

Research Note

Qualitative Scenario Study of the European Labour Force

by Peter Ekamper

Abstract:

In the Demography Monitors the trends in the labour force are documented as well as its future development. The latter is based on an extrapolation of current trends in age and sex specific labour force entry and exit rates which were assumed to remain constant. As it is highly improbable that labour force entry and exit rates will indeed remain constant, also given the various policies which are implemented in the Member States to increase labour force participation, this Research Note explores the possible impact of these policies on the development of the actual workforce. Starting point for these scenarios is the labour force scenario that was developed by DG ECFIN in 2005 for the EPC study on the future of public expenditures. These analyses show that, despite an assumed increase in labour force participation rates, total labour supply in 2050 will be smaller than in 2005. The Research Note pays attention to the growing importance of part time work and its consequences for the future development of labour supply in annual hours worked. The potential impact of labour migration and the impact of cohort effects are two other themes that are explored.

The role of international migration is rather complex. Migration does not seem to be a realistic solution to population ageing. However, migration might be helpful in balancing short-term shortages on the labour market depending on to what extent the European Union will be able to attract migrants with sufficient qualifications from outside Europe. Cohort effects will have a positive effect on future labour supply. Both labour force participation of women and older workers is expected to increase with younger generations.

The share of part-time workers in the European Union is increasing, both for men and women, at all educational levels and at nearly all ages. With respect to future part-time working the picture is less clear. To illustrate potential effects of increasing part-time work, three simplified scenarios are explored: (1) an increase of labour force participation rates of women, (2) an increase of labour force participation rates of older workers, and (3) a substantial shift from full-time to part-time participation for middle aged workers. The first two scenarios would increase labour force participation in terms of both numbers of persons and numbers of hours worked. The third scenario would decrease labour force participation in terms of numbers of hours worked. Whether the future total number of hours worked could increase, will depend on to what extent these effects offset each other. However especially in the long run (up to 2050) the working-age population is expected to be much smaller than as of today. Even positive effects of increasing full-time and part-time participation on the total number of hours worked might not compensate for a decrease of total number of hours worked due to a substantial decline in the number of people in the working-age population.

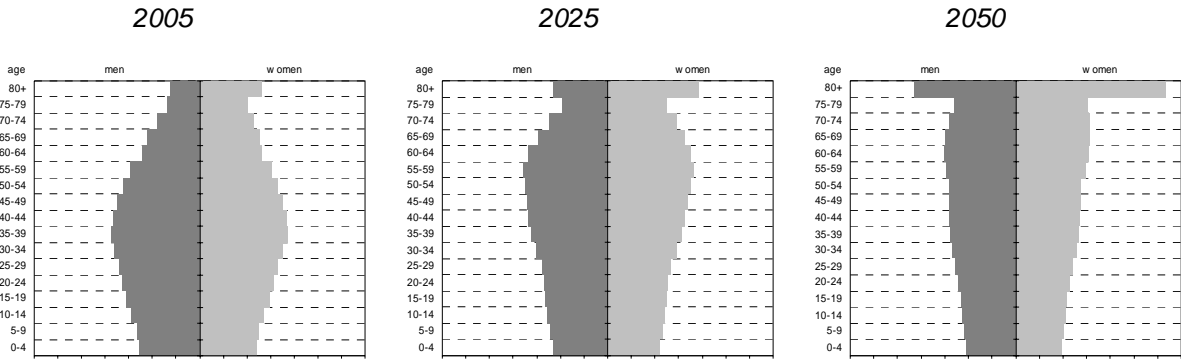
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Qualitative Scenario Study of the European Labour Force¹

I. The issue

In Europe population ageing is one of the most distinctive demographic events of the past several decades. Also in the coming decades, the size and age-structure of Europe's population will still undergo major changes due to low fertility rates and continuous increases in life expectancy (Beets, 2006). According to the most recent Eurostat baseline population projections (EUROPOP 2004; Lanzieri, 2006) the share of the elderly population aged 65 years and over in the European Union will increase by around 35% in twenty years time and even by 80% in fifty years time (see *Figure 1*). There has been a growing recognition at both national and European level of the profound economic, budgetary and social consequences of ageing populations. Population ageing in the European Union will particularly affect the future supply of labour both in the sense of high numbers of older workers leaving the labour force and decreasing numbers of new (young) entrants to the labour force. Due to the fertility decline future younger cohorts of entrants will be much smaller than nowadays.

Figure 1. Age pyramids for the European Union (EU-27) population in 2005, 2025 and 2050



Source: Eurostat baseline population scenario (EUROPOP 2004)

This Research Note will explore the possible impact of policies aiming at increasing labour force participation on the future development of the actual workforce. Starting point for these explorations will be the labour force scenario that was developed by the European Commission Directorate-General for Economic and Financial affairs (DG ECFIN) in 2005 for the Economic Policy Committee (EPC) study on the future of public expenditures. The idea is to add a qualitative dimension to these existing projections. The study will pay attention to the growing importance of part time work and for this a view on the future development of labour supply in annual hours will be developed. The potential impact of labour migration and the impact of cohort effects are two other themes that will be explored. This Research Note will be qualitative in nature and sketch a limited number of scenarios. The Research Note will primarily explore the potential impacts of policies; its aim is not to prepare a detailed set of quantitative labour force projections.

