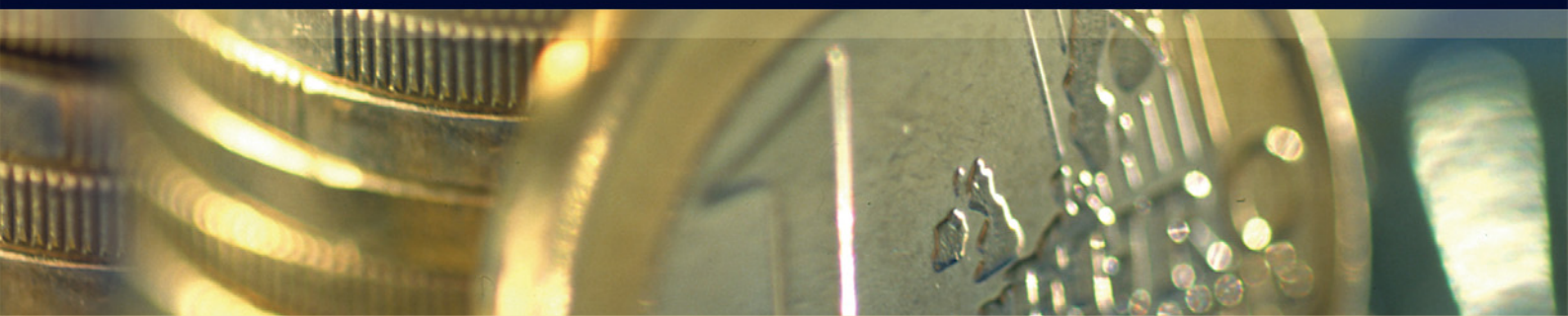


EUROPEAN ECONOMY

Economic Papers 359 | February 2009



Taxes and employment - is there a Scandinavia puzzle?

Torben M. Andersen

Economic Papers are written by the Staff of the Directorate-General for Economic and Financial Affairs, or by experts working in association with them. The Papers are intended to increase awareness of the technical work being done by staff and to seek comments and suggestions for further analysis. The views expressed are the author's alone and do not necessarily correspond to those of the European Commission. Comments and enquiries should be addressed to:

European Commission
Directorate-General for Economic and Financial Affairs
Publications
B-1049 Brussels
Belgium
E-mail: Ecfm-Info@ec.europa.eu

This paper exists in English only and can be downloaded from the website
http://ec.europa.eu/economy_finance/publications

A great deal of additional information is available on the Internet. It can be accessed through the Europa server (<http://europa.eu>)

KC-AI-09-359-EN-N
ISBN 978-92-79-08382-2
ISSN 1725-3187
DOI 10.2765/18119

© European Communities, 2009

Taxes and employment - is there a Scandinavia puzzle?*

Torben M. Andersen
School of Economics and Management,
Aarhus University,
CEPR, CESifo and IZA

January 2009

Abstract

Recent debates have suggested that taxation is very detrimental to labour force participation and employment. However, some countries - notably the Scandinavian - stand out as contradictions to this view since they have managed to sustain high labour force participation despite high tax rates and a generous social safety net. This paper considers the experience of European countries and Scandinavia compared to the US and asks whether Scandinavian countries are outliers. First, it is argued that the simple "tax argument" does not capture the European experience since labour force participation for some age groups is at the same or a higher level than the US. Second, it is argued that even though the social safety net is generous in Scandinavian countries, it is also very employment conditional. It is shown that these conditionalities can make high labour force participation consistent with a high marginal effective taxation of labour, and that it on the margin lowers the marginal costs of public funds. The design of the social safety net is therefore important in accounting for the Scandinavian experience.

*Paper prepared as part of the DG ECFIN Visiting Fellows Programme (contract number 155/2008/SI2.496.362). Comments and suggestions by Alfonso Arpia and Stephan Hupfeld and participants at a DG ECFIN seminar and the CESifo conference "Reform of the Welfare State: A New European Model" are gratefully acknowledged.

1 Introduction

A high employment rate is a key policy objective due to its direct social importance, but it is also indirectly important since it is essential to ensure the financial viability of a social model with a tax financed social safety net¹. An important issue is how to ensure that the relatively high taxes needed to finance social expenditures do not hamper labour supply to such an extent that it brings welfare and the financial viability of the social model at stake.

The role of taxes for economic performance in general and labour market participation and employment in particular is a recurrent theme. A recent wave in this debate has been fuelled by the controversial paper by Prescott (2004), arguing that differences in labour supply (measured as total hours supplied relative to population size) between the US and some larger European countries can be accounted for by the difference in tax rates. Hence, by implication, if these European countries were to reduce taxes to the US level, the labour input would be about the same on a per capita basis, and such reductions would be self-financing (see also Ohanian, Raffo and Rogerson (2006)).

While provocative, these claims are based on an implausibly large labour supply elasticity way above any available empirical micro evidence²³. Moreover, a closer look at the cross-country evidence reveals a more complicated picture than implied by the simple "tax and labour supply" view. It is in particular noteworthy that some high tax countries like the Scandinavian are exemptions to the simple tax view. The Scandinavian countries are among the countries with the highest tax burdens and tax wedges on labour, and yet they are known as countries with high labour force participation⁴.

The experience of the Scandinavian countries is even more striking when taking into account that they have a fairly generous social safety net. In parts of the economics literature, a generous social safety net is often portrayed as a "subsidy to leisure" or as "paying people for not working".

Many government spending programs implicitly provide a marginal subsidy to leisure since they stipulate that benefits are conditional on not working, or that the benefit is reduced in response to any labour income. Relevant examples include some components of social security, unemployment insurance, traditional welfare programs and disability (Rogerson, 2007, p 73).

This line of reasoning identifies the composite tax rates (marginal effective tax rates) on labour market participation (i.e. the combined effect of taxes lowering the return to work, and the loss of transfers) as crucial for determining labour force participation, and by implication they are high in countries like the Scandinavian with a generous tax financed social safety net.

In the political science literature, the same issue appears but from a different angle since the focus is

¹For EU countries this is reflected, among other things, in the Lisbon target as well as in country specific targets.

²Prescott (2004) assumes a labour supply elasticity of nearly 3. This is significantly larger than in micro studies which usually find the elasticities to be small and below one. For recent surveys see e.g. Evers, De Moij and van Vuuren (2005) and Meghir and Phillips (2008). Recent work has assessed elasticities using reported income which leads to higher elasticities (although the interpretation is open to debate, see Chetty (2008)), but even these elasticities are not as high as assumed by Prescott,

³Other arguments have been that Europeans have a stronger preference for leisure, that the welfare state via generous benefit levels lowers labour supply, and the role of imperfect competition (unions), see e.g. Alesina, Glaeser and Sacerdote (2005), Ljungqvist and Sargent (2007), and Gordon (2006).

⁴For a more general discussion of the experience of the Scandinavian countries, see e.g. Andersen et al. (2007).

on the extent to which social policies lead to a decommodification of labour. By decommodification is understood that selling of labour⁵ is not a necessity to maintain a decent standard of living.

A minimal definition must entail that citizens can freely, and without potential loss of job, income, or general welfare, opt out of work when they themselves consider it necessary (Esping-Andersen, 1990, p 23).

Decommodification is seen as an integral part of the universal welfare model stressing that entitlements are based on citizenship and needs rather than performance. If the social safety net in the Scandinavian countries is taken to support decommodification of labour (see Esping-Andersen (1990)), it follows that the Scandinavian countries come close to the universal model⁶. The decommodification interpretation goes hand in hand with the incentive view of the welfare state; that is, the economic incentives to supply labour are weakened by welfare arrangements.

While the experience of the Scandinavian countries is of interest in its own right, it is of wider interest in relation to the role of incentives. It is sometimes claimed that the experience of the Scandinavian countries documents that economic incentives do not matter. In the following it is argued that this is a too hasty conclusion which does not recognize that the incentive structure is made up of pecuniary and non-pecuniary elements, and the particular design of policies balances these so as to make high tax rates and employment rates compatible.

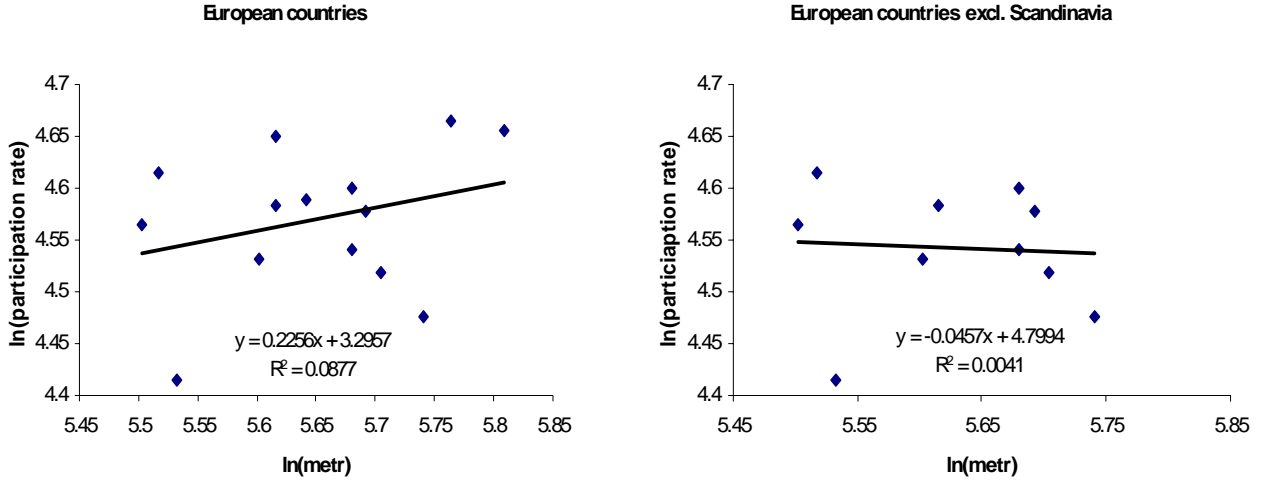
That there is a puzzle to be explained in the sense that the Scandinavian countries are outliers is seen from figure 1 showing the relationship between labour force participation rates and taxation of labour in a cross country perspective. In figure 1a displaying data for 14 European countries, there seems to be a positive relationship between taxes and labour force participation (see also Centeno (2005)); however, when removing the Scandinavian countries as done in figure 1b, the expected negative relation appears (although here with a low statistical significance). This suggests that the Scandinavian countries are outliers or noise to the standard view on the relation between taxes and labour supply.

The purpose of this paper is thus twofold. First, it takes a closer look at the comparative evidence on labour supply by comparing OECD countries and in particular European countries to the US. Second, with outset in the experience of the Scandinavian countries, this paper discusses what lessons can be learned with respect to reconciling a high labour supply with a social model in which the public sector plays a non-trivial role. It is argued that a key property is that the social safety net is employment conditional; that is, benefits are high but at the same time they have conditions related to active labour supply and employment. In this way the potential disincentive effects of generous benefits are countered which in turn support a high labour force participation rate and lower the marginal costs of public funds.

⁵ Also expressed as "the concept refers to the degree to which individuals, or families, can uphold a socially acceptable standard of living independently of market participation" Esping-Andersen (1990, p 37).

⁶ Various proposals on classification of welfare regimes or models have been made in the literature. Esping-Andersen (1990) made seminal a distinction between the liberal/residual, the continental/corporatist and the universal/social democratic/Scandinavian welfare model. This is used here since it is a convenient way by which to focus on the division of labour between the market, the civil society and the state. However, no country fits perfectly into these model categories, and countries with strong universal elements are also found outside Scandinavia, e.g. the Netherlands.

