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ABSTRACT

The aim of this paper is to evaluate the impact in terms of poverty and cost of the introduction of social (or non-contributory) pensions in Europe. We use data from the household survey EU-SILC and focus on 17 countries. We simulate – in a static framework – the introduction of two social pension schemes: universal and means tested social pensions. We see that the old-age poverty would substantially decrease (average poverty rate goes from 19.7 to 2.5 per cent with the universal scheme) but not totally, even though the level of the universal pension is set up to the poverty line. The impact on poverty with the means tested social pension is quite similar (though always smaller) than the one with the universal pension, since most elderly have few other income sources than pensions. On the opposite, it costs less. In fact, the means test reduces substantially the number of entitled elderly while the universal pension leads to a 'leakage' to non-poor elderly.

Key words: Old age poverty, pension systems, social pensions.
JEL Codes: D310, D190, H55, I380

1.1. Introduction

While the current context of ageing population has lead to many discussions on the financial sustainability of existing pensions systems, their ability to prevent poverty should also be part of the picture. This paper focuses on old-age poverty in Europe, and especially on how pension systems do and could alleviate poverty – and at what cost. In fact, one of the objectives of pension systems concerns poverty alleviation: it should be an important concern of social security systems as elderly constitute a vulnerable group of population. The risks of sickness and invalidity increase and the ability to work decreases with aging. Income opportunities are consequently fewer than for younger age cohorts. These facts obviously affect the risk of being poor: elderly face a higher risk of poverty than the rest of the population. As Eurostat (www.ec.europa.eu/Eurostat) reports, in 2006, the average old age poverty rate in the EU25 countries was 19 per cent for individuals aged 65 and more and 16 per cent for individuals aged less than 65. This could seem surprising as it is often recognised that European pension systems are relatively well developed in terms of coverage and generosity. More importantly, they also encompass minimum pensions of all sorts (OEDC (2005, 2007, 2009) and Vandeninden (2010)) that aim to keep retires' income above a minimal level. However, their reinforcement should be considered in views of the old-age poverty rates and as it has been recommended by international organisations (e.g. ILO (2003), World Bank (2005)). The current minimum pensions may fail at preventing poverty for different reasons. First, the coverage may be too narrow, as minimum pensions may concern only individuals that have worked. Second, the level of the benefit may be too low. Third, the transfer can be means-tested, i.e. the level of benefit is reduced with respect to other incomes. When the means-test concerns several income sources (for instance the incomes of several household members), there is a larger risk that the transfer do not succeed in preventing poverty. Finally, individual that are entitled with a transfer may not claim it. This is referred to as the take-up issue and can be explained by several reasons: individuals are not aware of their rights, they feel stigmatised, the administrative procedure is too complicated, etc.

Our aim is the answer the following question: what would happen if we respond to each of these potential critics of minimum pensions? In other words, we want to know what would be the incidence in terms of poverty and costs of a minimum pension that has a broad coverage, with a sufficient level of benefit and a means-test that do not lead to too many exclusion.

Concretely, we simulate the introduction of three different 'social pension' schemes in 17 European countries, using data from the household survey EU-SILC 2006 (European Union – Survey on Income and Living Conditions). There are called social (or non-contributory) pensions because their entitlement is independent of past-contributions and work history. The first scheme is the 'universal pension' (UP): the coverage is universal as every elderly (considered as individual above 65 years old) received the universal transfer. The two other social pensions are means-tested ('Means-tested social pension' (MTSP)): a means

tested scheme (a) on elderly individual's income and (b) on elderly couple's income. The level of social pension is adjusted in accordance with the personal (or couple's) income resources. In the three cases, the level of benefit is equal to the relative poverty line in each country (60 per cent of median income). Finally, as it is difficult to estimate what would be the non take-up rate of the simulated schemes, we assume a perfect take-up. It should therefore be kept in mind that the simulated impact on poverty may be overestimated because of the take-up issue. Similar exercises have been carried out for African countries and Latin American countries. [1]

With UP, we see that poverty decreases sharply, without however being totally eradicated. The remaining poverty is due to living arrangements: if elderly were living alone (or with other elderly), there would be no more poor elderly. For the MTSP, poverty reduction is less important with the test on couple's income than with the individual means-test, again due to living arrangement and intra-household redistribution. But in both cases of MTSP, the impact on poverty is smaller than with a universal pension. Nevertheless, the difference between UP and MTSP schemes is not significant since in most countries, poor elderly have few other income resources than pensions. In contrast, the impact on the prospective costs of both scenarios varies largely: the additional costs of the means tested social pensions are, on more than three times cheaper than the ones of the universal pension. The cost difference is mainly explained by the fact that UP lead to a leakage to non-poor elderly.

However, the simulation we undertake is static. It therefore does not take into account on how individuals will respond to the introduction of different social pensions schemes. If one would conduct a behavioural simulation (which is out of the scope of our analysis), the costs would certainly be higher. It is particularly true for the means tested social pensions, which induces stronger disincentive effects; such has 'hiding income', reducing labour supply and saving and changing living arrangements. As a matter of fact, workers - particularly those close to the eligibility line - have less incentive to work, as extra-earnings will lead to the same level of social pension benefit. It then also penalises those who save for their retirement period.[2] Moreover, as only poor elderly receive a means tested benefit, elderly who are not poor because they benefit from other household incomes, but have low pension and/or personal income, will have the incentive to live alone in order to benefit from the means tested social pension and increase its level. Due to these disincentive effects the number of elderly for MTSP will increase, leading to higher costs for MTSP as compared to the one predicted in our simulations. Next to the disincentive issues, our simulation 'forces' individual to benefit

[1] Kakwani and Subbarao (2005) have conducted a similar simulation in 15 African countries. They found that the cost of universal pension is unaffordable (on average almost 3 percent of GDP). Dethier, Pestieau and Ali (2010) have simulated the introduction of universal and means tested social pension in 18 Latin American countries. They found that universal pensions would substantially reduce poverty at an affordable cost.

[2] See Piggott, J., D. Robalino and S. Jimenez-Martin (2009) for an analysis of these effects. They simulate the introduction of a social pension within a life- cycle behavioural model. Disney and Emmerson (2005) have also shown the importance saving disincentive due to the introduction of minimum pension in United Kingdom.

from the means tested pensions. Finally, a universal scheme is easier to implement than a means test pension as means testing requires information on incomes and is therefore administratively more expensive. These issues are discussed in the last section.

It is worth noting that the social pension schemes could be designed differently. We had chosen to set up the age condition at 65 as it is the most common legal age of retirement in Europe, but it could also depend on life expectancy (especially if we do the same exercise in developing countries where life expectancy varies greatly). The maximum level of the social pension is fixed at the poverty line of each country. We could consider a smaller level also, which will reduce the costs, and possibly the distortion on labour supply. Finally, the form of the means test can also be discussed. In the simulations, we have considered two different possible cases: every elderly receives a top-up transfer so that his personal income (current pensions received plus other incomes) reaches the poverty line or that the incomes of elderly couples are at least equal to the poverty line. The test could also take into account incomes of other cohabitants, but the disincentives in term of living arrangements would be even stronger.

The remaining of the paper is structured as follows. In Section 2.2, the difference between the several forms of social pensions will be clarified. The current situation in European countries will also be reviewed. Section 2.3 aims at analysing poverty in the countries under study. It focuses on several elements, such as the impact of current pension systems, the labour income and assets of the elderly and the household composition. The simulations results of two schemes of social pensions are presented in Section 2.4. We discuss the coverage of the schemes in Section 2.5 while the costs of these programs are analysed in Section 2.6. Before concluding, the last section raises the question of adverse incentive issues and questions which social pension scheme would be preferable.

1.2. Old-age poverty in Europe

Before simulating any policy changes and evaluating their impact on poverty, it is important to understand what poverty is and what its determinants are.

1.2.1. Data and methodology

We aim at examining old-age poverty (current and after introduction of social pension schemes) in Europe using the European survey on Income and Living Condition (EU-SILC) from 2006. It is a household survey that covers the 25 EU members (plus Norway and Iceland) with an original sample size of 536.993 individuals.[3] However, due to missing values in some incomes variables, we had to exclude some countries.[4]

[3] Bulgaria and Romania are not yet covered by EU-SILC (EU members since 2007).

[4] In order to simulate the introduction of social pensions, we have to recompose the disposable income, using the formula in Appendix 2. Unfortunately, for some countries, the net old-age benefit variable was not available. Even after

The remaining of the paper focuses on 17 countries: Austria (AT), Belgium (BE), Czech Republic (CZ), Estonia (EE), Spain (ES), France (FR), Greece (GR), Ireland (IE), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), Poland (PL), Portugal (PT), Sweden (SE), Slovenia (SI), and United Kingdom (UK). Finally we excluded all records with negative disposable income. The final sample size amounts for 368.978 individuals and 138.441 households.