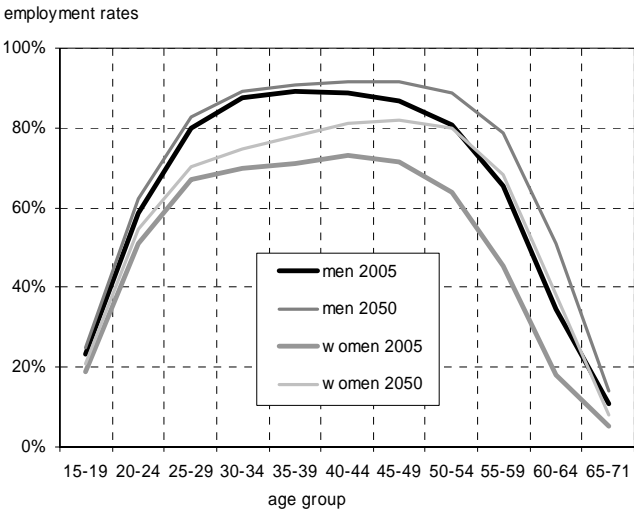
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II. The facts

Labour force projections

In 2005 the European Commission Directorate-General for Economic and Financial affairs carried out long-term labour force projections for each of the European Union Member States at that time (EU-25) for the period up to 2050. These projections were undertaken in order to provide the background technical inputs for the assessment of the potential economic and fiscal impact of an ageing population. The report of Carone (2005) presents methodology and results of these labour force projections. The report of the Economic Policy Committee and the European Commission DG ECFIN (2006) presents the additional projections on age-related expenditure covering pensions, health care, long-term care, education and unemployment transfers for the EU-25 Member States for the period up to 2050. The projections presented in these reports show the outcome for the labour force of extrapolating recent trends in labour market behaviour (entry and exit rates from the labour market). The baseline projections reflect the assumption of “no policy change” and are neither forecasts nor predictions in that they are not based on any assessment of more or less likely future changes in working patterns or economic conditions (Carone, 2005). The baseline projections take into account both the trend in lifetime profiles of participation in different generations (cohorts) and the impact of recent pension reforms (Carone, 2005). Women belonging to younger cohorts, for instance, have their own specific level of participation, which is usually higher than the corresponding level of older generations. However, future cohorts of women entering the labour force are assumed to have the same individual characteristics as cohorts that entered the labour force in the period 1997-2003. Therefore, future female participation rates will stabilize over time. Recent pension reforms are assumed to decrease future labour force exit rates and thus future participation rates of older workers. Figure 2 reflects the impact of the assumptions on future long-term employment rates.

Figure 2. Employment rates by sex and age group in the European Union (EU-25) in 2005 and 2050



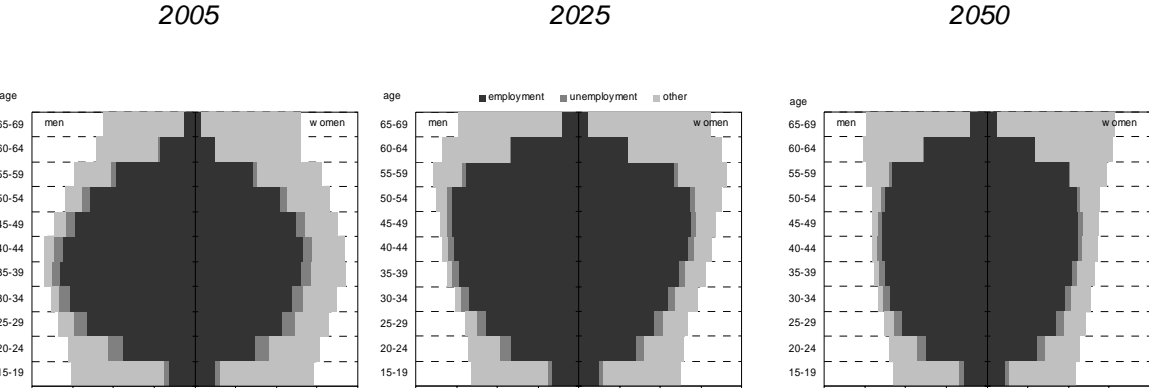
Source: Carone (2005)

The labour force projections baseline scenario indicates that, notwithstanding a projected increase in the participation rates and a reduction in unemployment rates, the pace of labour force and employment growth in the EU-25 will be slightly positive over the next 15 years and will turn negative after that up to 2050. This is mainly the result of the combination of the decline of the working-age population and a shift in the age structure of the population towards older, less participating groups due to the baby-boom generation approaching retirement and the succeeding smaller cohorts reaching working-age (Carone, 2005).

The overall participation rates (for the age group 15 to 64) in the EU-25 is projected to increase by about 5 percentage points over the period 2005-2050 (from 70.3% in 2005 to 74.9% in 2025, and to

75.5% in 2050). By 2018, the number of persons employed is projected to be on a downward trajectory. Having increased by some 20 million between 2004 and 2017, employment over the period 2018 to 2050 is projected to contract by almost 30 million (a fall of some 9 million over the entire projection period). Because of the demographic trends, the age structure of the labour force is projected to face a major change. With population ageing, the labour force will also age (see *Figure 3*).

Figure 3. Age pyramids for the European Union (EU-25) working-age population by labour status in 2005, 2025 and 2050



