

CSB  
**WORKING PAPER**

centreforsocialpolicy.eu

June 2013

No 13 / 03

**Do labor force  
evolutions affect the  
work incapacity  
caseload?**

*Leen Meeusen & Annemie Nys*



University of Antwerp  
Herman Deleeck Centre for Social Policy  
Sint-Jacobstraat 2  
B - 2000 Antwerp  
fax +32(0)3 265 57 98



# Do labor force evolutions affect the work incapacity caseload?

Leen Meeusen and Annemie Nys

Working Paper No. 13 / 03

June 2013

## ABSTRACT

Over the last two decades, the number of individuals entitled to work incapacity (WI) benefits increased strongly in Belgium, the Netherlands, Denmark and Sweden. The caseload has consequently increased but this has happened at a very different pace and to a very different degree. In order to draw correct conclusions regarding the actual growth in national caseload and to gain a new perspective on the very large cross-national variation, we introduce corrections on the growth of WI benefit uptake. By controlling for the evolution of the labor force and its respective gender and age components, we are able to formulate an answer to the following question: *'To what extent can the increase and cross-national variation in work incapacity caseload be explained by the evolution of the labor force and its components?'* The results show that the evolution of the female labor force, and this mainly in the age brackets 15-49, had the greatest impact on the growth of WI caseload. We conclude that the corrections, based on the evolution of the different components of the labor force, reduce the growth rate of national WI caseload and narrow the gap in cross-national variation. Nevertheless, a proportion of national growth and cross-national variation remains unexplained.

**JEL classification:** J21, Y10

**Keywords:** labor force – female labor force participation rate – work incapacity caseload

Corresponding author:

Leen Meeusen

Herman Deleeck Centre for Social Policy (CSB)

Faculty of Political and Social Sciences

University of Antwerp

Tel: +32 3 265 57 27

Email: [leen.meeusen@ua.ac.be](mailto:leen.meeusen@ua.ac.be)

## 1. Introduction

The combination of a low birth rate and high life expectancy is compromising the sustainability of social security systems in many industrialized countries. In Belgium, this pressure is all the more insidious because of the low activity rate among the population in general and among older workers in particular. This is resulting in a higher benefit dependency and a problematic balancing act in public budgeting. Although Belgium has restricted duration and levels of replacement incomes for benefits such as unemployment, its policy regarding work incapacity (WI) benefits has remained unchanged. A stable stock of benefit receivers and a steady inflow of new entrants have led to a considerable increase of claimants over the last years. Although these increases have occurred in most EU countries, differences in size and pace of the process have caused a large cross-national variation in WI caseload.

Previous studies have taken different factors such as demographics, health and institutions into consideration when explaining the increase in caseload. Demographics refer to the fact that an aging population is more inclined to take up WI-related benefits. Although aging of the population is a characteristic of almost every EU country, the pace at which this is happening differs considerably across countries. Therefore, the impact of demographics as an explaining factor depends strongly on the national age structure. Health refers to the country differences in prevalence of both physical and mental diseases. Institutions include facets such as eligibility criteria, the generosity of the system, duration, and training possibilities (Blöndal & Scarpetta, 1998; Gruber & Wise, 1999; Börsch-Supan, 2007).

In most EU countries, aging is mentioned as one of the crucial explanations. The OECD (2010) states that the aging of the labor force has a significant impact on the prevalence of disability. As the probability of having chronic health problems is twice as high for individuals between 50 and 64 years of age in comparison to the total labor force, the natural increase of the share of older workers in the labor force will, *ceteris paribus*, increase the number of work incapacitated. Although on a national level this explains part of the increasing caseload, when examining the cross-national variation in WI caseload and controlling for differences in demographic structures, this factor seems to be of no significant importance. Börsch-Supan (2007) draws the same conclusions with regard to differences in national health structures. The residual part in variation is contributed to institutions without further examination of explanation.

In order to be insured for WI benefits (covered by disability insurance, DI), a relevant period of work history is required. Consequently, the increased number of women in the labor market has increased the share

of women insured by disability insurance (Duggan & Imberman, 2009; RIZIV, 2009). Some American studies mention the growth in female labor force participation (LFP<sup>1</sup>) as a possible explanation for the increasing number of work incapacitated (Duggan & Imberman, 2009). In addition to aging and female LFP, the evolution of the labor force (LF) as a whole also has to be taken into account as fluctuations in the LF can further influence the size of the cohort entitled to DI insurance (Parsons, 1980; Haveman & Wolfe, 1984; Bound, 1989; Stern, 1989).

Although a large number of studies have examined the impact of work incapacity on LFP, the inverse relationship has – to our knowledge – not been examined in an EU context. Therefore, the focus of this paper is on the effect of the labor force on WI benefit receipt. Given the condition of a relevant period of work history to be insured for WI benefits, the evolution in LF in general and female LF specifically may have significant explanatory power for the growth in caseload. Differences in pace of the process across countries might consequently explain the cross-national variation.

In this paper we will try to formulate an answer to the following question: *'To what extent can the increase and cross-national variation in work incapacity caseload be explained by the evolution of the labor force and its components?'*

The objective of the paper is to gain a new perspective on and a deeper understanding of the large cross-national variation in WI caseload, controlled for the differences in size and evolution of the labor force. More specifically, we examine which proportion of the growth in work incapacity can be explained by the evolution of the labor force. Applying this correction will allow us to explain part of the cross-national variation and it will highlight the actual differences between countries.

