ELSEVIER

European Journal of Political Economy
Vol. 18 (2002) 333–344

European Journal of
POLITICAL
ECONOMY

www.elsevier.com/locate/econbase

Working time, taxation and unemployment in general equilibrium

Felix R. FitzRoy [a], Michael Funke [b,*], Michael A. Nolan [c]

[a] *Department of Economics, University of St. Andrews, St. Andrews, Fife, KY 16 9AL, Scotland, UK*
[b] *Fachbereich Wirtschaftswissenschaften, Universität Hamburg, Von-Melle-Park 5, 20146 Hamburg, Germany*
[c] *Department of Economics, University of Hull, Cottingham Road, Hull, HU6 7RX, UK*

Received 8 November 1999; received in revised form 4 May 2001; accepted 12 July 2001

Abstract

We study a simple general equilibrium model in which wages are set by collective bargaining as a mark-up over benefits. The inclusion of taxation and the government budget complicates the relationship between employment and hours worked; hence, we present numerical simulations of employment in terms of hours. There is a range of initial hours from which employment can be increased, or unemployment reduced, by cutting standard working time. Welfare conflicts are explained, but our examples show relatively small profit reductions when hours are diminished below the employers' (collective) optimum, and substantial employment gains. © 2002 Elsevier Science B.V. All rights reserved.

JEL classification: J22; J23; J6; H2
Keywords: Working time; Taxation; Unemployment benefits; Unemployment

1. Introduction

Persistently high European Union (EU) unemployment has generated renewed debate over the merits of working-time reduction to stimulate employment. A 35-h normal working week was enacted in France and came into force on January 1, 2000 for enterprises with over 20 employees, and 2 years later for smaller firms. Similar legislation is pending in Italy (OECD, 1998). Earlier studies of working time and employment were inconclusive, but generally sceptical concerning the employment benefits of reducing working time (Calmfors, 1985; Booth and Schiantarelli, 1986; Hoel and Vale, 1986; Hart, 1987). Theoretical

* Corresponding author. Tel.: +49-40-42838-4674; fax: +49-40-42838-5546.
E-mail address: funke@hermes1.econ.uni-hamburg.de (M. Funke).

PII: S0176-2680(02)00084-8

work, with widely differing models, tends to be somewhat more optimistic (Houpis, 1993; Contensou and Vranceanu, 1998a,b, 2000; Marimon and Zilibotti, 2000). The OECD (1998) emphasises the importance of complementary measures such as wage indexation and flexibility, which together might yield modest employment gains in some enterprises. Such measures and a cyclical upswing have combined to yield rapid employment growth in France since the 35-h week was introduced, but it is difficult to isolate the effect of the hours reduction. Lever (1996) finds significant positive effects of hours reduction on employment in a panel of Dutch manufacturing industries and Rubin and Richardson (1997) find positive employment effects of hours reductions in British engineering. On the other hand, Hunt (1998, 1999), in detailed studies of German working time, finds no evidence of employment gains. Roche et al. (1996) review international evidence.

Previous modelling of working time has neglected the general equilibrium interaction between unemployment benefits, the payroll taxes that fund benefits and the resulting wage bargain and employment decisions. Hart and Moutos (1995), however, consider efficient bargaining over hours and wages, but unemployment benefits and other exogenous parameters have no effect on employment in their model when the government budget is included. This implausible result, and much other evidence, suggests that the "right to manage" (RTM) model is more appropriate than efficient bargaining. As Teulings and Hartog (1998, p. 144) point out, "explicit simultaneous bargaining on wages and employment is most unusual... The RTM model seems a more accurate description of reality than the efficient bargaining model". In this paper, we present a first step towards a simple stylish, but consistent, general equilibrium model of the effects of working time and unemployment benefits on employment, wages in collective bargaining, taxes and profits. We adopt strong simplifying assumptions, but numerical simulation are nonetheless required in most cases to obtain quantitative results. Perhaps surprisingly, a substantial range of parameter values suggests employment gains from the reduction of working time.

The plan of the paper is to develop the basic theoretical model in Section (2) progressing from the case of wage and hours setting by a monopoly union, through the regime where employment and hours are determined by individual firms, to the situation where an employers' association determines hours and employment. A computable case of the model is outlined in Section 3 and is illustrated by simulation results. Conclusions are summarised in Section 4.

2. A general equilibrium model of hours and employment

We assume a competitive economy with representative firms.[1] Fixed capital is suppressed since we only consider short-run responses. The production function is Cobb–Douglas:

$$Q = (h - n)^{\alpha} N^{\beta}; \qquad 0 < \beta < 1,\ \alpha > 0 \tag{1}$$

[1] While imperfect competition might be more appropriate, results are unlikely to be affected by our simplification, and we do not consider the dynamics of firm entry and exit since these issues go far beyond our present scope.