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Ik draag deze doctoraatsthesis op aan

mijn ouders,

Leen, Daan, Tibe en de baby

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* * *

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Tim Goedemé

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Table of Contents

Samenvatting in het Nederlands (Summary in Dutch)

In deze doctoraatsthesis bundel ik zes papers over twee sterk aan elkaar verwante onderzoeksdomeinen: armoede en minimuminkomensbescherming. Drie papers handelen over de definitie en meting van armoede, drie andere onderzoeken het ontstaan en de evolutie van minimuminkomensbescherming voor ouderen in Europa. De verschillende papers dienen niet gelezen te worden als de opeenvolgende stappen van één grote studie, maar als zelfstandige hoofdstukken die deel uitmaken van een ruimere onderzoeksagenda. Deze onderzoeksagenda heeft tot doel armoede bij ouderen beter te begrijpen en na te gaan welke rol minimuminkomensbescherming speelt – en in de toekomst zou kunnen spelen – bij de vermindering van armoede onder ouderen.

1 Context van het onderzoek

Verschillende factoren dragen bij tot het belang van verder onderzoek naar armoede onder ouderen en de rol die minimuminkomensbescherming speelt in het verminderen van armoede bij ouderen:

Volgens de gestandaardiseerde armoede-indicatoren die de Europese Unie hanteert, leeft een niet verwaarloosbaar deel van de ouderen in armoede. Er bestaan echter grote verschillen tussen landen, wat betekent dat landen onderling nog heel wat van elkaar kunnen leren en dat een aantal landen nog grote vooruitgang kan boeken in het terugdringen van armoede.

Bovendien groeit het aandeel van de ouderen in de totale bevolking, en zal deze trend zich verder doorzetten in de toekomst. Zo wordt geschat dat de ratio van het aantal personen van 65 jaar en ouder en de bevolking op actieve leeftijd (15-64 jaar) in de Europese Unie zal toenemen van 0.25 in 2008 tot 0.54 in 2060 (European Commission, 2009: 44). Dit betekent dat – bij een ongewijzigd armoedeprofiel van de verschillende leeftijdsgroepen – het aantal ouderen in armoede zal toenemen, zowel in absolute aantallen als ten opzichte van het totaal aantal personen geconfronteerd met een situatie van armoede.

Ten derde zijn de pensioenshervormingen van de voorbije 20 jaar er voornamelijk op gericht de financiële houdbaarheid van de Europese pensioenstelsels te verhogen (zie bijvoorbeeld Hinrichs, 2000; European Commission, 2010: 10). Dit is niet zo verwonderlijk aangezien de uitgaven voor de publieke pensioenen als percentage van het Bruto Binnenlands Product (BBP) in het verleden sterk zijn toegenomen (Whitehouse et al., 2009: 515-516) en – behoudens enkele uitzonderingen – dat in de toekomst verder zullen doen (Economic Policy Committee (AWG) and DG for

Economic and Financial Affairs, 2009: 34-36). Niet toevallig ligt in heel wat recente pensioenshervormingen de nadruk dan ook op het versterken van de band tussen bijdragen en uitkeringen, onder meer door het verhogen van het aandeel van bijdragebepaalde (private) pensioenen in de totale pensioeninkomsten. Bij ongewijzigd beleid, zal dit in nogal wat EU Lidstaten in de toekomst leiden tot een daling van de vervangingsratio van publieke pensioenen (Meyer et al., 2007; European Commission, 2009: 27-28; e.g. European Commission, 2005; OECD, 2009; Whitehouse et al., 2009). De hervormingen betekenen in veel gevallen een verschuiving van de risico's naar individuen (Zaidi et al., 2006) en zowel de Europese Commissie (2005) als de OESO (2007) hebben gewaarschuwd voor een toename van de armoederisicograad onder ouderen, in het bijzonder in Oost-Europa. Het is dan ook waarschijnlijk dat in nogal wat landen mechanismen die een minimuminkomen waarborgen in de toekomst (nog) belangrijker zullen worden, in het bijzonder ter voorkoming van armoede onder ouderen.

Er bestaat heel wat onderzoek naar armoede onder ouderen (zie bijvoorbeeld Kangas and Palme, 2000; Smeeding, T., 2001; Dewilde and Raeymaeckers, 2008; Jehoel-Gijsbers and Cok, 2008; Smeeding, T. M. et al., 2008; Stropnik and Kump, 2008; Vrooman, 2009; Zaidi et al., 2006). Niettemin is er tot op vandaag relatief weinig aandacht besteed aan de precieze impact van minimuminkomensbescherming op armoede bij ouderen. Dit kan onder meer worden verklaard door een aantal belangrijke hindernissen die het moeilijk maken om de precieze impact te bestuderen. Het doel van deze doctoraatsthesis is dan ook om een aantal van deze hindernissen mee te helpen overwinnen.

2 De definitie en meting van armoede in Europa

Willen we armoede onder ouderen beter begrijpen, dan is er eerst en vooral een zekere consensus nodig over hoe we armoede definiëren en meten. De definitie en meting van armoede is het onderwerp van steeds terugkerend wetenschappelijk (en maatschappelijk) debat (zie Van den Bosch (1999) en Levecque (2003) voor een uitgebreide bespreking). Recent werd er een nieuw element aan dit debat toegevoegd, met name dat de referentiegroepen die mensen gebruiken om hun levensstandaard te beoordelen in sterke mate geëuropeaniseerd zouden zijn, en dat de meting van armoede hier mee moet rekening houden. In het eerste hoofdstuk van deze doctoraatsthesis, betoog ik met Stijn Rottiers dat deze discussie maar zinvol is voor zover ze betrekking heeft op de europeanisering van *publieke* referentiegroepen. Publieke referentiegroepen zijn de referentiegroepen die men gebruikt om een algemene norm te definiëren. Deze onderscheiden we van *private* referentiegroepen, die tot doel hebben onze eigen situatie te beoordelen. Hoewel er heel wat verschillende definities van armoede bestaan, komt er steeds in terug dat armoede gaat over een situatie waarin men niet in staat is om een minimaal aanvaardbare levensstandaard te bereiken. Zo'n minimaal aanvaardbare levensstandaard is bij uitstek een algemene norm, die bovendien in de eerste plaats gebruikt wordt om de

situatie waarin anderen zich bevinden te beoordelen. Met andere woorden zijn we er van overtuigd dat de discussie over de europeanisering van referentiegroepen maar zin heeft, voor zover ze betrekking heeft op de europeanisering van *publieke* referentiegroepen. Doordat het onderzoek in de eerste plaats focust op private referentiegroepen, bestaat er heel wat minder onderzoek naar de europeanisering van publieke referentiegroepen. We besluiten met een pleidooi voor Europees onderzoek naar referentiebudgetten (budgetstandaarden) dat, in combinatie met survey onderzoek, een veelbelovende strategie vormt om armoede-indicatoren te construeren die appelleren aan publieke referentiegroepen. Op deze manier is het niet enkel mogelijk om uitspraken te doen over de europeanisering van publieke referentiegroepen, maar zou het ook mogelijk moeten zijn om meer valide armoede-indicatoren te ontwikkelen, doordat de hoogte van de armoedegrens empirisch wordt getoetst aan wat men in de samenleving minimaal aanvaardbaar acht. Dit onderzoeksvoorstel wordt verder uitgewerkt in hoofdstuk 7 en in onder meer Storms et al. (2011b, 2011a); en Storms et al. (2012).

Een goede conceptuele basis en valide indicatoren volstaan echter niet om armoede te meten. Hiervoor zijn ook kwaliteitsvolle data vereist. De standaardfout en het betrouwbaarheidsinterval zijn twee belangrijke aanwijzingen voor de kwaliteit van steekproefdata en geven de statistische precisie aan waarmee een armoedecijfer wordt geschat. De opvolging en evaluatie van het armoedebeleid in de Europese Unie gebeurt in belangrijke mate aan de hand van indicatoren die geschat worden op basis van de EU-SILC data. Hoewel EU-SILC een survey is op basis van steekproefgegevens, worden schattingen van de statistische precisie van armoedecijfers op basis van EU-SILC zowel in het onderzoek als in officiële beleidsdocumenten vaak achterwege gelaten. Dit is problematisch omdat deze armoedecijfers worden gebruikt om beleid te evalueren, bijvoorbeeld met het oog op het behalen van de Europa 2020 doelstellingen met betrekking tot armoede en sociale uitsluiting.

De grootte van een standaardfout wordt in belangrijke mate bepaald door de manier waarop de steekproef wordt getrokken. Door de complexiteit van de steekproeven in EU-SILC, het gebrek aan duidelijke documentatie hieromtrent en tekorten aan gegevens in de dataset, is het echter niet vanzelfsprekend om op een accurate manier bij de schatting van standaardfouten met het steekproefdesign rekening te houden. In het tweede hoofdstuk van dit doctoraat, probeer ik dan ook de informatie met betrekking tot het EU-SILC steekproefdesign te vervolledigen, en ga ik de kwaliteit na van de steekproefvariabelen in de EU-SILC dataset. Aan de hand van een dataset speciaal voorbereid door het statistisch bureau van de Europese Unie (Eurostat) test ik de impact van verschillende assumpties met betrekking tot het steekproefdesign. Op deze manier onderzoek ik hoe optimaal gebruik kan worden gemaakt van de – weliswaar imperfecte – steekproefvariabelen in de EU-SILC data beschikbaar voor onderzoek. Met een analyse van de Europa 2020 armoedereductie-indicatoren toon ik aan dat wanneer (foutief) wordt verondersteld dat EU-SILC gebaseerd is op een enkelvoudig aselecte steekproef, de standaardfout zeer sterk wordt onderschat (tot minder dan 50 procent van de reële standaardfout). Indien echter wordt rekening gehouden met clustering op huishoudniveau kunnen vaak relatief nauwkeurige

schattingen van de standaardfout worden bekomen. Niettemin leidt het gebruik van meer precieze steekproefvariabelen met betrekking tot clustering op een hoger niveau, in veel gevallen tot nog betere schattingen, ook wanneer deze variabelen niet volledig accuraat zijn. Het hoofdstuk sluit af met een pleidooi voor betere steekproefvariabelen voor onderzoekers die EU-SILC analyseren en voor het verhogen van de effectieve steekproefgrootte, gezien de huidige steekproeven voor veel landen niet precies genoeg zijn om armoede op een adequate manier op te volgen[1].

In het derde hoofdstuk wordt stilgestaan bij de vele andere elementen die van belang zijn bij de meting van armoede. Samen met Koen Decancq, Karel Van den Bosch en Josefine Vanhille beschrijf ik de verschillende keuzes die moeten worden gemaakt bij de meting van armoede en tonen we met een voorbeeld het belang van deze keuzes aan. Zo verandert niet enkel onze blik op welke lidstaten het meest met armoede te kampen hebben sterk wanneer we één Europese armoedegrens dan wel nationaal gedefinieerde armoedegrenzen gebruiken, maar ook het oordeel over hoe armoede tussen 2004 en 2008 is geëvolueerd: waar op Europees niveau een duidelijke daling van de prevalentie van armoede en een verkleining van de armoedekloof kan worden vastgesteld indien we een Europese armoedelijn hanteren, kunnen we helemaal geen vermindering van de armoede vaststellen in het geval van armoedegrenzen gedefinieerd als een percentage van het nationaal mediaan inkomen. Dit onderstreept verder het belang van de discussie die in Hoofdstuk 1 aan bod komt, met name over de vraag naar de mate waarin in het Europees armoedeonderzoek één Europese armoedegrens moet worden gehanteerd.

