

# **The impact of labour participation on social security dependency, poverty and welfare**

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## **1. Introduction**

Recent years have seen a growing consensus among both researchers and politicians about the crucial importance of a high labour participation rate for a good performance in a wider socio-economic field. It may be true that rising social security expenditure can be financed temporarily by increasing tax rates or accepting higher budget deficits; that poverty and income inequality may be most effectively reduced in the short run by raising benefit levels or increasing the redistributive impact of the tax system; and that economic growth can be enhanced by increasing capital investments and stimulating technological innovations. Yet, there is hardly any discussion nowadays that durable success in these fields primarily asks for a high and/or rising rate of labour participation. As the share of the population in paid employment increases, the complementary share that is dependent on a social benefit shrinks, hence social expenditure falls, a decreasing number of people is in risk of being poor, and a growing number is employed in productive activities and contributes to economic growth. It is therefore understandable that increasing the labour participation rate has become the socio-economic focus of many national governments and supranational bodies, the European Union in particular. The European employment strategy (EES), initiated at the European summit of 1997 at Luxembourg, aims at rising labour participation in the European Union through an ‘open method of co-ordination’ (OMC). This means that the EU member states agree on common goals but are free to implement these goals as they choose. By monitoring and benchmarking each country’s performance, it is hoped that the national governments will learn from each other and that in the end the policies that have proven to be most successful will be adopted by the other countries. At the European summit of 2000 in Lisbon, the EU council agreed upon a more precise formulation of the goals with respect to labour participation: in the year 2010 the labour participation rate of the working-age population should be at least 70% in each member state, while the participation rate of two specific groups, viz. women and older people, aged 55-64 years, should reach 60% and 50%, respectively.

However, as I will argue in this article, by formulating such exact quantitative goals with respect to one variable one runs the risk of neglecting the other socio-economic objectives that were originally striven after. This would be no problem if there was a simple linear relationship between the labour participation rate on the one hand and the objectives with respect to social security dependency, poverty and economic growth on the other hand. A country’s performance with respect to labour participation would then directly be reflected in its social expenditure rate, its poverty rate and its economic growth rate. Alas, all too often this happens not to be true. The purpose of this article is to get a more precise insight in the contribution of changes of the labour participation rate to changes of social security dependency, the poverty rate and economic growth. This will be done by means of decomposition analyses, which will be explained in section 2. Section 3 describes the data that were used to perform the decomposition analyses for the fifteen member states of the European Union and for the United States. In sections 4-6 the results of the decomposition analyses are presented. In

section 7 I conclude that trends in social security dependency, social expenditure, poverty and income growth can only partly be explained by changes of the labour participation rate. Other factors, which change more or less independent from the labour market situation, often turn out to be more important than the rate of labour participation. Hence, it is doubtful whether formulating exact quantitative goals with respect to labour participation is very sensible in view of the perhaps even more important objectives with respect to social security, poverty and welfare.

## **2. Methodology: decomposition analysis**

Although it may seem plausible at face value that employment growth or a rise in the labour participation rate lowers dependency rates and social expenditure, reduces poverty and enhances economic growth, there is no simple linear relationship between these variables. In this section we will examine more closely the relationship between labour participation on the one hand and these social and economic variables on the other hand.

The best way to proceed would be to build a structural model comprising the causal relationships between all relevant variables. Such a comprehensive model would however be very complex and impossible to implement empirically. Hence, we confine ourselves to a number of analytical equations, based on the logical relation between different variables. Although these equations are not suitable for a causal analysis, they are nevertheless very useful for a numerical decomposition of the changes of the variables of interest. Such a decomposition gives an impression of the *direct* impact of a change of the relevant variables – the labour participation rate in particular – on the ‘dependent’ variable. It gives, however, no insight in possible indirect causation. E.g., a decomposition analysis can show the direct impact of an increase of the net participation rate on the unemployment rate, but it does not inform us about the possible indirect effect on the unemployment rate *via* the gross labour force participation (i.e. labour supply).

In this section we present the formulae for the decompositions of the empirical analyses in the following sections. The general arithmetical rules that are applied in these formulae are set out in Appendix 1.

### *2.1 Unemployment*

It seems evident that a rise in labour force participation reduces unemployment. Yet, the unemployment rate  $ur$  (the number of unemployed as a percentage of the labour force) not only depends on the net participation rate  $np$ , i.e. the number of employed people  $e$  as a percentage of the working-age population (15-64 years)  $wp$ , but also on the gross participation rate  $gp$ , i.e. the size of the labour force (or labour supply)  $lf$  as a percentage of the working-age population. Hence, the unemployment rate equals:

$$(1) \quad ur \equiv \frac{lf - e}{lf} = 1 - \frac{e}{lf} = 1 - \frac{e/np}{lf/np} = 1 - \frac{np}{gp}$$

Although a rising net participation rate  $np$  exerts a negative influence on the unemployment rate  $ur$ , this may be partly or fully offset by a rise in the gross participation rate  $gp$ . This needs not be mere coincidence, since the rise in employment may at least partly be induced by an increase in the supply of labour. For example, the rapid increase in labour force participation of Dutch married women in the second half of the 1980s both stimulated employment growth in the Netherlands and prevented the unemployment rate from falling substantially. Hence, we can expect  $np$  and  $gp$  to be positively correlated, causing an increase of the net participation rate  $np$  to result in a less than proportional decline of the unemployment rate  $ur$ .

From (1) and equation (A3) in the Appendix the change of the unemployment rate  $\Delta ur$  between two years follows:

$$(1') \quad \Delta ur = -\left(\frac{1}{\overline{gp}}\right)\Delta np + \frac{\overline{np}}{\overline{gp}_1 \overline{gp}_2} \Delta gp,$$

in which a subscript indicates the first (1) or last (2) year and a bar above a variable indicates the average of the first and last year, i.e.  $\bar{a} \equiv \frac{1}{2}(a_1 + a_2)$ .