Figure 1: Labour force participation and taxation: European countries and the Scandinavian countries



Note: The participation rate is for the age group 15-64, and the metr is the marginal effective tax rate from shifting between non-work and work, taking into account taxes and transfer income. Scandinavia = Denmark, Finland, Norway and Sweden. Data: See section 5.2.

The paper is organized as follows: Section 2 gives some background information on labour supply in a comparative perspective and identifies the main sources of differences in labour supply between European/Scandinavian countries and the US. Section 3 presents some key aspects of the so-called Scandinavian model, and section 4 develops a simple model of labour supply, focussing on the interplay between economic and non-economic incentives.

2 Labour input - Europe vs US

It is useful to start by considering labour input in some detail to identify the major differences between countries. This section focuses on OECD countries compared to the US.

2.1 Labour input

Most comparative studies consider the total labour input per capita; that is, total working hours divided by the population. It is useful to decompose this measure in the following way⁷

$$\frac{EH}{P} = \frac{P_{15-64}}{P} \frac{L}{P_{15-64}} \frac{E}{L} H \quad (1)$$

where E denotes employment, H average hours worked, P total population, P_{15-64} the population in the age group 15-64 (the working ages), and L the labour force. The total labour input is thus made up of a

⁷In the following focus is on the quantitative dimensions of labour input since these are most directly relevant to the issues analysed. Moreover, the quantitative dimension is more important to the financial aspects of the welfare state, cf. below. Qualitative aspects are more important for productivity and distributional issues which are not discussed here.

demographic factor ($\frac{P_{15-64}}{P}$), and two extensive margins: how many of the working age population are in the labour force ($\frac{L}{P_{15-64}}$), and among those how many are in employment ($\frac{E}{L}$), and the intensive margin (H).

The following decomposes labour input for OECD countries according to (1), and since the US has been used as the reference point in most of the recent discussions, the numbers are reported normalized by their respective US-values.

It is seen that most European countries have a per capita labour input which is below the US level. This can not be explained by differences in the age composition of the population since the population share of the age group 15-64 is almost the same as in the US. The difference is in some cases explained both by low labour force participation/employment rates and low working hours (e.g. France and Germany), while for some countries the difference is mainly due to differences in labour force participation (Italy), and for many others lower working hours (e.g. Belgium, Denmark, Sweden and the Netherlands).

Table 1: Decomposition of per capita labour input

	Labour input per capita	Contribution from			working hours
		Population 15-64 as % population (all persons)	Total labour force as % population 15-64	Employment rate	
France	72.6	97.3	90.9	95.5	86.0
Germany	74.1	100.3	97.4	95.2	79.7
Belgium	76.1	98.8	89.4	100.6	85.7
West					
Germany	77.2	97.9	98.8	101.2	78.9
Norway	79.7	99.4	101.2	101.0	78.4
United Kingdom	81.8	99.1	95.3	93.7	92.4
Netherlands	82.3	102.1	103.9	103.0	75.3
Slovak Republic	82.4	105.7	93.3	88.6	94.4
Sweden	83.8	98.8	96.7	100.1	87.6
Poland	85.4	103.9	85.7	87.5	109.7
Finland	87.7	100.9	94.9	96.1	95.3
Hungary	89.5	100.9	80.9	99.3	110.4
Denmark	89.6	100.0	103.7	100.3	86.2
Austria	90.1	101.8	94.9	102.2	91.3
Italy	92.2	99.4	92.9	98.8	101.0
Ireland	95.1	102.1	99.1	101.8	92.3
Spain	99.5	103.3	98.7	98.2	99.5
United States	100.0	100.0	100.0	100.0	100.0
Australia	100.4	100.9	103.1	101.0	95.6
Portugal	100.6	99.7	103.3	100.1	97.5
Mexico	101.0	91.9	103.1	104.3	102.2
Canada	101.2	103.9	101.5	99.1	96.9
New Zealand	107.3	97.9	105.1	103.3	101.0
Greece	108.7	101.8	92.9	100.8	113.9
Iceland	111.0	99.7	106.7	104.2	100.1
Switzerland	111.1	101.8	117.1	103.5	90.0
Czech Republic	111.9	106.3	96.6	99.3	109.8
Japan	113.1	100.0	111.9	102.3	98.8
Korea	143.4	109.3	95.7	103.5	132.4

Note: Employment rate is the employment rate of the labour force, and working hours is actual hours worked during the year. Data applies to 2004
Source: Data from Labour Force Statistics, www.sourceoecd.org

Note: Employment rate is the employment rate of the labour force, and working hours is actual hours worked during the year. Data applies to 2004.

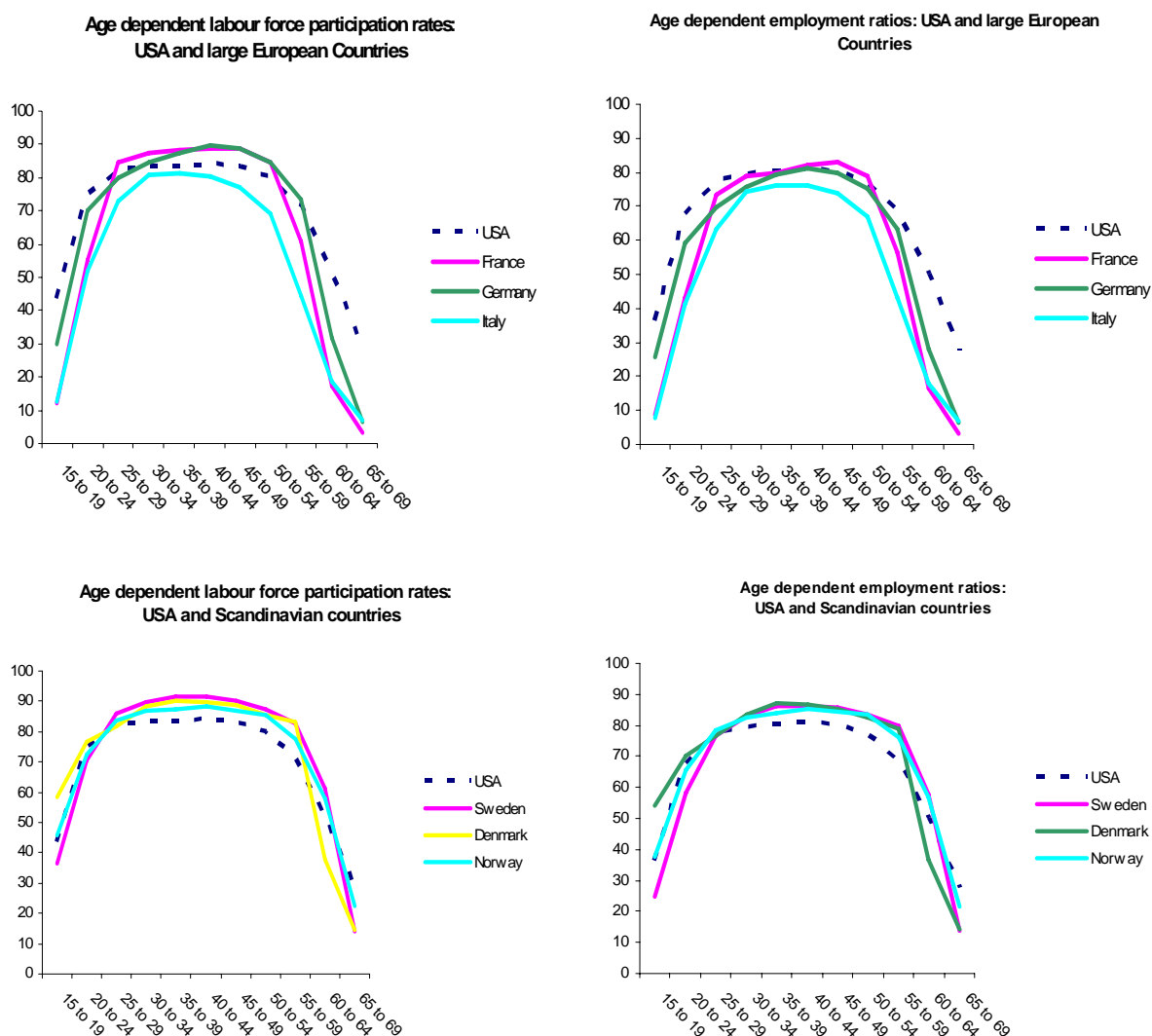
Source: Labour Force Statistics, www.sourceoecd.org

2.2 Labour force participation and age

Considering the extensive margins of labour supply in more detail along the age dimension as done in figure 2 brings forth two striking facts. First, for countries with a lower average labour force participation rate and employment rate than the US, the difference is mainly concentrated around entry and exit ages

from the labour market; i.e. the problem is not one of generally lower labour force participation and employment rates. Second, for some smaller European countries, labour force participation rates and employment rates are higher than for the US for prime age groups, but at or below US levels at entry and exit ages from the labour market.

Figure 2: Age dependent labour force participation rates and employment rates: US vs larger and smaller European countries