3 Minimum inkomensbescherming voor ouderen in Europa

In het tweede deel van het doctoraat staat minimuminkomensbescherming voor ouderen in Europa centraal. Net zoals bij onderzoek naar armoede, zijn ook hier duidelijke concepten, kwaliteitsvolle data en indicatoren en een grondige kennis van het beleid inzake minimuminkomensbescherming vereist. Op basis van de toegangscriteria maak ik een onderscheid tussen zes verschillende categorieën van minimuminkomensgaranties voor ouderen. Bij drie categorieën bepalen de betaalde sociale bijdragen mee de toegang, en vaak ook de hoogte van het gegarandeerde minimum: het forfaitair pensioen, het minimumpensioen en het pensioensupplement. Voor de drie andere categorieën zijn geen bijdragen vereist: het basispensioen, het conditioneel basispensioen en het sociaal pensioen. Waar er bij een forfaitair pensioen en een basispensioen geen enkele middelentoets aan te pas

[1] Zo schatte ik in Guio and Goedemé (2011) dat het aantal personen in armoede of sociale uitsluiting volgens EU-SILC metingen met minstens 210.000 personen moet dalen om met 95 procent betrouwbaarheid een significant verschil (ten opzichte van 0) te kunnen vaststellen. Aangezien de Belgische overheid zich tot doel heeft gesteld om het aantal personen dat met armoede of sociale uitsluiting wordt geconfronteerd met 380.000 personen terug te dringen, is het duidelijk dat EU-SILC niet precies genoeg is om deze doelstelling op een adequate manier te monitoren.

komt om de toegang tot en de hoogte van het gegarandeerde minimum te bepalen, dienen minimumpensioenen en het conditioneel basispensioen enkel ter aanvulling op het publieke (inkomen gerelateerde) pensioen, en wordt (een deel van) eventueel beschikbare andere pensioeninkomsten van de gegarandeerde minimumuitkeringen afgetrokken. Bij het pensioensupplement en het sociaal pensioen, ten slotte, worden niet enkel andere publieke pensioeninkomsten in rekening gebracht, maar wordt een bredere middelentoets toegepast die ook andere inkomstenbronnen in beschouwing neemt. Naast duidelijke concepten en definities, zijn ook voor de analyse van de sociale minima kwaliteitsvolle data vereist. In dit doctoraat staan de CSB-MIPI data centraal in hoofdstukken 4 en 5. Deze data worden verzameld door het Centrum voor Sociaal Beleid Herman Deleeck met behulp van een uitgebreid netwerk van nationale experts. De CSB-MIPI data bevatten informatie over de hoogte van de sociale minima in Europa en de Verenigde Staten van Amerika, onder meer op basis van zogenaamde standaardsimulaties van netto minimum inkomensniveaus (Van Mechelen et al., 2011).

In Hoofdstuk 4 wordt eerst de nieuwe categorisatie van minimuminkomensgaranties voor ouderen toegelicht en schets ik op basis van deze categorisatie een overzicht van de sociale minima voor ouderen in de Europese Unie. Vervolgens documenteer ik de grote verscheidenheid in uitkeringsniveaus voor het belangrijkste vangnet voor personen die onvoldoende bijdragen hebben kunnen opbouwen, en stel ik de vraag of sommige types van sociale minima er beter in slagen dan andere om een adequaat minimuminkomen te waarborgen. De analyse van de CSB-MIPI data tonen aan dat op het gebied van netto uitkeringen (rekening houdend met belastingen, sociale bijdragen en huurtoelagen) de verschillen tussen de Europese Lidstaten zeer groot zijn, zowel in koopkrachttermen als in verhouding tot het nationaal mediaan inkomen. Tussen 2001 en 2009 is de adequaatheid van uitkeringen in sommige landen wellicht sterk verbeterd. Dit was in het bijzonder het geval voor Portugal, Griekenland, het Verenigd Koninkrijk, Ierland en België. Tegelijkertijd daalde de welvaartscapaciteit (de mate waarin een uitkering een inkomen boven de armoederisicogrens kan tillen[2]) wellicht in één derde van de Europese Lidstaten, en in het bijzonder in Denemarken, Zweden, Frankrijk en Tsjechië. In 2009 lagen de netto minimumuitkeringen enkel in Portugal (voor koppels) en Nederland (voor alleenstaanden) boven de armoederisicogrens. In veel landen heeft de overheid dan ook nog een lange weg te gaan om een waardig minimuminkomen aan ouderen te waarborgen. Hierbij is het belangrijk nog te melden dat er op het eerste zicht geen sterk verband lijkt te bestaan tussen het type van minimumuitkering en de adequaatheid. Bovendien is het opmerkelijk dat in een aantal landen huisvestingstoelagen een bijzonder grote rol spelen bij het waarborgen van een minimuminkomen. Het is nog niet duidelijk of de beleidsmaatregelen die genomen werden naar aanleiding van de economische crisis dit beeld sterk hebben veranderd.

[2] De armoederisicogrens is gelijk aan 60 procent van het gestandaardiseerd mediaan huishoudinkomen van de Lidstaat waarin men leeft. Deze grens wordt gebruikt om armoede te meten op basis van de 'armoederisicograad'. Voor meer informatie, zie onder meer Goedemé et al. (2011).

In Hoofdstuk 5 wordt voor 13 'oude' Europese Lidstaten vanuit een breder tijdskader dieper ingegaan op het ontstaan en de ontwikkeling van de sociale minima voor ouderen. Bovendien wordt niet enkel gekeken naar de evolutie van de hoogte van de uitkeringen, maar ook naar trends in het aantal mensen die effectief een uitkering ontvangen. De centrale vraag is of de sociale minima waarvoor geen sociale bijdragen moeten worden betaald de voorbije 20 jaar minder genereus zijn geworden, net zoals het geval is voor de publieke pensioenen in het algemeen. De grondstof voor de analyse wordt geleverd door de CSB-MIPI data (bruto en netto uitkeringen) en de relatief nieuwe EuMin dataset, die administratieve gegevens bevat over het aantal uitkeringstrekkers in Europese bijstandsstelsels (cf. Bahle et al., 2011). De analyse toont aan dat in heel wat landen de generositeit van het belangrijkste laatste financiële vangnet voor ouderen, georganiseerd door de welvaartsstaat, sterk is toegenomen. Met uitzondering van West-Duitsland, hielden de bruto uitkeringen overal de voorbije 20 jaar minstens gelijke tred met de inflatie.

Uit het vorige hoofdstuk bleek al dat de netto-uitkeringen de voorbije tien jaar in een aantal landen sterk was verbeterd, en hier blijkt dat in Griekenland, Portugal, Ierland en het Verenigd Koninkrijk (maar niet België) deze trend al veel vroeger in de jaren 1990 was ingezet. In sommige landen werden over de beschouwde periode de sociale minima voor ouderen sterk hervormd. In Finland en Zweden, bijvoorbeeld, werd het basispensioen omgevormd tot een conditioneel basispensioen, waardoor het aantal uitkeringstrekkers terugviel van om en bij de 100 procent van de 65 plussers tot rond de 50 procent. Denemarken, Portugal en het Verenigd Koninkrijk vereenvoudigden daarentegen de toegang tot de sociale minima, waardoor het aantal begunstigden sterk toenam. In enkele andere landen zoals Duitsland, Frankrijk en België werd het sociaal pensioen eveneens hervormd, maar zonder dat dit het aantal uitkeringstrekkers sterk beïnvloedde.

Indien de minimumuitkeringen worden vergeleken met de gemiddelde lonen, kan een sterke convergentie van uitkeringsniveaus worden waargenomen voor de 13 landen opgenomen in de analyse. Deze convergentie werd in de jaren 1990 voornamelijk veroorzaakt door een dalende generositeit van het basispensioen in Denemarken en stijgende generositeit van het sociale pensioen in Griekenland. De sterke stijging van de generositeit van het Portugese sociaal pensioen zorgde aan het eind van de jaren 2000 echter weer voor een nieuwe divergentie. Zo'n algemeen patroon van convergentie is belangrijk, omdat het een eventuele harmonisering van de sociale minima in Europa gemakkelijker zou kunnen maken. Dit is het onderwerp van het zesde hoofdstuk in deze doctoraatsthesis.

In Hoofdstuk 6 wordt niet enkel stilgestaan bij de toegang tot sociale minima voor ouderen, maar bij alle aspecten van een uitkeringsstelsel die van belang zijn bij het ontwerpen van een stelsel dat er op is gericht om armoede onder ouderen effectief terug te dringen. Meer in het bijzonder, bouw ik met Wim Van Lancker voort op recente en minder recente pleidooien van de Raad, het Europees Parlement en de Europese Commissie voor een (gedeeltelijke) harmonisering van de sociale minima in Europa (Council of the European Communities, 1992a, 1992b; European Commission, 2008; European Parliament, 2009). We vertrekken van het voorstel tot invoering van

een Europees basispensioen dat eerder door anderen werd geformuleerd en gaan de verschillende technische mogelijkheden en valkuilen na bij het ontwerpen van zo'n stelsel. Onze basisassumptie is dat een basisinkomen filosofisch en ethisch te rechtvaardigen is, maar dat er tot op vandaag onvoldoende aandacht is besteed aan wat dit in de praktijk zou kunnen betekenen, indien het idee wordt toegepast in de vorm van een Europees basispensioen. We beargumenteren dat elk voorstel tot verdere harmonisering van de sociale minima in Europa rekening moet houden met de grote cross-nationale verschillen in levensstandaard, levensverwachting, afhankelijkheidsratio's en bestaande stelsels ter waarborging van een minimuminkomen voor ouderen. Door deze grote verschillen, kunnen sommige keuzes met betrekking tot het functioneren van een geharmoniseerd stelsel zeer grote gevolgen hebben voor wie er uiteindelijk van de regeling gebruik zou kunnen maken, hoe hoog de uitkering zou uitdraaien, de totale financiële kost van het stelsel en de optimale structuur om het stelsel te organiseren. Bovendien wordt het door deze grote verscheidenheid erg moeilijk om een uniform stelsel zonder al te veel negatieve neveneffecten te ontwerpen. Met andere woorden is het één zaak om voorstander te zijn van een Europees basispensioen, en een heel andere om een wenselijk scenario te ontwikkelen voor een verdere harmonisering in de richting van zo'n basispensioen. Dit wil echter niet zeggen dat er geen mogelijkheden zijn en dat elke vorm van verdere harmonisering voornamelijk tot negatieve bijwerkingen en onwenselijke uitkomsten zou leiden. Wellicht is een gunstige verdere harmonisering enkel mogelijk indien het in verschillende stappen wordt ingevoerd en indien de sterktes van een puur Europees minimuminkomensstelsel worden gecombineerd met ruimte voor nationale beleidsmakers om Europese principes op een creatieve manier aan te passen aan de lokale situatie.

4 Verder onderzoek

In het laatste hoofdstuk van het doctoraat ga ik dieper in op enkele pistes voor verder onderzoek, die uit de verschillende hoofdstukken naar voren komen.