For the cross-national comparison, we use Belgium, the Netherlands, Sweden and Denmark as countries of interest. Although this selection is partly based on data limitations, it allows us to study countries with different institutional conditions regarding WI and different labor force evolutions.

Following this short introduction, the second part of the paper will examine the national growth and cross-national variation of work incapacity caseload. To this end, we shall rely on administrative data for the period 1980-2008 (Clasen & Clegg, 2011). In the third part, the method of correction will be explained and the corrected data will be presented. These data allow us to investigate to what extent evolutions in

---

<sup>1</sup> Labor force participation rate refers to the ratio of the labor force and the overall size of the respective population group (OECD employment database, 2013)

the labor force have influenced national growth and cross-national variation. In the fourth part, the results will be discussed and conclusions will be drawn regarding the actual growth in national caseload and regarding the actual variation in work incapacity benefit uptake between the four countries of interest. In part five, a final conclusion is formulated and further research options are explored.

## **2. Cross-national variation in work incapacity caseload and evolution**

In this part, we will explore administrative data to get a good understanding of actual use and evolution of WI-related benefits. These administrative data, gathered by De Deken in Clasen & Clegg (2011), provide a comparable indicator of caseload numbers for the period 1980-2008. The data are corrected for any partial benefits and are therefore expressed as full-time equivalents.

In this work incapacity indicator the following benefits have been included (Clasen & Clegg, 2011):

- Belgium: sickness benefits<sup>2</sup> (*primaire arbeidsongeschiktheid en invaliditeitsuitkering*) for employees, self-employed and unemployed; benefits of employment injuries and occupational diseases (*arbeidsongevallen en beroepsziekten*); social assistance on disability grounds (*inkomensvervangende en integratietegemoetkoming gehandicapten*). Not included are statutory sickness pay (*gewaarborgd loon*) paid by the employers during the first two weeks of sickness of manual workers and the first 30 days of sickness for knowledge workers.
- The Netherlands: sickness benefits (*ziektewet; ZW*) and statutory sickness pay (*wet uitbreiding loondoorbetalingsverplichting bij ziekte; Wulbz*); disability benefits for wage earners (*wet op arbeidsongeschiktheid; WAO*) and for self-employed (*wet arbeidsongeschiktheid zelfstandigen; WAZ*); as of 2004 for all (*wet inkomen en arbeid; WIA*); disability benefits for handicapped youth (*wet werk en arbeidsondersteuning jonggehandicapten; Wajong*).
- Denmark: sickness benefits (*sygedagpenge ved sygdom*); disability benefits (*fortidspension*).

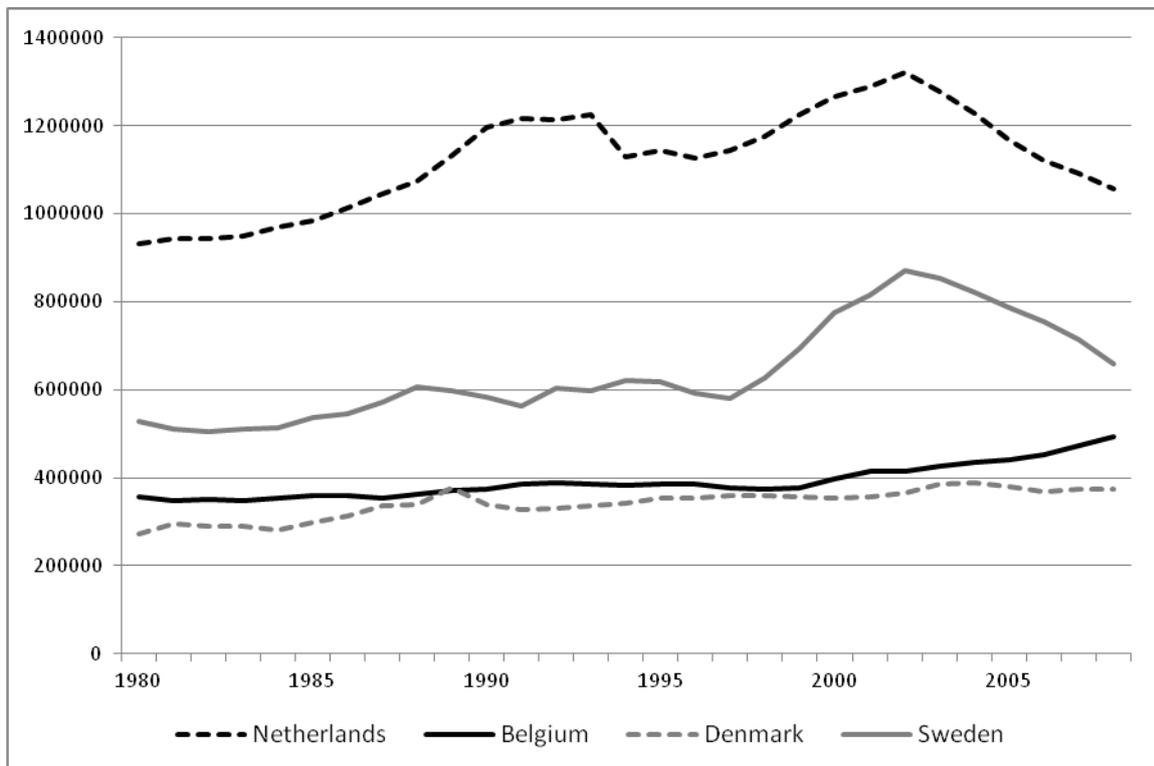
---

<sup>2</sup> Sickness benefits have been converted from working days into benefit years by dividing by 312 (Clasen & Clegg, 2011)

- Sweden: sickness benefits (*sjukpenning*); permanent disability benefits (*förtidspension*); temporary disability benefits (*sjukbidrag*)<sup>3</sup>.