We focus on one type of poverty measure: "at-risk-of-poverty rate" (or poverty rates), that is the share of individuals with an equivalent disposable income below a relative poverty line.[5] Here, the disposable income is a core concept: it represents the sum of incomes and social transfers of all household members (see Appendix 2 for a detailed composition). In order to account for differences in household size and economies of scale within household, equivalence scales are used to yield equivalent disposable income. In other words, they allow us to go from household resources to personal well being. We apply the OECD scale, which implies that the consumptions needs of children are smaller than for adults. The equivalent household size is computed using the following formula: 1+ 0.5 * (adult -1) + 0.3 * kid 1, with adult being individuals over 14 years old. If the per capita scale were used, elderly poverty would be relatively much lower than for other age groups, as few elderly live with children (see Lanjouw et al. (1998) for the incidence of equivalence scale on old-age poverty in transition economies). Like most cross-national studies on poverty within relatively wealthy countries, we compare equivalent disposable income with a relative poverty line, set at 60 per cent of the median national equivalent income (which is also the official method adopted by Eurostat (2000)).[6] It is important to realise that relative poverty measures are therefore influenced by the income distribution in each country. The at-risk-poverty rate indentifies individuals with low income in comparison to other residents in that country.

Old-age benefits are an aggregate income variable defined under the European system of integrated social protection statistics (see Eurostat 1996, ESSPROS manual). They include all mandatory pensions, be it public or private. It also includes disability benefit, survivors' pension, partial pension, early retirement benefits and safety nets paid after the legal age of retirement. It excludes private pensions made on a voluntary basis. Unfortunately, it is not possible to distinguish social pensions from contributory pensions.

Finally, the elderly population is defined as individuals aged 65 years old or more as it is the most widespread legal age of retirement in Europe.

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applying the current tax rate on pensions in those countries, the correlation with the disposable income provided in the dataset and its computation using the formula in Appendix 2 was too weak to carry out the simulation.

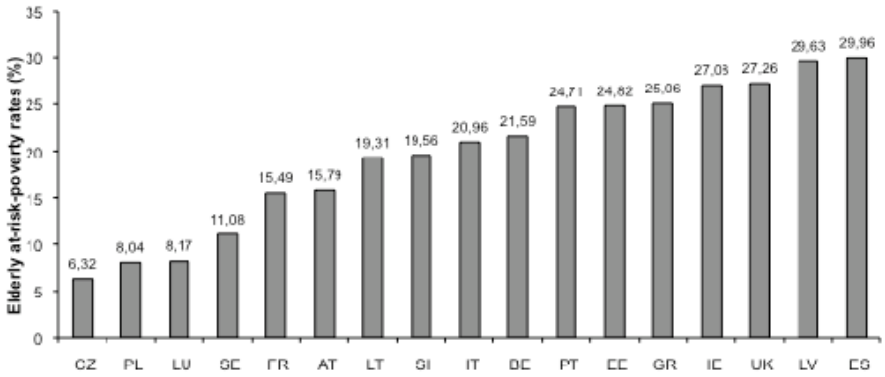
[5] See Jäntti and Danziger (2000) for an overview of alternative poverty measures

[6] The poverty statistics are weighted in order to represent the population in each countries, using the weight variable in the EU-SILC database.

1.2.2. Evidence of old age poverty

Elderly are a vulnerable group of the population. When getting older, the likelihood of sickness and disability increases and consequently reduces the earning capacity. At the same time, usual redistributive policies that go through labour, educational and output market for instance, cannot reach them. Direct cash support, such as public pensions appears to be the only relevant poverty alleviating instrument. As mentioned by Kidd and Whitehouse (2009), income security in old age has been considered as a fundamental human right since 1948 in the Universal Declaration of Human Right. As a matter of fact, the effort of European countries to provide elderly with an income support has been continuous. On average, they spend 7 per cent on gross domestic product (GDP) on public pensions (EU-SILC 2006, see appendix 3).[7] However, it is still legitimate to question the ability of the current pension schemes in alleviating poverty. From figure 4.3, we see that elderly poverty rates vary largely across countries: the average poverty rate in the 17 countries is 19.7 per cent, while the minimum rate is in CZ (6.32 per cent) and the maximum in ES (29.96 per cent). The issue we raise in this section is whether old people are poorer than the overall population. From Figure 4.4, it appears that in most countries elderly poverty rates are significantly higher than for the whole population. [8]

FIGURE 4.3: Elderly at-risk poverty rates

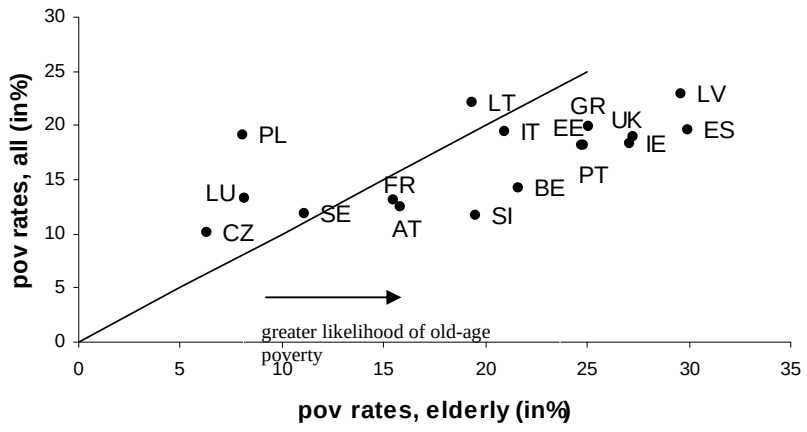


Source: EU-SILC database (2006)

FIGURE 4.4: Comparison between poverty rates for elderly and for the whole population

[7] Note that the share of pensions in GDP depends also on the life expectancy of elderly. The latter is smaller in new members' sates (Eurostat).

[8] See appendix 5 and 6 for the at-risk-poverty rates (for total population and elderly) in each countries.



Source: EU-SILC database (2006)

Only in Czech Republic, Poland, Luxembourg, Lithuania and Sweden, elderly face a smaller poverty risk than the total population. This evidently does not imply that pension systems perform better in these countries. Many other factors can influence elderly poverty (e.g. elderly labour supply, family solidarity, etc.). But before looking at the determinants of poverty, one has to be aware that the above findings, and especially the fact that the elderly at-risk-poverty rates are weak in most of new European Member Sates (CZ, PL, LT and also SI), is directly influenced by the poverty measure we utilise. As the equivalent income is compared to the national median income (60 per cent of the equivalent median income more precisely, see appendix 4), poverty rates also reflect the fact that the overall income level in these countries is low. It would evidently be a mistake to conclude that elderly are better off in Czech Republic than in Belgium for instance.

The at-risk-poverty rates consequently also reflect the income distribution in each country, as our poverty measure is relative. An absolute one (with a same poverty line for each country) would evidently lead to different results (see e.g. De Neubourg and Notten, 2007a,b for comparison between absolute and relative poverty). We, however, do not enter into this discussion, as the aim of this section is cross-country description of the poverty rates. In the next three sections, we investigate the causes, or the determinant, of old-age poverty.

1.2.2.1. Poverty rates and household composition

Before simulating the introduction of social pensions, it is worth highlighting the influence of household composition on poverty. In fact, poverty is determined using equivalent household income, which also implies equal sharing of resources among household's members. When looking at old-age poverty, one has to be aware that living arrangements may create two potential problems:

- It leads to overestimate poverty when old individuals have sufficient incomes resources but live with poor household members. For instance, a pensioner can have a pension higher than the poverty line, but has to 'share' it with other poor household members so that all household members are finally poor;
- It leads to underestimate poverty when elderly have few income resources but are not considered poor because they live, and depend, on other household's members' income.

1.3. Simulating the impact of social pension

In this section, we simulate the introduction of social pension schemes and look at their impact on old-age poverty. We use a methodology similar to Dethier, Pestieau and Ali's (2009). The schemes we look at focus on persons aged 65 years old or more and are characterised by a level of social transfer benefit that puts them at the poverty line in each country. Three scenarios are considered:

1. Flat benefit equal to the poverty line is given to all elderly (universal pension),
2. A 'individual' means test benefit (taking into account elderly personal incomes and assets) is given to all elderly who live in poor household,
3. A means test benefit based on couple's income (taking into account the personal incomes and assets of isolated elderly or elderly couple) is given to all elderly who live in poor household.