Eén van de grootste problemen met betrekking tot het huidige armoedeonderzoek en het beleid gericht op het waarborgen van een minimaal aanvaardbare levensstandaard is het gebrek aan kennis over wat de minimaal noodzakelijke middelen zijn om een minimaal aanvaardbare levensstandaard te kunnen waarborgen. Met andere woorden, is er op dit ogenblik onvoldoende kennis om op een valide manier de evolutie en cross-nationale verschillen in armoede te meten door het gebrek aan een valide armoedegrens. Daardoor is het niet enkel onmogelijk om met zekerheid vast te stellen hoeveel mensen er arm zijn, waar ze wonen en hoe groot de armoedekloof is, maar is het eveneens onmogelijk om voor elk land te bepalen hoe adequaat de sociale minima zijn en het beleid verder aan te sturen. Ik ben er sterk van overtuigd dat als we er in slagen om op een cross-nationaal vergelijkbare manier referentiebudgetten te ontwikkelen, een belangrijke bijdrage kan worden geleverd aan zowel de meting van armoede als het ontwerpen van

adequate sociale minima. Bovendien wordt het zo mogelijk om te schatten hoe de armoedegrens zich verhoudt tot de hoogte van het mediaan inkomen, wat het dan weer mogelijk maakt om de huidige veel gebruikte, en eenvoudig beschikbare, armoedematen te valideren en te verbeteren.

Een tweede belangrijke piste voor verder onderzoek betreft de accurate berekening van standaardfouten voor schattingen die gebruik maken van EU-SILC. Dit is niet enkel van belang vanuit wetenschappelijk oogpunt, maar tevens van maatschappelijk belang doordat EU-SILC wordt gebruikt om armoede in de Europese Unie op te volgen en beleid te evalueren. Als je geen rekening houdt met de statistische betrouwbaarheid van de gegevensbronnen, dan kan het immers zijn dat een falend beleid ten onrechte als succesvol wordt beschouwd, of omgekeerd, dat een succesvol beleid ten onrechte als falend wordt beschouwd. Dit is het geval wanneer toevallige schommelingen in armoedeschattingen foutief geïnterpreteerd worden, zonder rekening te houden met de statistische betrouwbaarheid van de gegevens. Een belangrijke prioriteit voor Eurostat zou dan ook de verbetering van de steekproefdesignvariabelen in EU-SILC moeten zijn, die een *conditio sine qua non* zijn om op een correcte manier standaardfouten te kunnen schatten. Hoewel Eurostat op dit gebied al enkele initiatieven heeft genomen, blijft er toch nog werk aan de winkel (Goedemé, 2010, 2012; Eurostat, 2012). De verbetering van de documentatie van imputaties in EU-SILC en het implementeren van een geschikte methode om imputaties mee op te nemen bij de berekening van standaardfouten en betrouwbaarheidsintervallen zou een belangrijke tweede prioriteit voor Eurostat moeten zijn. Wat eigen onderzoek betreft, zou het zinvol zijn om verder na te gaan wat het effect is van 'random' armoedelijnen op de grootte van de standaardfouten. Armoedelijnen zijn in zekere zin random, indien ze gedefinieerd worden op basis van steekproefdata. Dit is bijvoorbeeld het geval voor de armoederisicograad, waarbij het percentage armen wordt berekend aan de hand van een armoedelijn die gelijk is aan 60 procent van het mediane huishoudinkomen, dat op zichzelf geschat wordt op basis van dezelfde EU-SILC data. Dit maakt de correcte berekening van standaardfouten heel wat complexer en het zou dan ook de moeite lonen om verder uit te zoeken of onderzoekers zich zorgen moeten maken wanneer ze geen rekening houden met het random karakter van de armoedelijn (zoals nu meestal het geval is).

De CSB-MIPI dataset bevat bijzonder veel nuttige informatie over de evolutie en cross-nationale diversiteit in de hoogte van de sociale minima in de Europese Unie en daarbuiten. Niettemin is er nog heel wat ruimte om de representativiteit, validiteit en betrouwbaarheid van de CSB-MIPI data te verbeteren. Eerst en vooral moet de validiteit van de assumpties met betrekking tot de huisvestingssituatie sterk worden verbeterd. Dit is niet zo eenvoudig, maar er kan meer worden gedaan met de huidige beschikbare gegevens. Ten tweede moet de schatting van huisvestingskosten worden verbeterd en verfijnd. Dit zou zowel de kwaliteit van de CSB-MIPI data kunnen verhogen, als een belangrijke input kunnen leveren voor de ontwikkeling van cross-nationaal vergelijkbare referentiebudgetten. Ten derde zou het goed zijn mocht het aantal typegezinnen en inkomenssituaties die de basis vormen voor de

standaardsimulaties kunnen worden uitgebreid en mocht er meer aandacht kunnen gaan naar het functioneren van de middelentoetsen.

Ten slotte is het zinvol om dieper in te gaan op de relatie tussen de hoogte van de sociale minima, zoals gemeten door de CSB-MIPI standaardsimulaties, en armoede onder ouderen. Het zou bijzonder zinvol zijn om de inzichten op basis van standaardsimulaties beter te combineren met inzichten op basis van micro-simulaties, die het mogelijk maken om de verdeling van uitkeringen en de interactie met gezinssamenstelling en verschillende soorten van inkomstenbronnen in rekening te brengen. Dit onderzoek zou niet enkel de complexe relatie tussen sociale minima en armoede beter in kaart kunnen brengen, maar zou ook zeer nuttige inzichten kunnen verschaffen over hoe effectieve en efficiënte stelsels ter waarborging van een minimaal aanvaardbare levensstandaard kunnen worden ontworpen[3].

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[3] Verschillende onderzoeksprojecten maken reeds werk van deze pistes voor verder onderzoek. Zo wordt in het project ImPRovE een methode ontwikkeld om op een cross-nationaal vergelijkbare manier referentiebudgetten te ontwikkelen en worden referentiebudgetten opgesteld voor onder meer België, Spanje, Hongarije, Griekenland en Finland (http://www.improve-research.eu). In het InGRID project zullen we de module voor standaardsimulaties in het Europese microsimulatiemodel EUROMOD sterk uitbreiden, wat het mogelijk zal maken om meer typegezinnen in de CSB-MIPI data op te nemen en de bevraging van experts, bijvoorbeeld met betrekking tot middelentoetsen, uit te breiden.

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Introduction

In this PhD thesis, I present six papers which cover two different, but closely related fields of study. Three papers address the definition and measurement of poverty, while three other papers investigate the origins and evolution of modern minimum income protection for Europe's elderly. The papers should not be read as the consecutive steps of one in-depth study, but as self-standing texts which are part of a broader research agenda. The long-term aim of this research agenda is to better understand old age poverty in Europe and the way minimum income protection contributes to reducing poverty. The need to examine this topic arises from several factors:

According to the standard EU indicators on poverty, poverty in old age affects a non-negligible part of the elderly in a large number of Member States. However, a strong variation in old age poverty can be observed in Europe: according to the at-risk-of poverty indicator, between 4 per cent (in Hungary) and 40 per cent (in Cyprus) of persons aged 65 and over are at risk of poverty in 2009 and between 1 per cent (in Luxembourg) and 70 per cent (in Bulgaria) of the elderly are confronted with a serious form of material deprivation (EU-SILC 2010, Eurostat on line database)[4]. In other words, at first sight there seems to be substantial room for improvement and learning from one another.

Furthermore, the share of the elderly in the total population will continue to increase in the future. The latter can be illustrated by the ratio of persons aged 65 or over and the population at working age (15-64 years), which is projected to more than double in the European Union from about 25.5% in 2008 to 53.5% in 2060 (European Commission, 2009: 44).

In addition, over the past 20 years concerns about financial sustainability have constituted the main motive for pension reforms in many European countries (e.g. Hinrichs, 2000; European Commission, 2010b: 10). This is not surprising as public pension expenditures as a percentage of gross domestic product (GDP) have been on the rise in the past (Whitehouse et al., 2009: 515-516) and – with some exceptions – are projected to continue to do so in the future (Economic Policy Committee (AWG) and DG for Economic and Financial Affairs, 2009: 34-36). In the past, increases in pension expenditures as a percentage of GDP were mainly caused by the maturation of pension systems, real increases in (minimum) pension benefits, increased coverage of pension systems, the development and extension of early retirement options as well as population ageing – in Central and Eastern Europe exacerbated by negative net migration rates (Tamburi, 1983: 314-316; European Commission, 2010a: 20; Heller et al., 1986: 18-19; Ebbinghaus, 2006; Holzmann, 2009: 12; Vanhuysse, 2006).

[4] The precise definition of these indicators can be found in Chapter 2.

Recent and future increases in pension expenditures though, are principally driven by demographic ageing (European Commission, 2009: 88).

Not surprisingly, in many of the recent pension reforms there is a tendency to re-strengthen the link between contributions and benefits, and to increase the reliance on defined-contribution (private) pensions (with inherently more uncertainty about benefit levels as the recent crisis has shown) contributing to a projected fall in public pension replacement rates in a good deal of EU member states (Meyer et al., 2007; European Commission, 2009: 27-28; e.g. European Commission, 2005; OECD, 2009; Whitehouse et al., 2009). The implemented changes are likely to shift more risks towards individuals (Zaidi et al., 2006) and both the European Commission (2005) and the OECD (2007) have warned for an increase in the at-risk-of-poverty rate of Europe's elderly, especially in Eastern Europe. As a consequence, minimum income guarantees for the elderly are likely to become more important in the future in a good deal of EU member states, not only in terms of expenditures, but also in terms of the number of beneficiaries and their role in alleviating poverty in old age.

Even though there is a substantial literature on old age poverty (e.g. Kangas and Palme, 2000; Smeeding, T., 2001; Dewilde and Raeymaeckers, 2008; Jehoel-Gijsbers and Cok, 2008; Smeeding, T. M. et al., 2008; Stropnik and Kump, 2008; Vrooman, 2009; Zaidi et al., 2006), relatively little attention has been paid to the precise impact of minimum income protection on elderly poverty. However, it must be acknowledged that with the current state of affairs, a solid study of the role of minimum income protection in alleviating poverty in old age is not so easy. In my view, too many building blocks, girders and connection points for directly addressing this question are still lacking:

First of all, in order to understand the impact of minimum income protection on old age poverty, we should agree on how we define and measure poverty. This is an old debate, and I have not tried to summarise all aspects of this debate, as good overviews can be found elsewhere (for an extensive overview, see Van den Bosch, 1999; Levecque, 2003). Rather, I have tried to add one new element.

Since the introduction of the Laeken indicators in the early 2000s, the European Union disposes of a toolbox to measure and monitor 'poverty' in its Member States (Atkinson et al., 2002; Marlier et al., 2007). However, the toolbox has never been beyond discussion, especially after enlargement of the European Union to less wealthy countries in Eastern Europe. One of the main arguments in this debate, is that reference groups have strongly Europeanised, and that – as a result – poverty measures should take this into account. Some of the alternative poverty measures that have been proposed, lead to very different conclusions with regard to the level and distribution of poverty, not only across countries, but also within countries. This is the subject of Chapter 1 of this thesis. In this chapter, I inquire with Stijn Rottiers into the relation between the debate about the Europeanisation of reference groups, the definition of poverty and its consequences for the measurement of poverty. Among others, we argue that a distinction should be made between the reference groups people use for evaluating their own living standard (we call these privately-oriented

reference groups) and the reference groups people use for thinking about what should be the minimum acceptable living standard for society at large (we call these publicly-oriented reference groups). In addition, we argue that reference budgets would do a better job in defining the poverty threshold than the current official European indicators of poverty and social exclusion do.