Figure 1 shows the evolution of the work incapacity indicator for the period 1980-2008. We see remarkable differences between the four countries examined: the Netherlands and Sweden show some fluctuations with regard to their evolution in number of WI beneficiaries, whereas Belgium and Denmark show much less fluctuation but nonetheless a steady increase.

Figure 1. Evolution of the work incapacity caseload



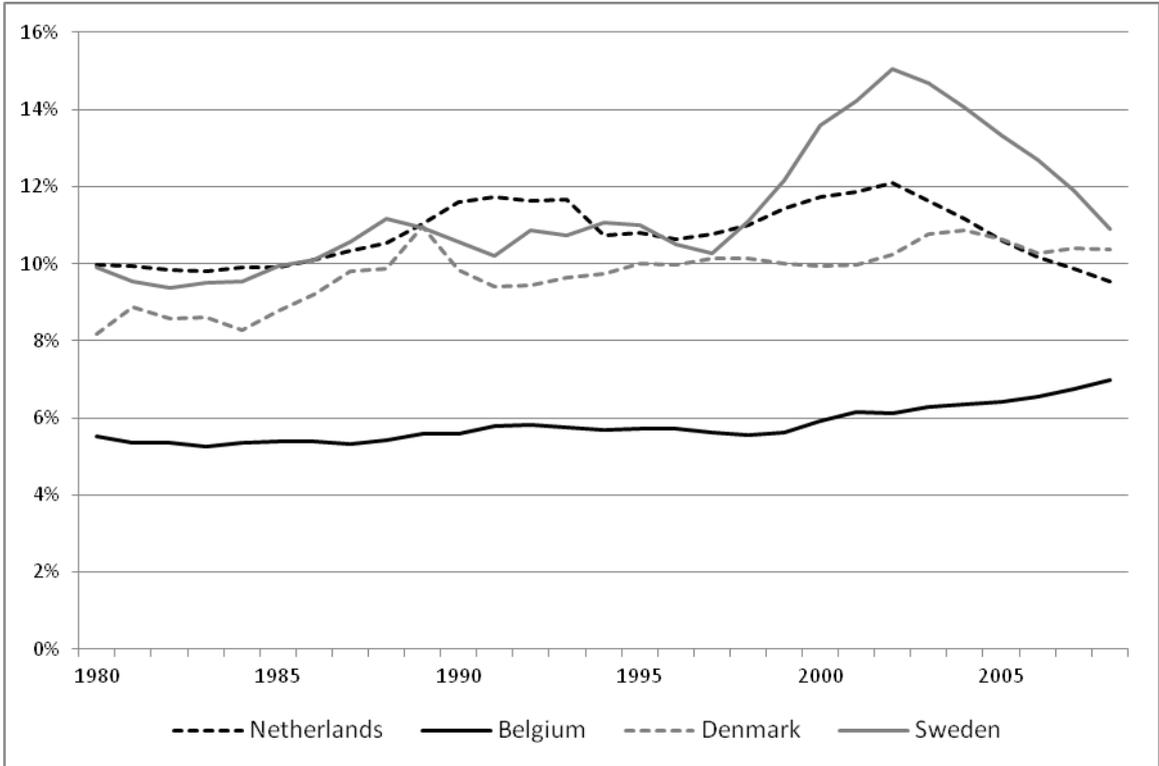
Source: Own calculations based on Clasen & Clegg (2011)

Figure 2 shows these same numbers but expressed as a percentage of the population between 15 and 65 years of age. We now see a clear shift in ranking. Until 1998, the Netherlands and Sweden stayed close together around the same level of approximately 11%. The same fluctuations witnessed in figure 1 return in figure 2 but this time also Denmark seems to experience a more turbulent evolution. From 1998 onwards Sweden

<sup>3</sup> As of 1992, the employer had to pay the first two to four weeks of the sickness benefits. The NEI-OECD simulates this caseload with a formula that takes into account the length of the period the employer had to pay, and ratio sick days by sickness benefit recipient in 1980. Johan De Deken has extended this procedure for the period after 2000.

takes a steady lead. Denmark follows the Netherlands closely with regard to caseload, but surpasses the Dutch in 2005. Belgium remains at the bottom with a fairly stable number of beneficiaries although we do see a small growth from 2000 onwards.

Figure 2. Evolution of the work incapacity caseload (in % of the population 15-65)



Source: Own calculations based on Clasen & Clegg (2011)

### 3. Correction: counterfactual work incapacity caseload

The previous section of the article showed a large cross-national variation in the work incapacity caseload numbers. Although we saw a strong increase in all four countries, we also noticed remarkable differences in starting point and growth level of beneficiaries. To evaluate which determinants drive these cross-national differences, we will introduce some corrections in this third part. More precisely, we will correct the WI caseload for evolutions in the labor force and its components to determine whether we can explain part of the national growth and consequently cross-national variation in caseload. Since labor force data (OECD.stat, 2013) for Belgium and Denmark are only available from 1983 onwards, the correction will be applied for the period 1983-2008.