## 2.2 Social security dependency

An important reason for trying to raise labour participation is that this reduces the number of social security beneficiaries and hence social security expenditure. This would enhance the sustainability of the social security system. Although this is true conditional on a *ceteris paribus* clause, in general the 'other' relevant factors will not remain constant. This is so, first, because some other factors apart from the number of unemployed also affect the number of beneficiaries. If we restrict attention to people of working age, the so-called dependency ratio  $dr$ , i.e. the ratio of the number of beneficiaries  $ben$  and the number of employed people  $e$ , not only depends on the net participation rate  $np$ , but also on the share  $s$  of non-working people who are entitled to a benefit, i.e. the eligibility rate:<sup>1</sup>

$$(2) \quad dr \equiv ben/e = s(wp - e)/e = s(1/np - 1)$$

The eligibility rate  $s$  depends, among others, on the (relative) number of lone mothers with young children who are dependent on social assistance and on the (relative) number of disabled persons who are entitled to a benefit. The size of these groups is mainly dependent on factors outside the labour

market and might therefore change independently from the participation rate. From (2) and equation (A3) the change of the dependency ratio  $\Delta dr$  follows:

$$(2') \quad \Delta dr = \left( \frac{\bar{1}}{np} - 1 \right) \Delta s - \frac{\bar{s}}{np_1 np_2} \Delta np$$

Of course, the total number of social benefit recipients also depends on the number of people aged 65 years and over, who are in general entitled to an old age benefit or pension.

However, social security expenditure is not only affected by the number of beneficiaries, but also by the average benefit level. This level may change because of deliberate government policies (e.g. a cut in benefit levels to increase work incentives) or as a result of a shift in the composition of the population of beneficiaries, e.g. from younger to older people, or from families to single persons.

Since older people and families in general get higher benefits than younger and single persons, such a shift may change the average benefit level.

If we denote the total population by  $p$ , the population aged 65 and over by  $p65$ , the average benefit they receive by  $b65$  and the average benefit received by people under 65 who are out of work by  $by$ , then the social security expenditure rate  $ser$ , i.e. the share of social security expenditure  $se$  in gross domestic product (gdp)  $y$ , is:

$$(3) \quad ser \equiv \frac{se}{y} = \frac{b65 p65 + by (wp - e)}{y} = \frac{b65}{ay} \frac{p65}{p} + \frac{by}{ay} (1 - np) \frac{wp}{p},$$

in which  $ay$  is average gdp per capita, that is  $ay \equiv y/p$ . The ratios  $b65/ay$  and  $by/ay$  are the relative benefit levels of retired people and of younger people out of work, respectively, compared to the average income level of the total population. If we write  $relb65$  for  $b65/ay$ ,  $relby$  for  $by/ay$ ,  $sp65$  for  $p65/p$  and  $swp$  for  $wp/p$ , then, using equation (A2), the change of the social security expenditure rate  $\Delta ser$  is:

$$(3') \quad \Delta ser = \overline{relb65} \Delta sp65 + \overline{sp65} \Delta \overline{relb65} + \overline{relby} (1 - \overline{np}) \Delta swp + \\ (1 - \overline{np}) \overline{swp} \Delta \overline{relby} - \overline{relby} \overline{swp} \Delta np - \frac{1}{4} \Delta swp \Delta \overline{relby} \Delta np$$

Hence, the social expenditure rate rises if the population share of retired people ( $sp65$ ) or the share of the working-age population ( $swp$ ) grows, if the relative benefit level of either retired people ( $relb65$ ) or of non-working people of working-age ( $relby$ ) rises, or if the net participation rate ( $np$ ) falls.

### 2.3 Poverty

Since employed people have, on average, a much higher income than people who are out of work, it seems evident that a rise in the number of employed people reduces income inequality and poverty. Yet, this is only true as long as one restricts attention to individual incomes. With respect to poverty, however, the proper unit of measurement is generally considered to be the household. But then the relationship between employment and poverty becomes far more complex. If an individual who finds a job belongs to a household in which some other person already earns an income from work, the resulting increase in the number of employed people might very well have no effect on poverty at all. If, for example, a dependent wife whose husband is a well-earning employee, joins the labour market, the resulting rise in income of this household will not affect the number of poor households, since the household was already well above the poverty line.

If one denotes the share of people that live in ‘work-rich’ households with at least one working member by  $na$ , the share of people living in ‘workless’ households without a labour income by  $ni$ , and the poverty rates of both types of household by  $pa$  and  $pi$  respectively, then the overall poverty rate  $pov$  is:

$$(4) \quad pov = na pa + ni pi = na pa + (1 - na) pi$$

Hence, the change of the poverty rate  $\Delta pov$ :

$$(4') \quad \frac{\Delta pov}{na \Delta pa + (1 - na) \Delta pi - (\overline{pi} - \overline{pa}) \Delta na} = \frac{\overline{na} \Delta pa + \overline{pa} \Delta na + (1 - \overline{na}) \Delta pi - \overline{pi} \Delta na}{na \Delta pa + (1 - na) \Delta pi - (\overline{pi} - \overline{pa}) \Delta na}$$

Unfortunately there is no unambiguous relationship between the share of the population living in work-rich households or, for short, the household activity rate  $na$  and the net participation rate  $np$ . Therefore we simply assume that the household activity rate is a particular fraction of the net participation rate, which we will call the household-person activity ratio  $\alpha$ :

$$(5) \quad na = \alpha np$$

In general  $\alpha$  is larger than 1 if non-working people are disproportionately concentrated in work-rich households and  $\alpha$  is smaller than 1 if non-working people are disproportionately concentrated in workless households. In case there are relatively many ‘traditional’ single earner families or relatively few single persons without a job,  $\alpha$  will tend to be larger than 1. There is no presumption that  $\alpha$  is constant. E.g., if the net participation rate  $np$  rises as some housewives with an employed spouse find a

job, then the number of non-working people living in work-rich households decreases and, hence,  $\alpha$  falls. Decomposing equation (5) yields:

$$(5') \Delta na = \bar{\alpha} \Delta np + \overline{np} \Delta \alpha$$

Substituting equation (5') in (4') we obtain a decomposition of the change of the poverty rate  $pov$  in terms of the net participation rate  $np$  and the poverty rates of work-rich households ( $pa$ ) and workless households ( $pi$ ), respectively:

$$(4'') \Delta pov = \bar{na} \Delta pa + (1 - \bar{na}) \Delta pi - \bar{\alpha} (\bar{pi} - \bar{pa}) \Delta np - \overline{np} (\bar{pi} - \bar{pa}) \Delta \alpha$$

So, the poverty rate rises if the poverty rate of either work-rich households  $pa$  or of workless households  $pi$  rises, or if the net participation rate  $np$  or the household-person activity ratio  $\alpha$  falls.