A second requirement of an investigation into the relation between minimum income protection and poverty, is that one disposes of high-quality data about poverty. In the case of Europe, the EU-Statistics on Income and Living Conditions (EU-SILC) are the primary data source for information about income and living conditions. Given that EU-SILC is a sample, it is necessary to take account of the sampling variance when drawing conclusions on the basis of EU-SILC estimations. Therefore, in Chapter 2, I elaborate on one specific methodological concern for poverty research: the statistical reliability of poverty estimates, an issue which has received relatively little attention in many publications on poverty, both in academic and in official policy-oriented publications. More precisely, I examine to what extent the sample design of EU-SILC can be taken into account when estimating standard errors and confidence intervals. This is an important question not only because EU-SILC consists of complex sample designs, which may strongly affect standard errors and confidence intervals, but also because EU-SILC is used to evaluate progress towards pre-defined policy targets. Of course, such an evaluation should take the sampling variance of poverty estimates into account.

Even if one agrees on the definition of poverty and data of sufficient quality are available, the measurement of poverty is not straightforward. Among others, measuring poverty involves many choices about the specifics of the indicator of poverty that will be included in the analysis. In some cases, the desirability and validity of one choice versus another can be directly deduced from the definition of poverty. However, in many cases there may be discussion, disagreement, or agnosticism regarding the optimal choice. Moreover, many of the choices that are made do have important consequences for the conclusions that are drawn in relation to the level, distribution and evolution of poverty in the EU. This is the subject of Chapter 3, the last chapter of Part I. Among others, it includes an illustration of the importance and potential consequences of the debate sketched in Chapter 1.

The second part of this PhD thesis is dedicated to minimum income protection for Europe's elderly. Similar to what is the case for poverty, the study of minimum income protection requires clearly defined concepts, good data and a profound knowledge of minimum income policies across Europe. Several typologies of minimum income guarantees for the elderly are available in the literature (e.g. OECD, 2009; Social Protection Committee, 2006). However, they are not encompassing, and employ rather vague criteria for defining various categories of minimum income guarantees. Therefore, Part II of this PhD includes a proposal for a new typology of minimum income guarantees for the elderly. Apart from clear concepts, for a comprehensive study, several different types of data are needed, such as descriptions of minimum income schemes and simulations of benefit levels, but also surveys which could provide insight into the number of beneficiaries and the distribution of

minimum income benefits across the population. The CSB Minimum Income Protection Indicators dataset (CSB-MIPI) provides one type of information, which will be central in the empirical analysis presented in Part II of this thesis. CSB-MIPI contains information on minimum income protection schemes in the European Union and several non-EU OECD countries, collected through a large international network of experts (Van Mechelen et al., 2011). Apart from descriptions of the functioning of minimum income schemes, the database contains consistent time series of gross benefit levels and – in contrast to for instance MISSOC – model family simulations of gross and net incomes of families receiving minimum income benefits. The empirical analyses included in Chapters 4 and 5 draw strongly on CSB-MIPI.

In Chapter 4, I first introduce the new typology of minimum income guarantees targeted at the elderly and, on the basis of this typology, provide an overview of these guarantees in the enlarged EU. Subsequently, I document the large variation in benefit levels in Europe and ask the question whether some types of schemes provided more adequate benefits than others during the 2000s. For doing so, the interaction with housing benefits, taxes and social contributions is taken into account.

As Adler et al. (1991: 7) and Giddens (1986: 13-22) have explained – while building on C. Wright Mills' *The* Sociological *Imagination* – cross-national comparisons (an 'anthropological sensitivity') do not suffice to fully understand a social phenomenon. It should be accompanied by a historical study of the topic of interest in order to develop a 'historical sensitivity'. Therefore, in Chapter 5, I discuss the origins and 'long-term' evolution of minimum income schemes for the elderly, at least for those countries for which data are available in CSB-MIPI. In this chapter, the central research question is whether – similar to what has happened to the overall pension system of many countries – non-contributory minimum income schemes targeted at the elderly have become less generous in the EU15 over the past two decades. For most countries it is found that gross benefit levels have not declined in real terms. However, in comparison with the average wage in each country, a process of convergence has been driven both by catch-up growth and declining relative generosity in some other countries.

In Chapters 4 and 5 the emphasis is on minimum income levels and the number of beneficiaries. In contrast, Chapter 6 provides an overview of all aspects of minimum income schemes that should be taken into account when designing a minimum income scheme aimed at reducing old age poverty. The paper is situated in the context of recent pleas by the European Parliament and the European Commission to (partially) harmonise minimum income protection schemes in the European Union. More in particular, with Wim Van Lancker, I examine the options and pitfalls for harmonising non-contributory minimum income schemes targeted at the elderly in the direction of a European basic pension scheme. In contrast to much of the literature on basic income, we broaden the scope to the often technical details associated with the design of a minimum income scheme. For doing so, we build on the literature about the measurement of income inequality and poverty and an analysis of the current situation with regard to minimum income protection in the European Union.

The third part of this thesis consists of two chapters. In Chapter 7, I elaborate on several ideas for further research. The relevance of these directions for further research is illustrated with some first findings, which do not only enrich the analyses presented in the preceding chapters, but which do also reveal some methodological issues, especially in relation to the CSB-MIPI data, that should be solved in the future. Chapter 8 summarises the main findings of this thesis and concludes. Given that this thesis is largely based on publications in peer-reviewed journals and books, I did not always have the space in the original text to present all results that nourished the analysis. I have tried to compensate for this by adding to most chapters an annex with unpublished material that is announced in a preamble at the beginning of the chapters concerned.

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Part I: The definition and measurement of poverty

Chapter 1: The Europeanisation of reference groups and the definition and measurement of poverty in the EU

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Abstract

The enlargement of the EU has stirred discussion about the relevance of the traditional EU poverty indicator. This indicator measures poverty in relative and national terms. As a result, the poor in the least wealthy EU member states have very different living conditions from those in more wealthy member states. Consequently, some authors have argued for alternative or additional poverty measures. One line of thought is that the reference groups people use for evaluating their living standard are significantly Europeanised and that a Europeanised poverty measure should incorporate this evolution. With this article, we aim to embed this debate into a proper conceptual framework. Therefore, we first review the literature on poverty definitions, and argue that despite diverging conceptualisations, scholars assume that somehow poverty is a relative concept. Second, we discuss the relevance of reference group theory for conceiving this relativity. We argue that a distinction must be made between privately-oriented reference groups and publicly-oriented reference groups. Only the latter offer a norm to define the minimum acceptable standard of living in society. Hence, poverty researchers should investigate publicly-oriented reference groups. Nevertheless, the discussion has largely focused on privately-oriented reference groups. We conclude that EU-wide research on budget standards in combination with survey-based approaches offer a promising way forward to construct poverty lines driven by publicly-oriented reference groups.

Preamble

In the article that follows, we refer to the wide divergence in living standards in the enlarged European Union as a central concern that fuelled the discussion about the measurement of poverty in the EU. To give an idea of the large differences in purchasing power between inhabitants of ‘new’ and ‘old’ EU member states, the annex at the end of this chapter includes several illustrative figures that were not included in the original text. The article concludes with a plea for the development of cross-nationally comparable reference budgets. This argument is further developed in Chapter 7 and in Storms et al. (2011a, 2011b).

1 Introduction

Unlike research based on the official US poverty measure (Orshansky, 1965, 1969; Blank, 2008), most research on poverty in the European Union (EU) defines the poverty line in relative and national terms, for instance by taking 50 or 60 per cent of the national median income as a poverty threshold (e.g. Deleeck et al., 1992; Zaidi and de Vos, 2001; Atkinson et al., 2002; European Commission, 2002, 2007a; Marlier et al., 2007; OECD, 2008; Bäckman, 2009; European Commission, 2009). Over the past few decades, only a handful of authors have emphasised that such a nationally bounded approach is merely one of several possible approaches and that, consequently, it should be open to explicit discussion (e.g. Townsend, 1979: 50; Atkinson and Micklewright, 1992: 187-188; de Vos and Zaidi, 1998). More recently, however, enlargement of the EU to the East has functioned as a catalyst for the discussion about the appropriate approach to the measurement of poverty (e.g. Förster, 2005; Delhey and Kohler, 2006; Fahey, 2007; Kangas and Ritakallio, 2007; Whelan and Maître, 2009a). This has led to a complex discussion, because scholars use different theoretical frameworks, which additionally, are often little elaborated. In general, we observe a lack of consistency between the definition of poverty and its measurement, which results in, among others, a discussion about the appropriate reference group to be used.

Hence, this article aims to embed this debate into a proper discussion of the definition of poverty as well as to draw some conclusions on a suitable sociological approach to the measurement of poverty in the EU. In order to do so, section one structures the main arguments put forward in the Europeanisation of poverty debate, section two elaborates on the definition of poverty and section three links the debate about the measurement of poverty to a clear poverty concept, focusing on the debate about the Europeanisation of reference groups. In the last section we conclude and make some suggestions for further research.

2 Poverty measurement in the European Union. An overview of the recent debate

The European Union has stuck to the same poverty definition for over 35 years. In 1975, the Council of the European Communities (1975: 34) defined poverty as follows:

> "-Persons beset by poverty: individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life of the member state in which they live;
>
> -Resources: goods, cash income, plus services from public and private sources"

The central indicator to measure this concept of poverty, is the 'at-risk-of-poverty rate'. Since 2001 this poverty measure is part of the so-called 'Laeken indicators' to monitor poverty and social inclusion (e.g. Atkinson et al., 2002; Marlier et al., 2007). The 'at-risk-of-poverty rate' is the percentage of individuals in a given country with an equivalent net disposable household income below the poverty threshold. The net disposable household income includes all income of all household members after taxes and social contributions, and is equivalised to take household composition into account[5]. The poverty threshold is set at 60 per cent of the median equivalent net disposable household income of the country in which one lives. This definition of the poverty threshold establishes the relative character of the poverty indicator as well as its national frame of reference. First, the indicator is relative in character: poverty is assessed with direct reference to the 'general' or 'average' level of prosperity of others in the society in which one lives by linking the poverty threshold to the *median* equivalised net disposable household income. Second, a strictly national frame of reference is applied: the poverty threshold refers to the median equivalent net disposable income *of the member state* in which one lives.

Although both characteristics are entirely in line with the Council's definition of poverty, they are under discussion in the academic literature. Moreover, very recently the EU adopted a new additional poverty indicator, which uses material deprivation instead of income to assess poverty. Apart from its emphasis on living conditions rather than income, the 'deprivation indicator' differs radically in both respects from the at-risk-of-poverty rate: it uses an EU-wide poverty threshold common to all member states and is not automatically nor directly relative to the average living standard in society (be it national or European) (Guio, 2009; Wolff, 2009) [6]. Although complementing the monetary measurement of poverty with a material deprivation indicator does not necessarily conflict with the EU definition of poverty, the European character and the lack of explicit reference to the average living standard in society potentially do. In general, arguments for such a shift to a European and rather fixed poverty threshold focus on European integration and the enlargement of the EU to less wealthy countries in the East. These arguments can be grouped along four lines of thought.