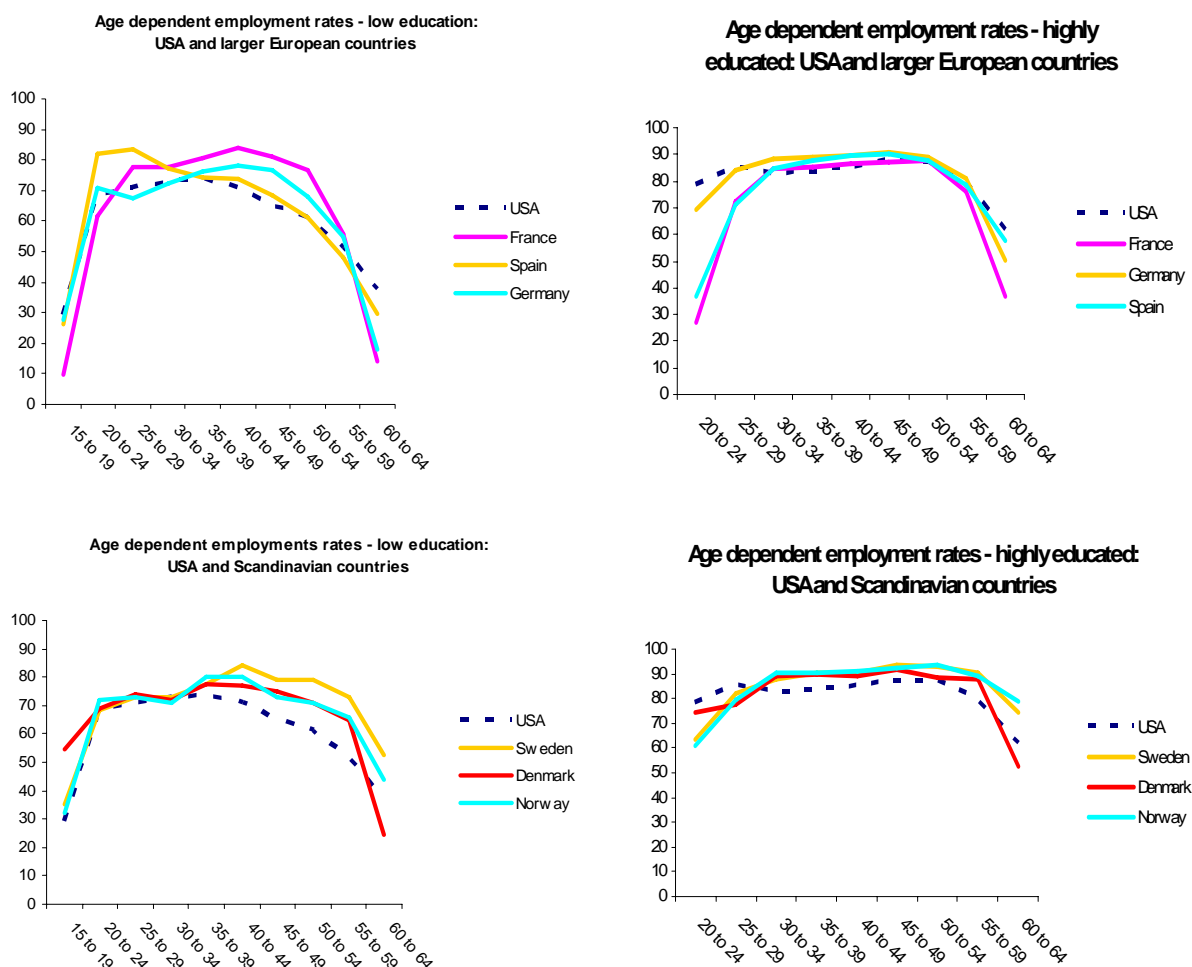


Source: Data applies to 2005 and is adopted from www.sourceoecd.org

If high taxes and generous social safety nets create a barrier to labour force participation and employment, one should in particular expect this to be prevalent for less educated having low potential market wages. A striking fact seen from figure 3 is that this is not the case. For both larger European and Scandinavian countries, the employment rates (relative to population in the relevant age groups) are in general higher for less educated in Europe than the US, although with the same tendency to weaken at entry and exit ages. Interestingly, for highly educated it is the entry and exit problem in particular in

the larger European countries that causes a deviation to the US.

Figure 3: Age dependent employment rates and education: US vs larger and smaller European countries

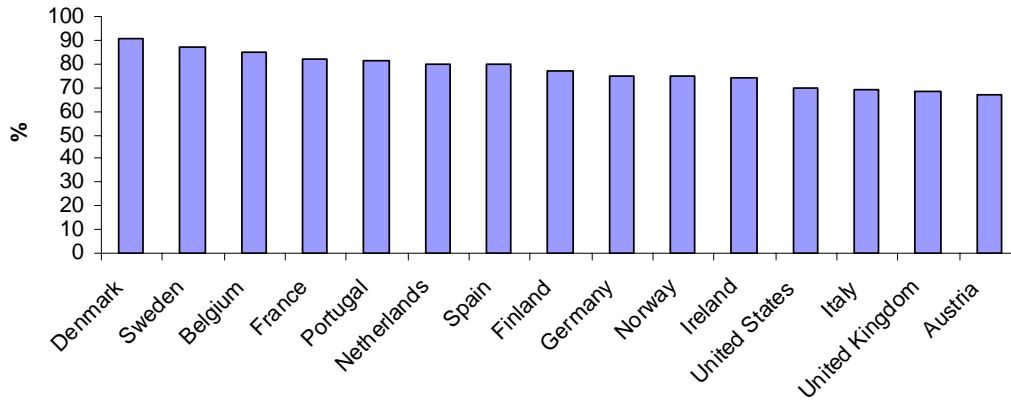


Note: The employment rate denotes the employment to population rate for the respective age groups. Low education is defined as "less than upper secondary level" and high education as "levels that correspond to both ISCED 5A and 6". Data applies to 2003

Source: OECD labour force statistics, www.oecdsource.org

The relevant tax metric affecting the labour force participation decision is the Marginal Effective Tax Rate (METR) taking into account that the economic gain from shifting into jobs depends both on taxes paid and income transfers lost. This double effect implies that the METR can be rather high, especially in countries with an extended welfare state (see European Commission (2005) and Centeno (2005)). Specific country studies find that the METR can be rather high (above 100%) for some groups. Figure 4 shows the METR for European countries in 2004.

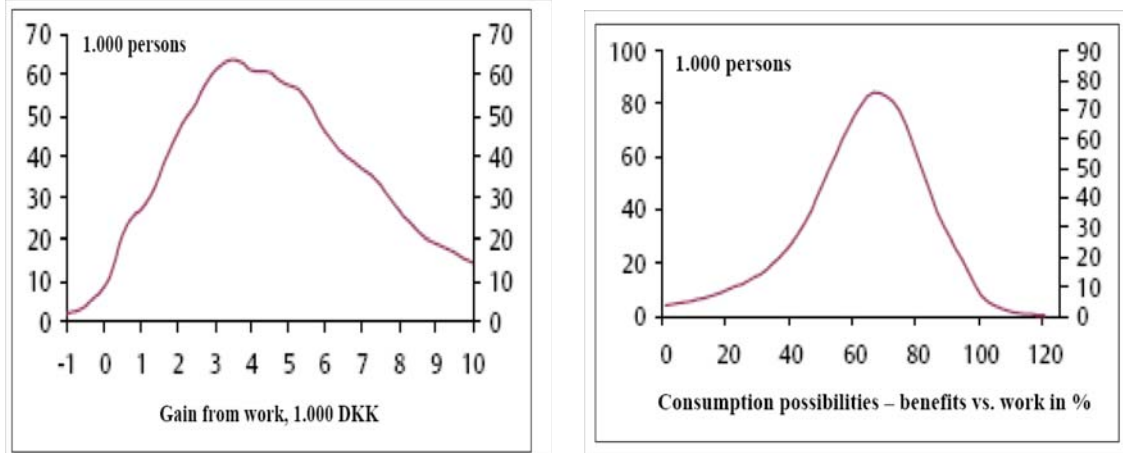
Figure 4: Marginal effective rate of taxation when shifting from non-work to work



Source: Eurostat

A striking finding is that analysis of "does it pay to work" finds that some persons are in employment even though they get a very low or even negative economic return from working (see also e.g. Pedersen and Smith (2002)). Figure 5 illustrates the distribution of both the absolute gain from work and the distribution of employed persons according to the compensation rate (possible benefits relative to wages after tax) for Denmark. It is seen that there is a tail of workers who have a replacement rate close to or above 100%. Hence, based on strict economic reasoning these persons would be better off not working. This may have different interpretations including that agents are irrational, work norms, stigma associated with living on benefits or forward-looking behaviour⁸. However, there is another very basic reason to be considered in more detail below, namely that living on benefits is not an unconditional alternative to work.

Figure 5: Gains from work - Denmark 2001



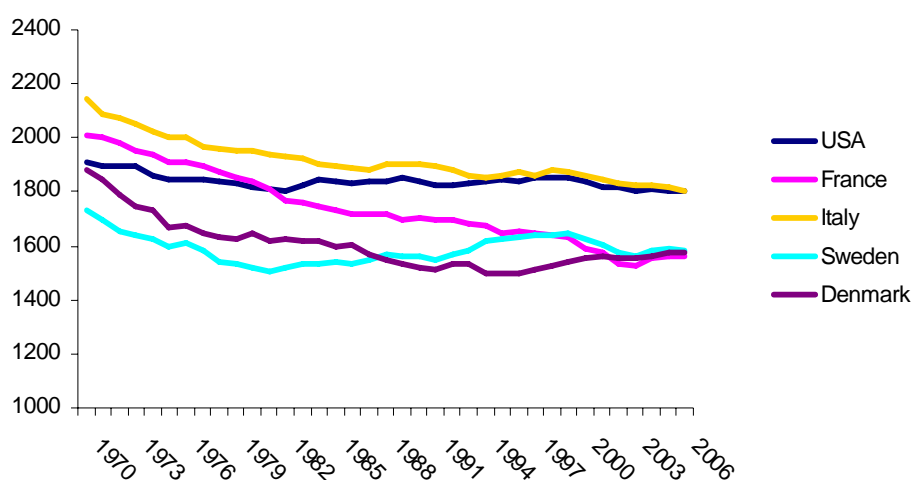
Source: Danish Ministry of Finance, 2004.

⁸It may be worthwhile to work for a current low wage if on the job training will lead to higher income prospects in the future.

3 The intensive margin

Average working hours are for a number of European countries significantly below those for the US, cf. table 1⁹. This gap has been growing over recent years, cf. figure 6 and OECD (2008). The trend decline in working hours is to be expected given growing material well-being (assuming the leisure is a normal good), and hence it may be questioned whether the outlier here is Europe or the US (lazy Europeans or crazy Americans?). However, since the trend is also found in countries which have a low tax burden or have maintained a relatively constant tax burden, it is not obvious that this can be readily explained as driven by tax wedges. Causa (2008) finds that tax wedge can account for part of the difference in working hours for females, but not for males.

Figure 6: Annual average working hours, 1970-2006: Selected countries

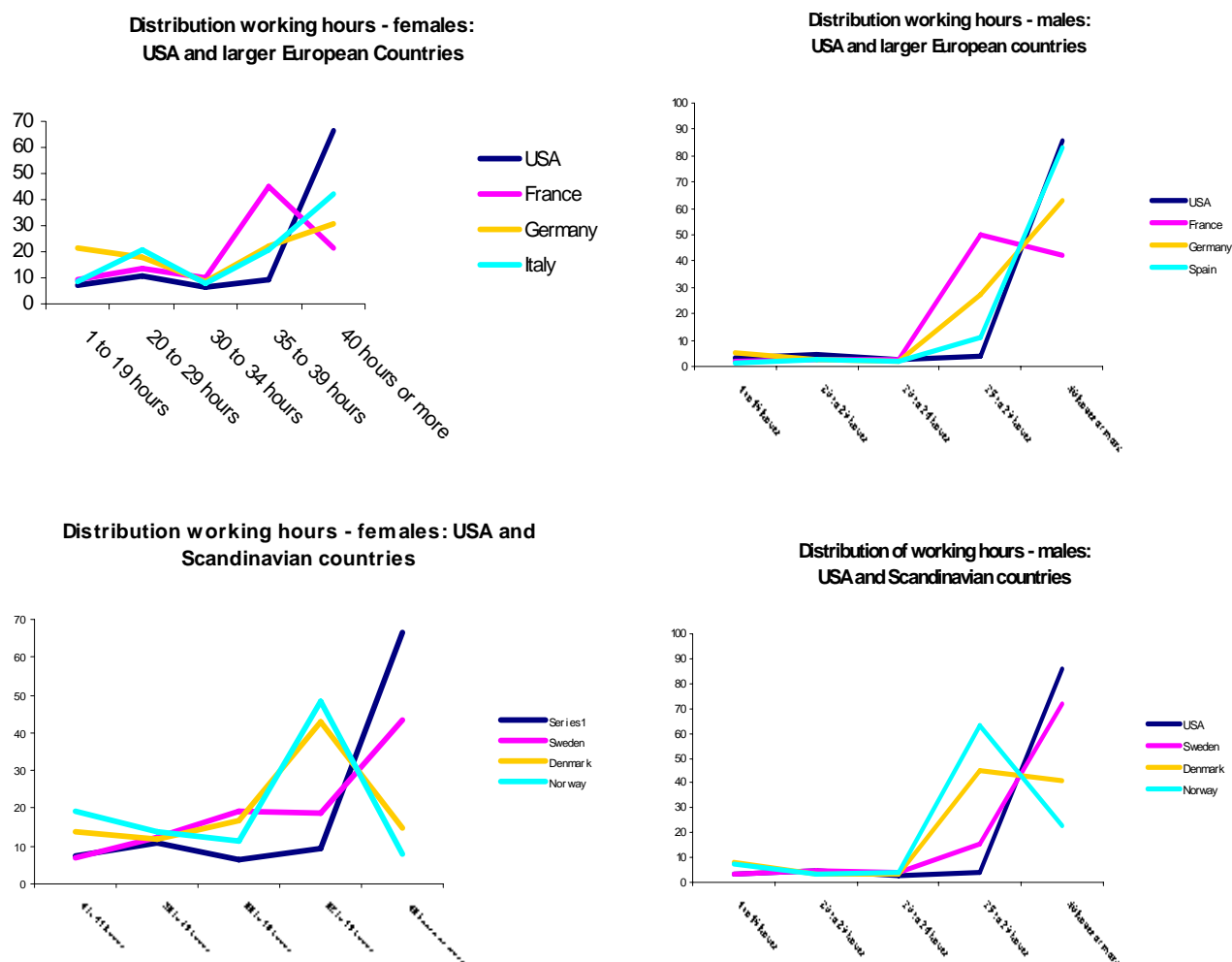


Source: www.sourceoecd.org

There is one striking difference between Europe and the US in the gender dimension, cf figure 7. The difference in the distribution of working hours is larger for females than for males. More females have longer working hours in the US than in Europe - this holds for both larger and smaller European countries. In Europe there seems to be a negative relation between female labour force participation and average working hours.