1.3.1. Universal pension

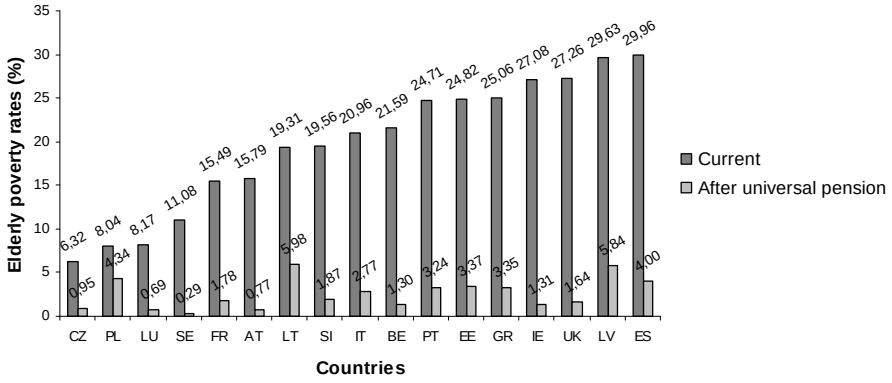
The poverty line income is guaranteed to all individuals aged 65 or over. We use the following formula to introduce the universal pension:

T=Max (0, s-p) if age>=65, where T is the top-up transfer needed to adjust the pensions currently received (p) to the poverty line (s).

The personal income after the introduction of the universal pension is thus: $y_i^*=y_i+p+T$, where y_i is the personal income of individual i with no pension.[9] The new poverty rate is then computed: we sum the new personal income y_i^* for all household's members and then apply the equivalent scale. From figure 4.10, we see that poverty rates decrease sharply: the average poverty rate for the 17 countries goes from 19.7 per cent to 2.5 per cent.

[9] y_i is computed using the household income formula in appendix 2. For every individual we add the individual income variables (except the old-age benefits) and then we add the household income variables divided by the household size.

FIGURE 4.10: Poverty rates for the elderly population, before and after the universal pensions

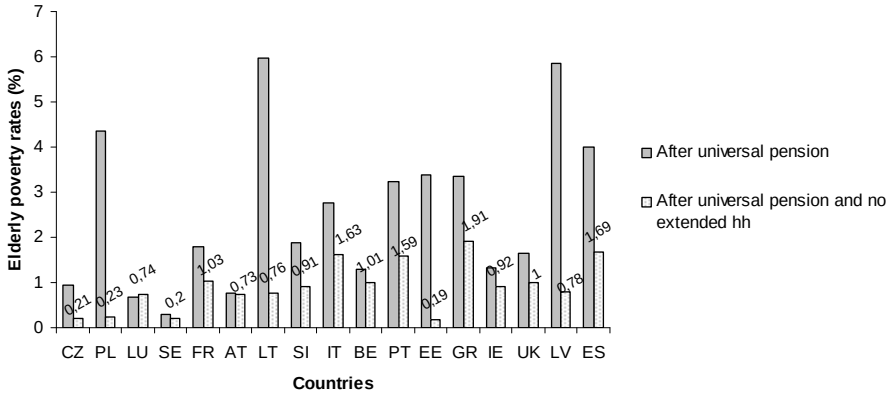


Source: Author's own calculations based on EU-SILC database (2006)

However, it could seem surprising that old-age poverty does not entirely disappear even as all elderly now have a pension income at least equal to the poverty line. As already mentioned, living arrangements is at the origin of this residual poverty. It is not particularly surprising that the poverty rates after allowing for universal pensions are relatively high in countries were the proportion of elderly living in extended household is high (such as Estonia, Latvia, Lithuania and Poland).

To illustrate the impact of household composition and its implication on poverty rates after universal pension, we simulate the impact on poverty assuming that there are no more extended household (like in 3.3.2.). We see that the impact of the universal pension is higher: the average poverty rate in the 17 countries being 0.88 per cent.

FIGURE 4.11: Poverty rate after universal transfer with current household composition and modified household composition (no extended households)



Source: Author's own calculations based on EU-SILC database (2006)

Finally, the residual poverty after the universal pension and the change in household composition is explained by the fact that elderly still share their pension with their non-elderly partner. Therefore, the residual poverty is linked to the proportion of intergenerational couple in each country, and more particularly, to the income distribution within the intergenerational couples (see appendix 10). For a same proportion of intergenerational couples (as in Belgium and Greece), the poverty is higher when, on average, the non-elderly partners financially depend on the elderly. Consequently, old persons that are still poor after introduction of the universal pension are so only because of their choice in living arrangements. If all elderly would be living alone, or only with other elderly, old-age poverty would completely disappear.

1.3.2. A means tested universal pension

With a universal pension, every elderly receives a pension benefit at least equal to the poverty line. Even to those who initially had other income resources to be out of poverty (e.g. housewife who receives no pension but whose husband's pension is raised due to their living arrangement, see 'taux des ménages' in Belgium). In order to reduce the cost of such a program, a social planner could introduce a means test to restrict the eligibility to those in need. For instance, one could consider that the poverty line income is guaranteed to individuals aged 65 and more *but only* if they live in poor household, using the following formula: T=Max (0, s-p) if age>=65 and if $y_{eq}<s$, where T is the transfer needed to adjust the pensions currently received (p) with the poverty line (s) and y_{eq} the equivalent disposable income. In this case, hence referred to as 'modified universal pension', the impact on poverty is exactly the same as in the case of the universal pension. Poor elderly receive exactly the same additional transfer as in the universal pension case. The only difference is that this transfer is not awarded to elderly who are currently receiving a low pension level but are not poor (thanks to other income sources or support from household's members). The fact that the latter do not receive an additional transfer does not affect poverty rates as they were already out of poverty.

Nevertheless, once one starts means testing to decide whom to pay an extra-pension, the social security administration could also use information on income to limit the costs. In fact, the cost of the modified universal pension could be lowered if the level of benefits the elderly receives would be adapted as a function of other income source. The crucial question is which income? In what follows, we consider two alternatives: the personal income of the elderly or the couple's income (the sum of both personal incomes) of elderly (see appendix 3 for definition of personal income).

We could alternatively means test using the equivalent household disposable income. But it would strongly penalise poor elderly who, because they cannot subsist on their own, live in extended household. The incentive of living separately will be extremely high as the benefit received by an elderly would be reduce with respect to incomes of the other household members. Strategic changes in household composition (e.g.

elderly would live without their children) would finally lead to a similar situation to that of the means test using personal income, as the income after strategic change in living arrangement would basically be the personal income of elderly. We however consider the means test on the income of the couples as it is less likely that this mean-test will lead to strategic divorces.

As already mentioned, using income information to means test pension benefit reduces the costs. As we will see in Section 2.6, we expect that the simulated cost of the universal (c_u) will be higher than the cost with the 'individual' means test (c_i), while the cost of the means test on elderly couple's income will be the lowest (c_c): $\mathbf{c_c<c_i<c_u}$. On the other hand, the effect on poverty rates will be the reverse, $\mathbf{r_u<r_i<r_c}$ as means testing on income couple reduces the level of the social pension benefit.

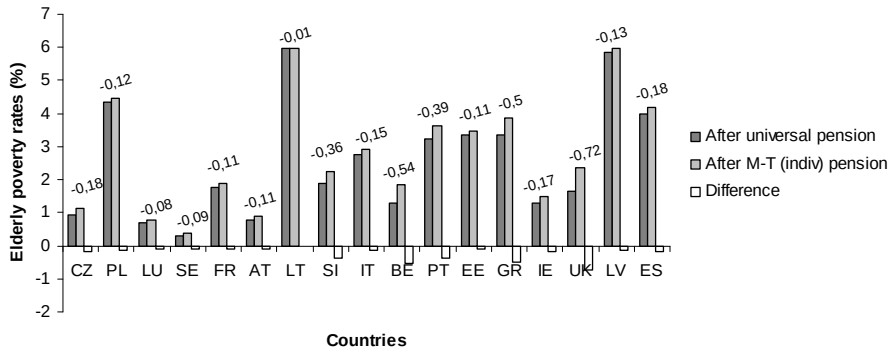
1.3.2.1. Means tested social pension: Individual income

The benefit formula used to introduce the 'individual' means tested social pension is the following:

T=Max (0, s-p_i-y_i) if age>=65 and if y_{eq} <s, where T is the transfer needed to adjust the pensions currently received (p_i) and the personal income with no pension of individual i (y_i) to the poverty line (s), and y_{eq} the equivalent disposable income.

From figure 4.12, we see that the impact on poverty of this means tested social pension is similar to the one of universal pension. Even if the poverty is always higher with this scheme, the differences between poverty rates after the universal and the means tested scheme are small in most countries (the maximum difference is 0.72 per cent in UK). This means that few elderly *having pension below the poverty line*, have other income resources. In addition, one has to be aware that the composition of personal income (income component that are at household level have been divided by the household size, see appendix 2) may have an impact on the difference in poverty rates between the universal and individual means test. In particular, the personal income may be artificially high, because of the equal sharing assumption, if the elderly live in extended household where income components at household level are substantial.