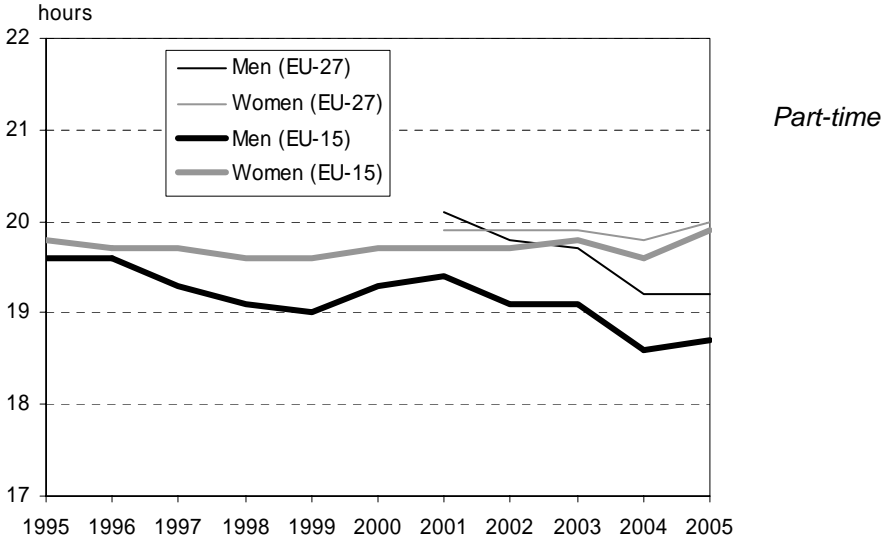
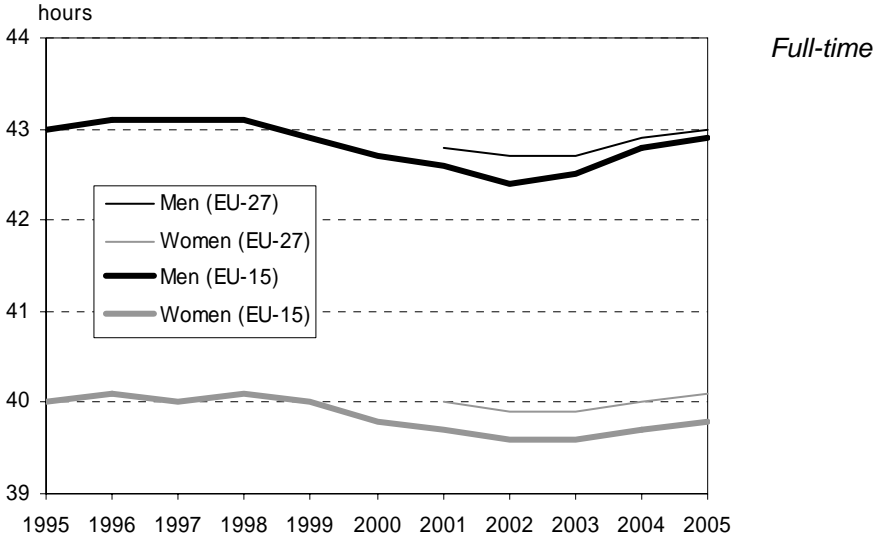
Source: NIDI calculations based on Eurostat baseline population scenario (EUROPOP 2004) and Carone (2005)

The share of older workers (aged 55 to 64) in the total labour force is projected to almost double, rising from 11% in 2005 to about 18% in 2050 in the EU-25. The balance between the inactive elderly and the total population employed, that is, the share of the retired population on workers is projected to rise sharply for the EU-25 from 37% around 2005 to 48% in 2025 and 70% in 2050.

Working hours and part-time work

The total size of employment is not only determined by labour force participation (or employment) rates but also by working hours. In all 27 Member States of the current European Union women still have lower usual weekly working hours than men and the share of part-time workers is still higher for women than for men. In 2005 women in the EU-27 worked on average 7.5 hours a week less than men. In 2005 the share of part-time workers in the EU-27 was 30.7% for women and 6.7% for men. *Figure 4* shows the average number of usual weekly hours worked in the main job by sex and full-time or part-time job in the European Union. As time series for the EU-27 (and EU-25) are rather short (from 2001 onwards) the time series for the EU-15 (from 1995 onwards) are presented as well. Women working full-time work on average 3 hours less than men. Though the number of hours started decreasing slightly since 1998, the trend is upwards again since 2003. Women working part-time on the other hand work slightly more hours than men working part-time. The difference between men and women shows a slight increase here.

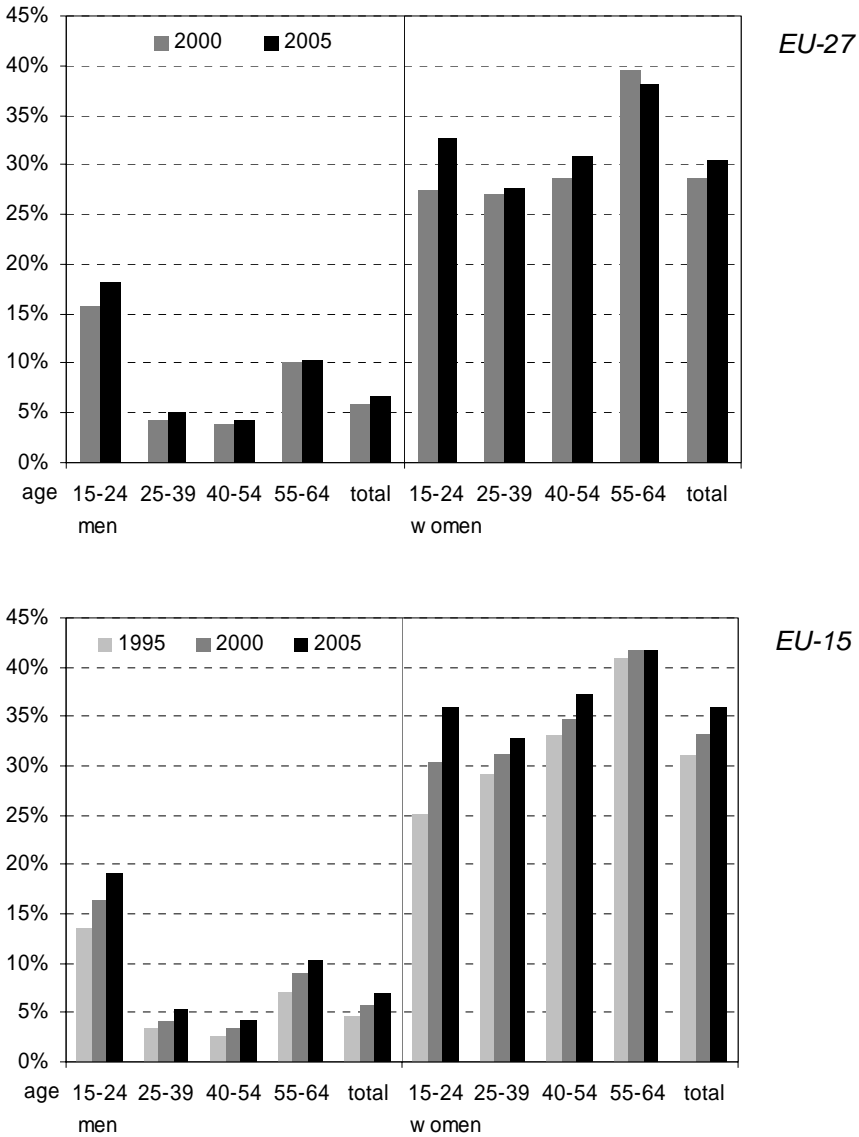
Figure 4. Average number of usual weekly hours of work in main job, by sex and full-time/part-time in the European Union (EU-27 and EU-15), 1995-2005