⁹ Comparison of working hours is made difficult both by different measurement methods across countries and by the fact that average working hours can be low due to low statutory hours (working hours during the week, vacations) or absence from work (sickness).

Figure 7: Distribution of working hours, females and males: US vs larger and smaller European countries



Source: www.sourceoecd.org

4 Taxes, benefits and employment in the Scandinavian welfare model

The comparative evidence leaves the puzzle why a generous welfare state as found in the Scandinavian countries does not produce a more detrimental incentive structure to work. Can this be taken to show that incentives do not matter, or does it reflect the particular way policies are designed in the Scandinavian countries?

In the following we address this question by first pointing to a basic employment dependency of the Scandinavian model, and next the issue of entitlements and conditionalities in welfare policies is considered. This provides the background for the theoretical considerations in the next section.

4.1 Employment focus

To set the scene for the following discussion, it is useful to outline a basic property of the Scandinavian model, namely that it is very employment focussed. To see this consider the basics of the public sector budget constraint when we focus on the two main expenditure items¹⁰, transfers/benefits (b) paid to the non-working and public consumption (g). The provision of public services is mainly done by use of labour (L_g), and therefore the wage expenditures are given as whL_g , where w denotes the wage rate, h working hours, and L_g the number of public employees. The predominant source of tax revenue¹¹ is given by direct and indirect taxation of labour, and hence the total revenue is $\tau [whL_p + whL_g]$, where L_p denotes private employees. For simplicity working hours and wages are assumed equal in the private and public sector¹².

The budget balance can now be written

$$\begin{aligned} B &= \tau [whL_p + whL_g] - [N - L_p - L_g]b - whL_g \\ &= [\tau wh + b]L_p - [(1 - \tau)wh - b]L_g - Nb \end{aligned}$$

It follows straightforwardly that the budget balance is very sensitive to private employment. An increase in private employment improves on the margin the budget by $(\tau w_p h + b)$, i.e. the sum of the paid taxes and the saved benefits. Note that $(\frac{\tau wh + b}{wh})$ is the METR associated with shifting from benefits into work, cf. figure 4. An increase in public employment deteriorates the budget if $(1 - \tau)wh - b > 0$.

A balanced budget ($B = 0$) requires a tax rate given as

$$\begin{aligned} \tau &= \frac{[N - L]b + whL_g}{whL_p + whL_g} \\ &= \frac{[N - L_p - L_g] \frac{b}{wh} + L_g}{L_p + L_g} \end{aligned}$$

We have, as expected, that an increase in private employment leads to a tax decrease¹³

$$\frac{\partial \tau}{\partial L_p} = \frac{-\left(N \frac{b}{wh} + L_g\right)}{(L_p + L_g)^2} < 0$$

¹⁰ Among Scandinavian countries public consumption constitutes on average 50 % of total public outlays and transfers 40 %. About 2/3 of public consumption is wage expenditures (OECD (2007)).

¹¹ Among Scandinavian countries taxes from direct and indirect taxation of labour constitute about 85 % of total tax revenue (OECD (2007)).

¹² In the general case, we have

$$B = \tau [w_p h_p L_p + w_g h_g L_g] - [N - L]b - w_g h_g L_g$$

where a subscript p refers to the private sector, and subscript g to the public sector. Hence,

$$\begin{aligned} \tau &= \frac{[N - L]b + w_g h_g L_g}{w_p h_p L_p + w_g h_g L_g} \\ &= \frac{[N - L] \frac{b}{w_p h_p} + \frac{w_g h_g}{w_p h_p} L_g}{L_p + \frac{w_g h_g}{w_p h_p} L_g} \end{aligned}$$

Hence, if relative wages $\frac{w_g}{w_p}$ and working hours $\frac{h_g}{h_p}$ are constant, the same conclusions follow.

¹³ Note that

$$\frac{\partial^2 \tau}{\partial (L_p)^2} = \frac{\left(N \frac{b}{wh} + L_g\right)}{(L_p + L_g)^4} 2(L_p + L_g) > 0$$

and an increase in public employment (and thus public service provision) and the benefit level leads to a tax increase¹⁴

$$\begin{aligned}\frac{\partial \tau}{\partial L_g} &= \frac{L_p - N \frac{b}{wh}}{(L_p + L_g)^2} > 0 \\ \frac{\partial \tau}{\partial b} &= \frac{[N - L_p - L_g] \frac{1}{wh}}{L_p + L_g} > 0\end{aligned}$$

Since the Scandinavian countries have high ambitions concerning both the social safety net (captured by the replacement rate $\frac{b}{wh}$) and public employment (captured by public employment L_g and thus public service provision), it follows that a high employment rate (private) is needed to avoid too large tax rates. In short the model relies on high labour force participation/employment rates because this is needed to ensure the financing of both the social safety net and the publicly provided services, and because the public sector itself is a large employer. Or to put it differently, it is important not to end up in a vicious circle where a high tax rate via incentive effects causes a low employment level, which in turn requires an even higher tax rate to balance the budget. This underlines the fact that the decommodification interpretation of the Scandinavian welfare model (see introduction) is an inaccurate description of an employment focussed model.

Employment sensitive budgets

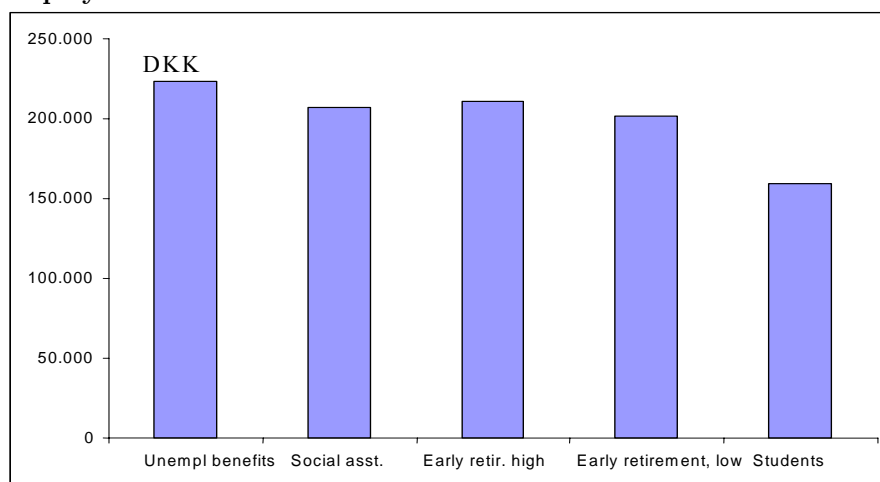
The fact that the budget sensitivity to employment is very large is illustrated by figure 8 showing for Denmark the immediate budget effect (one year) when a person shifts from receiving some benefits into employment in the private sector¹⁵. For an unemployed the amount is roughly 30,000 euro due to the double effect of the increased tax payment and the reduced benefit expenditures. An increase in private employment of 10,000 (0.6 %) will thus improve the budget by 2.25 billion DKK (300 million euro) corresponding to a budget improvement of about 0.15 percentage points of GDP.

¹⁴Note that $L_p - N \frac{b}{wh} > 0$ follows from $(1 - \tau)wh - b > 0$. Since

$$\begin{aligned}(1 - \tau)wh - b &= \left(1 - \frac{[N - L_p - L_g] \frac{b}{wh} + L_g}{L_p + L_g}\right)wh - b \\ &= \frac{whL_p - [N - L_p - L_g]b - b(L_p + L_g)}{L_p + L_g} \\ &= \frac{whL_p - Nb \frac{[N - L_p - L_g] \frac{b}{wh} + L_g}{L_p + L_g}}{L_p + L_g}\end{aligned}$$

¹⁵The orders of magnitude are the same for Sweden, see Swedish Economic Policy Council (2008).

Figure 8: Budget effect of shifts between various types of benefits and private sector employment



Source: Danish welfare commission (2006).

4.2 Employment conditionalities

Considering the Scandinavian welfare model looking at its generous social safety net, it seems to fit the description of a system "subsidizing leisure" or "paying people for not working". However, this is an empirically inaccurate characterization of the welfare policies underlying the model since they do not in general leave various benefits as a free choice but include a number of conditionalities determining eligibility.

By conditionalities are understood the conditions under which the individual acquires access to tax financed transfers and services. A basic question is whether the entitlement is a citizen's right, or whether it depends on some prior action like payment of a contribution, membership fee and the like. A universal welfare arrangement is defined as one where the "entry" condition is a citizen's right granted at an individual level¹⁶. However, if citizenship was the only condition, social transfers would amount to an unconditional income, i.e. a so-called demo-grant or basic income¹⁷. The transfers are however not unconditional, and the conditionalities basically serve two purposes, namely, targeting and incentives.

A key issue in the design of welfare policies is the screening problem to identify who is (deserving) in need, e.g. those who involuntarily lost their job, those with a reduced work capability etc. This is a selection problem arising since policy makers cannot necessarily distinguish between different types. The problem is that more will claim the benefit if entitlement is unconditional (beyond citizenship), and if so, either the benefit level would have to be lower or the tax rate to be higher. Conditionalities of various forms can thus serve the purpose of screening between the "deserving" and "non-deserving" which may lead to more redistribution/insurance or smaller costs (taxes)¹⁸. This screening may either arise via

¹⁶Note that globalization and mobility of people raise new issues in the definition of citizenship, and therefore residence criteria have been introduced for e.g. pensions and social assistance (see below for Denmark).

¹⁷A basic income is sometimes argued as being the ultimate example of decommodification of labour and completion of social rights, cf. Marshall (1950).

¹⁸So-called targeting or tagging, cf. Akerlof (1978). See also Nichols and Zeckhauser (1982).

a gate-keeper checking whether given eligibility conditions are met, or via self-selection. One example of a conditionality with a strong self-selection mechanism is an activation requirement associated with claiming some types of benefits¹⁹. The opportunity cost of this requirement will be high for those who either have a high potential market wage or value of leisure, and hence such conditions may help screening away those who can support themselves or the "lazy".