FIGURE 4.12: Difference between poverty rates for the elderly population, after universal pension and after means tested social pension



Source: Author's own calculations based on EU-SILC database (2006)

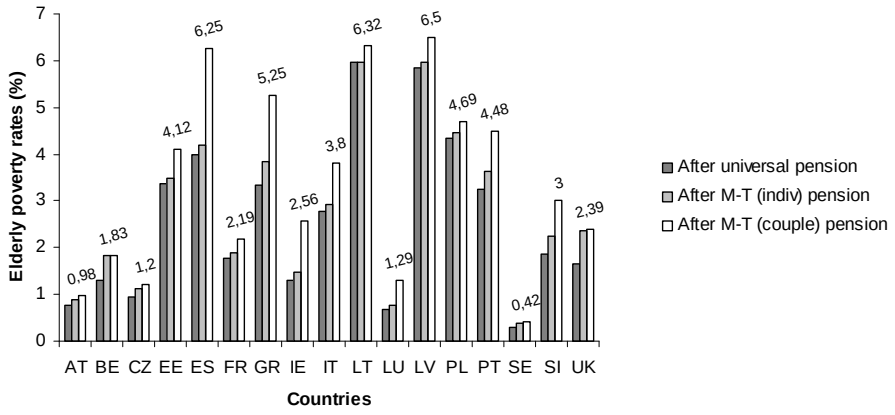
1.3.2.2. Means tested social pension: Couple's income

Another way of designing a means tested social pension is to adapt the level of benefit as a function of the incomes of both partners. To illustrate the difference with the previous means tested social pension, we can consider a simple situation of a poor household composed by an elderly couple (with equivalent income smaller than the poverty line s) where the wife has zero pension and the husband a pension $p_H=s$ and they have no other income. Under, the first means test, the wife receives s as a social pension while the husband receives nothing. They equivalent income after the social pension is thus $2*s/1.5$, with 1.5 being the equivalent household size. The equivalent income is thus higher than the poverty line s because the 'individual' means test does not take into account that the husband has other income and it is therefore 'too generous' with the spouse. A means test that takes into account the income of both partners adapts the benefit level of the wife with respect to the income of her partner in a way that they both end up with an equivalent income equal to the poverty line s, and not superior. In order to bring the couple out of poverty, the sum of income of both partners (p_H+0 in this case) has to be equal to the poverty line, multiplied by the equivalent scale. In our example, as the only income source is the pension of the husband, we want that $p_H=s*1.5$. The additional transfer has to be equal to $T=s*1.5-p_H=0.5\,p_H$ (as $p_H=s$) to bring the couple out of poverty. Assuming that both partner receive half of the transfer T, the final equivalent income y_{eq} is thus $((p_H-2*(p_H/4)/1.5$, and since we have assumed in the example that the level of pension received by the husband equals the poverty line ($p_H=s$), $y_{eq}=s$.

The formula we use to introduce the 'couple' means tested social pension is therefore:
T=Max (0, $s*1.5-p_c-y_c$) if age>=65 and if $y_{eq}<s$, where T is the transfer needed to adjust the sum of the pensions currently received by the couple (p_c) and the sum of the personal income with no pension of the couple (y_c) to the poverty line (s), and y_{eq} the equivalent disposable income. Each partner receives $T/2$. Evidently, if the elderly has no partner, the top-up transfer T is equal to the one in the 'individual' means test as $p_c=p_i$ and $y_c=y_i$.

As predicted, the poverty rates in this case are higher than with the individual means test (figure 4.13). Since the additional transfer *T* is now reduced to barely allow elderly couples to be out of poverty, it has a consequence on the poverty risk of households composed of both elderly couple and non elderly. In the individual means test, the 'surplus' that was granted to elderly couple allowed some extended household to end up with a sufficient equivalent income. It is therefore not surprising that in countries where the percentage of elderly couples living with non-elderly, such as Spain, Greece and Italy (see appendix 12), the increase in poverty compared to the individual means test is important. But again, the increase in poverty also depends on the income distribution within these households.

FIGURE 4.13: Poverty rates for the elderly population, after the three different social pensions



Source: Author's own calculations based on EU-SILC database (2006)

1.4. Who are the beneficiaries of Social pensions?

Before presenting the simulated costs of the different social pension schemes, let us have a look at the proportion of the elderly population who are entitled to receive an additional transfer *T* under the different schemes.

From table 4.3, we see that in every country, the share of the old-age population that receives an additional transfer with the universal pension is at least twice as high as the current poor. This reflects the fact that an important share of non-poor elderly benefits from the universal pension. If we decompose the share of beneficiaries, two issues arise. First, a part of the poor elderly does not get any additional transfer and second, some non-poor elderly do get it. In Belgium for instance, out of the 41.41 per cent of beneficiaries, only 16.55 per cent are poor (see column four) while 24.86 are non-poor. Consequently, a share of the population does not benefit from the additional transfer because they already receive a pension (above the poverty line) but stay poor because they 'share' it with other household's members. And on the other hand, a share of the elderly receives the additional transfer because their current pension is low or inexistent, even when other income sources (personal or from other household members) bring them out of poverty. In Belgium, from the 24.86 per cent of the elderly who are in this situation, around 30 per cent of them have never worked (almost only women), 25 per cent were independent workers and 45 per cent were employees (note that these are the last status in employment and do not take into account the length of the working period and the fact that some elderly may continue to work). The third column of table 4.3 thus also reports the proportion of the elderly who have a current pension below the poverty line.

Columns four and five show the proportion of poor elderly receiving a modified universal pension (that is a universal pension with an eligibility condition on being poor) and the 'individual' means tested pension. The difference between them is quite weak as the poor elderly depend mostly on pensions and have few other incomes. And in both cases, the percentages are much lower when compared with the universal pension, since the issue of granting universal pension to non-poor elderly does not arise. Finally, the last column reports the percentage of beneficiaries from the means tested pension on couple's income. In general, the percentage of beneficiaries increases, but in some countries it decreases. In fact, two effects arise: some elderly who have a relatively high pension but live with a partner who has a low pension and/or personal income may become eligible (the percentage is higher than in column fifth On the other hand, some elderly were entitled with the individual means tested pension became non-eligible after taking their partner's income into account. However, as we will see in the next section, even if more elderly receive an additional transfer with the means test on couple's income, what matters – in terms of costs – is the amount of the additional transfer.

TABLE 4.3: Percentage of old-age population receiving the additional transfer *T* under the different schemes, with respect to the elderly population

1. Countries	2. Current poverty rates	3. per cent under universal pension	4. per cent under modified universal pension	5. per cent under individual M-T	6. per cent under couple M-T
CZ	6,32	23,76	5,34	5	5,16
PL	8,04	16,13	4,52	4,24	3,96
LU	8,17	33,63	6,44	6,33	6,75
SE	11,08	40,48	10,74	10,61	10,7
FR	15,49	37,66	13,08	12,78	13,9
AT	15,79	35,57	13,54	13,48	15,36
LT	19,31	43,07	16,53	15,93	15,61
SI	19,56	47,47	18,17	17,8	18,07
IT	20,96	46	18,56	18,34	19,02
BE	21,59	41,41	16,55	16,18	20,39
PT	24,71	58,2	23,31	22,97	23,35
EE	24,82	63,97	23,74	23,45	22,72
GR	25,06	56,17	21,98	21,13	22,62
IE	27,08	73,18	25,59	25,43	25,54
UK	27,26	55,99	24,47	23,96	25,15
LV	29,63	81,22	29,06	28,86	28,01

ES	29,96	57,93	24,27	23,78	26,95

Source: Author's own calculations based on EU-SILC database (2006)

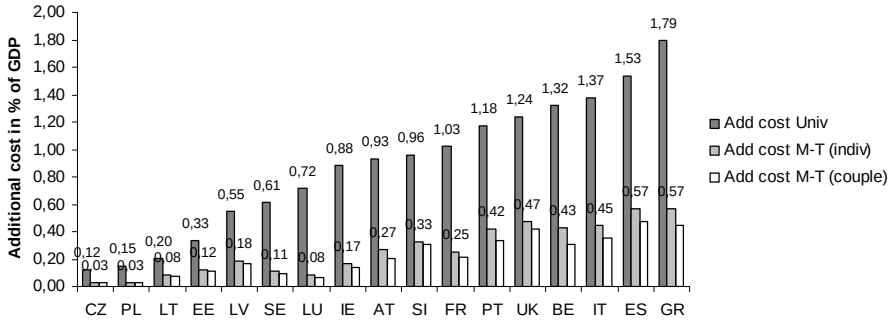
1.5. Costs of universal pensions schemes

As seen in Section 4.4, the introduction of social pensions allows for important poverty reductions: the average poverty rate in the 17 countries goes from 19.7 to 2.5 per cent with the universal scheme, 2.8 with the means tested social pension and to 3.4 with the means test on couple's income. While the difference of the impact in term of poverty is no more than 1 per cent on average, their respective cost varies greatly.

In order to understand the difference between the costs of the social pensions, one has to be aware that several elements influence them such as the initial coverage and the proportion of elderly who receive the social pension. But more importantly, it depends directly on the gap between current pension (and other personal income in the case of the means tests) and the poverty line. The proportion of elderly in the total population also plays a role (see appendix 16).