#### 2.4 Income

As long as an additional employed person contributes positively to production, an increase in employment adds to gross domestic product (gdp) and hence to the level of welfare, as it is conventionally measured. Nevertheless, for three reasons gdp per capita – or average income - may not increase proportionally to the net participation rate.

First, the productive potential of the labour force is not determined by the number of working persons but by the number of fulltime equivalent jobs. Two people with a halftime job will in general produce no more than one person with a fulltime job. Hence, it is the change of the fulltime employment rate  $fer$ , rather than the change of the net participation rate  $np$ , that is relevant for economic growth. The difference between the two is determined by the part-time ratio  $pr$ , which is defined as the ratio of the number of employed persons  $e$  and fulltime equivalent employment  $fe$ , i.e.  $pr \equiv e/fe$ . Hence, the fulltime employment rate:

$$(6) \quad fer \equiv \frac{fe}{wp} = \frac{e/pr}{wp} = \frac{np}{pr}$$

Secondly, gdp growth also depends on the change of labour productivity, i.e. real gross domestic product per fulltime worker. For different reasons it is likely that a rise in the rate of labour participation exerts a negative pressure on average labour productivity. In general, relatively productive people have a higher probability of being employed than less productive people, since for highly productive people the income out of paid work will more often outweigh the loss of leisure time than for less productive people do. Besides, a statutory minimum wage may effectively block the

entry of less productive people into a job. Hence, a rise of the labour participation rate will in general mean that less productive people join the labour market, which slows down productivity growth. A slowdown of labour productivity may also be the result of measures devised to promote employment by increasing the labour intensity of production. E.g., a shift in the tax burden from labour earnings to value added or to capital income, might lower capital intensity and hence hinder productivity growth. Since the rate of economic growth is equal to the sum of employment growth and productivity growth, such a policy might have no effect whatsoever on economic growth. A country that tries to enhance job growth by stimulating labour intensive production, might therefore end up with no higher rate of economic growth than a country that pays less attention to employment and focuses on improving productivity.

Thirdly, the rate of growth of gdp per capita is effected by the share of people of working age in the total population  $swp$ . An ageing population will experience a slowdown of per capita income growth because of a shrinking proportion of the population that is available to perform productive work. Denoting labour productivity, i.e. gdp per fulltime worker, by  $lp$ , average gdp per capita  $ay$  is:

$$(7) \quad ay \equiv \frac{y}{p} = \frac{fe \cdot lp}{p} = \frac{fer \cdot wp \cdot lp}{p} = \frac{np/pr \cdot wp \cdot lp}{p}$$

It is not very useful to compare the change of average income between countries in absolute terms, since this change is highly contingent on the initial level of average income. Therefore we calculate the change of the natural log of average income, which approximately equals the relative or percentage change of average income if this change is not too large. If the change of the log of a variable is denoted by a capital D, i.e.  $Da \equiv \Delta \ln a$ , the change of log average income can be decomposed as follows:

$$(7') \quad Day = Dnp - Dpr + Dlp + Dswp$$

Hence, the positive impact of an increasing labour participation  $np$  on average income, may be offset by a rise of the part-time ratio  $pr$ , a decline of average labour productivity  $lp$  and a falling share of the working age population  $swp$ .

The analytical decompositions in this section show that the relationship between the labour participation rate on the one hand and the unemployment rate, social security dependency and social expenditure, poverty, and average income growth on the other hand is in general quite complex. It is therefore far from evident that those countries that show the best labour market performance also outperform the other countries in terms of social security dependency, poverty, and income growth. In

order to assess the success of the European employment strategy one should therefore not restrict attention to labour market indicators only, but also address these other socio-economic indicators.

### **3. Data**

This article focuses on the impact of secular trends of the labour participation rate on other socio-economic variables in the European Union and the United States. Hence we need comparable figures for sixteen countries over a quite long period of time. Whenever possible figures for the entire period since the year 1985 are used.

International comparisons are susceptible to numerous methodological pitfalls and complications. This article is no exception to this rule. Although we use figures which are published by international organisations whenever possible, this does not guarantee their consistency and comparability. The main sources used are Eurostat (the statistical office of the European Union) and the Organisation for Economic Co-operation and Development (OECD). Except for the United States, Eurostat is the source for all figures on labour market indicators (participation rate, unemployment rate, fulltime employment rate), which are based on the European Union labour force surveys (LFS) and are annually published in *Employment in Europe* (EC 1999 and 2002). The OECD regularly publishes figures on National Accounts (OECD 2002a), which are the source for the indicators of average income and productivity, and of social expenditure (OECD 2001). Besides, in 2000 the OECD published a survey of the income distribution and poverty in a number of OECD countries, including 12 EU member states and the United States (Förster 2000). There are no ‘official’ statistics of the number of social security beneficiaries from either Eurostat or the OECD. However, on commission of the Dutch government the Netherlands Economic Institute (NEI) in Rotterdam occasionally collects figures on the numbers of beneficiaries in various social security schemes in eight EU countries plus the United States and Japan (Arents et al. 1999, Moor et al. 2002).

Although we do not want to suggest that the comparability of figures of the labour market and the national accounts is unproblematic, the use of international figures of social security and poverty deserve special attention. Figures of social security expenditure, for example, are very sensitive to differences in tax treatment of social benefits. While in some countries social benefits are generally paid out as net incomes, in other countries social benefits are subjected to income taxation or even to social insurance levies. Adema (2001) has adjusted social expenditure figures for these differences in tax treatment and shows that the differences in social expenditure rates between countries are substantially reduced if they are all calculated on a net basis. Since his analysis only covers a few recent years (1993-1997) and we are interested in developments over the entire period 1985-2000, his figures will, however, not be used in this article.

Figures of the number of social security beneficiaries are also very sensitive to differences in registration methods and definitions. Although Arents et al. (1999) and Moor et al. (2002) have tried to adjust for these differences as best as they could, due to a lack of precise information on definitions

and methods, there remains a lot of uncertainty in their figures. Year-to-year changes are sometimes incredibly large and probably point to changes of definition. Since there are no other sources to check these figures, these figures will nevertheless be used in the analysis below.