Another important issue is how to separate between different causes of a particular situation. If the reason is entirely exogenous, the situation is simple in the sense that there are no incentive problems. However, if it includes effects of choice and effort, it is more difficult since we then have an endogenous element, and there is a moral hazard problem since agents may affect both whether the event occurs and its consequences (ex ante and ex post moral hazard). However, building conditionalities into the system makes it possible to change the balance between insurance and incentives²⁰. An example is if requirements for active job search or activation requirements are built into an unemployment insurance scheme. In this case there is a strong incentive to search for jobs (moral hazard problems are reduced), and the insurance scheme can to a larger extent deal with unemployment which is not self-inflicted. In short, such conditionalities address moral hazard problems and therefore allow the system to be more generous in relation to causes exogenous to the individual. This may alternatively be phrased in terms of justice in the sense that the policy aims at correcting for causes beyond the control of the individual but not those directly related to the individual's own choices/effort.

4.3 Conditionalities in the Scandinavian Welfare Model

The issue of rights vs. duties has recently come to the forefront again via a number of labour market reforms undertaken in the Scandinavian countries (in particular Sweden and Denmark). These reforms have reenacted active labour market policies²¹. The shift in labour market policy from a passive to an active focus has been launched by appealing to a so-called "right and duty" principle. The argument being that the individual, on the one hand, has a right to income support, but, on the other hand, also a duty to actively search for jobs and being willing to work. At the same time, society has a duty to help improving job prospects but also a right to demand something from recipients of income transfers. This can be interpreted as reflecting that the welfare state builds on reciprocity and work norms.

A closer look at labour market policies shows that these include a number of contingencies fitting into the following list (cf. OECD (2005)): i) early intervention in unemployment spells, high contact intensity between job seekers and counsellors, ii) regular reporting and monitoring of work availability and job-search activities, iii) direct referral of unemployed to vacant jobs, iv) back-to-work arrangements or individual action plans, v) active labour market programmes to prevent loss of motivation, skill, and employability as a consequence of long-run joblessness, vi) monitoring of compliance with eligibility conditions and implementation of sanctions. In short all these contingencies aim at ensuring that support

¹⁹See Besley and Coate (1992, 1995) for an analysis of how workfare can attain better targeting in a poverty alleviation programme. In Andersen (2008a) it is shown how the design of workfare programmes can ensure a Pareto improvement relative to an unconditional redistribution programme.

²⁰Andersen and Svarer (2008) show in a search framework how workfare elements in an unemployment insurance scheme can shift the trade-off between insurance and incentives.

²¹However, the use of such conditionalities is not a new aspect of welfare policies in the Scandinavian countries.

only goes to people actively searching for jobs. It is not a passive system which merely subsidizes non-market activities.

Table 2: Income transfers in Denmark - conditionalities related to eligibility

Summary indicators of conditionalities in unemployment insurance, social assistance and early retirement - Denmark				
	Eligibility	Conditions	Job search	Activation requirements ¹
Unemployment benefits	Voluntary, contribution based, tax subsidized	Membership: relevant education or employment in 12 months. Renewed benefit period: regular work in 6 out of the last 36 months. Duration: max 4 years	Mandatory registration in job centre (to be renewed weekly) CV on jobnet Individual job-plan/regular contact to job-centre Active job search (monitored and sanctioned)	Age below 30: after 6 months Age between 30 and 60: after 9 months Age above 60: after 6 months Repeated offers After 2 ½ years full time activation
Social Assistance	Universal, but depends on age, and means tested for married based on family income	Social event precluding self-support	For recipients of social assistance who are assessed to have lack of job as their main problem – the same requirements as for unemployment insured	Age between 25 and 30 and no education: education offers after 6 months (alternatively lower benefits) Age between 25 and 30: after 5 weeks an offer of duration 8 weeks, after 13 weeks an offer of duration 18 months Above 30: after 9 months
Early retirement	Voluntary but based on previous employment, contribution based, tax subsidized.	Age. 60-65.	None	None

Note: (1) the actual activity requirements and duration varies across groups.

Source: Based on Danish Ministry of Labour (2007).

Table 2 gives some summary indicators on the conditionalities in three major welfare programmes in Denmark, namely, the unemployment insurance scheme, social assistance (the basic social safety net) and the early retirement scheme. It is seen that claiming unemployment benefits or social assistance is not an unconditional benefit but is associated with a number of conditionalities which mostly have an employment focus. However, even the early retirement scheme is employment conditional in the sense that eligibility presumes that an employment criterion is fulfilled. If this condition is met, it is the individual who decides whether the scheme is going to be used²². If the aim of the scheme is to create an option to opt out of the labour market for individuals with a low work capability as old, it may be questioned whether the absence of a gate-keeper condition is consistent with a welfare model relying on a high employment rate. The reason may be that the scheme was introduced based on prevalent policy

²²Some eligible for disability pensions may take the option of early retirement since it is easier, and hence abolishing the scheme would not on a one-to-one basis be reflected in labour force participation.

views in the 1970s and 1980s building on the "lump of labour"-fallacy. As shown in figures 2 and 3, the particular problem of maintaining a high labour force participation rate for the age group 60+ can be related to the options offered for early retirement.

To see this more clearly consider the main element of the social safety net, social assistance (in Danish "kontanthjælp"). This scheme offers support to individuals having been exposed to a social event like unemployment, illness, divorce etc. The assistance is means tested on a family basis; that is, the income/wealth of the spouse is also of importance for the assistance offered. Moreover, the social assistance is dependent on a number of criteria including age and children. There is a possibility of individual supplements, and recipients of social assistance will usually also be eligible for a housing subsidy (also means tested).

The employment focus of the conditionalities is seen from the following listing of conditions associated with social assistance: (i) Labour market availability criteria: all recipients of social assistance are required to actively search for jobs and participate in so-called activation measures, cf. table 2. (ii) Time dependence: after receiving assistance for more than 6 months there is an upper cap on the sum of social assistance and supplements implying for most a reduction in the total assistance level. Special rules apply to young recipients. (iii) Employment criteria: for a married couple there is a work requirement of at least 300 hours of regular work within the last 2 years to qualify for assistance, and if this condition is not met only one person receives social assistance. (iv) Earned income tax credit: in general all income is deducted from the social assistance, but if the person receives reduced social assistance, cf. (ii), part of the work income is not deducted in the social assistance in order to increase incentives to work. (v) Entry condition: entitlement presupposes that the individual has been living in Denmark in 7 out of the last 8 years (or fulfils the conditions for eligibility according to EU rules), otherwise the person will only be entitled to social assistance at a lower level, the so-called "start assistance" (in Danish "starthjælp").

In sum welfare policies in the Scandinavian countries include a number of conditionalities with a strong employment focus which may counteract both adverse selection and moral hazard problems. The schemes are in general neither "subsidizing people for not working" nor implying that "labour has been decommodified, but rather they serve the purpose of supporting a high labour force participation rate. An implication of this is that the schemes are associated with quite some administrative burdens in the form of control and monitoring. As an illustration of this, the Scandinavian countries are the OECD countries spending most on active labour market policies.

4.4 Some indicative empirical evidence

As a follow-up on the preceding discussion of how welfare policies affect labour supply consider the following simple empirical exercise, where the labour force participation rate is related to the marginal effective tax rate (metr), and two measures affecting the marginal value of non-working time for individuals namely publicly provided services in kind and expenses on active labour market policies. Data is for 14 Western European countries (EU15 minus Luxembourg and Greece and plus Norway) and applies to 2005. Data is measured relative to the US²³.

There are numerous measurement problems involved in assessing the role of economic and non-

²³The results are almost the same if variables are not measured relative to US values.

economic incentives for labour force participation/employment. First, the participation constraint is most binding for individuals with low potential market income, and hence by using aggregate labour force participation, the role of incentives may be underestimated. However, there is no readily available measure of labour supply for the potential low income group. Second, the role of conditionalities in welfare policies is very difficult to measure, and the expenditure levels are very poor indicators of the whole complex of rules and regulations pertaining to receiving welfare benefits.

Despite these reservations the results of the simple regressions reveal some interesting findings^{24 25}. First, the regressions are significantly improved by the inclusion of the two measures related to the employment focus of welfare policies, and the a priori expected signs are found. Second, while the "tax only" regression produces the wrong sign to the tax variable, it is correctly signed when controlling for the two employment focussed variables (even including the Scandinavian countries, compare to figure 1). Finally, in accordance with existing empirical evidence, the effects are much smaller for males than females, and in particular services in-kind have a significant positive effect on labour force participation for females.

Table 3: Estimated labour force participation equation

	Total		Males		Females	
constant	3.30	5.23	4.40	5.22	1.96	5.22
	(2.78)	(3.95)	(6.49)	(4.31)	(1.01)	(2.71)
metr	0.23	-0.25	0.03	-0.18	0.46	-0.31
	(1.07)	(0.82)	(0.22)	(0.64)	(1.34)	(0.76)
almp	NI	0.04	NI	0.03	NI	0.12
		(0.55)		(0.42)		(0.51)
services	NI	0.03	NI	0.03	NI	0.04
		(2.96)		(1.01)		(3.71)
\widehat{R}^2	0.09	0.57	0.01	0.15	0.13	0.68

Note: Based on a cross-section estimation for 14 European countries (EU 15 minus Luxembourg and plus Norway), data applies to 2005, except services where data is from 2003. All variables are measured relative to US values. The metr is the marginal effective tax rate applying to labour force participation (source: Eurostat), and almp and services measure total outlays on active labour market policy in-kind benefits (old age and family) in % of GDP (source: www.sourceoecd.org). The regression is $\ln(p) = \text{constant} + a_1 \ln \text{Metr} + a_2 \ln \text{Almp} + a_3 \ln \text{Services}$. Numbers in parenthesis give the numerical values of the t-statistics.

²⁴The estimation is presented here for labour force participation rather than employment since the latter involves demand aspects. However, labour supply numbers may be boosted if agents not actively searching for jobs are included. Hence, more explicit employment conditionalities may reduce registered labour supply. The estimation has also been made with the employment rate (age group 15-64) as the dependent variable, with the same results.

²⁵It is particularly noteworthy that the introduction of the two control variables implies a significant improvement of the explanatory power of the model (compare also figure 1), even though it remains parsimonious.

5 Employment conditional welfare policies and tax distortions

The preceding discussion of conditionalities raises the question of how pecuniary and non-pecuniary incentives interact in affecting labour supply decisions and the distortionary effects of taxation. The labour supply considered here is labour force participation, i.e. the extensive margin of labour supply.

It is an important question whether conditionalities in transfers (like the activation requirement in the unemployment insurance scheme and the social assistance programme) can sustain a higher labour supply, and thereby contribute to counteract the effects of both taxes and benefit levels on labour force participation.

Consider a situation where individuals have different abilities reflected in different earnings (wages) potentials. Index individuals by type i ($\in [0, 1]$) and denote the potential wage for type i by w_i . Assume that abilities are distributed across the population according to a continuous density $f(w)$ of potential wages²⁶. An individual type i will have utility

$$U(w_i(1 - \tau)) - d$$

if working. $U()$ (where $U' > 0, U'' < 0$) gives the utility from consumption equal to disposable income $w_i(1 - \tau)$, where τ is the tax rate. The disutility from work²⁷ is denoted d (note that working hours are assumed exogenous and normalized to 1).