### 3.1. Method

To determine the impact of the evolution of the labor force<sup>4</sup>, we will, in a first phase, calculate the counterfactual caseload. By dividing the WI caseload in 2008 by the size of the LF in 2008, and then multiplying by the size of the LF in 1983, we keep the evolution of the labor force stable over the entire period (1983-2008). This creates a counterfactual work incapacity caseload on the structure of the labor force of 1983, thus neutralizing any evolutions in the LF.

In a second phase, when comparing the actual caseload with the calculated counterfactual caseload, we get an indication of the proportion of growth in WI caseload explained by the evolution of the labor force. In other words, by eliminating the evolution of the LF, we get corrected and comparable caseload numbers.

To compute the impact of the labor force, we have specified the counterfactual using the following formula:

$$(1) \text{ COUNTERFACTUAL CASELOAD}_{LF} = \frac{\text{work incapacity caseload '08}}{\text{LF '08}} * \text{LF '83}$$

To get a more detailed picture of the weight of each component of the LF, we also provide a decomposition of the LF. By decomposing into its respective gender, age and labor status components, we are able to control for the evolutions of these exclusive components and express WI growth as a function of these socio-demographic factors.

First, the labor force data (OECD.stat, 2013) are divided into male and female participation. Although both categories have known a positive evolution in the period 1989-2009, the growth of the female LF was much higher than the growth in male LF. Not only are more women entering the labor force, they also remain active until a later age (RIZIV, 2011). Given this fact, the evolution in female LF may have significant explanatory power for the growth in work incapacity numbers.

Secondly, within the gender components, a further distinction is made by the age of labor force participants. The OECD (2010) states that WI benefit receipt is positively affected by the aging of the labor force.

---

<sup>4</sup> The labor force has been defined using ILO-norms: persons who are active on the labor market, either as *unemployed* (non-working who have actively looked for employment during the last four weeks and are readily available for the labor market, i.e. can start new employment within two weeks, together with the non-employed who have found employment that will start within three months), or *employed* (individuals who have performed at least one hour of paid labor in the reference week) (ILO resolution, 2013).

Therefore, the growth in work incapacity caseload may also be explained by the growing proportion of elderly in the labor force. The cutoff age in the following calculations has been set at 50.

Finally, an additional distinction is made between the employed and unemployed to get a more detailed picture.

The increase in WI caseload is therefore disaggregated into the following eight exclusive component sources:

- 1) Employed males, 15-49
- 2) Employed males, 50-64
- 3) Unemployed males, 15-49
- 4) Unemployed males, 50-64
- 5) Employed females, 15-49
- 6) Employed females, 50-64
- 7) Unemployed females, 15-49
- 8) Unemployed females, 50-64

To explore the individual impact of the eight categories on the growth of work incapacity caseload, an alternative version of formula (1) was used. Instead of using data on the overall LF, we use data on the different components, thus computing counterfactual caseload numbers on the structure of each separate component.

$(2) \text{ COUNTERFACTUAL CASELOAD}_{\text{component}} = \frac{\text{work incapacity caseload '08}}{\text{component '08}} * \text{component '83}$
--

To interpret the counterfactuals correctly, the relative weight of each component in the labor force has to be taken into account. Therefore, an additional step is implemented in the formula: weighing the overall effect of each component by its relative weight in the LF in 1983.

**3.2. Counterfactual caseload**

Using the caseload data of De Deken (2011) and OECD labor force statistics (OECD.stat, 2013), table 1 displays the growth in absolute WI caseload (row a) and the labor force (row b) for the period 1983-2008 for Belgium, the Netherlands, Denmark and Sweden. For more detailed data of the labor force, we refer to annex 1.

Furthermore, the table shows the counterfactual caseload, controlled for the LF (row c). Row d displays the proportion of the WI caseload growth that is explained by the labor force in general. Rows e-l show the contribution of each exclusive component within this proportion.

Table 1. Counterfactual of the work incapacity caseload

Table 1a: Belgium

			1983	2008	growth level '83-'08
(a)	Work incapacity caseload (absolute # of claimants)		347047	492031	41.78
(b)	Labor force (15-64 years)		3841055	4746647	23.58
(c)	Counterfactual work incapacity caseload (absolute # of claimants: counterfactual on the structure of the LF of '83)		347047	398159	14.73
.....					27.05
(d)	Proportion of WI caseload growth explained by the evolution of the labor force: (a) - (c)				27.05
Relative contribution of the different component sources in (d):					-----
(e)	Men	Employment		15-49	3.29
(f)				50-64	3.03
(g)		Unemployment		15-49	-0.66
(h)				50-64	-0.16
(i)	Women	Employment		15-49	16.66
(j)				50-64	7.58
(k)		Unemployment		15-49	-2.93
(l)				50-64	0.24

Table 1b: the Netherlands

				1983	2008	growth level '83-'08
(a)	Work incapacity caseload (absolute # of claimants)			950000	1058000	11.37
(b)	Labor force (15-64 years)			5709000	8607000	50.77
(c)	Counterfactual work incapacity caseload (absolute # of claimants: counterfactual on the structure of the LF of '83)			950000	701719	-26.13
.....					37.50	
(d)	Proportion of WI caseload growth explained by the evolution of the labor force: (a) - (c)				37.50	
Relative contribution of the different component sources in (d):					-----	
(e)	Men	Employment		15-49	9.67	
(f)				50-64	7.62	
(g)		Unemployment		15-49	-4.88	
(h)				50-64	-0.56	
(i)	Women	Employment		15-49	19.09	
(j)				50-64	8.08	
(k)		Unemployment		15-49	-1.67	
(l)				50-64	0.13	