In what follows, we express the costs in percentage of Gross Domestic Product (GDP data from Eurostat 2006, see appendix 13). The simulated cost of the universal (c_u) is higher than the cost of the 'individual' means test (c_i), while the cost of the means test on elderly couple's income is the lowest (c_c): $\mathbf{c_c<c_i<c_u}$. As a matter of fact, the more information on income is used to means test, the less expensive the scheme is. The cost of the pension systems is on average 6.94 per cent of GDP in the 17 countries. After the introduction of the universal pension, it increases by 0.88 per cent of GDP, 0.27 with means tested pension on individual income, and 0.22 with the one on couple's income (see appendix 14 and 15 for the cost per countries). In figure 4.14, we compare the additional costs of the three schemes. They are thus the sums of the additional transfers T divided by the GDP (with $T= s-p$ for social pension and $T=s-p_i -y_i$ or $T=(s*1.5-p_c-y_c)/2$ for the means test pensions).

FIGURE 4.14: Comparison between the additional costs of the universal and the means tested schemes

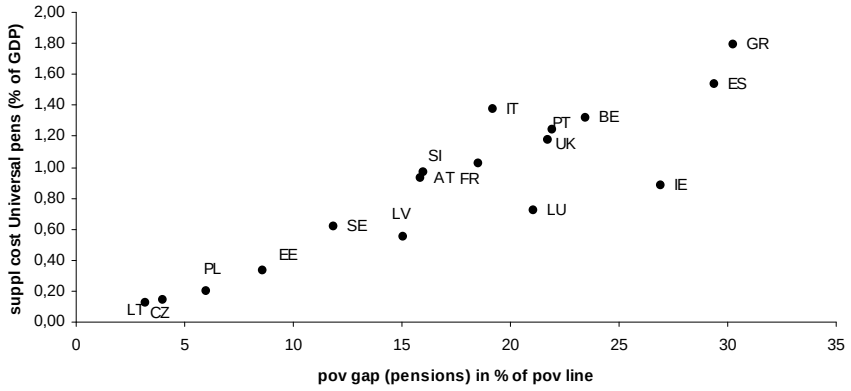


Source: Author's own calculations based on EU-SILC database (2006)

The cost of the universal pension scheme depends on the gap between the current pensions received and the poverty line. In other words, it is linked to what we here call the 'pension poverty gap' for the elderly. This is the mean difference between the pension income currently received by elderly and the poverty line, expressed as a percentage of the poverty line. The figure 4.15 shows the relationship between the 'pension poverty gap' and the supplementary cost of the universal scheme. When current pensions are far from the poverty line, the additional cost will evidently be higher. The proportion of elderly who receive a pension also influences the pension poverty gap. The larger the share of the elderly population who do not receive any pension, the higher the poverty gaps.[10] Let us note that the cost is slightly smaller when the proportion of elderly in the total population is small (e.g. Luxembourg and Ireland) and inversely (e.g. Italy).

FIGURE 4.15: Relation between the additional cost of the universal pension and the pension poverty gap

[10] The same relationship is observed between the cost of the means tested scheme and the 'personal income poverty gap' of the elderly (computed as the difference between the mean personal income elderly and the poverty line, expressed as a percentage of the poverty line). See appendix 16



Source: Author's own calculations based on EU-SILC database (2006)

The important difference between the cost of the universal scheme and the two means tested pensions is mainly explained by fact that no more additional benefit *T* are granted to elderly living in non-poor household.

In addition, the difference between the costs of the universal and the individual means test pensions is also related to the share of pension as a proportion of personal income of poor elderly. If the main source of income during old age is the pension income, the difference between the means tested and the universal scheme will be smaller. This reflects that the poor elderly have few other resources than pension. In other words, they depend strongly on their pension income. To understand this effect on the cost of the means test, we can compare the cost of the individual means test with the one of the 'modified universal pension' (where the eligibility is conditional of being poor) (see appendix 18). In countries where the *poor* elderly have no other income other than pension, the cost difference is small (e.g. in Lithuania, Czech Republic, and Estonia). The reduction in cost as compared to the universal scheme is thus mainly due to the eligibility restriction and not to the change in the level of benefit. However, in countries where the share of current pension as a percentage/proportion of personal income of poor elderly is low, the drop in cost will be more important. In that case, the means test reduces both the number of beneficiaries and the level of benefit. Therefore, the cost of the means test decreases more in countries poor elderly are less dependent on their pension income (see e.g. Greece, Spain, and Belgium).

The cost difference between the two (individual and couple) means tested pensions is due to the fact that the level of benefits of the additional transfer is reduced so as to bring elderly couples out of poverty. Since the level of the additional transfer also takes into account the income and pension of the partner, the transfer is always smaller than with the individual means test. The difference is particularly high in countries where the proportion of elderly who receive no (or very low) pension, and depends on the income of their partner, is high.

1.6. Universal or means tested social pensions? Incentives, administrative cost and take-up issue

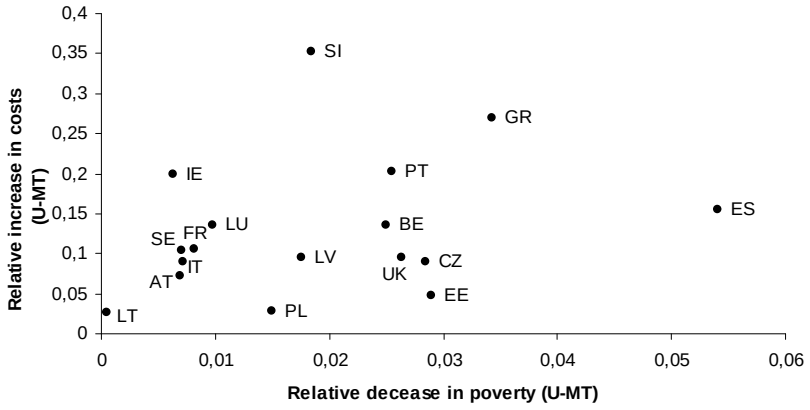
From what precedes, one could question the utility of universal pension, compared to the means tested ones. It costs much more that the means tested schemes while the difference in terms of poverty reduction is not so impressive. The cost difference is mainly explained by the fact that non-poor elderly benefit from the additional transfer. This problem has been central in the debates on universal versus means test transfers for many years already.[11] To quote Besley (1990, p. 119), "Universal provision entails a cost in the form of a leakage of some of the benefit to the non-poor". Nevertheless, as Sen (1995) mentioned, the problem with means tested benefits is that the "so-called targets" are not easily indentified (see administrative costs hereafter) and that they are not "unreacting".

In order to know which countries are more leaning towards universal or means tested pension, a first step could be to compare the difference between the relative decrease in poverty from the universal pensions and from the means tested pensions, with the relative increases in costs induced by both schemes.[12] In fact, figure 4.15 maps the countries for which we have undertaken the simulations and compares the relative (des)-advantages of universal pension with respect to means tested pensions. Two conclusions can be drawn from figure 4.15. First, under this static framework (or assuming the same behavioural responses to the social pensions in each countries), some countries are more leaning towards universal pensions. If we look for example at Luxembourg (LU), Belgium (BE) and Spain (ES), for a similar increase in cost (between universal and means tested pension), the universal pension leads to a more important poverty reduction (than with means test) in BE than in LU, and to a even stronger poverty reduction in ES. It is however difficult to find the frontier that could allow us to affirm that one countries should opt for a specific scheme (especially for countries such as BE, while it is easier for extremes such as LU and ES). Figure 4.15 just allows us to say that for a same increase in cost, some countries (such as ES) are more inclined to universal pension. Second, some countries are dominated by others. If you compare Slovenia (SI) and Latvia (LV), for the same impact in term of poverty, the cost difference is much higher for SI. But once again, this affirmation is not obvious for every country (e.g. when we compare SI with PT, it is not clear anymore than SI is dominated by PT).

FIGURE 4.16: Comparison between the relative decrease in poverty and the relative increase in cost of Universal and Means Tested Pensions

[11] See e.g. Garfinkel (1982).

[12] Basically, on the horizontal axis, we plot the difference between the relative decrease in poverty with respect to the initial poverty rates ((Pov U- Pov/ Pov) – (Pov MT-Pov/Pov)). On the vertical axis, the difference in terms of costs is depicted ((Cost U-Cost/Cost)-(Cost MT-Cost/Cost)).



Source: Author's own calculations based on EU-SILC database (2006)

However, this graph compares our static results and therefore assumes no change in behaviour or the same ones across countries. As our simulation is static, it shows only the mechanical effects of the introduction of such pensions.[13] One should however consider that, first, social pensions of all forms lead to some behavioural response from individuals, and second, that these behavioural responses differ according to the type of social pensions (namely, universal or means tested). These issues are important because they will have an impact on poverty.