The public sector offers a benefit scheme which provides a tax financed benefit (after tax) of b with an activation requirement implying a disutility αd , $\alpha \geq 0$. Hence, utility if not working is

$$U(b) - \alpha d$$

The parameter α captures the strength of the conditionality built into claiming the benefit, and it can be interpreted in different ways. In standard model $\alpha = 0$ is implicitly assumed, i.e. an unconditional benefit. The most straightforward interpretation of the α parameter is that there is a time consuming workfare element attached to receiving benefits, and if the activation requirement is a proportion α of the working hours of the employed, the formulation above follows. It is also possible to interpret α as measuring the strength of the conditionality in terms of the foregone leisure value implied by the conditionality by spending time on job search or the probability of shirking on job search and the implied sanction if detected.

An alternative interpretation is that the disutility from work captures the opportunity cost of not being able to perform non-market activities (cooking, cleaning, taking care of the children, family etc.)²⁸. Hence, if the government supplies public services which are close substitutes to non-market activities like e.g. day care facilities, it essentially works to lower the value of non-market activities. Hence, a low α corresponds to a case where the opportunity cost of time is low, and oppositely for a high value of α .

Finally, the parameter α can also be interpreted as measuring the strength of work norms (see Lindbeck (1995)), Lindbeck, Nyborg and Weibull (1998,2003)). If α is large, it implies that the gain in leisure from

²⁶ Where $f(w) > 0$ for $w \in [\underline{w}, \bar{w}]$, and $f(w) = 0$ elsewhere. $\int_0^\infty f(w)dw = 1$.

²⁷ All workers are assumed to have the same disutility from work. The model can easily be generalized to allow for differences in disutility from work. This would imply that the non-working group will include both low productivity groups and high value of leisure groups.

²⁸ Note that Rogerson (2007) takes into account that some public schemes subsidize market work.

not working is small, which may reflect that it is a strong norm that one should be self-supporting, and vice versa.

Reservation wage

Consider now the labour force participation decision²⁹. Is a given individual i better off at work than receiving benefits? The participation constraint reads

$$U(w_i(1-t)) - d \geq U(b) - \alpha d$$

implying that there is a critical wage \tilde{w} defined by

$$U(\tilde{w}(1-t)) - d = U(b) - \alpha d$$

This has the interpretation of a reservation wage determining whether there is an incentive to work or not; that is

$$\begin{aligned} w_i &\geq \tilde{w} && \text{individual } i \text{ is working} \\ w_i &< \tilde{w} && \text{individual } i \text{ is not working} \end{aligned}$$

i.e. there is a skill or ability effect determining who is working, and who is not. The high skilled (with high earnings ability) work and the low skilled (with low earnings ability) do not work. Note that \tilde{w} depends on the tax rate (τ), the benefit level (b) and the activation requirement (α), i.e.

$$\tilde{w}(\tau, b, \alpha)$$

where

$$\frac{\partial \tilde{w}}{\partial \tau} > 0 \quad \frac{\partial \tilde{w}}{\partial b} > 0 \quad \frac{\partial \tilde{w}}{\partial \alpha} < 0$$

i.e. the reservation wage is increasing in the tax rate and the benefit level, but decreasing in the activation requirement.

Note that in the linear case ($U(y) = y$) we have

$$\tilde{w}(1-\tau) = b + (1-\alpha)d$$

implying that the reservation wage can be written

$$\tilde{w}(1 - METR) = (1 - \alpha)d$$

or

$$\tilde{w} = \frac{(1-\alpha)d}{1 - METR}$$

where $METR \equiv \tau + \frac{b}{\tilde{w}}$ measures how the tax system affects the economic consequence from transiting from non-work to work, i.e. the sum of lost benefits and the tax payment, cf. above. The expression here makes clear how economic ($metr$) and non-economic (α) incentives affect the reservation wage and

²⁹It is assumed that utility out of work is always higher when receiving the benefits than when not receiving benefits; that is, the take-up rate among the non-employed is assumed to be 100%.

thus labour force participation/employment, and therefore why non-economic incentives may counter the effects of economic incentives.

Employment

Total employment is now found as

$$L(\tau, b, \alpha) \equiv \int_{\tilde{w}}^{\infty} f(w)dw$$

and the number entitled to benefits is given as

$$N(\tau, b, \alpha) \equiv \int_0^{\tilde{w}} f(w)dw$$

The public sector budget constraint reads

$$\tau \int_{\tilde{w}}^{\infty} wf(w)dw = b \int_0^{\tilde{w}} f(w)dw + g$$

where g denotes eventual other public activities to be financed by the tax. The budget constraint can be written

$$\tau R = bN + g$$

where

$$R \equiv \int_{\tilde{w}}^{\infty} wf(w)dw$$

i.e. R gives total (labour) income generated in the economy.

5.1 Labor supply and taxes

An increase in the tax rate or the benefit level causes a reduction in labour supply, i.e.

$$\begin{aligned} \frac{\partial L}{\partial \tau} &= -\frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) < 0 \\ \frac{\partial L}{\partial b} &= -\frac{\partial \tilde{w}}{\partial b} f(\tilde{w}) < 0 \end{aligned}$$

The intuition is that both a higher tax rate and a higher benefit level make work less attractive to non-work, and therefore labour force participation decreases. This captures the standard incentive effects of taxes and benefits. However, increasing the conditionality for benefits, i.e. the work requirement (non-economic incentives), we have that it increases labour force participation.

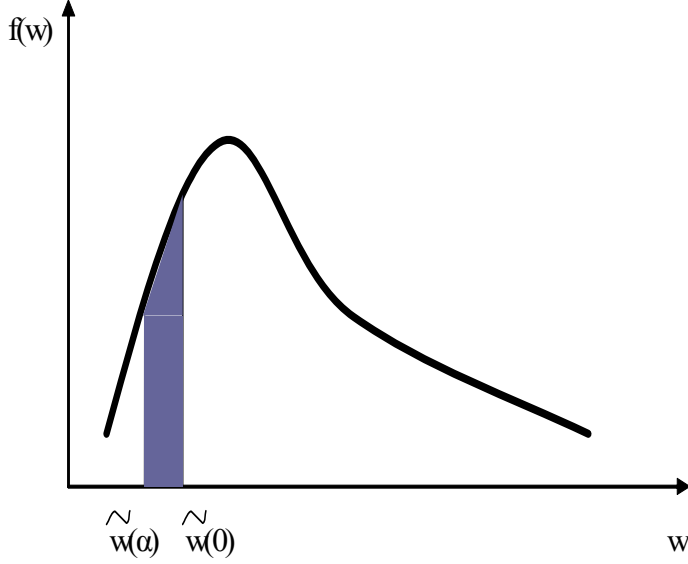
$$\frac{\partial L}{\partial \alpha} = -f(\tilde{w}) \frac{\partial \tilde{w}}{\partial \alpha} > 0$$

Hence, we can conclude that a conditional transfer scheme causes labour supply to be larger when a passive transfer scheme has the same tax rate and benefit level, i.e.

$$L(\tau, b, \alpha) > L(\tau, b, 0) \quad \text{for } \alpha > 0 \tag{2}$$

The intuition for this result can be seen from figure 8. All individuals with a wage potential above the reservation wage ($w_i \geq \tilde{w}$) will work. Since the reservation wage in the case of an activation requirement $\tilde{w}(\alpha) < \tilde{w}(0)$, it follows that the activation requirement increases employment by the shaded area in figure 8.

Figure 8: Reservation wages and employment



Considering next the sensitivity of total labour force participation/employment to the tax rate (or more generally the metr), we have

$$\begin{aligned} \frac{\partial L}{\partial \tau} \frac{\tau}{L} &= -\frac{\partial \tilde{w}}{\partial \tau} \frac{\tau f(\tilde{w})}{L} \\ &= -\frac{\tau}{1-\tau} \frac{\tilde{w} f(\tilde{w})}{L} < 0 \end{aligned}$$

which is obviously negative. Note that elasticity of employment wrt the tax rate can be written

$$\frac{\partial L}{\partial \tau} \frac{\tau}{L} = -\frac{\tau}{1-\tau} \tilde{w} \phi(\tilde{w}) \quad (3)$$

where

$$\phi(\tilde{w}) \equiv \frac{f(\tilde{w})}{\int_{\tilde{w}}^{\infty} f(w) dw} \in [0, 1]$$

denotes the fraction of the employed at the critical wage level. The elasticity depends on the tax rate (via $\frac{\tau}{1-\tau}$), the reservation wage (\tilde{w}), and the fraction of the employed ($\phi(\tilde{w})$) who work at their reservation wage. The important point is that this elasticity not only depends on the tax rate but also on the reservation wage, which in turn depends both on pecuniary and non-pecuniary incentives. Note that (3) implies that the effects of tax reforms can be assessed from empirical estimations of how employment responds to taxes. However, empirical results are conditional on the prevailing conditionalities, and

therefore empirical evidence on tax elasticities can not readily be transferred across countries with different social arrangements.

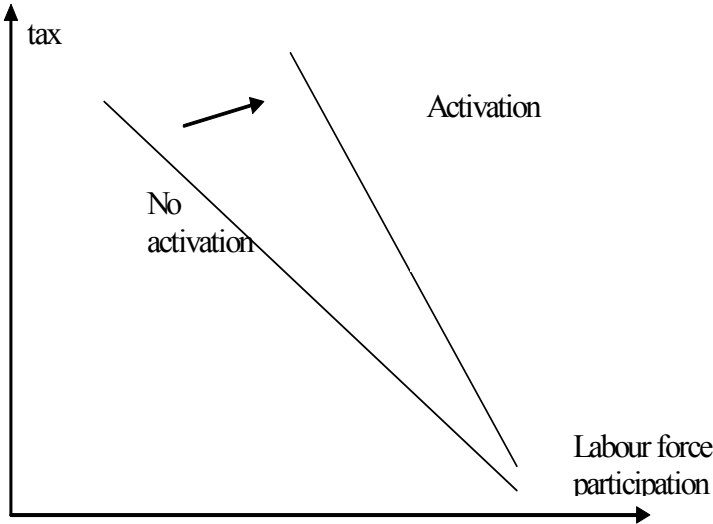
The interesting question is whether activation makes labour supply more or less elastic to the tax rate (i.e. does a given tax make labour force participation fall more or less in a system with an active focus of the transfer scheme). We have that

$$\frac{\partial}{\partial \alpha} \left[\frac{\partial L}{\partial \tau} \frac{\tau}{L} \right] = -\frac{\tau}{1-\tau} \left[\phi(\tilde{w}) \frac{\partial \tilde{w}}{\partial \alpha} - \frac{\tilde{w} f(\tilde{w})}{L^2} \frac{\partial L}{\partial \alpha} + \frac{\tilde{w}}{L} \frac{\partial f(\tilde{w})}{\partial \alpha} \right] \begin{matrix} \leq \\ \geq \end{matrix} 0$$

Note that the elasticity $\frac{\partial L}{\partial \tau} \frac{\tau}{L}$ is negative, and hence if $\text{sign} \frac{\partial}{\partial \alpha} \left[\frac{\partial L}{\partial \tau} \frac{\tau}{L} \right] > 0$, it follows that labour supply becomes less elastic/sensitive to the wage rate. Three effects are at play in determining how the elasticity of employment is affected by a change in the activation requirement. A higher activation requirement (i) reduces the reservation wage ($\frac{\partial \tilde{w}}{\partial \alpha} < 0$), and this tends to increase the elasticity, (ii) increases labour force participation ($\frac{\partial L}{\partial \alpha} > 0$), and this tends to increase the elasticity, (iii) reduces the elasticity if $\frac{\partial f(\tilde{w})}{\partial \alpha} > 0$, i.e. a larger fraction of the population is affected by activation, and vice versa if $\frac{\partial f(\tilde{w})}{\partial \alpha} < 0$. It is thus in general ambiguous whether the elasticity increases or decreases. If $\frac{\partial f(\tilde{w})}{\partial \alpha} \leq 0$, i.e. the density is locally non-increasing in the reservation wage, we have that $\frac{\partial}{\partial \alpha} \left[\frac{\partial L}{\partial \tau} \frac{\tau}{L} \right] > 0$, i.e. the elasticity becomes larger (the case illustrated in figure 8 fulfils this condition). Since the elasticity is negative, this means that labour supply becomes less elastic.