First, with enlargement of the EU in 2004 and 2007, differences in living standards within the EU have grown considerably as relatively poor Eastern European countries joined the EU. Since the poverty threshold is defined as 60 per cent of national median incomes, in terms of purchasing power this threshold is much higher in the

[5] Net disposable household income comprises all incomes of the household over a period of one year net of taxes and contributions. In the case of multi-person households economies of scale are assumed and an equivalence scale is applied. Household members are weighted as follows: 1 for the household head, 0.5 for all additional household members aged 14 and over and 0.3 for all children in the household below the age of 14 (this is the so-called 'modified OECD scale').

[6] The indicator consists of a scale of 9 deprivation items which are equally weighted and do not vary by member state. Material deprivation is defined as the enforced lack of at least three of nine items.

rich member states than in the less wealthy member states. In fact, it is even the case that many of the poor in the richest member states have more purchasing power than the majority of the population in the least wealthy member states (Goedemé, 2009; Lelkes et al., 2009: 23). This evidence reveals that the traditional (national) poverty indicator may be good at distinguishing groups at risk of financial poverty within member states, but that it sketches only a partial picture of the variation in living conditions and poverty across the EU. On this basis some authors have argued that these poverty figures are not fully comparable cross-nationally and lead to an underestimation of poverty in the less wealthy member states (e.g. Guio, 2005a: 2; 2005b: 1; Beblavy and Mizsei, 2006; Juhász, 2006: 100-101). Nonetheless, these authors do not link this conclusion to a conceptual framework in which contradictions between the definition of poverty and its measurement are made explicit.

Another group of authors (Förster et al., 2004; Delhey and Kohler, 2006; Fahey, 2007) argue in favour of additional, European-wide poverty indicators by using a different kind of reasoning. They contend that the group of persons with whom we compare our living standard, i.e. the reference group, is of crucial importance for the measurement of poverty (or social stratification in general). These authors claim that, previously, this reference group was primarily national, whereas now reference groups have to a large extent Europeanised. Dickes et al. (2010) present some further evidence to support this claim by showing that the extent to which EU citizens deem some goods and services as necessary for having an 'acceptable living standard' is largely similar in all EU member states. Nevertheless, the latter do not link this observation to the extent of Europeanisation of reference groups. Although the claim that reference groups are important for the measurement of poverty is not new in the poverty literature (see below), in the recent debate this should be more explicitly linked to the poverty concept. We come back to this issue in section three.

A third argument for a Europeanised poverty measurement comes from Brandolini (2007) and Fahey (2007). These scholars argue that even if reference groups would not be strongly Europeanised, the at-risk-of-poverty rate would miss an important aspect of the heterogeneity and social cohesion in the European Union as well as of the social dimension of European unification. Therefore, poverty should also be calculated using a European-wide poverty line (say, at 60 per cent of the European median equivalent net disposable household income). In fact, in the past several authors have calculated poverty using a cross-national ('EU-wide') relative poverty line (e.g. Eurostat, 1990; de Vos and Zaidi, 1998; Boix, 2004; Kangas and Ritakallio, 2007; Berthoud, 2004).

Finally, Whelan and Maître (2009a, 2009b) contradict the fact that reference groups have Europeanised (sufficiently) and present empirical evidence to support their claim. They do not find any evidence that people increasingly perceive themselves as part of a larger European stratification system (the strong version of the Europeanisation thesis), nor that common standards of evaluation emerge as a consequence of knowledge of conditions in other societies (the weak version of the Europeanisation thesis). So they dismiss the argumentation in favour of using one European poverty threshold for measuring poverty. In addition, Whelan and Maître

also argue in favour of an alternative poverty (deprivation) indicator, though for different reasons. Together with among others Dewilde (2008: 236-238) they emphasise the mismatch between income poverty and deprivation poverty, especially in more affluent member states (see also Perry, 2002; Nolan and Whelan, 2007)[7]. Therefore, the multidimensional nature of poverty should be translated into a multidimensional measurement of poverty. Taking deprivation measures more seriously would mean an important step forward to overcome the 'contradictions' and 'difficulties' raised by measuring poverty in an enlarged European Union.

The extent to which the validity of the EU at-risk-of-poverty indicator is affected by these claims is determined by the degree to which they show a serious contradiction between the indicator and the concept it is supposed to measure. However, in general we observe a gap between the concept of poverty and the arguments put forward. It is not clearly argued why diverging material living conditions of the poor in various member states is problematic, given the definition of poverty. Similarly, the importance of reference groups for the measurement of poverty is not sufficiently linked to the poverty concept. In contrast, we argue that the measurement of poverty should be embedded in a consistent theoretical framework. Starting from the definition of poverty, the theoretical framework should clearly establish the role of reference groups for the identification of the poor and the way diverging living standards can affect the measurement of poverty. In the remainder of this paper, we focus only on the former issue: linking reference groups with the concept of poverty. Nevertheless, we believe that the role of reference groups is also key to understanding the latter issue, namely to what degree diverging material living conditions of the poor undermine the validity of the principal EU poverty indicator. Our analysis is structured as follows. First, we address the literature on the conceptualisation of poverty and assess whether there is some degree of consensus on key characteristics of poverty. Second, the role of reference groups for the measurement of poverty is connected to the definition of poverty by reviewing the literature on reference groups. Third, we emphasise that a distinction should be made between privately-oriented reference groups and publicly-oriented reference groups. Although currently scholars mainly focus on the former type of reference groups, the measurement of poverty should be primarily concerned with the latter type. In the last part we discuss how this could be done.

3 The definition of poverty

Discussing the appropriate way of measuring poverty is useless without a proper conceptual framework. Therefore we now review the literature that does scrutinise the poverty concept. A crucial step will be to show that there exists agreement on some core characteristics of the poverty concept. Furthermore, it is necessary to put

[7] For a broader distinction between indirect (income) versus direct (deprivation) measures of poverty, see especially Ringen (1988).

the role of reference groups in proper perspective by linking these issues explicitly to the concept of poverty.

Over the past century several definitions of poverty have been formulated, which some authors classify into two or three categories (e.g. George, 1980: 1-3; Hagenaars and de Vos, 1988: 212; Ruggles, 1990: 15-23; Giddens, 2001: 311): absolute, relative and (although less common) subjective poverty[8]. Absolute poverty definitions define poverty as having less than an absolute minimum. Relative poverty definitions define poverty as having less than others in society. Where the former two definitions are based on external criteria, subjective poverty definitions rely on individual impressions since poverty is defined as feeling that you do not have enough to get along. The differences between these three categories in relation to the role of reference groups and absolute differences in living standards between societies are obviously quite large. In the case of absolute definitions, absolute differences in wealth between societies are very important and lead, all other things being equal, to higher poverty figures in poorer societies and lower poverty figures in richer societies. This is not necessarily the case for relative definitions, as only differences of living standards within societies are accounted for. It is clear that in the case of subjective poverty, absolute differences in living standards between societies do not affect comparability of poverty statistics. The role of reference groups is not directly clear for absolute and relative definitions of poverty, whereas this is rather obvious in the case of subjective poverty (cf. Abel-Smith, 1984: 70-71).

However, on a closer look, the common distinction between absolute, relative and subjective poverty definitions is more confusing than helpful[9]. First of all, one has to make a clear distinction between the poverty concept (definition) and the approaches and indicators to measure the concept: one poverty definition may be measured by several different indicators. As is the case in the article of Hagenaars and de Vos (1988), the distinction between concept and indicator is not always clear: many

[8] In this paragraph we make use of the description by Hagenaars and de Vos (1988) of absolute, relative and subjective poverty definitions.

[9] A more helpful distinction could be made between, at the one hand, definitions for which the living standard is the crucial dimension to identify poverty and, at the other hand, definitions for which rather some form of social status is crucial (e.g. definitions based on dependence on social assistance (Simmel), the subculture of poverty (Lewis) and the underclass (Murray, Wilson) (for references, see Van den Bosch, 2001: 4; as well as Levecque, 2003)). As the latter group of definitions has been largely absent during the past 20 years in European poverty research, they are left out of consideration for the discussion in this paper. Additionally, a distinction could be made between a 'British' and a 'French' tradition (Room, 1995: 105-107). The French tradition focuses on relational issues and uses the concept of social exclusion rather than poverty. However, we do not compare both 'traditions' in this paper, and disregard the latter. A final distinction on which we do not touch concerns the distinction between direct and indirect definitions of poverty (cf. Ringen, 1988). Direct definitions define poverty in terms of some form of deprivation (e.g. Rowntree, Sen; see below), whereas indirect definitions require explicitly that the deprivation is caused by a lack of resources (e.g., Townsend, the EU definition of poverty; see below).

examples of so-called absolute, relative and subjective definitions are indicators of poverty rather than definitions of the poverty concept.

Second, with regard to subjective poverty – i.e. the idea that people are poor when they feel they do not have enough to get along – a diversity of authors has stressed that for a (sociological) study of poverty the 'objective' social situation should be the starting point and not whether persons have the feeling of being poor. "It is neither necessary nor sufficient that [the poor] feel themselves to be deprived. This is not, of course, to deny that the feelings of deprivation, exclusion or frustration associated with low levels of resources may be a powerful reason for our concern in the first place" (Atkinson, 1989: 10) (cf. Townsend, 1979: 38; Sen, 1981: 16; Van den Bosch, 2001: 4). Hence, subjective poverty definitions are extremely rare in the literature, and we will give them no further consideration[10].

Third, and perhaps most important, if carefully thought through, so-called absolute poverty definitions are, to some degree, *always* relative (Ringen, 1988: 353). Besides, this claim also holds for poverty indicators (cf. Callan and Nolan, 1991: 245, 247-248). How is this the case? The crucial distinction between so-called absolute and relative definitions is that in the case of absolute definitions the poverty threshold does not directly refer to the living standard of others in the society in which one lives. Nevertheless, as many authors have stressed, ultimately the societal context must be taken into account as far as the measurement of these definitions is concerned. For instance, Ruggles (1990: 17) writes that "it is very difficult to establish an 'objective' minimum that really is applicable over a long period (or even across very divergent population groups). Over time, for example, the goods people consume are likely to change dramatically, and the definition of the minimum needed for subsistence is likely to change as well." (For an illustration see also Lamale, 1958). In the same vein, cross-national differences in social, climatological, biological and economic context are important factors that should be accounted for when operationalising 'absolute' definitions of poverty. As Adam Smith (1908 [1776]: 691) observed over two centuries ago: "[c]ustom […] has rendered leather shoes a necessary of life in England. The poorest creditable person of either sex would be ashamed to appear in public without them. In Scotland, custom has rendered them a necessary of life to the lowest order of men; but not to the same order of women, who may, without any discredit, walk about barefooted. In France, they are necessaries neither to men nor to women; the lowest rank of both sexes appearing there publicly, without any discredit, sometimes in wooden shoes and sometimes barefooted." (See also Rein, 1970)

A further illustration of this point can be derived from the international (European) conceptual debate on poverty. Four definitions of poverty have been dominating the literature over the past century. According to Rowntree (2000 [1901]: 86-87), the poor consist of two groups: "(1) Families whose total earnings are insufficient to obtain the minimum necessaries for the maintenance of merely physical efficiency.

[10] This is not to say that various subjective indicators are not in use for measuring poverty, see especially Goedhart et al. (1977); Kapteyn et al. (1988); Deleeck et al. (1992) and for a more recent critical study Van den Bosch (2001).