Atkinson and Badolini (2001) have recently emphasised the pitfalls in the use of 'secondary' data on income distribution. Again, small differences in definitions and methodology may result in strongly diverging conclusions on (trends in) income inequality and poverty. E.g. the figures used here, which are compiled by the OECD, differ substantially from the often used data of the Luxembourg Income Study (LIS 2002). Although we have no indication that the OECD figures are in general more reliable than the LIS figures, we use the data of Förster (2000) because these include figures on the poverty rate and the population share of work-rich and workless households separately, which we need to perform a decomposition analysis. The reader should, however, be aware that using another source for these poverty data might have resulted in different conclusions.

Another complication when analysing changes between the years 1985 and 2000 or 2001, is the break in the series caused by the re-unification of Germany in 1990. Since, for 1985 only figures for West-Germany are available, I have tried to adjust the changes between 1985 and 2000/2001 for the effect of the re-unification of Germany. Whenever the time series for West-Germany and for the united Germany overlap, this is simply done by lifting or lowering the series for West-Germany to the level of the united Germany in the overlapping year. When there were no common years in both series, I have assumed the change between the last year of the series for West-Germany and the first year of the series for the united Germany to be nil.

#### **4. Labour market performance**

European labour markets performed quite disappointingly during the 1980s and 1990s. While employment in the United States grew on average by 1.6% per year from 1985 until 2001, total EU employment grew by only 0.7 % per year (adjusted for the re-unification of Germany). The net labour participation rate rose from 76.2% in 1985 to 83.6% in 2001 in the US, but only from 59.8% to 63.9% in the European Union, so the gap between the US and Europe even widened. There are, however, large differences between the member states of the EU. While the participation rate in Ireland, the Netherlands and Spain increased much more than in the US, it fell in Denmark, Finland, Greece and Sweden (table 1).

Table 1 Net labour participation rate\* and unemployment rate† in 1985 and 2001 (in %)

	labour participation rate			unemployment rate		
	1985	2001	change	1985	2001	change
Austria	67.3	68.4	1.1	3.4	3.6	0.1
Belgium	53.1	59.9	6.8	10.3	6.6	-3.7
Denmark	77.4	76.2	-1.2	7.0	4.4	-2.6
Finland	75.2	68.1	-7.1	5.8	9.2	3.3
France	62.0	63.1	1.1	10.0	8.6	-1.4
Germany#	63.1	65.8	2.4	7.2	7.9	-0.6
Greece	57.3	55.4	-1.9	7.0	10.5	3.6
Ireland	51.4	65.8	14.4	16.9	3.8	-13.1
Italy	53.0	54.8	1.8	8.6	9.6	1.0
Luxembourg	58.0	63.1	5.1	2.7	2.0	-0.7
the Netherlands	57.7	74.1	16.4	7.7	2.4	-5.3
Portugal	63.5	68.8	5.3	8.7	4.3	-4.4
Spain	44.1	56.3	12.2	21.6	11.4	-10.2
Sweden	80.3	71.7	-8.6	2.9	5.3	2.4
United Kingdom	66.2	71.7	5.5	11.5	5.1	-6.4
European Union	59.8	63.9	3.9	9.9	7.5	-2.5
United States	76.2	83.6	7.4	7.3	4.8	-2.4

\* The number of persons doing paid work as a percentage of the population aged 15-64 years.

† The number of unemployed as a percentage of the labour force aged 15-64 years.

# The figures for 1985 apply to the Federal Republic of Germany only; the change between 1985 and 2001 is adjusted for the effect of the re-unification of Germany.

Source: EC (1999, 2002), for the US: OECD (2002a, 2002b)

It seems obvious that the countries performing best with respect to labour participation also were the most successful in fighting unemployment. Table 1 shows that this is generally true: unemployment decreased strongest in Ireland, the Netherlands, Spain and the United Kingdom, while it increased in Austria, Finland, Greece, Italy and Sweden. Nevertheless, the correlation between the participation rate and the unemployment rate is far from perfect. E.g. the unemployment rate decreased in Denmark, despite a fall in the participation rate, while the opposite happened in Italy. And although the rise of the Dutch participation rate was three times as large as the rise of the British participation rate, unemployment in the UK fell slightly more than in the Netherlands. Furthermore, it is remarkable that the unemployment rate in the EU fell marginally more than in the US despite the much stronger American employment growth. This is due to the fact that labour supply also grew stronger in the US than in the EU.

As we explained in section 2, the change of the unemployment rate is, apart from the change of the net participation rate, also determined by the change of the labour supply, i.e. the gross participation rate. Table 2 shows the results of the decomposition of the change of the unemployment rate in equation (1').

Table 2 Decomposition of the change of the unemployment rate, 1985-2001 (in percentage points)

	change of unemployment rate	contribution of	
		net participation rate	gross participation rate
Austria	0.1	-1.6	1.7
Belgium	-3.7	-10.9	7.2
Denmark	-2.6	1.5	-4.1
Finland	3.3	9.1	-5.8
France	-1.4	-1.6	0.2
Germany	-0.6	-3.3	2.7
Greece	3.6	3.1	0.5
Ireland	-13.1	-22.1	9.0
Italy	1.0	-2.9	3.9
Luxembourg	-0.7	1.5	-2.2
the Netherlands	-5.3	-24.0	18.7
Portugal	-4.4	-7.6	3.2
Spain	-10.2	-20.3	10.1
Sweden	2.4	10.9	-8.5
United Kingdom	-6.4	-7.4	1.1
United States	-2.4	-8.8	6.4

Source: EC (1999, 2002), OECD (2002a, 2002b); calculations by the author

Although in most countries the change of the net participation rate exerted a large influence on the unemployment rate, the changes of the gross participation rate were also quite important. This was most clearly the case in Belgium, Ireland, the Netherlands and Spain, where, despite a strong rise in the net participation rate, the fall in unemployment rate was considerably mitigated by the simultaneous growth of the labour force. Finland and Sweden showed the opposite pattern: there the rise in the unemployment rate was mitigated by a contracting labour force, while in Denmark the fall of the unemployment rate was entirely due to a decrease of the gross participation rate. The fact that the contribution of the gross participation rate is in general opposite to the contribution of the net participation rate points to a discouraged worker effect: as employment rises, labour supply rises too because discouraged workers, who left the labour market when unemployment was high, rejoin the labour market as they see their chances of finding a job improve. This mechanism explains why the change of the net participation rate was often larger than the change of the unemployment rate.