4.7.1. Incentives effects of social pensions

If we consider the incentives effects of social pensions in general, it is know that the guarantee of receiving an income during old age affects labour supply and savings before retirements (see e.g. Disney and Emmerson (2005)). Individuals will decrease those latter, as they know they will receive an income in old age. Social pensions also affect household behaviour in many possible ways. First, one effect (which also comes from social protection in general) is that family ties weaken (Bourguignon 2005, Englehardt et al. 2005). Elderly that are provided with sufficient income do not need to live with their children for instance. Second, it can also affect the behaviour of other household members. For instance, Ardelington et al. (2007) shows that social pensions in South Africa relieve credit constraints of households and allow elderly to support financially their younger household members to find jobs. In that case, social pensions promote youth employment.

4.7.2. Incentives effects: universal versus means tested pension

[13] As the simulation of Atkinson et al. (2002) using EUROMOD.

What interested us more here is the comparison between behavioural responses of individual receiving a universal or a means tested pension. As a matter of fact, from our static simulations, it is shown that the impact on poverty are quite similar but that the cost of a means tested social pension is much lower than the cost of universal pension. But what would happen if we take into consideration the behavioural responses of individuals? The only way to evaluate accurately the respective behavioural changes induced by the different schemes would be through a behavioural micro-simulation (using e.g. a labour supply model that estimates household preferences with respect to labour), which is out of the scope of this paper. As already mentioned individuals may change their labour supply, saving, living arrangements and hide income and work in informal sector. We limit ourselves to highlighting that our results certainly under-estimate the cost of the means tested pensions because of disincentive effects induced by a means test. To do so, we present some of the empirical results of the analysis of means-test incentives.

- Labour supply and savings

As Piggot, Robalino and Jimenez-Martin (2009) recognise, the literature on the means test impact on saving and labour supply is sparse but still offer some evidence that means testing creates disincentives to work and save. [14]

To begin with, in the theoretical literature, several authors found that means testing reduce labour supply and savings, and particularly that the reduction is more severe than with universal benefits.[15] The disincentives effects are even stronger with a means test as any extra-wage received will be compensated anyway by the means tested transfer. More specifically, it is recognised that 100 per cent withdrawal rate (i.e. the means tested benefit is reduced by 1 euro for every 1 euro of wealth) lead to disincentives in saving and working compare to a universal benefit (which encompasses a 0 per cent withdrawal rate). The poor elderly will then become poorer; the elderly who are at the margin of poverty will become poor in order to become eligible. It similarly reduces the incentive to save for old age. On the empirical side, several authors have estimated the incentives effect of means testing: the overall conclusions are that means test transfers lead to higher disincentive effects on labour supply and saving than universal transfers (or than means tested transfer with lower withdrawal rate).

For instance, Neumark and Powers (1998, 2000) analyse the behavioural responses to the Supplemental Security Income (SSI), which is a means-tested transfer for elderly (aged 65 or more) and disable persons administered by the Social Security Administration. As the SSI benefits vary across States, Neumark and

[14] In their paper, they develop a conceptual framework to analyse the incentive effects of social pensions, using a life-cycle behavioural model.

[15] See e.g. Besley and Kanbur (1993) for a discussion on the marginal tax rates of universal and means test schemes and Piggott, J., D. Robalino and S. Jimenez-Martin (2009) for an analysis of these effects. They simulate the introduction of a social pension within a life- cycle behavioural model.

Powers exploit this variation to estimate (with the difference-in-difference methodology) the impact on savings (Neumark and Powers 1998) and on labour participation (Neumark and Powers 2000) using data from the 1984 Survey of Income Program Participation. They find evidence that SSI reduces savings, and particularly those of men and female householders close to the age of retirement. When looking at the incentives on pre-retirement labour supply, they also find that SSI has a negative effect on employment and earnings of 60-64 year-old men. The more generous the benefit is, the more pre-retirement labour supply decreases. French (2005) develop a dynamic model to look at the behavioural effect of the elimination of the earning test (using the Panel Study of Income Dynamics for the years 1968-1997) and also find similar conclusions about the job market exist.

Also, several authors have studied the means tested pension in UK. Disney and Smith (2002) studied the effect of a reform in 1989 that abolished the earning test in UK. They adopt a similar methodology than Neumark and Powers (1998, 2000) (difference-in-difference approach using data from the Family Expenditure Survey From 1984 to 1994) and find that the reform had a positive effect on the earnings and labour supply. Sefton et al. (2005, 2009) focus on a more recent reform using dynamic behavioural micro-simulation model. In 2003, the government reduced the means test withdrawal rate from 100 per cent to 40 per cent (replacing the former Minimum Income Guarantee by the Pension Credit). They found that the reform does encourage poor elderly to work and save more.[16]

As a last example, Decoster, Orsini and Van Camp (2007) develop a micro-simulation model to assess ex-ante the labour supply effects on a reform of survival benefit. Basically, they analyse the impact of reforming the means test on survival benefit (namely they abolish a threshold after which survivor benefit suddenly drops, because of a means test). They find that labour supply of windows would increase.

- Living arrangements

As we have mentioned earlier, social pensions may have effects on the whole household and on living arrangements (Ardelington et al., 2007). However, if we compare means testing with universal transfers, one may think that the means test would lead to strategic changes in family composition. In fact, as the entitlement and the amount of the transfer depends on some forms of means test, one may expect that elderly who financially depend on other family members will live on their own so as to become entitled to the means tested transfer. It has often been argued that social security, and especially pension system, induces a decrease in family size as pensions enable elderly to live separately from their children (see e.g. Bourguignon (2005)). However, even if in most European countries the majority of elderly live alone or in couple, the proportion of extended households may still be significant in some countries (particularly in

[16] However, they point out the fact that a part of the elderly who where not entitled to the means tested benefit before have, with the reform, incentives to reduce their labour supply and savings.

Eastern and Southern countries). When the reason of living with their children is income support, the number of eligible elderly will increase, and so will the costs of the means tested schemes. This effect on living arrangements will be even stronger when the test takes account of other household's member incomes. In the case of the means test on couple's income, strategic 'divorce' of two elderly may also occur so that the level of benefit they both receive is higher.

- Incentives to hide income or increase informal labour supply

Another caveat of means testing is that elderly have incentives to hide some income and/or asset, to become artificially poor. It may also induce to work in the informal sector, as Valdez (2008) states for the means tested assistance pension in Chile.

From above, one may expect that different schemes induce different incentives effects that may lead individuals to modify their choices. In figure 2.16, the three social pensions we have considered are represented and the arrows' direction represent the increases in costs and distortions in behaviour that one may expect.[17]

[17] We do not consider universal pension that would be attributed in function of living arrangements. That would be again the principle of universal transfers, which are per se individual.

FIGURE 2.16: Cost and incentive effect of the social pension schemes

Distortions →

Distortions ↓

	Universal	**Means test**
Individualisation	Universal pension	Means test on personal income
Couple	N/A	Means test on couple's income

↑ Cost

← Cost

To conclude, the incentives effects induced by a means test are expected to raise the number of entitled elderly as well as the amount of means tested benefits. Therefore, the cost of means tested pension in our static simulation is expected to rise. Consequently its relative attractiveness compared to the universal pension should be cautiously reconsidered in views of the latter possible distortions.

4.7.3. Administrative cost of means testing and take up

Identifying who is eligible or not requires information on income and/or asset. Therefore, means testing induces more administrative cost than a universal pension (Besley and Kanbur 1993). These costs of administration and data collection should also been taken into account when comparing their respective pros and cons.

Finally, it is worth noting that in our simulation, we 'force' elderly to receive the social pensions. However, the so-called 'take-up issue' are often associated with means testing (see e.g. Besley (1990)). Individuals may not claim the benefit while they were entitled to it. Several factors can explain the non-take-up: the administrative cost (time in filling out forms, queuing, etc.), the stigma (shame of being poor; see e.g. Moffitt 1983) or simply the lack of information (individuals may be ignorant of the existence of the benefit). There are few studies that have estimated the non-take up rate (for example, Duclos (1995) shows that there is a probability of approximately 30 per cent of individuals entitled to the Supplementary Benefit in UK do not receive it). The take-up issue weakens the impact of means tested social pensions in terms of poverty reduction.

4.8. Conclusions

The design of European pension systems varies greatly among countries. We have seen that in most countries, contributory schemes include poverty-alleviating instruments (such as a minimum pension guaranteed and a flat pension, called Beveridgean component). In addition to that, social pensions are also widely present, especially under the form of means tested social pensions. In fact, universal pensions are only implemented in The Netherlands and Denmark. However, we would need more accurate data and information on social pensions to evaluate their effectiveness in reducing poverty.