Source: Eurostat

Figure 5 shows the share of part-time workers in the European Union by age and sex both for EU-27 and EU-15. For all age groups the share of part-time workers in the EU is much higher for women than for men. Part-time working clearly is a female phenomenon. Particularly in the middle age groups part-time employment among men is rather low (less than 5%) compared to women (more than 27%). Part-time work is particularly higher among young people, be it because they are still in education, because they like the flexibility or because it is just all they can get without qualifications (Berkhout *et al.*, 2007).

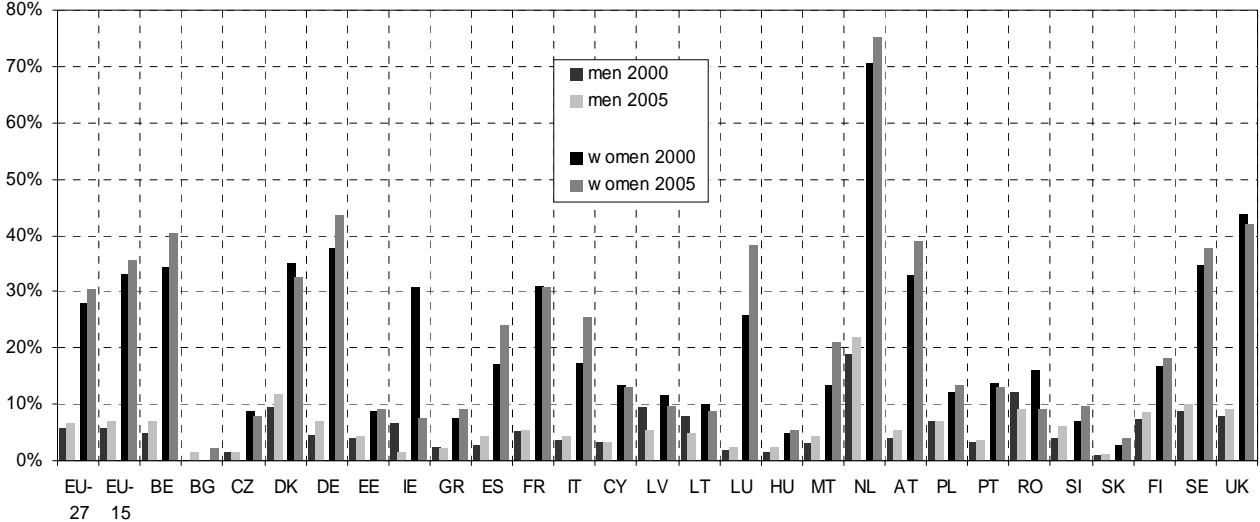
Figure 5. Percentage part-time employment by sex and age groups in the European Union (EU-27 and EU-15) in 1995, 2000 and 2005



Source: NIDI calculations based on Eurostat

The share of part-time employment increased for both men and women in all age groups except for women in age group 55-64. When looking at the share of part-time employment per country (Figure 6) we see that the Netherlands take an exceptional position. More than 70% of the women employed are working part-time and more than 20% of the men. Belgium, Germany and the United Kingdom have a relatively large share of part-time female workers as well (around 40%).

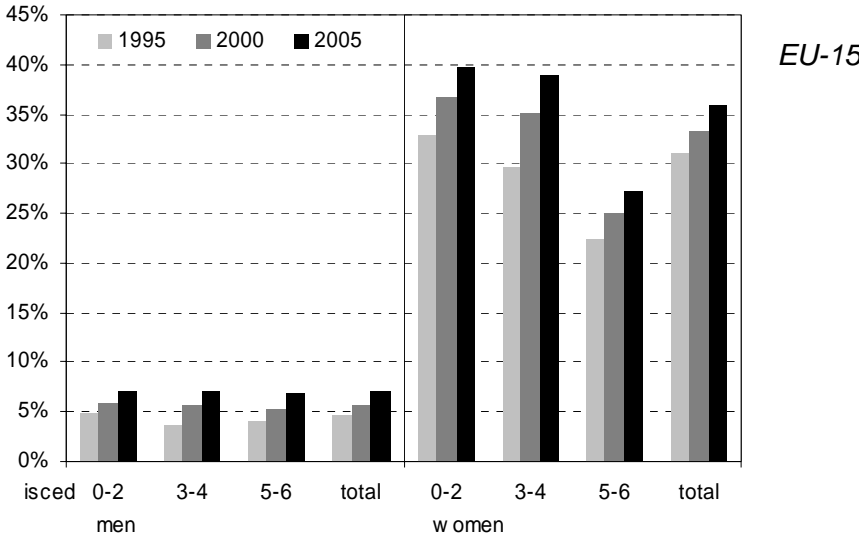
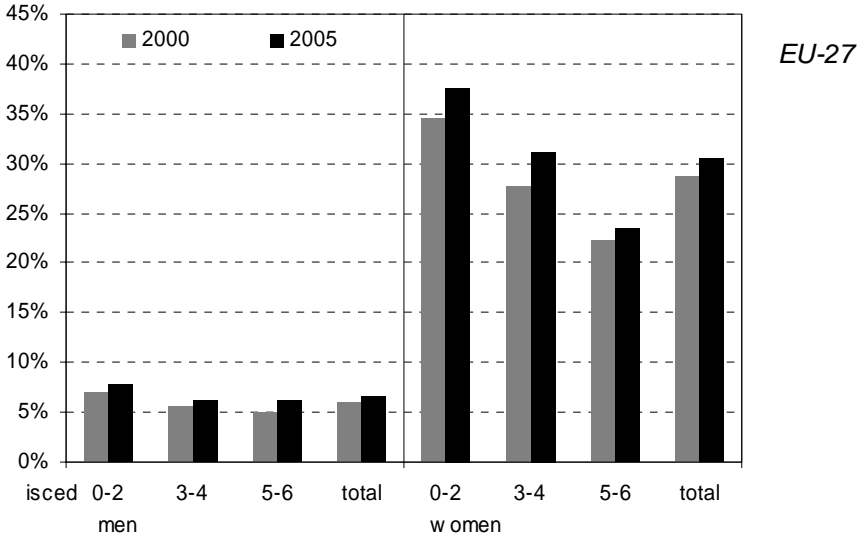
Figure 6. Percentage part-time employment by sex and Member State of the European Union in 2000 and 2005