### 5. Social security dependency

In the 1980s and 1990s the social security system of many European countries came under heavy fire because of strongly rising benefit dependency and growing social expenditure. Many believed that the continuation of the relatively generous welfare states was in danger if they would not succeed in restricting social security expenditure by either cutting benefit levels or reducing the number of beneficiaries. Since lowering benefit levels – which seemed the more simple solution at first - met with much resistance among the population and was by many considered as socially undesirable, gradually the conviction grew that in the long run restricting the number of benefit claimants by increasing the labour participation rate was the only viable way to save the European welfare states.

Hence, it is interesting to see to what extent the European countries succeeded in curbing social security dependency and expenditure by raising labour participation. Table 3 shows the level of two indicators for social security dependency in 1985 and in 1998/1999. The first indicator is the dependency rate for people of working age, which is defined as the number of beneficiaries under the age of 65 as a percentage of the total number of employed people. As mentioned above this indicator is available for only nine EU countries and the United States. The second indicator is the social security expenditure rate, i.e. total social security outlays as a percentage of gross domestic product.

Table 3 Social security dependency rate\* and expenditure rate† in 1985 and 1998/1999 (in %)

	dependency rate			expenditure rate		
	1985	1999	change	1985	1998	change
Austria	.	32.1	.	15.5	16.2	0.7
Belgium	45.7	43.4	-2.3	16.8	14.4	-2.4
Denmark	32.8	35.7	2.8	13.0	12.8	-0.2
Finland	.	.	.	12.3	14.0	1.7
France	24.6	30.9	6.3	15.5	15.6	0.2
Germany#	22.6	34.8	3.1	11.8	14.0	0.6
Greece	.	.	.	12.1	14.7	2.6
Ireland	.	.	.	11.7	6.7	-5.0
Italy	.	.	.	14.7	17.9	3.1
Luxembourg	.	.	.	14.9	12.7	-2.2
the Netherlands	35.0	24.4	-10.6	17.0	13.1	-4.0
Portugal	.	.	.	8.1	10.8	2.8
Spain	27.1	20.6	-6.4	12.9	12.8	-0.1
Sweden	22.0	29.2	7.2	12.9	13.6	0.7
United Kingdom	34.3	35.3	1.0	10.6	13.9	3.4
European Union (unweighted mean)	28.3	31.8	3.5	13.3	13.5	0.2
United States	21.0	18.4	-2.6	7.6	7.4	-0.2

\* The number of social security beneficiaries under the age of 65 as a percentage of the employed population.

† Social security expenditure as a percentage of gross domestic product.

# The figures for 1985 apply to the Federal Republic of Germany only; the change between 1985 and 2001 is adjusted for the effect of the re-unification of Germany.

Source: Arents et al. (1999), Moor et al. (2002), OECD (2002a)

In only four of the nine countries for which figures are available the dependency rate declined between 1985 and 1999, and in only six of the EU countries plus the United States social security expenditure fell between 1985 and 1998.

According to equation (2') in section 2 the dependency rate changes if the net participation rate changes or if the relative number of benefit claimants among the non-working population (the eligibility rate, for short) changes. Table 4 shows the contribution of both factors to the diverging trends in the dependency rate in eight EU countries and the United States.

Table 4 Decomposition of the change of the dependency rate\*, 1985-1999 (in percentage points)

	change of dependency rate	contribution of	
		net participation rate	eligibility rate
Belgium	-2.3	-11.3	9.0
Denmark	2.8	2.6	0.2
France	6.3	1.3	5.0
Germany	3.1	-2.1	5.2
The Netherlands	-10.6	-17.9	7.4
Spain	-6.4	-8.1	1.7
Sweden	7.2	12.3	-5.1
United Kingdom	1.0	-7.5	8.5
United States	-2.6	-9.8	7.2

\* The number of social security beneficiaries under the age of 65 as a percentage of the employed population.

Source: see tables 1 and 3; calculations by the author

The change of the eligibility rate turns out to be of equal importance in explaining the change of the dependency rate as the change of the net participation rate. Hence, social security dependency is influenced as much by changes of social security eligibility among the non-working population as by changes of the relative number of non-working people. This explains why the dependency rate in Germany and in the United Kingdom rose between 1985 and 1999 despite a rise in the net participation rate. Only in Sweden the eligibility rate decreased from 1985 till 1999, but not enough to prevent the dependency rate from rising strongly, caused by a large fall of the net participation rate.

Changes of the social security dependency rate are caused by changes of the relative size of the non-working population under 65 years and over 65 years, respectively, as well as by changes of the benefit ratios of both groups, i.e. the average benefit received by each member of these groups (including those who are not eligible to a social benefit) as a percentage of the average income (gdp) of the total population (see equation (3')). The outcome of the calculations is presented in table 5, in which the last term of equation (3'), viz. the interaction of the different factors, which is in general quite small, is left out.

Table 5 Decomposition of the change of the social security expenditure rate\*, 1985-1998 (in percentage points)

	change of social security expenditure rate	contribution of				
		net participation rate	benefit ratio 15-64	share of pop. 15-64	share of pop. 65+	benefit ratio 65+
Austria	0.7	-0.6	0.8	-0.1	0.3	0.3
Belgium	-2.4	-0.8	-2.2	-0.2	1.2	-0.4
Denmark	-0.2	-0.5	-0.9	0.1	-0.3	1.4
Finland	1.7	2.2	-1.0	0.0	1.0	-0.4
France	0.2	0.2	-2.0	0.0	1.8	0.1
Germany	0.6	0.2	-0.6	-0.1	1.2	-0.2
Greece	2.6	0.0	0.2	0.2	2.4	-0.3
Ireland	-5.0	-1.2	-2.7	0.6	0.2	-1.8
Italy	3.1	0.1	-0.7	0.0	2.8	0.8
Luxembourg	-2.2	-5.2	1.3	-0.2	0.4	1.5
The Netherlands	-4.0	-2.4	-1.2	0.0	0.5	-0.9
Portugal	2.8	-0.7	0.6	0.2	1.0	1.7
Spain	-0.1	-0.7	-2.1	0.4	2.2	0.1
Sweden	0.7	2.5	-2.1	0.1	-0.2	0.6
United Kingdom	3.4	-0.8	0.0	-0.1	0.0	4.2
United States	-0.2	-0.9	0.8	0.0	0.3	-0.4

\* The share of social security expenditure in gross domestic product.