Before simulating the introduction of different types of social pensions, we examine old-age poverty in 17 European countries (due to constraints). It is important to analyse the determinants of poverty (current pensions and coverage, other income and living arrangements) because they influence the impact of social pensions on poverty alleviation and costs. For instance, the impact of universal pension will be lower in countries where the proportion of elderly living in extended household is higher, as in Spain, Latvia, and Lithuania. The means tested pensions' impact on poverty depends on the importance of other incomes than pensions. These elements evidently affect the costs as well: the more poor elderly, the more costly social pensions are. More precisely, the cost is directly influenced by the gap between pensions under current policies and the poverty line. It is therefore not surprising that in countries where few elderly are receiving pensions (e.g. Greece and Spain) the cost is among the highest. The additional incomes (other than pension benefits) of the poor elderly also influence the costs: in countries where poor elderly depend less of their current pensions (e.g. Belgium and Luxembourg), the means test leads to a higher cost reduction than in others. Thus, to conclude, impressive decrease in old age poverty after the introduction of the different scheme is mainly due to the fact that existing social pension schemes do not cover enough elderly and that their current level may be too low compared to the poverty line.

As expected, the more information we use on incomes, the less important the impact on poverty is and the less costly the schemes are. The average poverty with the universal scheme drops to 2.5 per cent, to 2.8 with the individual means test and to 3.4 for the one on couple's income. On the other hand, the additional cost of the universal pension is on average 0.88 with the universal scheme, 0.27 and 0.22 for the individual and couple's means tests. In addition to the determinants of poverty, the high difference in cost between the universal and means tested schemes is mainly explained by the 'leakage' of universal pension to non-poor elderly.

It is however important to take account of adverse incentive effects induced by the means test when comparing both social pension schemes. As a matter of fact, living arrangement, savings and labour supply are expected to change. The long run cost of the means tested pension will probably be much higher than the one predicted by the simulation. Moreover, the means test leads to supplementary administrative costs. Hence, universal pensions are easier to administer. On the other hand, the cost will be lower if the take-up issues are important (here we have forced elderly to take the additional benefit).

One way of reducing the costs of the universal scheme would be to increase the eligibility age. Ideally, it should depend on life expectancy and reflect the age at which pensioners do not have the capacity to work any longer. Another way would be to reduce the benefit level. Also, one could possibly tax those who do need the universal transfer. However, taxing leads to some administrative costs, as means testing.

Further research should examine more deeply the financial feasibility of universal pensions and simulate the behavioural changes induced by the means test.

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4.10. Appendix

Appendix 1: Social pensions and other poverty alleviating instruments within contributory scheme, in Europe

Countries	**Universal pension**	**Means tested social pension**	**"Beveridgean" pension**	**Minimum pension**
AT		x		
BE		x		x
CY		x		x
CZ		**x**	**x**	**x**
DK	**x**	**x**		
DE		x		

EE			x	x
ES		x		x
FR		x		x
GR		x		x
HU				x
IE		**x**	**x**	
IT		x		
LT			x	
LU		**x**	**x**	**x**
LV		x		x
MT		x		x
NL	**x**			
PL				x
PT		x		x
SE				x
SI				x
SK				x
UK		x	x	x

Source: OECD (2009), and for non-OECD member countries, Whitehouse (2007).[18]

Appendix 2: disposable income

The disposable income is computed as the sum of the net components of all household members: employee cash or near cash income; cash benefits or losses from self-employment; unemployment benefits; old-age benefits; survivor' benefits; sickness benefits; disability benefits; **plus** net components of income components at household level (income from rental of a property or land; family/children related allowances; social exclusion not elsewhere classified; housing allowances; regular inter-household cash transfers received; interests, dividends, profit from capital investments in unincorporated business;**) minus (**regular taxes on wealth; regular inter-household cash transfer paid; repayment/receipt for tax adjustments on income**)**.

The household components are divided by the household size when the individual income is calculated.

Appendix 3: Cost of public pensions in per cent of Gross Domestic Product

[18] Table 1 may thus not represent accurately the current situation in non-OECD member since reforms in pension systems may have occurred since 2007.

Countries	Current cost (in per cent of GDP)
AT	10,02
BE	6,87
CZ	5,93
EE	4,48
ES	6,31
FR	10,64
GR	8,57
IE	3,78
IT	11,27
LT	4,53
LU	5,47
LV	4,25
PL	8,32
PT	9,15
SE	6,33
SI	8,93
UK	8,12

Source: EU-SILC database (2006) and appendix 12

Appendix 4: Poverty lines (current and if not extended households)

Countries	Poverty line	Poverty line no extended household
AT	10671,59	10366,18
BE	10226,13	10080
CZ	2888,324	2795,976
EE	2182,631	2045,917
ES	6856,8	6345,6
FR	9726,9	9599,2
GR	6000	5760
IE	11787,5	11561,38
IT	8815,429	8488,2

LT	1449,147	1393,752
LU	17729,6	17470,2
LV	1542,414	1413,384
PL	1865,772	1800,449
PT	4400,583	4212
SE	10659,82	10570,88
SI	5589,986	5416,19
UK	11574,15	11451,31

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 5: Percentage of elderly population that have positive cash or near cash income and/or positive cash benefits from self-employment, or above the poverty line (second column)

Countries	Elderly still working (per cent of elderly population)	Elderly still working (per cent of elderly population) (income>poverty line)
AT	2,94	1,58
BE	1,9	1,11
CZ	4,91	1,59
EE	13,66	7,13
ES	3,36	2,18
FR	2,11	1,03
GR	6,27	2,53
IE	10,43	5,26
IT	7,96	4,18
LT	10,66	4,69
LU	2,36	1,06
LV	9,99	5,78
PL	3	1,44
PT	7,34	4,19
SE	13,03	4,96
SI	6,68	1,17
UK	6,22	2,38

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 6: Percentage of elderly population that have positive private voluntary pension

Countries	Proportion of elderly that receive a private voluntary pension
AT	0,7
BE	0,7
CZ	1
EE	0,1
ES	1,7
FR	0,1
GR	0,1
IE	3,3
IT	0,6
LT	0
LU	0,4
LV	0
PL	0,1
PT	0,5
SE	24,9
SI	2
UK	10,2

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 7: Percentage of elderly households that have positive assets (income from rental a property or land and/or interests, dividends, profit from capital investments in unincorporated business) and mean assets (of the elderly population) expressed as a percentage of the poverty line

Countries	per cent of elderly households	Mean assets as a share of poverty line
AT	64,57	2,11
BE	76,02	7,35
CZ	3,77	0,42
EE	6,56	0,32
ES	23,63	3,22

FR	85,82	7,79
GR	19,27	7,54
IE	17,17	2,68
IT	50,75	4,75
LT	9,18	0,98
LU	74,35	11,25
LV	2,13	0,52
PL	2,20	0,79
PT	24,11	4,50
SE	73,99	5,10
SI	37,30	1,30
UK	62,26	6,51

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 8: Poverty rates for total population

Countries	Poverty rates	Poverty rates (with Universal pension)	Poverty rates (no extended household)	Poverty rates (with Universal pension and no extended household)
AT	12,55	10,48	13,14	11,09
BE	14,15	9,1	14,55	11,11
CZ	10,15	14,69	10,18	10,14
EE	18,16	16,11	17,77	15,76
ES	19,62	10,44	21,26	18,17
FR	13,06	15,08	13,02	10,88
GR	19,96	15,12	21,19	16,77
IE	18,37	15,29	18,76	16,16
IT	19,37	19,86	19,53	16,56
LT	22,11	11,96	21,99	20,34
LU	13,28	19,14	13,49	13,07
LV	22,84	18,33	23,83	20,45
PL	19,03	13,69	19,89	20,56
PT	18,14	9,97	18,7	15,29
SE	11,83	7,83	12,04	10,5

SI	11,68	14,66	13,99	9,93
UK	19,02	10,48	19,09	15,09

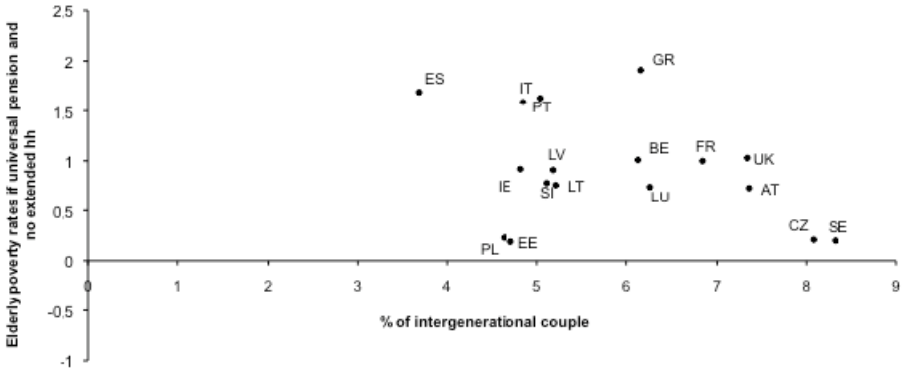
Source: Author's own calculations based on EU-SILC database (2006)

Appendix 9: Old-age poverty rates

Countries	Poverty rates	Poverty rates (with Universal pension)	Poverty rates (no extended household)	Poverty rates (with Universal pension and no extended household)
AT	15,79	0,77	18,56	0,73
BE	21,59	1,3	23,47	1,01
CZ	6,32	0,95	5,59	0,21
EE	24,82	3,37	20,37	0,21
ES	29,96	4	32,21	1,86
FR	15,49	1,78	15,9	1,03
GR	25,06	3,35	29,52	1,96
IE	27,08	1,31	30,84	0,92
IT	20,96	2,77	22,44	1,63
LT	19,31	5,98	16,53	0,76
LU	8,17	0,69	8,52	0,74
LV	29,63	5,84	34,5	0,78
PL	8,04	4,34	5,25	0,23
PT	24,71	3,24	26,87	1,59
SE	11,08	0,29	10,64	0,2
SI	19,56	1,87	28,82	0,91
UK	27,26	1,64	28,01	1

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 10: Relation between poverty rates after the universal pension and the change in household composition (no more extended families) and the proportion of intergenerational couple.