Source: Eurostat

Figure 7 shows the share of part-time workers in the European Union by age and educational level both for EU-27 and EU-15. Based on the International Standard Classification of Education (ISCED) three education levels are distinguished: pre-primary, primary and lower secondary education (ISCED levels 0-2), upper secondary and post-secondary non-tertiary education (ISCED levels 3-4), and tertiary education (ISCED levels 5-6). For all three educational levels the share of part-time workers in the European Union again is much higher for women than for men. The share of part-time workers is highest among the lower educated and lowest among the higher educated. This applies to both men and women. However, part-time employment is increasing at all education levels. Individual Member States show similar trends: part-time employment is less frequent among the higher educated in all countries (Berkhout *et al.*, 2007).

Figure 7. Percentage part-time employment by sex and highest level of education (ISCED) attained in the European Union (EU-27 and EU-15) in 1995, 2000 and 2005



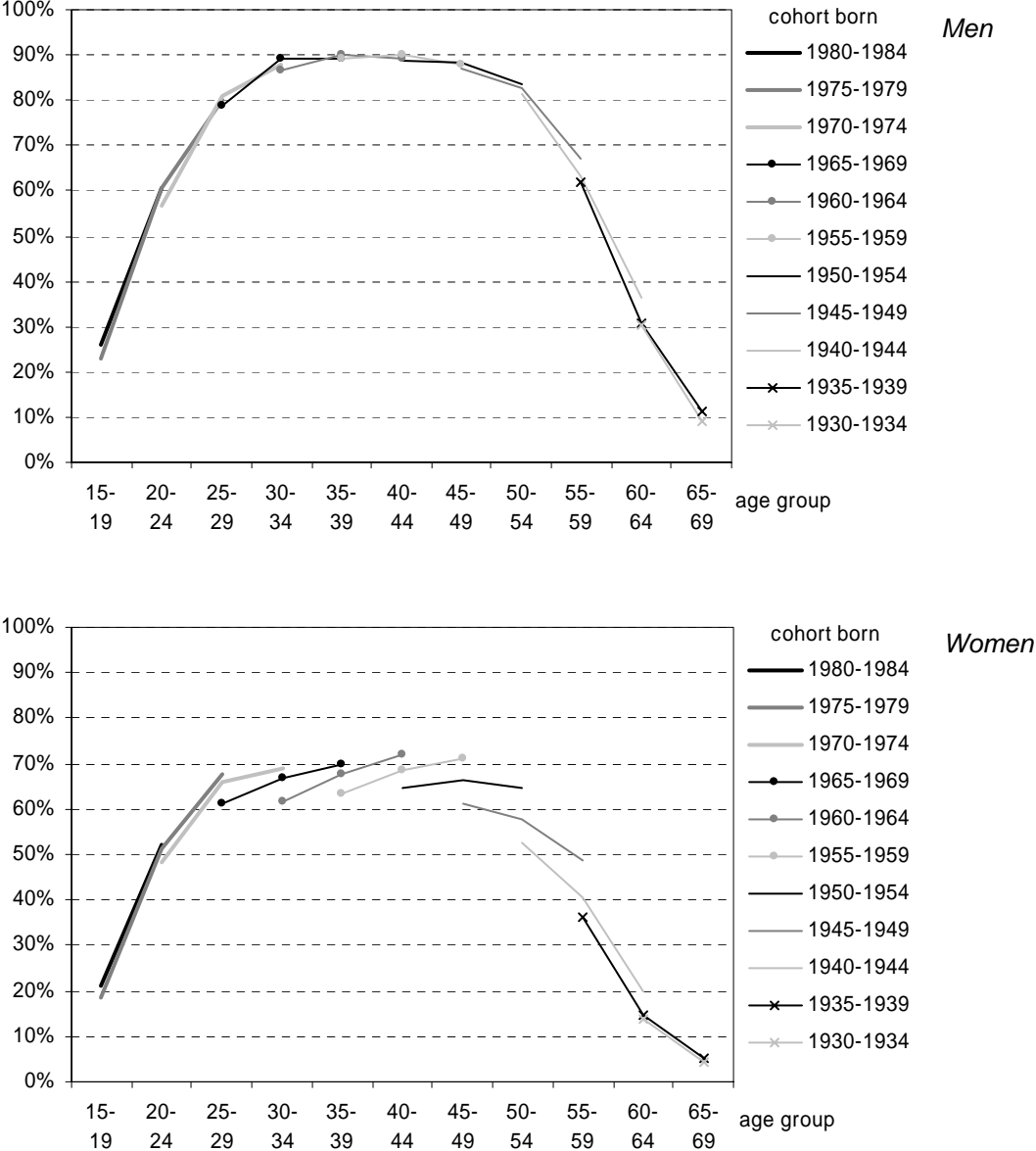
Note: ISCED level 0-2 is pre-primary, primary and lower secondary education; ISCED level 3-4 is upper secondary and post-secondary education; ISCED level 5-6 is tertiary education