Poverty falling under this head may be described as 'primary' poverty. (2) Families whose total earnings would be sufficient for the maintenance of merely physical efficiency were it not that some portion of it is absorbed by other expenditure, either useful or wasteful. Poverty falling under this head may be described as 'secondary' poverty." For both primary and secondary poverty, the ultimate poverty criterion is thus 'merely physical efficiency'. Sen, on the other hand, does not provide a very precise definition of poverty but nevertheless has had much influence on the conceptual discussion of poverty with the introduction of the capability approach. Broadly, Sen (1985: 669-670) describes poverty as follows: "[p]overty is not just a matter of being relatively poorer than others in the society, but of not having some basic opportunities of material well-being – the failure to have certain minimum 'capabilities'." Probably the most dominant poverty definition in European poverty research of the last 30 years is the one of Townsend (1979: 31). "Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged, or approved, in the societies to which they belong. They are, in effect, excluded from ordinary living patterns, customs and activities." Finally, a fourth definition of poverty comes from the European Commission. Though we cited it before, we here use a more recent version: "[p]eople are said to be living in poverty if their income and resources are so inadequate as to preclude them from having a standard of living considered acceptable in the society in which they live" (European Commission, 2004: 8).

Within the common absolute versus relative poverty divide, the former two definitions are typically classified as 'absolute' and the latter two as 'relative' definitions of poverty. Nonetheless, all four authors agree that one should take account of, that is, make the measurement of poverty relative to, the characteristics of the society in which one studies poverty. Both the EU definition and Townsend's definition of poverty directly refer to what society considers minimum acceptable, respectively the ordinary living patterns, customs and activities. This is not the case for the definitions of Rowntree and Sen.

In Rowntree's definition, the crucial criterion, or 'threshold', to identify the poor is whether 'merely physical efficiency' is obtained. This was measured by Rowntree and his investigators by observing whether families were living in 'obvious want and squalor', which in turn implied that "Rowntree and his investigators were working with a relative definition of poverty which compared the living conditions of the people they surveyed with the living conditions which were *conventionally* recognized and approved" (Veit-Wilson, 1986: 78; own italics). In his later work, Rowntree acknowledged that "ideas of what constitutes 'obvious want and squalor' have changed profoundly" (1941, quoted in Veit-Wilson, 1986: 88). It has thus been rightly argued that the simple fact that a definition refers to physical efficiency or subsistence as a poverty threshold, does not imply that this threshold is an absolute and unique measure in money-terms or a list of items (be it calories or anything else) which can be universally applied. Perhaps one could try to measure these thresholds

in an 'absolute' 'universal' way without taking account of social differences, but research has sufficiently shown that this is un-scientific. As Orshansky (1965: 5) noted: "there is no generally accepted standard of adequacy for essentials of living except food. Even for food, social conscience and custom dictate that there be not only sufficient quantity but sufficient variety to meet recommended nutritional goals and conform to customary eating patterns. Calories alone will not be enough." Even if the variety argument is left aside one should take account of biological, social and other factors such as metabolic rates, body size, climatic conditions, sex, pregnancy, lactation, and work intensity, since all these factors co-determine the amount of food that is needed to live without hunger or malnutrition (e.g. Sen, 1984: 78). Having shown the relative characteristic of Rowntree's definition of poverty, we will do the same for Sen's capabilities oriented definition of poverty.

In 1983, Sen explained at length the way in which his conception of poverty is 'absolute': the poverty threshold does not change (by definition) by the fact that others in society lack the same minimum capabilities or not. By way of example, in a society confronted with a general famine, someone's poverty (obvious lack of food) is not alleviated by the fact that all other persons in that society suffer the same poverty. Nonetheless, Sen emphasised that the income necessary to achieve some basic capabilities does depend on, among other things, the society in which one lives and the general standard of living in that society. More generally, "[...] your absolute achievement – not merely your relative success – may depend on your relative position in some other space" (Sen, 1983: 156). As Sen (2006: 37) writes in a recent contribution: "[t]his is not only because the capabilities that are taken to be minimally basic tend to change as a country becomes richer, but also because even for the same level of capability, the needed minimal income may itself rise, along with the incomes of others in the community." So, although "people's deprivations are judged absolutely, and not simply *in comparison* with the deprivations of others in that society", Sen (1985: 670) fully agrees that a proper understanding of the societal context is of crucial importance for the measurement of poverty.

By now we have given three arguments why the distinction between absolute, relative and subjective definitions of poverty is more confusing than helpful. First, the distinction often relies on a mix-up of definitions and indicators. Second, subjective definitions have been widely rejected. Third, so-called 'absolute' poverty definitions always imply some relative aspects. A final point that should be made, is that relative definitions of poverty are not necessarily relativistic.

Sen (1981: 17) argues that there is an "irreducible core of *absolute* deprivation in our idea of poverty". Proponents of this 'irreducible core of absolute deprivation' contend that relative definitions of poverty are not capable of capturing situations of society-wide poverty. For instance, if one uses the EU poverty threshold of 60% of the median income, by definition at least half of the population will not be counted as poor. However, a poverty figure generated by the EU poverty threshold is an indicator, not a definition of poverty. It is therefore indispensable to examine whether the definitions of poverty commonly categorised as relative definitions are indeed inadequate to grasp society-wide poverty. It is true that Townsend's definition

primarily makes poverty relative to the current living patterns in society, hence suggesting that the poor can only be a fraction of the population. Nevertheless, the addition that the poverty threshold may also be influenced by living patterns which are widely encouraged or approved may not be neglected. Thus, according to Townsend's definition of poverty, a general famine can be conceived as follows: all starving people can be considered as poor, since starvation runs against the living conditions which are widely approved for human beings. An analogous reasoning applies to the EU definition of poverty. Starvation is unlikely to become an acceptable standard of living, even in the case that it affects all citizens. In other words, definitions of poverty which are labelled 'relative' definitions hold on to Sen's 'irreducible core of absolute deprivation', but reword it into relative terms: poverty does not always point at situations in which the poor eat less than others, but sometimes also to situations in which the poor eat less than what is generally accepted as what they should eat.

After this discussion of the literature on concepts of poverty, we can safely conclude that, despite several academic discussions, dominant conceptualisations of poverty do agree on some core characteristics of poverty: one should take account of the societal context for measuring poverty, but this should not be guided by a 'blind' procedure (i.e. an acceptable standard of living need not exclusively refer to current living patterns (as the EU poverty threshold does), but may also refer to ideal patterns of living). Hence, we claim that a useful distinction between absolute and relative definitions of poverty cannot be made. Nevertheless, nothing has been said about which societal factors one should take into account to properly assess poverty. The next section reflects further on this issue.

4 Reference groups and the minimum acceptable way of life

The discussion above shows that poverty is relative to society in which people live or expect to live. The crucial question then is: what is the 'minimum acceptable way of life' (as it is worded in the EU poverty definition). The answer to this question is found in the reference group which people use to assess what is minimally acceptable. In order to fully grasp what this means, we briefly elucidate on reference group theory, even though we argue that classic reference group theory is insufficient in the case of poverty measurement.

Reference groups (a term introduced by Hyman, 1968 [1942]) are "employed as a standard for self-evaluation" (Pettigrew, 1967: 251). According to social comparison theory (cf. Festinger, 1954), people need to compare themselves with others to come to an understanding of themselves. Subsequently, reference group theory (first formalised by Merton and Rossi, 1968 [1949]) is a subsection of social comparison theory, since it discusses with whom and how these comparisons are made.

One of the main findings of reference group theory is that people often use several reference groups, be it simultaneously or through time (Hyman and Singer, 1968).

Second, both similar and dissimilar others are used as reference groups: Goethals and Darley (1977) found that when people have little information about a domain, they will explore that domain broadly, which often brings them to a comparison with dissimilar others (e.g. to get an idea of the time needed to run a marathon, one will typically look at the fastest and slowest times set in a recent race). In contrast, if people already have some awareness of a domain, they will start to compare with similar others (in the marathon example, exploring how fast people of the same age, sex, training record,… run). Third, both upward and downward reference groups are used (Brickman and Bulman, 1977; Collins, 1996; Wood, 1996). Upward reference groups are others with a better outcome than that of the person who makes the comparison (e.g. faster times, more wealth,…). Downward reference groups are people with a 'worse' outcome. In sum, it seems that potentially everyone can serve as a reference group in any situation. Furthermore, it is also found that any reference group can evoke either negative, or positive (or neutral) feelings (Collins, 1996). This brings Pettigrew (1967: 260) to the following conclusion: "[t]he [reference group] theory's breadth is a considerable asset in untangling the complex web of normative and comparative influences of groups upon individuals. … Yet the breadth of the theory is not only its principal strength but its principal weakness as well."

Nevertheless, reference group theory can predict patterns of reference groups, namely if one confines the theory to specific domains. The literature that focuses on reference groups concerning material well-being comes to the conclusion that, when assessing their material well-being, people mainly use a broad (and upward) reference group.

Early reference group theorists considered people's direct in-groups (family and friends) as most prominent reference groups (White and Dahl, 2007: 525). However, the empirical literature suggests that when assessing economic well-being, people's reference groups mostly exceed the direct in-group. Evidence for this is found in studies which investigate which reference groups people use to assess their pay (e.g. Bygren, 2004) or their income in general. The latter assessment is called the 'relative income hypothesis' on which a substantive literature exists. The relative income hypothesis holds that people assess their income relative to the income of some reference group. In order to test its validity, scholars have tested several types of reference groups (for a review of theoretical studies, read Clark and Oswald, 1996; for a review of empirical studies, read Clark et al., 2008)[11]. "The basic finding in the literature is that own income contributes positively to own happiness, while the opposite is true for the income of the reference group. In other words, the higher the reference income, the less satisfaction is derived from own income." (Van Praag and Ferrer-i-Carbonell, 2009: 373) Hence, applying broader reference groups in models that test the relative income hypothesis yields significant results. By way of example, Luttmer (2005) finds that the average income level in a person's neighbourhood does

[11] In most cases, scholars impose self-assumed reference groups to their dataset. Rarely (e.g. Clark and Senik, forthcoming) scholars ask their respondents whom they use as reference group.

affect people's assessment of their own income. In other words, this applied reference group obviously surpasses the direct in-group of family and friends. Also when scholars use other than geographical criteria to determine reference groups, such as educational classes (Easterlin, 2001), or a combination of them (Ferrer-i-Carbonell, 2005), they find that people's assessment of their income depends on the income level of their reference group.

However, the observation that people use (broad) reference groups to assess their own material well-being does not explain how these reference groups determine the standard of living considered acceptable in society. The cited research on reference groups refers to the evaluation of one's own living standard in relation to one's own reference group. Similarly, indicators such as life satisfaction and subjective economic stress are the main dependent variables employed in recent research on the Europeanisation of reference groups. Nonetheless, poverty is judged by what is considered the minimum acceptable way of life by society at large. Furthermore, this standard is applied to all members of society. In other words, reference group theory does not elaborate on how society comes to a minimum acceptable living standard that could be used for the evaluation of the poverty status of all members of society. Hence, it is unclear what poverty researchers can hope to achieve by referring to reference group theory.