Table 1c: Denmark

				1983	2008	growth level '83- '08
(a)	Work incapacity caseload (absolute # of claimants)			290851	375000	28.93
(b)	Labor force (15-64 years)			2611000	2908000	11.38
(c)	Counterfactual work incapacity caseload (absolute # of claimants: counterfactual on the structure of the LF of '83)			290851	336675	15.76
-----						13.18
(d)	Proportion of WI caseload growth explained by the evolution of the labor force: (a) - (c)					-----
Relative contribution of the different component sources in (d):						
(e)	Men	Employment	15-49			3.34
(f)			50-64			5.72
(g)		Unemployment	15-49			-3.27
(h)			50-64			-0.42
(i)	Women	Employment	15-49			4.71
(j)			50-64			6.41
(k)		Unemployment	15-49			-3.11
(l)			50-64			-0.21

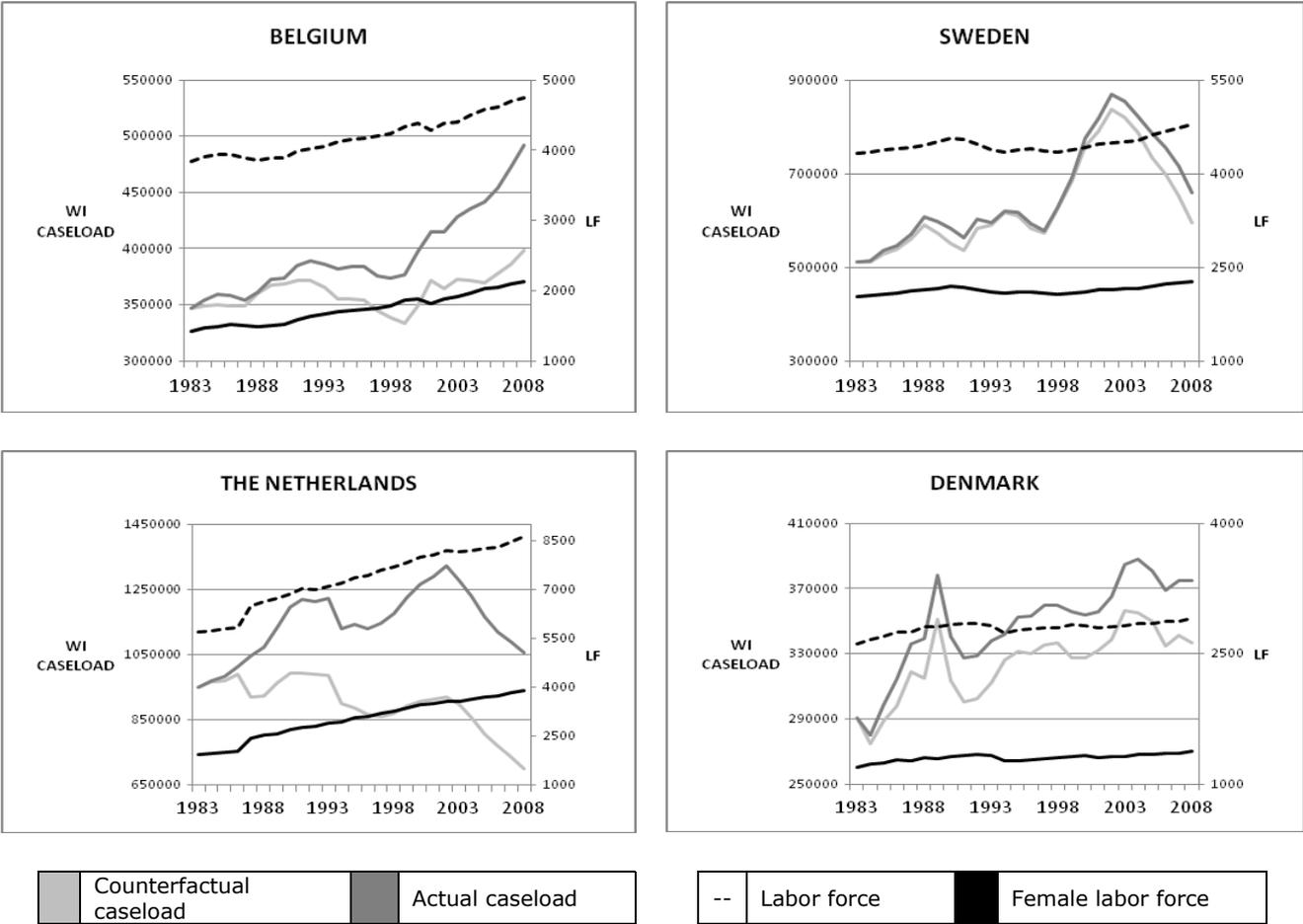
Table 1d: Sweden

				1983	2008	growth level '83- '08
(a)	Work incapacity caseload (absolute # of claimants)			510678	659030	29.05
(b)	Labor force (15-64 years)			4330000	4784000	10.48
(c)	Counterfactual work incapacity caseload (absolute # of claimants: counterfactual on the structure of the LF of '83)			510678	596505	16.81
-----						12.24
(d)	Proportion of WI caseload growth explained by the evolution of the labor force: (a) - (c)					-----
Relative contribution of the different component sources in (d):						
(e)	Men	Employment	15-49			-0.37
(f)			50-64			4.33
(g)		Unemployment	15-49			1.36
(h)			50-64			0.27
(i)	Women	Employment	15-49			0.06
(j)			50-64			4.90
(k)		Unemployment	15-49			1.45
(l)			50-64			0.23