Source: Eurostat

Cohort effects

The impact of cohort effects on the European Union labour market is mainly relevant for two groups: women and older workers. Women belonging to younger birth cohorts generally have higher labour force participation rates than women from older birth cohorts. With regard to the labour force participation of women in the EU-15 for instance a substantial change in the behaviour and in the labour force position took place, in particular for mothers (Schulz *et al.*, 2006). The activity rates of women aged 30-44 increased in the last three decades from 40% to 76%. However, in the former socialist countries the changes in the political and economic system led to reduced labour force participation rates (Schulz *et al.*, 2006).

Figure 8. Employment rates by sex, age group and year of birth in the European Union (EU-15), 1995-2005



Source: NIDI calculations based on Eurostat

Figure 8 presents employment rates by sex, age group and birth cohort over the period 1995-2005. Though the time interval of only ten years is rather short, it is clear particularly for women, that younger birth cohorts have higher employment rates than the older ones at all ages except for the very youngest and very oldest age groups.

Labour force participation rates of older workers changed considerably in the past three decades, particularly in age group 60-64 (Schulz *et al.*, 2006). The substantial decrease in the labour force participation of older (male) workers resulted from the lower average retirement age and the decreasing share of self-employed persons. Both for men and women the average age at retirement decreased markedly in the last decades due to early retirement policies. However, more recently retirement policies have changed due to population ageing and the foreseen financial problems in the statutory pension schemes, by raising standard retirement ages and restricting access to special early retirement schemes and other pathways to early withdrawal from the labour force (Schulz *et al.*, 2006). As can be observed from Figure 8, employment rates of older male workers slightly increased for the younger cohorts indeed. In the case of women, the increase for older workers is much higher but

mainly caused by the general increase of labour force participation of succeeding younger female generations.

Migration

The strong future changes of the age structure of the population of the European Union cannot easily, if at all, be overcome. Essentially, from a demographic point of view, there are a few options only: increasing fertility or increasing immigration. Increasing fertility doesn't seem very likely regarding current demographic trends and its causes (Beets, 2006). Bijak *et al.* (2005) carried out a study on the impact of international migration on population dynamics and labour force resources based on labour force participation scenarios developed by Szuk (2004). They looked at the (hypothetical) consequences of the inflow, from outside the European Union, of sufficient numbers of migrants to keep the population size constant on the level observed nowadays and needed to keep various dependency ratios (old-age, economic, and labour market) not increasing. Following the assumptions on keeping the population size constant up till 2050, the total population of European Union would need an inflow of more than 30 million immigrants more than in the baseline scenario. At the end of the projection period, the group of (in this study post-2002) immigrants and their descendants would comprise almost 120 million people, that is about 22% of the total population. Maintaining the population size alone however does not reverse or even significantly slow down the ageing processes (Bijak *et al.*, 2005). With respect to the country distribution of the additional 'replacement immigrants', the highest numbers were obtained in the simulation for Romania (8.8 million), Poland (6.6 million), Germany (4.7 million), Bulgaria (3.5 million) and Italy (3.2 million). In the case of Bulgaria and Romania the size of 'replacement immigration' would amount to over 40 percent of the current population. On the other hand, in eight countries, Belgium, Denmark, France, Ireland, Luxembourg, the Netherlands Sweden and the United Kingdom, maintaining the population size would not require the inflow of additional migrants from outside Europe. The scenario of Bijak *et al.* (2005) that keeps the old-age dependency ratios constant is similar to the study prepared by the United Nations (2000). In this scenario, in order not to let the old-age dependency ratio in the individual countries increase above current levels, the European Union would have to accommodate around an additional 830 million immigrants by 2050. Hence, the whole population would have to triple. By the end of the projection period, the (post-2002) newcomers and their descendants would account for over 70% of the total population. Increasing migration would certainly not be much of a remedy for ageing: migration flows would need to be extremely large to keep the current age structure. However, migration could serve as a policy option aiming at balancing short-term shortages on the labour markets through the means of selective migration (Bijak *et al.*, 2005).

Migration within the Europe Union would only shift problems spatially: attractive regions might be able to solve problems, whereas less attractive regions would be worse off because of losing (prospective) favourable workers. Migration from the eastern (and other) parts of Europe outside the European Union, like Russia, would put a lot of pressure on these countries, since these regions face similar demographic prospects as the European Union. Migrants therefore need to come from outside Europe. However, nowadays, the major reason for migrants to migrate is family reunification, though there are substantial differences between countries. Denmark, Portugal and the United Kingdom are characterised by work-based immigration, whereas immigration in France and Sweden mainly is family reunification (OECD, 2006b). Generally immigrants are found to have clearly lower employment and higher unemployment rates than the native population (Berkhout *et al.*, 2007). In fact, in most countries at least two different migrant groups can be characterized: one relatively low skilled and one relatively high skilled. Even when looking at migrants from non-Western-countries only, they turn out to be on average high skilled in the one country and on average low skilled in the other (Berkhout *et al.*, 2007). Of course it is uncertain how the position and characteristics of migrants will develop in future and to what extent attracting migrants will be helpful in solving labour market shortages.