Figure 9 illustrates the case where the elasticity increases, i.e. $\frac{\partial}{\partial \alpha} \left[\frac{\partial L}{\partial \tau} \frac{\tau}{L} \right] > 0$; that is, we have that labour supply becomes larger (cf (2)) and less elastic to the tax rate when there is an activity requirement associated with the benefit scheme.

Figure 9: Taxation and labour supply: the role of activation



5.2 Marginal costs of public funds

An often used measure to evaluate the implications of tax distortions is the so-called marginal costs of public funds. This measure captures both the direct and indirect (distortion) costs of raising revenue to the public sector. Appendix B shows that the marginal costs of public funds are given as

$$mcpf = \frac{1}{1 + \frac{\tau R_\tau}{R} - \frac{\tau N_\tau}{N}} > 1$$

It is seen that the $mcpf$ is larger than one because an increase in the tax rate both reduces the income base ($R_\tau < 0$) and increases the number being dependent on transfers ($N_\tau > 0$).

We are interested in knowing how $mcpf$ is affected by a change in the work requirement in the benefit scheme. To this end, it is used that

$$\begin{aligned} R &= \int_{\tilde{w}}^{\infty} wf(w)dw \\ R_\tau &= -\frac{\partial \tilde{w}}{\partial \tau} \tilde{w} f(\tilde{w}) < 0 \\ N_\tau &= \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) > 0 \end{aligned}$$

it follows that $mcpf$ can be written

$$mcpf = \frac{1}{1 - \frac{\tau \tilde{w} + b}{R} \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w})}$$

Hence, a change in the activation requirement affects the marginal costs of public funds by

$$\frac{\partial mcpf}{\partial \alpha} = (mcpf)^2 \frac{\partial}{\partial \alpha} \left[\frac{\tau \tilde{w} + b}{R} \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) \right]$$

where

$$\frac{\partial}{\partial \alpha} \left[\frac{\tau \tilde{w} + b}{R} \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) \right] = \left[\frac{\tau \tilde{w}}{R} \frac{\partial \tilde{w}}{\partial \alpha} - \frac{\tau \tilde{w} + b}{R^2} \frac{\partial R}{\partial \alpha} \right] \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) + \frac{\tau \tilde{w} + b}{R} \left(\frac{\partial}{\partial \alpha} \frac{\partial \tilde{w}}{\partial \tau} \right) f(\tilde{w}) + \frac{\tau \tilde{w} + b}{R} \frac{\partial \tilde{w}}{\partial \tau} \frac{\partial f(\tilde{w})}{\partial \alpha}$$

and $\frac{\partial \tilde{w}}{\partial \alpha} < 0$, $\frac{\partial R}{\partial \alpha} > 0$, $\frac{\partial}{\partial \alpha} \frac{\partial \tilde{w}}{\partial \tau} = 0$, and $\frac{\partial f(\tilde{w})}{\partial \alpha} \leq 0$. Hence, $\frac{\partial f(\tilde{w})}{\partial \alpha} \leq 0$ (i.e. the density is locally non-increasing in the reservation wage) is a sufficient condition that

$$\frac{\partial}{\partial \alpha} \left[\frac{\tau \tilde{w} + b}{R} \frac{\partial \tilde{w}}{\partial \tau} f(\tilde{w}) \right] < 0$$

which in turn implies that the activation requirement lowers the marginal costs of public funds³⁰, i.e.

$$\frac{\partial mcpf}{\partial \alpha} < 0$$

In sum we have seen that conditionalities in the benefit scheme (activation) work to increase labour force participation for given tax rates and benefit levels (i.e. it counteracts the disincentive effects of

³⁰In Andersen (2008b) it is shown how tax distortions are lowered when taking into account that taxes also provide some implicit insurance.

both), and moreover that it may both make labour supply (labour force participation) more inelastic and the marginal costs of public funds lower (i.e. it becomes less costly to tax financed public activities).

Workfare as part of the optimal policy?

The use of workfare policies may have different political motivations including views on work ethics and reciprocity. An interesting question is whether workfare will be part of the optimal policy package for a utilitarian policy maker respecting individual preference orderings. This is particularly so since Besley and Coate (1992) argued that there under this premise could be no welfare argument for workfare. The argument is that the disutility of imposing the workfare requirement exceeds the marginal value of benefit increases. However, this result was found in an adverse selection setting where the problem is to distinguish deserving from non-deserving benefit claimants.

In the present model, the issue is related to the incentives to work for the marginal participant in the labour market. An increase in the workfare requirement (α) has a utility cost for all benefit claimants. However, the increase in workfare requirements reduces the reservation wage (\tilde{w}), which in turn increases employment and thus tax revenue and lowers benefit expenditures. This is countered by the fact that workfare programmes have direct programme costs. It is shown in the appendix that the necessary condition for workfare policies to be optimal is captured by the simple criterion that it on the margin has a positive net effect on the government budget, i.e.

$$\tau R_\alpha - (b + \alpha c) N_\alpha - cN > 0 \text{ for } \alpha = 0$$

This condition is always fulfilled if workfare programmes are costless ($c = 0$). Hence, there exists a \bar{c} such that the inequality holds for $c < \bar{c}$; i.e. the costs of activation should not be too high for it to be optimal to use workfare as a part of optimal policies.

An additional issue beyond the present paper is how the political support for the social safety net can be strengthened by including contingencies which may be seen to be in accordance with underlying work norms.

6 Concluding remarks

A key policy question for most European countries is how to ensure that the relatively high taxes needed to finance social expenditures do not hamper labour supply to such an extent that it brings welfare and the financial viability of the social model at stake. Recent experience shows that some countries - also high tax countries like the Scandinavian - have been able to increase labour market participation and reduce unemployment. At the same time, debates among researchers have renewed interest in how taxes affect labour markets, and the extent to which it can explain differences between Europe and the US in income per capita. However, some countries like the Scandinavian are outliers in the sense of having high taxes and high labour force participation rates.

This paper has argued that the labour force participation is at a high level in the Scandinavian countries despite high taxes and a generous social safety net because the welfare policies have strong conditionalities linking transfers to employment. Hence, the description of the social safety net as an unconstrained alternative to work is not appropriate for key welfare schemes like unemployment benefits

and social assistance. One important exemption to the rule is early retirement schemes which subsidize non-work and therefore do not have the same employment focus as most other welfare programmes. This contributes to explain why the Scandinavian countries have labour force (and employment) participation rates for prime age groups (30-60) which are above those found in the US, but at or below the US level for the age group 60+.

The present paper has shown how the interaction between economic and non-economic incentives is important in determining labour supply (participation), which explains both why labour supply may seem surprisingly large given taxes and benefit levels, and why high taxes are not causing larger distortions. However, this also brings out the importance of policy complementarities where an important condition for maintaining a Scandinavian type welfare model is to ensure a high employment rate.

The main focus of the preceding discussion has been the extensive margin of labour supply (labour force participation). The intensive margin (working hours) is equally important. A particularly interesting question is to what extent the disincentive effects of high taxes can be countered. Employment conditionalities can more easily address the extensive than the intensive margin. Institutional arrangements like centralized wage bargaining may work to lower the effects of high taxes on the intensive margin of labour supply if e.g. working hours are decided at a centralized level. The reason is that centralized wage bargainers will internalize the public budget in its determination of wages and working hours (see Summers et al. (1993)). An interesting question for future research is whether the tendency towards more decentralized wage determination will strengthen the disincentive effects of taxes on working hours, and whether this can be countered by conditionalities in the social safety net.

Appendix: A

The equilibrium to the model can be characterized by the following two equations:

$$U(\tilde{w}(1 - \tau)) - d = U(b) - \alpha d \quad (4)$$

and

$$\int_{\tilde{w}}^{\infty} \tau w f(w) dw = b \int_0^{\tilde{w}} f(w) dw + g \quad (5)$$

If b is taken to be the policy variable, this gives a system of two equations in the two endogenous variables (\tilde{w}, τ) . Note that (4) defines the reservation wage as a function of the tax rate, i.e. $\tilde{w} = \phi(\tau)$ for $\tau < 1$ where

$$\frac{\partial \tilde{w}}{\partial \tau} \Big|_{participation} = \frac{\tilde{w}}{1 - \tau}$$

or

$$\frac{\partial \tau}{\partial \tilde{w}} \Big|_{participation} = \frac{1 - \tau}{\tilde{w}} > 0$$

and

$$\frac{\partial^2 \tau}{\partial \tilde{w}^2} \Big|_{participation} = -\frac{1 - \tau}{(\tilde{w})^2} < 0$$

The budget constraint (5) gives for given benefits the tax rate given the reservation wage, i.e. $\tau = \psi(\tilde{w})$. Note that

$$\begin{aligned}\tau &\rightarrow \infty \text{ for } \tilde{w} \rightarrow \infty \\ \tau &\rightarrow \frac{g}{\int_0^{\infty} wf(w)dw} \text{ for } \tilde{w} \rightarrow 0\end{aligned}$$

Moreover, we have from (5)

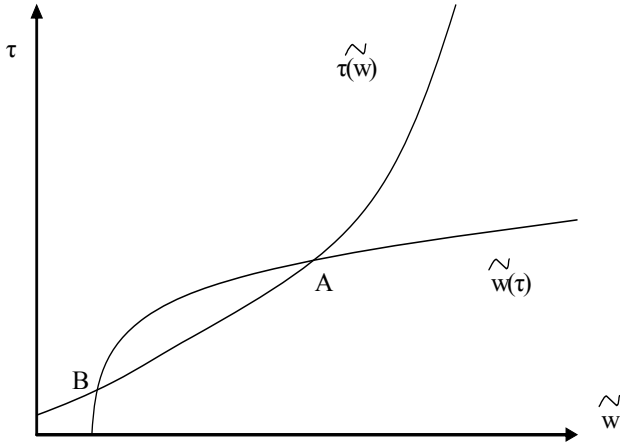
$$\frac{\partial \tau}{\partial \tilde{w}} \Big|_{\text{budget}} = [b + \tau \tilde{w}] \frac{f(\tilde{w})}{\int_{\tilde{w}}^{\infty} wf(w)dw} > 0$$

and

$$\frac{\partial^2 \tau}{\partial \tilde{w}^2} \Big|_{\text{budget}} = \left[\tilde{w} \frac{\partial \tau}{\partial \tilde{w}} + \tau \right] \frac{f(\tilde{w})}{\int_{\tilde{w}}^{\infty} wf(w)dw} + [b + \tau \tilde{w}] \frac{f_w(\tilde{w}) \int_{\tilde{w}}^{\infty} wf(w)dw + \tilde{w} (f(\tilde{w}))^2}{\left(\int_{\tilde{w}}^{\infty} wf(w)dw \right)^2} \leq 0$$

Note that the second derivative is ambiguously signed. The equilibrium is illustrated in figure 10. For the sake of argument, the figure below is drawn for the case where it is assumed that $\frac{\partial^2 \tau}{\partial \tilde{w}^2} \Big|_{\text{budget}} > 0$.