Source: Clasen & Clegg, 2011; OECD.stat (2013)

To get a better visual understanding of the above numbers, figure 3 displays the actual and the counterfactual evolution of WI caseload on the left axis. To complement the analysis and to test our hypothesis, the evolution of the labor force (and the female labor force) is expressed on the righthand axis.

Figure 3. Evolution of the actual and counterfactual caseload, 1983-2008.



Source: own calculations based on Clasen & Clegg (2011), OECD.stat (2013)

In Belgium we see that the discrepancy between the actual and the counterfactual caseload remains fairly small and this goes hand in hand with a stable labor force evolution. From 1991 onwards however, we see an increasing labor force. As a consequence the gap between the actual and the counterfactual caseload widens. Furthermore, the graph shows that the increase in the labor force is mirrored by an increase in the female labor force thus indicating the plausibility of our thesis that the female LF has reinforced the already increasing caseload. However, since both actual and counterfactual caseload have increased, we can conclude that there are additional influential factors besides the increasing female LF.

For the Netherlands we see a similar story: until 1986 the labor force remains stable, followed by a steady increase. This translates in larger differences between the actual and the counterfactual Dutch caseload. As was the case in Belgium, the increase in total labor force follows the same motion as the increase in female labor force. We see that any increase in the total labor force is mainly the result of increasing female participation.

However, also in the Dutch case, the figure shows us that more drivers are causing the increasing actual caseload.

In Sweden we see a different pattern: no significant changes occur in the labor force until the beginning of 2000 when a slight increase sets in. This small increase widens the gap between actual and counterfactual caseload slightly from 2002 onwards.

In Denmark we see a quite stable gap between actual and counterfactual caseload. Until 1992 the labor force increases very mildly, and this is reflected by the enlargement of the gap until this point. However, both the labor force and the female labor force do not experience any drastic increases or decreases. We therefore see almost no changes in the gap between the actual and the counterfactual caseload.

#### 4. Discussion

In this section we will discuss these data more thoroughly to see whether we can formulate an answer to our research question: *'To what extent can the increase and cross-national variation in work incapacity caseload be explained by the evolution of the labor force and its components?'* We will use the main findings from the previous section to get a good understanding of the implications of the correction.

Table 2 provides both actual and counterfactual WI caseload and shows which part of the growth in actual caseload can be contributed to the evolution in labor force.

Table 2: Proportion of caseload growth explained by the evolution of the labor force, in percentages, 1983-2008

	<b>Actual WI caseload growth (a)</b>	<b>Counterfactual WI caseload growth (b)</b>	<b>Proportion explained by the evolution in the LF (a)-(b)</b>	<b>LF growth</b>
Belgium	41.78	14.73	27.05	23.58
The Netherlands	11.37	-26.13	37.50	50.77
Denmark	28.93	15.76	13.18	11.38
Sweden	29.05	16.81	12.24	10.48

Source: own calculations based on Clasen & Clegg (2011), OECD.stat (2013)

The above table indicates that in those countries where the LF has known a considerable growth, i.e. the Netherlands (50.77%) and Belgium (23.58%), the proportion of caseload growth that can be attributed to this evolution is also large. In Sweden and Denmark, where a smaller evolution of the LF has taken place, the proportion is consequently smaller but nonetheless, a substantial part of the WI evolution can be explained.

Also noteworthy is the counterfactual caseload growth, i.e. the residual part of the WI growth not explained by the LF evolution. With the Netherlands as sole exception, we see that the numbers for Belgium, Sweden and Denmark approach each other very closely. To formalize the cross-national differences between these countries we calculate the actual and the counterfactual variance. We provide these numbers with and without inclusion of the Netherlands. As can be seen in the third row of table 3, the variance in work incapacity caseload growth declines substantially after controlling for LF evolutions and excluding the Netherlands.

Table 3. Cross-national variance in actual and counterfactual caseload growth, absolute number, 1983-2008

	<b>Variance actual WI caseload growth</b>	<b>Variance counterfactual WI caseload growth</b>
Inclusion of the NL	156.07	436.83
Exclusion of the NL	54.53	1.08

Source: own calculations based on Clasen & Clegg (2011), OECD.stat (2013)

Without going into detail regarding the national policies, we do want to mention that the Netherlands have known a rather turbulent policy discourse in recent years with a strong focus on reducing the work incapacity-related caseload. This might explain why the counterfactual growth is negative (table 2: column 3). The positive policy effects have been overruled by the LF evolution in this case , thus resulting in a positive rather than a negative actual growth.

In table 4, we focus only on the proportion of caseload growth explained by the evolution of the LF (corresponding with the figures in the fourth column of table 2). By decomposing the explained proportion into the socio-demographic components of the LF, we get a clear understanding of the weight that each of these individual drivers has.