Source: see tables 1 and 3; calculations by the author

The factors that determine the changes of the social security expenditure rate vary quite a lot between different countries. Although in most countries the expenditure rate changed in the same direction as the net participation rate, this seems to be quite coincidental, since quite often some other factor had a larger impact which was however cancelled out by the remaining factors. E.g., in France the change of the expenditure rate (+0.2% points) seems to be explained fully by the change of the net participation rate only because the much larger impact of the benefit ratio of non-working people under 65 years was exactly equal to, but of the opposite sign as the impact of the other three factors. In nine countries the change of the expenditure rate was mitigated by a reduction of the benefit ratio for the working-age population. This resulted either from a fall in eligibility of the non-working population under 65 years or from a reduction of the average benefit level. In some countries, notably France, Italy and Sweden, this effect was opposite to and approximately as large as or even larger than the impact of the change of the net participation rate. In most countries, with the exception of Denmark and Sweden, the ageing of the population exerted a substantial push on social security expenditure by raising the share of the population over 65 years. This effect of ageing was the strongest in the Southern European countries Greece, Italy and Spain. In some countries however, notably Ireland and the Netherlands, the impact of the ageing population was offset by a reduction in the average benefit level of retired people. In the United Kingdom, on the contrary, the growth of social security expenditure was explained fully by the strong rise of the benefit ratio of the population over 65. This explains why the British expenditure rate rose strongly despite a fall in the share of non-working people.

## 6. Poverty

Work is sometimes called the ‘royal’ road to less inequality and poverty. Although a generous social security system may be more effective in reducing poverty in the short run, in the long run it runs the risk of ‘biting its own tail’ by reducing incentives and hence hindering employment growth and increasing social security dependency. In the end it may be impossible to sustain a too generous and lax social security system. If one succeeds, however, in getting more beneficiaries back to work, one might enhance sustainability of the welfare state and reduce poverty at the same time. Hence, in recent years many European countries have embraced the idea of an active welfare state, promoting employment growth while maintaining social protection for those who are really in need of support. It is interesting to find out whether the European countries that succeeded most in promoting employment in the last two decades also were successful in combating poverty.

Table 6 gives figures on the poverty rate in twelve EU countries and the US in the mid-1980s and the mid-1990s, based on a poverty level of 50% of the median of adjusted disposable household incomes. We give both figures for the entire population and for the population of working-age (15-64 years), since the decomposition analyses can be carried out only for the last population group. Because of the varying time periods between the two years for which figures are available, to ease comparison the changes of the poverty rate are expressed as average changes per year.

Table 6. Poverty rate\*, mid-1980s and mid-1990s (in percentages)

	total population			working-age population			first year	last year
	mid-1980s	mid-1990s	change per year	mid-1980s	mid-1990s	change per year		
Austria	6.1	7.4	0.13	4.5	6.1	0.16	1983	1993
Belgium	10.6	7.8	-0.23	5.0	6.6	0.13	1983	1995
Denmark	7.0	5.0	-0.18	4.6	3.8	-0.07	1983	1994
Finland	5.1	4.9	-0.02	4.2	4.4	0.02	1986	1995
France	8.0	7.5	-0.05	6.5	6.9	0.04	1984	1994
Germany	6.4	9.4	0.30	5.6	9.4	0.38	1984	1994
Greece	13.5	13.9	0.07	11.0	10.7	-0.05	1988	1994
Ireland	10.6	11.0	0.06	9.6	8.6	-0.04	1987	1994
Italy	10.3	14.2	0.43	9.4	14.1	0.52	1984	1993
the Netherlands	3.1	6.3	0.36	3.4	7.0	0.36	1985	1994
Sweden	5.9	6.4	0.04	6.1	7.2	0.09	1983	1995
United Kingdom	6.9	10.9	0.40	6.8	11.0	0.42	1985	1995
unweighted mean of above countries	7.8	8.7	0.11	6.4	8.0	0.16	1985	1994
United States	18.3	17.1	-0.11	17.7	16.5	-0.11	1984	1995

\* The percentage of the population living in households with incomes below 50% of median adjusted disposable income of the entire population.

Source: Förster (2000); calculations by the author

There was no general trend in poverty in the European Union between the mid-1980s and mid-1990s, although in most countries for which data are available the poverty rate rose. Notable exceptions were Belgium and Denmark – although this does not apply to the poverty among people of working-age in

Belgium. Poverty rose most sharply in Germany, Italy, the Netherlands and the United Kingdom. While the Netherlands had by far the lowest poverty rate in the mid-1980s, it had lost its leading position in the mid-1990s to Denmark and Finland. Although relative poverty is much larger in the United States than in the EU, the gap has narrowed somewhat since American poverty fell a little more than one percentage point between the mid-1980s and mid-1990s, while the average European poverty rate increased by more than one point.

According to equation (4'') in section 2 the change of the poverty rate can be decomposed into the change of the net participation rate, the change of the relative number of persons living in households with at least one employed member (the household-person activity ratio) and the changes of the poverty rate of work-rich and workless households, respectively. The data needed to calculate this decomposition are available only for ten EU-countries and the United States and only for the poverty rate of the working-age population. Hence, this decomposition analysis probably overstates the impact of changes of the labour participation rate on the poverty rate, since the poverty rate of retired people is less dependent on labour market developments than on policy and demographic changes.

Table 7. Decomposition of the change of the poverty rate of the working-age population\*, c.1985-1995 (in percentage points)

	total change of poverty rate	contribution of			
		net participation rate	household- person activity ratio	poverty of work-rich households	poverty of workless households
Austria	1.3	-0.9	1.1	1.9	-0.6
Denmark	-0.8	0.7	-0.3	-0.4	-0.8
Finland	0.2	2.6	-2.0	-0.7	0.3
France	0.4	0.5	-0.3	-0.1	0.2
Germany	3.8	-0.1	0.6	1.7	1.6
Greece	-0.3	0.2	-0.4	0.1	-0.2
Italy	4.7	0.2	1.3	2.9	0.3
Netherlands	3.6	-2.3	2.6	1.4	2.0
Sweden†	-0.1	3.2	-1.7	0.3	-1.5
United Kingdom	4.2	-1.2	1.4	3.5	0.6
United States	-1.2	-2.6	2.2	-0.9	0.0

\* The percentage of the population aged 18-64 living in households with incomes below 50% of median adjusted disposable income of the entire population.

† Due to an inconsistency in the population shares of work-rich and workless households in the OECD-data for the year 1983, the contribution of the four components does not add up exactly to the change of the poverty rate.

