} \lambda$$

$$(4) \quad U_2(C(t), L(t)) = \left(\frac{1+\theta}{1+r}\right)^{t-1} \lambda w_t$$

where subscripts denote partial derivatives and λ is the marginal utility of wealth in period 1. According to condition (3), consumption is chosen so that the marginal utility of consumption equals the marginal utility of wealth after adjusting for a discount factor which depends on the rate of time preference and the after-tax interest rate. Condition (4) determines the consumer's choice of leisure.

Using the definition of labour supply (i.e., $h(t) = L^* - L(t)$) and the implicit-function theorem, we can solve equations (3) and (4) for consumption and labour supply as follows:

$$(5) \quad C(t) = C\left[\left(\frac{1+\theta}{1+r}\right)^{t-1} \lambda, w_t\right], t = 1, 2$$

$$(6) \quad h(t) = h\left[\left(\frac{1+\theta}{1+r}\right)^{t-1} \lambda, w_t\right], t = 1, 2$$

The functions $C(\cdot, \cdot)$ and $h(\cdot, \cdot)$ depend only on the functional form of $U(\cdot, \cdot)$. Given the assumption that $U(\cdot, \cdot)$ is concave and that consumption and leisure are normal goods, they

satisfy

$$(7) \quad C_1 < 0, h_1 \geq 0, h_2 \geq 0$$

Equation (6) and condition (7) imply that capital income taxation which reduces the after-tax interest rate r will increase the labour supply in the second period, assuming a constant marginal utility of wealth λ .

This standard income effect clearly depends on the total amount of savings from the first period. The higher the level of savings, the larger is the effect of capital income taxation on the labour supply. Our analysis of the labour supply with hours constraints and target lifetime consumption can be viewed as extensions of the above model. In the case of hours constraints, there are additional savings equal to the monetized value of the leisure involuntarily foregone due to the constraints in the first period. Capital income taxation reduces the amount of leisure that can be purchased with the accumulated savings, thus increasing the lifetime hours of work. As a result, capital income taxation reduces the employment effect of the wage tax. A similar effect occurs in the case of target consumption. The main difference between the two cases is that, under target consumption, the savings are entirely voluntary.