Table 4. Proportion of caseload growth explained by the components of the labor force, in percentages, 1983-2008

Proportion explained by the evolution in the LF:	Contribution of the different component sources in the proportion of WI caseload growth explained by the evolution in the LF:							
	Male employment		Male unemployment		Female employment		Female unemployment	
	15-49	50-64	15-49	50-64	15-49	50-64	15-49	50-64
<b>BE</b> 27.05	3.29	3.03	-0.66	-0.16	16.66	7.58	-2.93	0.24
<b>NL</b> 37.50	9.67	7.62	-4.88	-0.56	19.09	8.08	-1.67	0.13
<b>DK</b> 13.18	3.34	5.72	-3.27	-0.42	4.71	6.41	-3.11	-0.21
<b>SE</b> 12.24	-0.37	4.33	1.36	0.27	0.06	4.90	1.45	0.23

Source: own calculations based on Clasen & Clegg (2011), OECD.stat (2013)

Although the weight of female employment differs, it is by far the main driver in all four countries. The substantial increases in female labor force have increased the fraction of female individuals insured by DI. This increase in WI insurance rate has consequently translated into a higher proportion of women actually taking up WI benefits. In Sweden and Denmark, where male and female employment were already quite similar in 1983 (see annex 1), the effect of female employment is smaller than in Belgium and the Netherlands where gender discrepancy was more pronounced.

## 5. Conclusion

Although previous studies attempted to attribute the growth and cross-national variance in work incapacity caseload to differences in health status and age structure, no clear explanation was found in either driver. Institutions as a whole were therefore regarded as the main explanation. With no clear understanding of what these institutions entail, we find this explanation unsatisfying.

Knowing that the evolution of the labor force happened at a different pace in each of the countries of interest, we wondered whether this indirectly accounted for part of the work incapacity caseload growth. The present study therefore answered a twofold research question: *'To what extent can the increase and cross-national variation in work incapacity caseload be explained by the evolution of the labor force and its components?'*

On the one hand, we were interested in correcting national caseload growth for the evolution experienced in the labor force. More specifically, we wondered whether the substantial increase in female labor force was

the main driver behind the increasing caseload numbers. The results indicate that female employment is indeed the main driver in all four countries but that the proportion of work incapacity related caseload growth explained by it differs to a great extent.

On the other hand, we were puzzled by the large cross-national variation in work incapacity caseload between the four countries that we examined. We wondered whether these large differences would uphold once the correction was implemented. With the Netherlands as sole exception, the residual growth of work incapacity caseload shows remarkable similarities between Sweden, Denmark and Belgium, resulting in a much smaller cross-national variance.

By focusing on this one, rather detailed component of 'institutions', we have shown that controlling for the labor force evolution, (1) there is only a small residual national growth left in work incapacity caseload, and (2) cross-national differences disappear to a great extent.

The importance of the present findings lies in the decomposing method we used to unravel the impact of the labor force. Applying this method, we were able to indicate the specific contribution of various socio-demographic components of the LF. This framework allowed us to specify that work incapacity related caseload growth was mainly driven by the evolution in female employment in the age cohort 15-49.

Since we based our analysis on four countries where a clear *dual earner family model* exists, further research should extend this analysis to countries where a *male breadwinner model* with low female employment is found. Based on our conclusion with regard to the four countries examined in this paper – i.e. female employment as the main driver for caseload growth – we expect the contribution of the LF evolution to be lower in such countries.

## BIBLIOGRAPHY

- Blöndal, S., and S. Scarpetta (1998), *The Retirement Decision in OECD Countries*. OECD Economics Department Working Papers No.98. Paris: OECD.
- Börsch-Supan, A. (2007), *Work Disability, Health, and Incentive Effects*. MEA Discussion Paper 135.
- Bound, J. (1989), 'The Health and Savings of Rejected Disability Insurance Applicants', *American Economic Review* 79: 482-503.
- Clasen, J., and D. Clegg (2011), *Regulating the Risk of Unemployment: National Adaptations to Post-Industrial Labour Markets in Europe*. New York: Oxford University Press.
- Duggan, M., and S.A. Imberman (2009), 'Why are the Disability Rolls Skyrocketing? The Contribution of Population Characteristics, Economic Conditions, and Program Generosity', *Health at Older Ages: The Causes and Consequences of Declining Disability among the Elderly*, NBER.
- Gruber, D., and D. Wise (1999), 'Social Security Programs and Retirement Around the World: Introduction and Summary', In Gruber, D. and Wise, D. (eds), *Social Security Programs and retirement Around the World*. Chicago: University of Chicago Press.
- Haveman, R., and L.B. Wolfe (1984), 'The Decline in Male Labor Force Participation: Comment', *Journal of Political Economy* 92(3):532-541.
- ILO resolution (2013), Resolution concerning statistics of the economically active population, employment, unemployment and underemployment. Retrieved January 2013 from [http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms\\_087481.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_087481.pdf)
- OECD employment database (2013), Basic statistical concepts: employment, unemployment and activity in Labour Force Surveys. Paris: OECD. Retrieved January 2013 from <http://www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm#unr>
- OECD (2010), *Sickness, Disability and Work: Breaking the Barriers. A synthesis of findings across OECD countries*. Paris: OECD.
- OECD.stat (2013), Labour Force Statistics by sex and age (Database).
- Parsons, Donald O. (1980), 'The Decline in Male Labor Force Participation', *Journal of Political Economy* 88(1):1117-134.
- RIZIV (2011), *Verklarende factoren met betrekking tot de stijging van het aantal invaliden: loontrekkenden (gegevens 1989-2009)*. Brussel: RIZIV - INAMI
- Stern, S. (1989), 'Measuring the Effect of Disability on Labor Force Participation', *Journal of Human Resource* 24(3):361-395.