Figure 10: Equilibrium tax and reservation wage.



For an equilibrium to exist, it is required that the revenue requirement is sufficiently low ($g < \underline{g}$). An equilibrium always exists for $g = 0$ since we in that case has $\tau \rightarrow 0$ for $\tilde{w} \rightarrow 0$. Note that there are in general two equilibria, and stability requires that

$$\frac{\partial \tau}{\partial \tilde{w}} \Big|_{\text{participation}} > \frac{\partial \tau}{\partial \tilde{w}} \Big|_{\text{budget}}$$

or

$$\frac{1-\tau}{\tilde{w}} > [b + \tau\tilde{w}] \frac{f(\tilde{w})}{\int_{\tilde{w}}^{\infty} wf(w)dw}$$

$$1 > [b + \tau\tilde{w}] \frac{\tilde{w}}{1-\tau} \frac{f(\tilde{w})}{\int_{\tilde{w}}^{\infty} wf(w)dw}$$

Note that this ensures that $mcpf > 1$ (see Appendix B).

Appendix B: Optimal policies

The problem for a utilitarian planner can be written

$$Max_{\tau,b,g,\alpha} \int_{\tilde{w}}^{\infty} [U((1-\tau)w) - d] f(w)dw + \int_0^{\tilde{w}} [U(b) - \alpha d] f(w)dw + V(g)$$

$$st \tau \int_{\tilde{w}}^{\infty} wf(w)dw = (b + \alpha c) \int_0^{\tilde{w}} f(w)dw + g$$

where $V(\cdot)$ is a concave utility function giving the utility of public consumption. The optimization problem can be written as the following Lagrange problem

$$Max_{\tau,b,g,\alpha} \Upsilon = \int_{\tilde{w}}^{\infty} [U((1-\tau)w) - d] f(w)dw + \int_0^{\tilde{w}} [U(b) - \alpha d] f(w)dw + V(g) + \lambda [\tau R - (b + \alpha c) N - g]$$

where we have the following first order conditions

$$\frac{\partial \Upsilon}{\partial \tau} = \int_{\tilde{w}}^{\infty} -U_c(\cdot)wf(w)dw + \lambda [R + \tau R_{\tau} - (b + \alpha c) N_{\tau}] = 0 \quad (6)$$

$$\frac{\partial \Upsilon}{\partial g} = V_g(\cdot) - \lambda = 0 \quad (7)$$

$$\frac{\partial \Upsilon}{\partial \alpha} = -dN + \lambda [\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN] = 0 \quad (8)$$

$$\frac{\partial \Upsilon}{\partial b} = U_b(b)N + \lambda [\tau R_b - (b + \alpha c) N_b - N] = 0 \quad (9)$$

(I) Marginal costs of public funds

We have from the first order condition for the tax rate (6) that

$$-\int_{\tilde{w}}^{\infty} wU_c((1-\tau)w)f(w)dw + \lambda [R + \tau R_{\tau} - (b + \alpha c) N_{\tau}] = 0$$

Hence

$$\lambda = \frac{\int_{\tilde{w}}^{\infty} wU_c((1-\tau)w)f(w)dw}{R + \tau R_{\tau} - (b + \alpha c) N_{\tau}}$$

Note that the Lagrange multiplier measures the effect on utility of a marginal increase in the revenue requirement to the public sector. This is therefore a measure of the costs of raising revenue to the public sector. However, it gives a metric measured in units of utility which is hard to interpret, and therefore it is useful to transform it to a measure in monetary units. This can be done by relating the Lagrange multiplier to the marginal utility of consumption, and in the present case it is convenient to do this for the average wage, i.e. $\bar{w} = \frac{R}{L}$. Hence, we get

$$mcpf \equiv \frac{\eta}{\bar{U}_c((1-\tau)\bar{w})} = \frac{\int_{\bar{w}}^{\infty} w \frac{U_c((1-\tau)w)}{\bar{U}_c((1-\tau)\bar{w})} f(w) dw}{R + \tau R_{\tau} - (b + \alpha c) N_{\tau}}$$

Assume for the sake of argument that the marginal utility is constant, implying that $\int_{\bar{w}}^{\infty} w \frac{U_c((1-\tau)w)}{\bar{U}_c((1-\tau)\bar{w})} f(w) dw = \int_{\bar{w}}^{\infty} w f(w) dw = R$ in which case we have³¹

$$mcpf = \frac{1}{1 + \frac{\tau R_{\tau}}{R} - (b + \alpha c) \frac{N_{\tau}}{R}} > 1$$

or using that the budget constraint for the public sector implies $(b + \alpha c) N = \tau R$

$$mcpf = \frac{1}{1 + \frac{\tau R_{\tau}}{R} - \frac{\tau N_{\tau}}{N}} > 1$$

(II) Benefits and active labour market policies

From (8) we have that the optimal level of α satisfies

$$dN = \lambda [\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN]$$

where the left hand side gives the marginal costs of imposing higher effort requirements on the unemployed measured by the disutility from work. The right hand side gives the marginal benefit as the direct revenue effect $(\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN)$ times the shadow price of public revenue (λ). A necessary condition for $\alpha > 0$ to be optimal is that

$$\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN > 0 \text{ for } \alpha = 0$$

Note that $R_{\alpha} > 0$ and $N_{\alpha} < 0$. Hence, this inequality holds for $c = 0$. Hence, there exists a \bar{c} such that the inequality holds for $c < \bar{c}$, i.e. the costs of activation should not be too high.

Hence, the condition for $\alpha > 0$ to be optimal is that the marginal costs of employment conditionalities fall short of the marginal benefits of a change in the work requirement evaluated in the situation without any work requirement ($\alpha = 0$), i.e.

$$dN < \lambda [\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN] \text{ for } \alpha = 0$$

or using (9)

$$dN < -U_b(b)N \frac{[\tau R_{\alpha} - (b + \alpha c) N_{\alpha} - cN]}{\tau R_b - (b + \alpha c) N_b - N} \text{ for } \alpha = 0$$

³¹Note that stability ensures that $mcpf$ is always larger than one, cf. Appendix A.

Note that $\frac{\partial \tilde{w}}{\partial \alpha} = -\frac{d}{U_b(b)} \frac{\partial \tilde{w}}{\partial b}$ and hence $R_\alpha = -\frac{d}{U_b(b)} R_b$ and $N_\alpha = -\frac{d}{U_b(b)} N$. Hence the condition above can be written

$$1 < \frac{-\tau R_\alpha + (b + \alpha c) N_\alpha + cN}{-\tau R_\alpha + (b + \alpha c) N_\alpha - \frac{d}{U_b(b)} N} \text{ for } \alpha = 0$$

This condition is fulfilled for $c = 0$.

References:

- Akerlof, G.A., 1978, The Economics of "Tagging" as Applied to the Optimal Income Tax, Welfare Programs and Manpower Planning, *American Economic Review*, 68, 8-19.
- Alesina, A., E. Glaeser and B. Sacerdote, 2005, Work and leisure in the US and Europe: Why so different?, In *NBER Macroeconomics Annual*, edited by Mark Gertler and Kenneth Rogoff, Cambridge Mass. MIT Press.
- Andersen, T.M., and B. Holmström, S. Honkapohja, S. Korkman, H.T. Söderström, J. Vartiainen, 2007, The Nordic Model - Embracing globalization and sharing risks. ETLA
- Andersen, T.M. and M. Svarer, 2008, The Role of Workfare in Striking a balance between incentives and insurance in the labour market, CESifo working paper.
- Andersen, T.M., 2008a, Workfare, redistribution and welfare, Working Paper.
- Andersen, T.M., 2008b, Income taxation: Incentives vs. insurance, Working Paper, Aarhus University.
- Besley, T., and S. Coate, 1992, Workfare vs. Welfare: Arguments for Work Requirements in Poverty-Alleviation Programs, *American Economic Review*, 82, 249-61.
- Besley, T., and S. Coate, 1995, Review of Economic Studies.
- Chetty, R., 2008, Is the taxable income elasticity sufficient to calculate the deadweight loss? The implications of evasion and avoidance, NBER Working Paper, 13844.
- Centeno, 2005, Indicators of financial incentives to work, in European Commission (2005).
- Causa, O., 2008, Explaining differences in hours worked among OECD countries: An empirical analysis, OECD Economics Department Working Paper 596.
- Danish Ministry of Labour, 2007, LBK nr 1074, 07/09/2007.
- Danish Ministry of Finance, 2004, Distribution and incentives (Fordeling og incitament), Copenhagen.
- Danish Welfare Commission, 2006, Fremtidens velfærd - vores valg, analyserapport, Copenhagen.
- Evers, M., R. A. de Moij, and D. J. van Vuuren, 2005, What explains the variation in estimates of labour supply elasticities? CESifo working paper 1633.
- Esping-Andersen, G., 1990, The Three Worlds of Welfare Capitalism, Polity Press.
- European Commission, Indicators and policies to make work pay, European Economy, Special Report no 2, 2005
- Gordon, R., 2006, Issues in the Comparison of Welfare Between Europe and the United States, Working Paper-
- Ljungqvist, L., and T. J. Sargent, Do Taxes Explain European Employment? Indivisible Labour, Human Capital, Lotteries and Savings, CEPR Discussion paper 6196.

- Lindbeck, A., 1995, Hazardous Welfare State Dynamics, *American Economic Review*, Papers and Proceedings, May 1995, 9-15.
- Lindbeck, A, S. Nyberg and J.W.Weibull, 1999, Social Norms and Economic Incentives in the Welfare State, *Quarterly Journal of Economics*, 114, 1-37.
- Lindbeck, A, S. Nyberg and J.W.Weibull, 2003, Social Norms and Welfare State Dynamics, *Journal of the European Economic Association*, 1, 533-542.
- Marshall, T.H., 1950, *Citizenship and social class, and other essays*, Cambridge: Cambridge University Press.
- Meghir, C., and D. Phillips, 2008, Labour Supply and Taxes, IZA Discussion paper 3405.
- Nichols, A.L., and R. J. Zeckhauser, 1982, Targeting Transfers through restrictions on recipients, *American Economic Review*, 72 (2), 372-377.
- OECD, 2005, *Employment Outlook*
- OECD, 2008, Explaining Differences in Hours Worked across OECD Countries, *Economic Policy Reforms*, 1, 66 - 81.
- Ohanian, L., A. Raffo, and R. Rogerson, 2006, Long-term Changes in Labour Supply and Taxes: Evidence from OECD Countries, 1956-2004, NBER Working Paper 12786.
- Pedersen, P.J., and N. Smith, 2002, Unemployment traps: Do financial disincentives matter?, *European Sociological Review*, 18, 271-88.
- Prescott, E. C., 2004, Why do Americans Work So Much More Than Europeans?, Federal reserve bank of Minneapolis, *Quarterly Review*, 28 (1), 2-13.
- Rogerson, R., 2007, Taxation and market work: Is Scandinavia an Outlier?, *Economic Theory* 32, 59-85.
- Saez, E., 2002, Optimal Income transfer programs: intensive versus extensive labour supply responses, *Quarterly Journal of Economics*, 1039-1073.
- Swedish Economic Policy Council, 2008, *Fiscal Policy in Sweden*, Stockholm.
- Summers, L., J. Gruber, and R. Vegara, 1993, Taxation and the Structure of Labour Markets: The Case of Corporatism, *Quarterly Journal of Economics*, 385-411.