III. Implications

The previous sections paid attention to three aspects of future labour force participation related to population ageing in the European Union: labour supply in working hours, migration from outside the European Union and cohort effects. The share of part-time workers in the European Union is increasing, both for men and women, at all educational levels and at nearly all ages. If the importance of part-time work will still grow in future, the labour supply in annual hours will be affected negatively. On the other hand cohort effects will have a positive effect on future labour supply. Both labour force participation of women and older workers is expected to increase with younger generations compared to the older ones. In the case of female participation this process is already going on for some decades. In the case of older workers this is a much more recent phenomenon caused by policy changes induced by the foreseen (financial) consequences of population ageing. The role of international migration is more complex. Migration does not seem to be a realistic solution to population ageing. However, migration might be helpful in balancing short-term shortages on the labour market depending on to what extent the European Union will be able to attract migrants with sufficient qualifications from outside Europe.

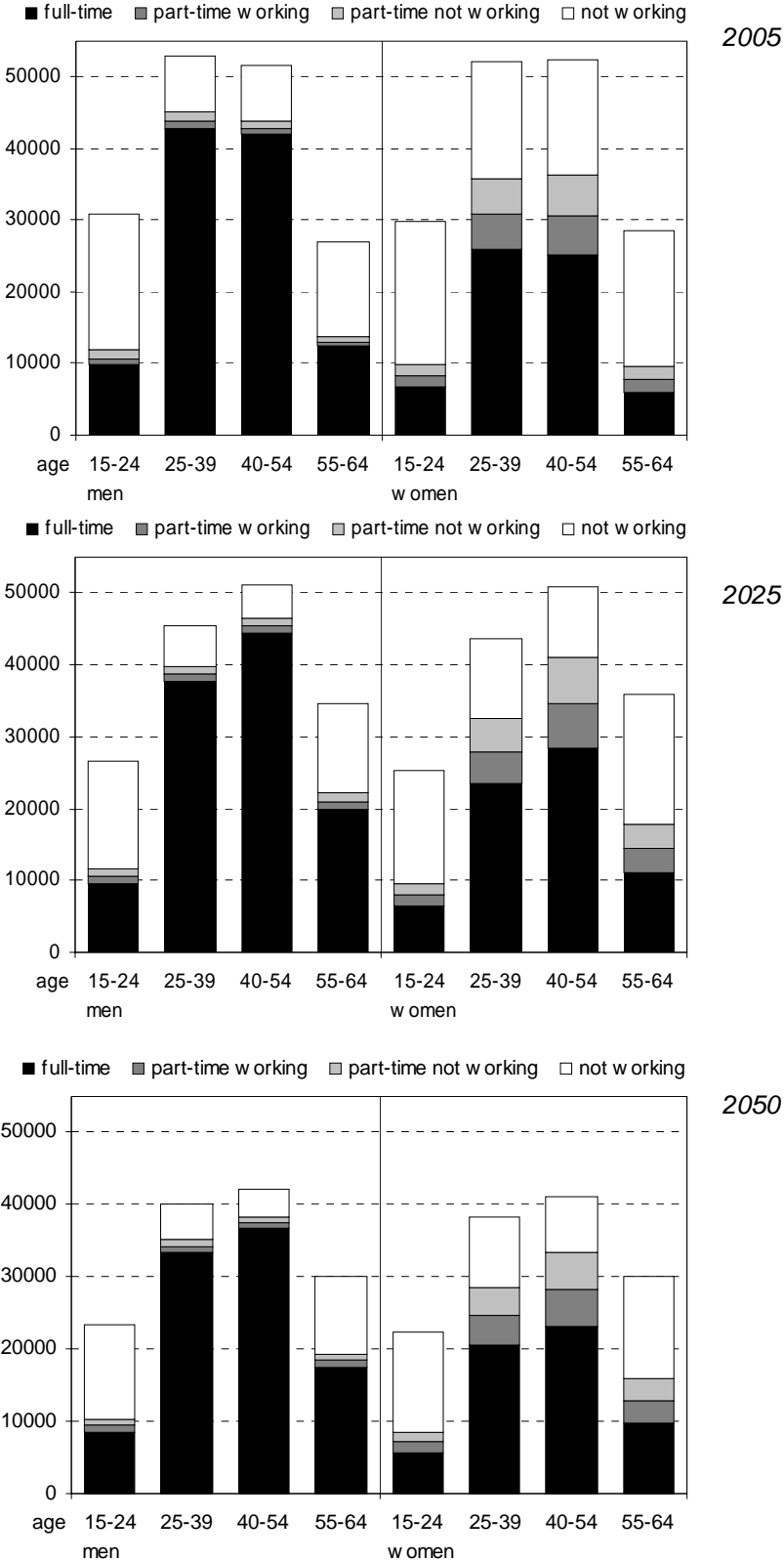
If current patterns of part-time working would remain stable, that is without further increase of the share of part-time work, the number of people employed in full-time units would be around 7% higher in 2025 compared to 2005 (under the assumptions of the DG ECFIN scenario). Though the population at working-age (15-64) will be slightly lower in 2025 than in 2005, the labour force participation will be higher because of the cohort effects (higher participation of women and older workers). Also the largest cohorts aged 40-54 in 2025, with higher participation rates, did not reach (early) retirement age yet.

According to the DG ECFIN scenario, in 2050 the population at working-age will be around 18% lower than in 2005. The increased labour participation rates will not compensate the lower population anymore: the number of people employed in full-time units would be around 8% lower in 2050 compared to 2005.

Figure 9 shows the population at working-age by type of (working) hours in 2005, 2025 and 2050 under the assumption of unchanged share of part-time work. From this figure we can see in which groups labour force participation could possibly be increased. There are several options. Labour force participation remains relatively low in the DG ECFIN scenario among the young, the old and women.

Targeting the young (aged 15-24) to increase labour force participation seems to be less likely. European Union policy aims, according to the Lisbon strategy objectives, at becoming the most competitive and dynamic knowledge-based economy in the world, which will require improving educational levels, skills, labour force participation and labour productivity in the future. Particularly for the young population investing in education will be conflicting with improving labour force participation. Targeting the older population would be more likely. In the age-group 55-64 labour force participation still remains rather low according to the DG ECFIN scenario, even though current pension policy reforms have been included already.