Nevertheless, we do believe that the conceptualisation of reference group theory might be helpful to the conceptualisation of poverty. However, this requires a distinction which hitherto has not been made explicitly. In classic reference group theory, one could speak of privately-oriented reference groups, whereas reference groups in the assessment of poverty can be seen as publicly-oriented (cf. privately and publicly-oriented evaluations as defined by Barry, 1990: 12-13)[12]. The former offer a norm to assess a personal characteristic or outcome, whereas the latter offer a norm to assess a generalised characteristic or outcome, e.g. a minimum acceptable standard of living in society (cf. Van den Bosch, 1998: 136-137). Since there is no particular reason to believe that both types of reference groups are largely the same, classic reference group theory is not very informative in exploring publicly-oriented reference groups. Hence, empirical studies on publicly-oriented reference groups are rather scarce[13].

An important assumption of the definition of poverty is that it supposes some consensus in society about the minimum acceptable living standard. Such a consensus is more likely if some common point of reference exists, i.e. if publicly-oriented

[12] We owe this reference to Van den Bosch (2001: 13-14).

[13] In a recent paper Fahey (2010) further characterises the differences between the original approach towards relative deprivation (subjective economic well-being) and poverty measurement. However, in contrast to Fahey, we do not consider the exclusive focus on publicly-oriented reference groups and the disregard of personal evaluations as a shortcoming in the measurement of poverty – also on the European level. Rather, as we will argue below, an important part of the problem is that the measurement has focused too much on current living conditions at the expense of what people consider the minimum acceptable way of life.

reference groups sufficiently converge. However, the term consensus should – at least in our view – not be taken too literally: it may well be understood as Townsend's (1979: 31) "living conditions and amenities which are [...] at least widely encouraged, or approved" in society. The question then is: which role for publicly-oriented reference groups in the determination of the minimum acceptable living standard in society?

Van den Bosch (2001: 391-399) reports evidence that people indeed use a different reference group for evaluating one's own living standard than when evaluating a general living standard. For instance, responses to questions about what people consider the minimum income necessary to get along in society for a certain household type correlate hardly or not with personal characteristics (such as household income). This contrasts sharply with answers to questions about the sufficiency of income (to make ends meet) which refer to the specific conditions or circumstances of the respondent. In fact, answers to these questions correlate strongly with household income. The distinction between both answers not only suggests that people are able to take a publicly-oriented point of view, but also that they differentiate this clearly with a privately-oriented point of view. In other words, a distinction between publicly and privately-oriented reference groups does make sense.

Another bit of evidence regarding the fact that people sometimes use publicly-oriented reference groups, and that consensus might exist, comes from budget standard research. Using consensus analysis, which relies on key informants of different classes, Dressler (1996; Dressler et al., 1998) finds a shared 'cultural ideal of consumption'. Also when searching for minimum budget standards (in contrast with Dressler's ideal norms), scholars fairly easily arrive at culturally shared standards, whether mainly relying on expert groups and low income focus groups (e.g. Storms and Van den Bosch, 2009c, 2009b) or mainly on 'general public' focus groups (e.g. Bradshaw et al., 2008).

In sum, if reference groups are relevant for the measurement of poverty, they primarily should be publicly-oriented reference groups. Hence, although we are aware of limitations to existing data, the shortcut that researchers make when measuring the Europeanisation of poverty, namely by focusing on privately-oriented reference groups, is not justified. This is not to say that subjective well-being and personal evaluations of one's own situation are irrelevant. Rather, we argue that these evaluations are little helpful *for measuring poverty* as it is usually defined.

5 Which way forward?

We have argued that if there is a link between reference group theory and the poverty concept, it must be based on publicly–oriented reference groups which enable the determination of what is the minimum acceptable way of life in society. If publicly-oriented reference groups sufficiently converge, a consensus about what is

minimally acceptable can exist in society. For the measurement of poverty, the crucial point then is to identify what this minimum acceptable living standard is about.

Over the past decade, the dominant approach to assess the minimum acceptable living standard has been twofold. First, in the case of the 'at-risk-of-poverty rate' it is assumed, with very limited empirical underpinnings, that 60% of the median income is the minimum acceptable living standard. Second, the approach to the measurement of deprivation has focused on the consumption items which are customary, assuming that a lack of it (due to financial reasons) implies a situation of poverty. Yet, in both cases this means an exclusive focus on the first part of Townsend's (1979: 31) definition of poverty, i.e. the lack of resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are *customary* in society. In other words, this approach neglects the second part of Townsend's poverty definition: the living standard which is at least widely encouraged, or approved by society. As long as both perspectives converge, the focus on actual living standards need not be problematic. However, as Sen (1983, 1981) has extensively argued, there may be a big difference between the living conditions which are customary in society and the living standard which is widely encouraged or approved. Probably, this is the main reason why the exclusive use of the EU at-risk-of-poverty indicator seems to lead to contra-intuitive results and has become to some degree controversial. We believe that this indicator remains of clear relevance for the study of the distribution of wealth in society, whereas for the identification of the poor, the exclusive focus on actual living standards in society is problematic.

As a result, it is necessary to include a focus on the living conditions which are widely encouraged or approved, and thus to address publicly-oriented reference groups. In order to do so, we see at least two broad ways of revealing what is minimum acceptable in society, while appealing to publicly-oriented reference groups: a survey based approach and an approach based on focus groups. Of course, many different forms are possible and both approaches can be combined. We would go even further and argue that both approaches should be combined in order to validate their results and cover up for the deficiencies of each approach. However, we do not propose entirely new research methods.

Using surveys, there are various ways of finding out which living standard is widely encouraged or approved. Important in this respect, is that not every survey question evokes a publicly-oriented reference group. As we noted earlier, there are different kinds of subjective questions (cf. Van den Bosch, 2001; Atkinson et al., 2002: 34-35) and only those questions should be used which call on publicly-oriented reference groups. More in particular, these are the type of questions that do not (directly) refer to the actual circumstances of the respondent, but that refer to a general household type in society. For instance, in 2007 the European Commission (2007b) published results of a large-scale survey in which EU citizens were asked what they consider acceptable in order to have a decent standard of living in their country with regard to financial means, housing conditions, durable goods, basic necessities and social integration. Although such questions clearly refer to publicly-oriented reference groups, the survey-approach has some important limitations. First, it is not clear

whether everyone interprets the questions in the same way: one can find that people should at least be able to afford a TV as well as a mobile phone, a home computer and many other things, but it is not clear whether each of these items should be affordable jointly or whether a subset would suffice. Second, for measuring poverty one could construct an index of items with regard to the enforced lack of those items which are deemed necessary (e.g. Guio, 2009; Nolan and Whelan, 2007). However, such indices have their own shortcomings, including the neglect of previous financial commitments (e.g. mortgage for a big house), and differing consumption patterns as a result of different preferences or needs (resulting from disability, household composition etc.) as well as the necessity to make more or less arbitrary choices with regard to the composition of the index, the relative weight of the various items and the determination of the poverty threshold (e.g. Deleeck et al., 1992: 5). Third, they do not offer an overall money-threshold. In itself the latter is not necessarily a problem for the measurement of poverty, but it is a serious shortcoming in terms of (short-term) policy guidance and evaluation.

Therefore we suggest that the results of these surveys should feed into, and be used to validate and/or update the outcome of the budget standard approach. In budget standard research baskets of goods and services for various types of households are constructed. The baskets are conceived to consist of the goods and services which would correspond to the minimum acceptable way of life in society. In a second step, a price is attached to all goods and services and the total cost of the basket results in a poverty threshold. There are several methods to construct budget standards and we would recommend in particular the one in which budgets are discussed in focus groups. There can be a legitimate discussion about the composition and number of focus groups. We suggest that they should be representative of society, and should definitely involve low income households to ensure that the budgets are realistic. Furthermore, discussions in these groups should be underpinned by expert knowledge (e.g. in relation to dietary needs, the depreciation of clothing and durables, etc.) As is the case for the survey approach, budgets should be constructed for certain household types invoking publicly-oriented reference groups. Furthermore, in an EU context a uniform method and theoretical framework should be used across the entire EU in order to assure cross-national comparability (e.g. Atkinson et al., 2002: 90; Storms and Van den Bosch, 2009a).

Whereas we discussed the Europeanisation of reference groups in the first part of this paper, our own analysis does not directly address that issue. Rather, we found that the current discussion on the Europeanisation of reference groups was mainly based on privately-oriented reference groups, which is invalid, as we argued. From that point, we elucidated the link between the conceptualization of poverty and the importance of publicly-oriented reference groups. At the end, we made clear how poverty thresholds can be constructed driven by publicly-oriented reference groups. Nevertheless, the proposed approaches do not make explicit what publicly-oriented reference group people in fact use. Nonetheless, these approaches provide a better starting point than privately-oriented reference groups, which people use for entirely different purposes. We therefore argue that the best way forward, if we want to

know whether publicly-oriented reference groups have Europeanised, is to take seriously the here proposed approaches, and compare their results through time and across places in order to study the dynamics of publicly-oriented reference groups.

6 Conclusion

The enlargement of the EU has stirred discussion about the relevance of the traditional EU poverty line. The review of this literature shows that it lacks explicit references to the concept of poverty. We argue, however, that a sound conceptual embedding would enrich the argumentation and empirical analysis. To make this claim, we first gave an overview of the literature on poverty definitions, and found that despite diverging conceptualisations, scholars must assume that poverty is a relative concept. The poverty status of people is relative to a certain norm, which is derived from a certain, sometimes hypothetical (though not less real in its consequences), reference group. The question then is, which reference group? Based on a review of reference group theory, we come to the conclusion that the reference groups used in standard psychological reference group literature differ significantly from the reference groups to which the concept of poverty refers. We propose to differentiate between privately-oriented reference groups and publicly-oriented reference groups. The former are scrutinised in standard reference group literature and are used to assess a personal characteristic or outcome. The latter offer a norm to assess a generalised characteristic or outcome, e.g. the minimum acceptable standard of living in society. Hence it is publicly-oriented reference groups that we should look for when measuring poverty. However, present analyses of the Europeanisation of the poverty line all focus on privately-oriented reference groups. Therefore, their contribution to the measurement of poverty is limited.

We present empirical evidence that the distinction between these two forms of reference groups is warranted, but that analyses explicitly addressing publicly-oriented reference groups are scarce. Consequently, definite conclusions about the appropriate level of poverty measurement are impossible to draw, given the current state of research. Undoubtedly, the distinction between both types of reference groups, the distinctive characteristics of publicly-oriented reference groups (such as the processes behind their selection and formation), as well as their exact role in the determination of what society considers as the minimum acceptable living standard offer promising grounds for further research. More in particular, we propose to take EU-wide budget standard research more seriously and to complement its outcome with survey-based research about what the population at large deems necessary for a minimum acceptable way of life in society.