## ANNEX 1: LABOR FORCE AND COUNTERFACTUAL CASELOAD EVOLUTIONS

<b>BELGIUM</b>					
<b>Categories of the LF (overlapping) (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Women (total)			1417	2138	50.90
Elderly (total)			663	1021	53.97
Employed (total)			3391	4414	30.17
Unemployed (total)			450	333	-26.06
<b>Exclusive categories of the LF (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Men	Employment	15-49	1751	1861	6.30
		50-64	476	577	21.28
	Unemployment	15-49	167	145	-13.17
		50-64	30	25	-17.14
Women	Employment	15-49	1021	1579	54.60
		50-64	142	396	178.37
	Unemployment	15-49	239	141	-41.05
		50-64	14	22	55.53
<b>Counterfactual WI caseload</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08<sup>5</sup></b>
WI caseload: counterfactual on the evolution of the exclusive component sources of the LF:					
Men	Employment	15-49	347047	462890	33.38
		50-64	347047	405694	16.90
	Unemployment	15-49	347047	566665	63.28
		50-64	347047	593801	71.10
Women	Employment	15-49	347047	318252	-8.30
		50-64	347047	176751	-49.07
	Unemployment	15-49	347047	834643	140.50
		50-64	347047	316355	-8.84

<sup>5</sup> These are the counterfactual growth levels before the additional step of weighing the overall effect of each component by its relative weight in the LF in 1983. The weighted growth levels are presented in table 1.

<b>THE NETHERLANDS</b>					
<b>Categories of the LF (overlapping) (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Women (total)			1934	3916	102.44
Elderly (total)			875	2056	134.92
Employed (total)			4908	8345	70.03
Unemployed (total)			801	262	-67
<b>Exclusive categories of the LF (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Men	Employment	15-49	2636	3384	28.36
		50-64	588	1177	100.20
	Unemployment	15-49	472	95	-79.86
		50-64	78	35	-55.24
Women	Employment	15-49	1489	2965	99.08
		50-64	194	819	321.34
	Unemployment	15-49	236	107	-54.65
		50-64	15	25	69.84
<b>Counterfactual WI caseload</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08<sup>5</sup></b>
WI caseload: counterfactual on the evolution of the exclusive component sources of the LF:					
Men	Employment	15-49	950000	824246	-13.24
		50-64	950000	528461	-44.37
	Unemployment	15-49	950000	5253917	453.04
		50-64	950000	2363874	148.83
Women	Employment	15-49	950000	531444	-44.06
		50-64	950000	251104	-73.57
	Unemployment	15-49	950000	2333038	145.58
		50-64	950000	622950	-34.43

<b>DENMARK</b>						
<b>Categories of the LF (overlapping) (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>	
Women (total)			1198	1374	14.69	
Elderly (total)			500	760	51.81	
Employed (total)			2352	2807	19.36	
Unemployed (total)			259	101	-60.98	
<b>Exclusive categories of the LF (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>	
Men	Employment	15-49	1006	1082	7.49	
		50-64	273	402	47.14	
	Unemployment	15-49	114	40	-64.74	
		50-64	19	9	-50.57	
Women	Employment	15-49	877	984	12.12	
		50-64	195	339	74.31	
	Unemployment	15-49	113	43	-62.07	
		50-64	14	9	-34.83	
<b>Counterfactual WI caseload</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08<sup>5</sup></b>	
WI caseload: counterfactual on the evolution of the exclusive component sources of the LF:						
Men	Employment	15-49	290851	348855	19.94	
		50-64	290851	254867	-12.37	
	Unemployment	15-49	290851	1063614	265.69	
		50-64	290851	758642	160.84	
Women	Employment	15-49	290851	334476	15.00	
		50-64	290851	215134	-26.03	
	Unemployment	15-49	290851	988791	239.96	
		50-64	290851	575401	97.83	

<b>SWEDEN</b>					
<b>Categories of the LF (overlapping) (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Women (total)			2032	2278	12.12
Elderly (total)			1045	1406	34.54
Employed (total)			4159	4490	7.96
Unemployed (total)			171	294	71.69
<b>Exclusive categories of the LF (in thousands of persons)</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08</b>
Men	Employment	15-49	1665	1651	-0.82
		50-64	546	707	29.43
	Unemployment	15-49	70	120	72.52
		50-64	18	28	55.49
Women	Employment	15-49	1482	1484	0.16
		50-64	466	648	38.97
	Unemployment	15-49	69	123	78.00
		50-64	15	23	57.93
<b>Counterfactual WI caseload</b>			<b>1983</b>	<b>2008</b>	<b>growth level '83-'08<sup>5</sup></b>
WI caseload: counterfactual on the evolution of the exclusive component sources of the LF:					
Men	Employment	15-49	510678	664457	30.11
		50-64	510678	509170	-0.30
	Unemployment	15-49	510678	382006	-25.20
		50-64	510678	423828	-17.01
Women	Employment	15-49	510678	657964	28.84
		50-64	510678	474225	-7.14
	Unemployment	15-49	510678	370235	-27.50
		50-64	510678	417290	-18.29