Source: Author's own calculations based on EU-SILC database (2006)

Appendix 11: Old-age poverty rates under means tested pensions

	Poverty rates	Poverty rates individual M-T	Poverty rates couple M-T
AT	15,79	0,88	0,98
BE	21,59	1,84	1,84
CZ	6,32	1,13	1,2
EE	24,82	4,09	4,12
ES	29,96	5,62	6,25
FR	15,49	1,89	2,19
GR	25,06	4,21	5,25
IE	27,08	1,48	2,56
IT	20,96	2,92	3,8
LT	19,31	5,98	6,32
LU	8,17	0,77	1,29
LV	29,63	6,36	6,5
PL	8,04	4,46	4,69
PT	24,71	3,87	4,48
SE	11,08	0,38	0,42
SI	19,56	2,23	3
UK	27,26	2,36	2,39

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 12: Percentage of elderly couple living with a least one non-elderly

Countries	per cent of old couples with non-elderly
AT	0,45

BE	0,44
CZ	0,34
EE	0,47
ES	1,34
FR	0,24
GR	1,37
IE	0,30
IT	1,12
LT	0,44
LU	0,48
LV	0,67
PL	0,56
PT	1,03
SE	0,05
SI	0,86
UK	**0,37**

Source: Author's own calculations based on EU-SILC database (2006)

Appendix 13: Gross Domestic Product at current price (2006)

	GDP (millions of Euros)
AT	256162
BE	318193
CZ	113696
EE	13229
ES	984284
FR	1806429
GR	210458
IE	176758
IT	1485378
LT	23978
LU	34150
LV	16047
PL	272089

PT	155446
SE	313450
SI	31056
UK	1944751

Source: Eurostat database http://appsso.eurostat.ec.europa.eu/nui/show.do

Appendix 14: Cost of pension systems with respect to GDP (Cost/GDP):

	Current cost	Cost of universal pension	Additional cost of the universal pension
AT	10,02	10,95	0,93
BE	6,87	8,19	1,32
CZ	5,93	6,05	0,12
EE	4,48	4,81	0,33
ES	6,31	7,84	1,53
FR	10,64	11,66	1,03
GR	8,57	10,36	1,79
IE	3,78	4,67	0,88
IT	11,27	12,64	1,37
LT	4,53	4,73	0,20
LU	5,47	6,19	0,72
LV	4,25	4,80	0,55
PL	8,32	8,47	0,15
PT	9,15	10,32	1,18
SE	6,33	6,94	0,61
SI	8,93	9,89	0,96
UK	8,12	9,36	1,24

Source: Author's own calculations based on EU-SILC database (2006)

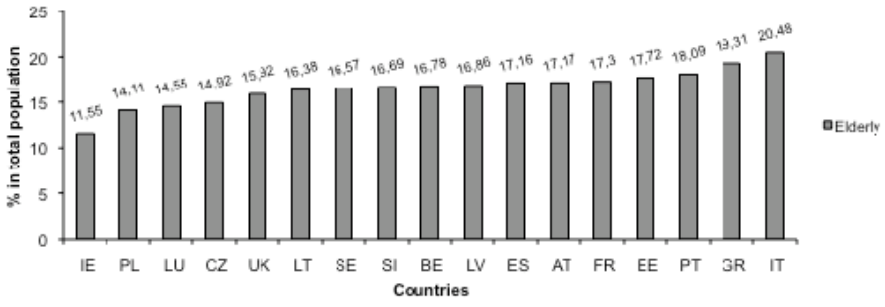
Appendix 15: Cost of Means tested scheme with respect to GDP:

	Current	Cost of the individual M-	Additional cost of the	Additional	Additional cost of the

	cost	T	individual M-T	cost of the modified universal pension	couple M-T
AT	9,95	10,23	0,27	0,81	0,20
BE	6,83	7,26	0,43	1,09	0,31
CZ	5,52	5,55	0,03	0,10	0,03
EE	4,48	4,60	0,12	0,26	0,11
ES	6,30	6,86	0,57	1,30	0,47
FR	10,34	10,59	0,25	0,82	0,21
GR	7,71	8,28	0,57	1,33	0,44
IE	3,75	3,92	0,17	0,56	0,14
IT	11,19	11,63	0,45	1,11	0,35
LT	4,53	4,61	0,08	0,16	0,08
LU	5,38	5,46	0,08	0,62	0,06
LV	4,21	4,40	0,18	0,45	0,17
PL	8,22	8,24	0,03	0,11	0,02
PT	8,23	8,65	0,42	0,90	0,33
SE	6,18	6,29	0,11	0,28	0,09
SI	7,06	7,40	0,34	0,81	0,30
UK	8,12	8,59	0,47	0,92	0,42

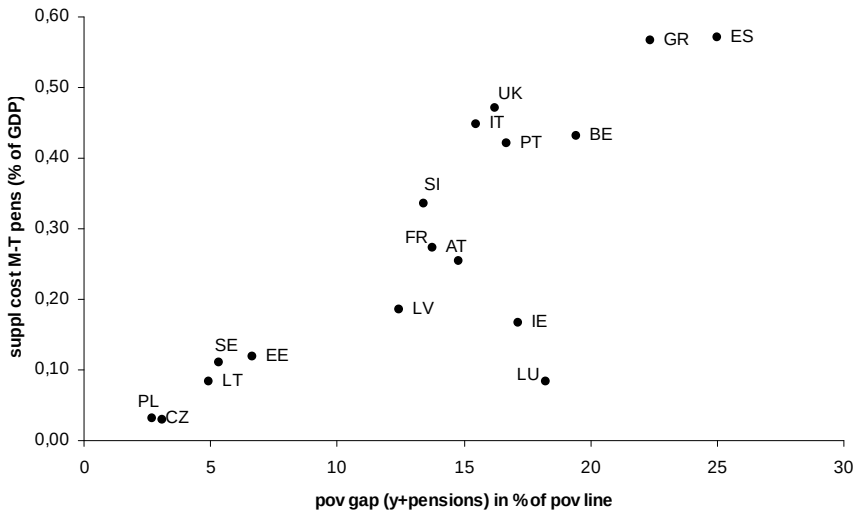
Source: Author's own calculations based on EU-SILC database (2006)

Appendix 16: Proportion of elderly in total population



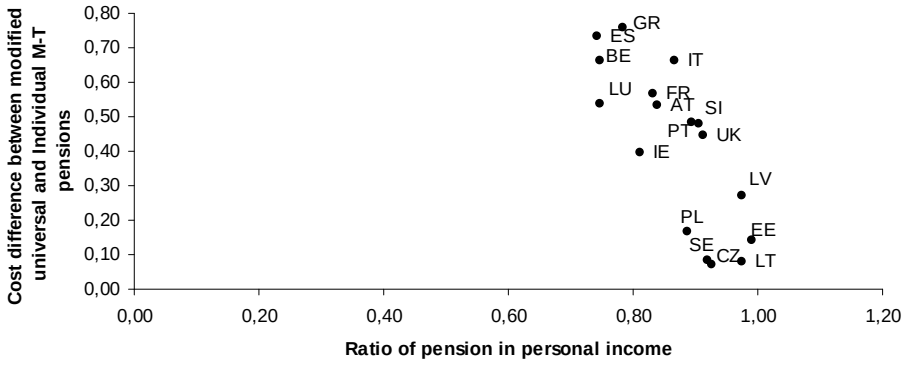
Source: Author's own calculations based on EU-SILC database (2006)

Appendix 17: Relation between the additional cost of the means tested pension and the personal income poverty gap



Source: Author's own calculations based on EU-SILC database (2006)

Appendix 18: Relation between the difference of the additional cost of the modified universal pension (conditional on being poor) and the individual means tested pension, and pensions share in poor elderly personal income



Source: Author's own calculations based on EU-SILC database (2006)

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