Figure 9. Population in full-time units by sex, age group and type of (working) hours in the European Union (EU-27) in 2005, 2025 and 2050 (numbers x 1000)



Note: part-time working denotes the number of part-time workers in full-time working units; part-time not working denotes the number of part-time workers in full-time not-working units

Source: NIDI calculations based on Eurostat and Carone (2005)

However to reach significant increases in labour force participation here, even stronger policy reforms would be necessary with respect to early withdrawal from the labour market than already implemented.

With respect to part-time working the picture is less clear. An increase in part-time work may lead to an increase or to a decrease in the total number of hours worked. The availability of more part-time jobs might attract more people to the labour market who did not participate before or do not participate anymore. Labour force participation of women in the European Union is lower than that of men. By attracting non-participating women, the availability of more part-time jobs could improve their labour force participation in terms of both numbers of persons and the total number of hours worked. Labour force participation rates of older workers are lower than those of the middle age groups. In the case of men, non-participation is usually caused by early withdrawal from the labour market and in the case of women also, particularly for older cohorts, because they never participated or stopped working at younger (childbirth) ages. Labour force participation rates could be increased by preventing full-time early withdrawal and by stimulating part-time (or full-time) continuation of employment. Again this would mean improvement of labour force participation in terms of both numbers of persons and the total number of hours. On the other hand the availability of more part-time jobs might also attract people already working full-time. This would mean a shift from full-time to part-time labour force participation. Labour force participation rates would be the same for this group, but the total number of hours worked would decrease.

To illustrate potential effects of increasing part-time work, table 1 presents the results of three simplified scenarios compared to the current situation and the DG ECFIN baseline scenario. The first scenario – *older workers employment* – assumes increasing employment rates of older workers (age group 55-64) to the level of middle aged workers (age group 40-54); however, the additional employment is assumed to be part-time employment only. The second scenario – *female employment* – assumes increasing employment rates of female workers to the level of male workers in the corresponding age groups; again the additional employment is assumed to be part-time employment only. The third scenario – *Dutch part-time employment* – does not assume any change in the employment rates other than already implemented in the DG ECFIN scenario, but a shift from full-time to part-time employment for both men and women to the level of the European Union country with the highest share of part-time employment, viz the Netherlands (see figure 6).

According to the *older workers employment* scenario employment rates will increase by 22% compared to 2005 and a ten percent-point increase compared to the DG ECFIN scenario. In 2025 the total number of hours worked will increase by 12% compared to 2005 and by 5 percent-points compared to the DG ECFIN scenario. In 2050 the total number of hours worked will still be lower than in 2005, but the difference is smaller than according to the DG ECFIN scenario. Increasing female participation rates only for all age groups produces very similar effects for the total number of hours worked as can be observed from the *female employment* scenario. The *Dutch part-time employment* scenario demonstrates a substantial decrease of the total number of hours worked when adopting the rather exceptional part-time employment situation from the Netherlands. Thus if an increase in part-time employment would at the same time result in a shift from full-time to part-time employment, this could limit the positive effect of part-time employment on labour force considerably.

Table 1. Percentage change of employment rates and number of hours worked in the European Union (EU-27) in 2025 and 2050 compared to 2005 according to the DG ECFIN scenario and three alternative scenarios

Scenario	2025			2050		
	total	males	females	total	males	females
<i>% change of employment rates</i>						
Baseline (DG ECFIN)	12	8	17	13	8	18
Older workers employment	22	16	29	22	16	29
Female employment	21	8	37	21	8	37
Dutch part-time employment	12	8	17	13	8	18
<i>% change of number of hours worked</i>						
Baseline (DG ECFIN)	7	5	10	-8	-10	-6
Older workers employment	12	9	17	-4	-6	-1
Female employment	11	5	21	-5	-10	3
Dutch part-time employment	-10	-3	-19	-22	-16	-31

Note: *older workers employment* scenario assumes increase of older workers (age group 55-64) employment rates to employment rates of age group 40-54 effectuated in part-time jobs only; *female employment scenario* assumes increase of female employment rates to male employment rates effectuated in part-time jobs only; *Dutch part-time employment scenario* assumes share of part-time employment similar to the Netherlands.

Source: NIDI calculations based on Eurostat and Carone (2005)

Summarizing it may be said that a continuation of the overall increase of the share of part-time workers might have three effects:

- An increase of labour force participation rates of women
- An increase of labour force participation rates of older workers
- A shift from full-time to part-time participation, particularly in the middle age groups

The first two effects would increase labour force participation in terms of both numbers of persons and numbers of hours worked. The latter effect would decrease labour force participation in terms of number of hours worked. Whether the total number of hours worked could increase, will depend on whether the first two effects can offset the latter. In countries with relatively low labour force participation rates, particularly of women and older workers, it seems likely that a significant increase in part-time working would lead to a net increase in the total number of hours worked. In countries with already relatively high labour force participation rates possibilities to increase (part-time) participation of non-participants are more limited since the group of non-participants is smaller. A shift from full-time to part-time participation in such a situation would not necessarily be compensated for by the gain in part-time participation of (former) non-participants. An overall increase of part-time employment might then lead to a decrease in the total number of hours worked. Of course this also very much depends on the magnitude of the shift from full-time to part-time working.

However especially in the long run (up to 2050) the working-age population is expected to be much smaller than as of today. Even positive effects of increasing full-time and part-time participation on the total number of hours worked might not compensate for a decrease of total number of hours worked due to a substantial decline in the number of people in the working-age population.

Another option of improving labour force participation would be increasing the average number of annual working hours. This could improve labour productivity, but would mean a more radical change with the past, even more so given the past trend of the increased share of part-time employment.

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