Source: Förster (2000), EC (1999); calculations by the author

It is immediately clear from table 5 that the change of the poverty rate of the working-age population cannot be explained by changes of the net participation rate. In seven out of eleven cases the sign of the impact of the participation rate is even opposite to the sign of the change of the poverty rate. E.g., in Austria, Germany, the Netherlands and the United Kingdom the poverty rate rose *despite* an increase of the net participation rate. This was due to the fact that both the household-person activity

ratio and the poverty rate among work-rich and workless households changed in the opposite direction of the labour participation rate. As explained in section 2, the household-person activity ratio ( $\alpha$ ) is an indicator for the concentration of non-working people in work-rich households. A rise of this ratio lowers poverty, since poverty among work-rich households is lower than among workless households. Remarkably, in all countries – with the exception of Italy - the effect of this ratio is opposite to the effect of the net participation rate, i.e. a rise in the net participation rate is often accompanied by a fall in the household-person activity ratio, and vice versa. This suggests that, as labour participation increases, most of the additionally employed persons belong to a work-rich household. This might be caused by the fact that many housewives with an employed spouse found a job. This also seems to be an indication of the discouraged worker effect, mentioned before: the labour supply of people who are not dependent on their own income from work is more elastic with respect to labour market conditions than the labour supply of breadwinners. As a result, fluctuations in the labour participation rate are not reflected in corresponding fluctuations in the household activity rate and, hence, neither in the poverty rate.

Since the impact of the change of the labour participation rate was largely cancelled out by the change of the household-person activity ratio, the change of the total poverty rate of the working-age population is primarily explained by the changes of the poverty rate of work-rich households and of workless households, respectively. So poverty among working-age people rose substantially in Germany, Italy, the Netherlands and the United Kingdom because poverty among work-rich households and poverty among workless households rose. Since workless households are mainly dependent on social benefits, changes of the poverty rate of workless households seem to be primarily caused by government policies with respect to social security. What caused the change of poverty among work-rich households is less clear. It is striking that in seven out of eleven countries the relative number of working poor seems to have risen. This might be either due to (structural?) changes in labour markets (e.g. a rise in flexible and part-time employment) or to changes of policy (e.g. a relative cut of the statutory minimum wage).

## **7. Income**

Work is often regarded as the ultimate source of human welfare. Hence, increasing labour participation is generally considered to be an important or even necessary condition for increasing the wealth of a nation. As mentioned in section 2, the impact of a rise of the participation rate might however be mitigated by a slowing down of labour productivity. Table 8 gives both the level of labour productivity and of average income per capita, defined as real gross domestic product (gdp) per fulltime worker and per head of the population, respectively, in the fifteen EU member states and in the United States in 1985 and 2001, and the average percentage change per year.

Table 8 Labour productivity\* and average income† in 1985 and 2001 (in 1,000 constant US\$ of 1995 and average percentage change per year)

	labour productivity			average income		
	1985	2000	change per year	1985	2001	change per year
Austria	56.6	78.8	2.1	24.0	33.2	2.2
Belgium	64.0	85.7	1.8	22.4	31.3	2.3
Denmark	67.9	83.8	1.3	30.0	38.7	1.7
Finland	49.4	73.5	2.5	23.2	32.1	2.2
France	60.4	80.0	1.8	22.1	30.5	2.2
Germany	62.8	83.8	2.0	25.3	32.8	1.7
Greece	29.7	38.3	1.6	10.5	13.6	1.8
Ireland	41.0	71.5	3.5	11.9	29.4	6.2
Italy	46.1	60.2	1.7	15.8	21.4	2.0
Luxembourg	65.6	144.1	5.0	27.7	57.8	5.0
the Netherlands	69.1	80.1	0.9	22.0	31.4	2.4
Portugal	18.5	28.6	2.8	7.5	13.1	3.8
Spain	42.5	51.6	1.2	11.4	18.0	3.1
Sweden	54.6	71.7	1.7	24.7	31.6	1.7
United Kingdom	41.5	55.8	1.9	15.6	22.2	2.4
European Union	55.0	67.8‡	1.4	19.1	26.3	2.2
United States	54.0	66.4‡	1.4	23.3	31.9	2.1

\* Real gross domestic product per fte.

† Real gross domestic product per capita.

‡ 2000

Source: EC (1999, 2002), OECD (2002a, 2002b); calculations by the author

In the year 2000 European workers produced on average US\$ 68,000 of worth, slightly more than the average American worker. Labour productivity was by far the highest in Luxembourg, followed by a group of countries with a productivity level between US\$ 80,000 and US\$ 86,000: Belgium, Denmark, France, Germany and the Netherlands. The average rise of labour productivity in the EU and in the US between 1985 and 2000 was exactly equal, but there was a huge variation within the EU. While labour productivity of Dutch workers increased by only .9% per year, in Luxembourg labour productivity increased by an astonishing 5% per year.

The average per capita income in the EU is only about two fifths of average labour productivity, indicating that fulltime employment is only about 40% of the total population (including children and retired people). Since American labour participation is higher than the average European level, average income is also somewhat higher in the US than in the EU, despite its slightly lower labour productivity. Both in the EU and in the US average income rose more strongly than labour productivity because of a rise of the share of fulltime employment in the population. Average income rose most rapidly in Ireland and Luxembourg, where average wealth more than doubled between 1985 and 2001. In Denmark, Germany, Greece and Sweden, however, the average income level increased only sluggishly, resulting in an income rise of at most 30% in 16 years time.

Equation (7') spelled out a decomposition of the change of the log of average income, which is approximately equal to the percentage change. Table 9 shows the results of this decomposition for the period 1985-2001.

Table 9 Decomposition of the change of log average income (gdp per capita), 1985-2001#

	change of log average income (x 100)	contribution of			
		net part.rate	part-time factor	labour productivity	share of pop. 15-64
Austria	35	2	-2	33	2
Belgium	34	12	-5	29	-2
Denmark	26	-2	5	21	1
Finland	33	-10	3	40	0
France	32	2	-1	28	4
Germany	27	4	-6	29	1
Greece	29	-3	2	25	5
Ireland	90	25	-4	56	14
Italy	30	3	0	27	0
Luxembourg	75	-1	-2	79	0
The Netherlands	37	25	-4	15	1
Portugal	56	8	0	44	4
Spain	48	24	-1	19	6
Sweden	25	-11	7	27	2
United Kingdom	38	8	-1	30	1
United States	34	11	1	21	1

# 1985-2000 for the United States

Source: EC (1999, 2002), OECD (2002a, 2002b); calculations by the author

In general the rise in labour productivity explains by far the largest part of the change of the average income level. The only exceptions are the Netherlands and Spain, where the rise in average income was more than twice as high as productivity growth. These are the only countries where the rise in labour participation contributed more to income growth than the rise in productivity. Since the rise of labour productivity in the Netherlands was the lowest of all EU countries, Dutch income growth was quite moderate, despite its high employment growth. The effect of changes of the part-time ratio on the rate of income growth was in general negligible, as was the impact of changes of the share of the working-age population (with the exception of Ireland). Overall, the figures in table 9 show that the rate of long-term income growth hardly depends on labour participation growth.

## 8. Conclusion

The European employment strategy (EES) is implicitly based on the supposition that there is a positive relationship between a country's labour market performance and its performance on a number of other socio-economic indicators. However, as I have shown in this article, both on theoretical and on empirical grounds, the positive impact of a rising labour participation rate on social security dependency, poverty and income growth, should be seriously qualified. The decomposition analyses in the preceding sections for the fifteen member states of the European Union and the United States showed that, in most cases, the change of the net labour participation rate explained only a small part

of the changes of the other socio-economic variables in the period 1985-2000. Sometimes these variables even changed in the opposite direction than one would expect on account of the change of the participation rate. Not unexpectedly, the relationship between the labour market variables is the strongest: there is a clear negative correlation between the unemployment rate and the participation rate (table 2). Nevertheless, the impact of a rise (fall) of the net participation rate on the unemployment rate was in most countries considerably mitigated by a simultaneous rise (fall) in labour supply. The effect of a change of the participation rate on the ratio of social security beneficiaries to fulltime employment, the so-called dependency rate, turned out to be no greater than the effect of changes of the benefit eligibility of the non-working population (table 4); and changes of the social security expenditure rate appeared to be determined at least as much by changes of relative benefit levels and the ageing of the population as by changes of the participation rate (table 5). In seven out of eleven countries the effect of a changing participation rate on the poverty rate was nullified by the changes of the poverty rate among work-rich and workless households, respectively, and by a changing concentration of non-working people in different household types (table 7). Finally, the correlation between per capita income growth and the participation rate was practically nil, because of strongly diverging trends in the rise of labour productivity (table 9).

The analysis in this article casts serious doubt on the usefulness of formulating exact quantitative goals with respect to the level of labour participation in Europe in the year 2010. Unless one attaches an intrinsic importance to a particular level of the labour participation rate, it is dubious whether focussing on the participation rate is a sensible strategy to improve socio-economic performance of the European Union in the next decade. Although a rising participation rate may have a favourable impact on social security dependency, poverty and income growth, in general other instruments are at least as effective. Changing social security eligibility and benefit levels and stimulating productivity increases might ultimately be more effective in reducing social expenditure, combating poverty and raising living standards than increasing the participation rate. Besides, the more successful a country is in raising labour participation, the harder it will be to raise the participation rate even further. Hence, raising labour participation can only be a temporary strategy to improve socio-economic performance, simply because sooner or later it will encounter its logical limit, which is a participation rate of 100%. In the long run, therefore, a government simply has to resort to other instruments to keep improving the well-being of its people.

## Appendix 1

In this Appendix we spell out the arithmetical rules that were used in deducing the decomposition equations in section 2.

Let  $A \equiv B \cdot C$ , then the change of  $A$ ,  $\Delta A$  is equal to:

$$(A1) \quad \begin{aligned} \Delta A \equiv A_2 - A_1 &= B_2 \cdot C_2 - B_1 \cdot C_1 = (B_1 + \Delta B)(C_1 + \Delta C) - B_1 \cdot C_1 = \\ &(B_1 + \frac{1}{2}\Delta B)\Delta C + (C_1 + \frac{1}{2}\Delta C)\Delta B = \bar{B}\Delta C + \bar{C}\Delta B \end{aligned}$$

Next, let  $A \equiv B \cdot C \cdot D$ . Since

$$\bar{CD} = \frac{1}{2}(C_1D_1 + C_2D_2) = \frac{1}{2}((\bar{C} - \frac{1}{2}\Delta C)(\bar{D} - \frac{1}{2}\Delta D) + (\bar{C} + \frac{1}{2}\Delta C)(\bar{D} + \frac{1}{2}\Delta D)) = \bar{C}\bar{D} + \frac{1}{4}\Delta C\Delta D$$

$\Delta A$  is equal to:

$$(A2) \quad \begin{aligned} \Delta A \equiv A_2 - A_1 &= B_2 \cdot C_2 \cdot D_2 - B_1 \cdot C_1 \cdot D_1 = \bar{B}\Delta(CD) + (\bar{CD})\Delta B = \\ &\bar{B}(\bar{C}\Delta D + \bar{D}\Delta C) + \bar{C}\bar{D}\Delta B + \frac{1}{4}\Delta B\Delta C\Delta D = \bar{B}\bar{C}\Delta D + \bar{B}\bar{D}\Delta C + \bar{C}\bar{D}\Delta B + \frac{1}{4}\Delta B\Delta C\Delta D \end{aligned}$$

If  $A$  is a ratio, that is,  $A \equiv B/C$  then the decomposition rule is:

$$(A3) \quad \Delta A \equiv A_2 - A_1 = \frac{B_2}{C_2} - \frac{B_1}{C_1} = \left(\frac{\bar{1}}{C}\right)\Delta B + \bar{B}\Delta\left(\frac{1}{C}\right) = \left(\frac{\bar{1}}{C}\right)\Delta B - \frac{\bar{B}}{C_1C_2}\Delta C$$

$$\text{since } \Delta\left(\frac{1}{C}\right) \equiv \frac{1}{C_2} - \frac{1}{C_1} = \frac{C_1 - C_2}{C_1C_2} = \frac{-\Delta C}{C_1C_2}$$

By applying these rules to the definitions in section 2 the decomposition equations can be easily deduced.

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## Note

<sup>1</sup> To simplify the analysis we implicitly assume that only people who are out of work are entitled to a benefit. This might not be correct in practice, since some people may combine a (part-time) paid job with a (partial) benefit.