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8 Annex: Wide disparities in income between East and West European EU member states (not included in original text)

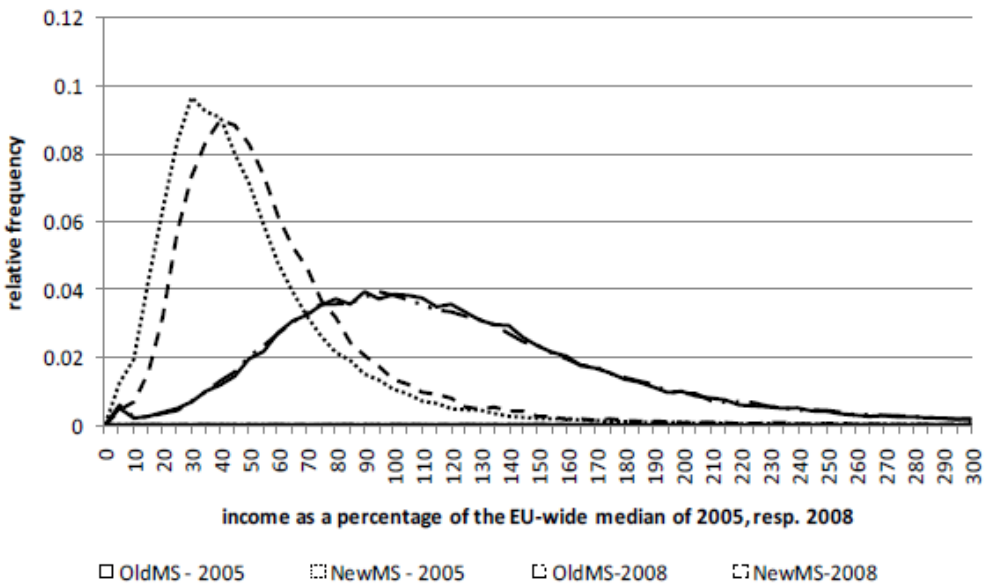
In this chapter, it is argued that the large difference in living standards between Eastern and Western European countries is one of the main drivers of the current debate about the appropriate frame of reference for the measurement of poverty in the European Union. In addition, it is argued that whether one uses a national or European frame of reference for defining the poverty threshold makes a big difference in measured poverty outcomes. The graph and table below provide some evidence which supports these claims. In Chapter 3, a more elaborate analysis of poverty trends in the European Union between EU-SILC 2005 and EU-SILC 2009 can be found. Further analyses of poverty in the EU are discussed in Goedemé (2009) and with regard to poverty in Eastern Europe in Raeymaeckers and Goedemé (2008) and Goedemé and Raeymaeckers (2008), see also Ward et al. (2009) for an elaborate analysis of income disparities in the European Union.

A simple relative frequency curve of the income distribution nicely illustrates the wide disparities in income between the old and new EU member states, even when price differences across countries are taken into account (see Figure 1). This is further illustrated in Table 1, which clearly shows that with an EU-wide poverty threshold, poverty in the new member states is much higher than in the 'old' EU member states[14]. Finally, Figure 2 shows that in many countries the number of people with a net disposable income below the poverty line changes dramatically if not the national median, but the EU-wide median income is used to define the poverty line. This is especially so for the new EU member countries (except for Cyprus and Slovenia), where poverty with an EU-wide threshold is estimated to be much more widespread than with a national poverty threshold. In addition, the disparity between the countries with the lowest poverty rate and the highest poverty rate is much wider than in the case of the at-risk-of-poverty indicator with a national poverty line. Similar observations can be made if an EU-wide poverty threshold is used for an indicator of material deprivation (see Chapters 2 and 3).

[14] In Chapter 3, the FGT index is clearly defined and explained.

In addition, Figure 1 and Table 1 show that between 2004 and 2007, relative to the EU-wide median income, there has been a remarkable growth in income in Eastern EU member states, whereas this growth is nearly completely absent in Western EU member states. As a consequence, if the poverty threshold is defined as a percentage of the EU-wide median income, substantial declines in poverty rates can be observed in Eastern Europe, whereas a similar trend is lacking in the old EU member states. Furthermore, the lower the poverty threshold (as a percentage of the EU-wide median income), the stronger the effect. Similar observations can be made if one looks at the normalised poverty gap ratio (FGT1) or the squared poverty gap ratio (FGT2).

Figure 1: Relative frequency of equivalent net disposable household income (PPS) as a percentage of the EU-wide median equivalent net disposable household income, EU-SILC 2005-2008



Note: Income top-bottom coded using the LIS procedure. Distribution of household income income at the individual level (not the household level). Germany included. Malta, Romania and Bulgaria not included due to limited data availability.

Source: EU-SILC UDB 2005, 2008; own calculations. PPPs for final household consumption from Eurostat's online database.

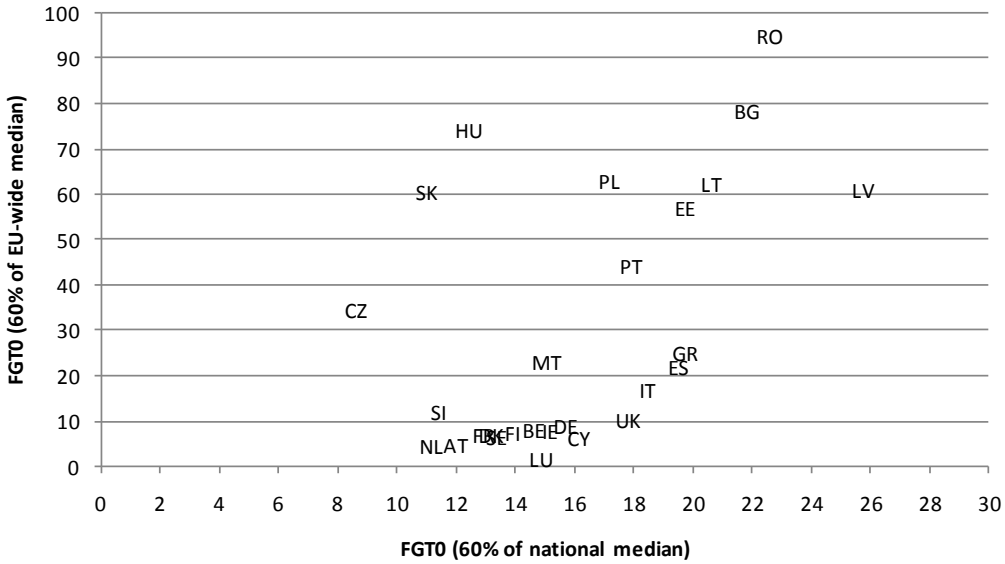
Table 1: EU-wide poverty in old and new EU Member States, EU-SILC 2005-2008

			2005			2008			2008-2005		
Measure	Threshold	Group	point	LB	UB	point	LB	UB	point	LB	UB
FGT(0)	60% Median	Old MS	13.0	12.6	13.3	13.5	13.1	13.9	0.5	0.0	1.0
		New MS	75.8	75.1	76.4	66.8	66.1	67.5	-9.0	-9.9	-8.0
		Total	23.1	22.7	23.5	22.0	21.6	22.3	-1.1	-1.7	-0.6
FGT(1)	60% Median	Old MS	3.9	3.8	4.0	4.1	3.9	4.2	0.2	0.0	0.4
		New MS	33.5	32.8	34.2	24.6	24.0	25.2	-8.9	-9.8	-7.9
		Total	8.7	8.3	9.0	7.3	7.0	7.6	-1.3	-1.8	-0.8
FGT(2)	60% Median	Old MS	2.0	1.9	2.1	2.1	2.0	2.2	0.1	0.0	0.2
		New MS	18.8	18.2	19.4	12.1	11.6	12.5	-6.7	-7.5	-5.9
		Total	4.7	4.4	4.9	3.7	3.5	3.9	-1.0	-1.3	-0.7
FGT(0)	70% Median	Old MS	19.3	18.9	19.7	19.9	19.5	20.3	0.6	0.0	1.2
		New MS	82.9	82.3	83.4	76.7	76.0	77.3	-6.2	-7.1	-5.4
		Total	29.5	29.2	29.9	28.9	28.6	29.2	-0.6	-1.1	-0.2
FGT(0)	50% Median	Old MS	8.1	7.8	8.4	8.5	8.1	8.8	0.4	-0.1	0.8
		New MS	65.1	64.4	65.8	53.3	52.5	54.1	-11.8	-12.9	-10.7
		Total	17.2	16.8	17.7	15.6	15.2	15.9	-1.7	-2.2	-1.2
FGT(0)	40% Median	Old MS	4.7	4.5	4.9	4.9	4.6	5.1	0.2	-0.2	0.5
		New MS	50.0	49.2	50.8	36.2	35.4	37.0	-13.8	-15.0	-12.7
		Total	12.0	11.6	12.3	9.8	9.5	10.1	-2.1	-2.6	-1.7

Note: Incomes top-bottom coded using the LIS procedure. 95% confidence intervals (LB = lower bound; UB: upper bound). For the difference between the two years it has been assumed that the two samples are independent, although this is not the case. The fact that the poverty line has been estimated from the data has been taken into account for estimating confidence intervals using the DASP module for Stata (Araar and Duclos, 2007). Germany included. Malta, Romania and Bulgaria not included due to limited data availability.

Source: EU-SILC UDB 2005, 2008; own calculations. PPPs for final household consumption from Eurostat's online database.

Figure 2: Percentage of the population with an equivalent net disposable household income below 60 per cent of the national, respectively EU-wide, median income (PPS), EU-SILC 2009



Note: LIS top-bottom coding of income. Germany included.

Source: EU-SILC 2009 UDB, own calculations, PPPs for final household consumption from Eurostat's online database.

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Chapter 2: How much confidence can we have in Europe's poverty figures?

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Results presented in this article are based on research during a short stay at Eurostat. An evaluation of and recommendations with regard to the EU-SILC sample design variables available to Eurostat and EU-SILC users, have been formulated in two papers prepared for Eurostat:

Goedemé, T. (2010), *The construction and use of sample design variables in EU-SILC. A user's perspective*, Report prepared for Eurostat, Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp, 16p.

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[15] http://www.essnet-portal.eu/net-silc2/workshop-2930-march-2012.

Abstract

If estimates are based on samples, they should be accompanied by appropriate standard errors and confidence intervals. This is true for scientific research in general, and is even more important if estimates are used to inform and evaluate policy measures such as those aimed at attaining the Europe 2020 poverty reduction target. In this article I pay explicit attention to the calculation of standard errors and confidence intervals, with an application to the European Union Statistics on Income and Living Conditions (EU-SILC). The estimation of accurate standard errors requires among others good documentation and proper sample design variables in the dataset. However, this information is not always available. Therefore, I complement the existing documentation on the sample design of EU-SILC and test the effect on estimated standard errors of various simplifying assumptions with regard to the sample design. It is shown that accounting for clustering within households is of paramount importance. Although this leads in many cases to a good proxy of the standard error, taking as much as possible account of the entire sample design generally leads to more accurate estimates, even if sample design variables are not fully accurate. The effect is illustrated for the official Europe 2020 indicators of poverty and social exclusion and for all European countries included in the EU-SILC 2008 dataset. The findings are not only relevant for EU-SILC users, but also for users of other surveys on income and living conditions which lack accurate sample design variables.

Preamble

In the text that follows, standard errors have been calculated on the basis of linearisation. To some extent, I have double checked the findings using the bootstrap approach. The results of this exercise can be found in the annex at the end of the paper.

1 Introduction

On 17 June 2010 the European Council agreed to reduce the number of Europeans at-risk-of-poverty or social exclusion by at least 20 million (European Council, 2010). The target is defined by a composition of three different indicators: an indicator of financial poverty (the so-called at-risk-of-poverty rate), an indicator of material deprivation and an indicator of the number of households with a very low work intensity (details below). The data underlying these indicators are the European Union Statistics on Income and Living Conditions (EU-SILC), the principal data source for cross-national comparative research on income and living conditions in the European Union (EU). As EU-SILC is composed of samples in all EU Member States, sampling and non-sampling errors can seriously affect the accuracy of all estimates based on this survey – including the Europe 2020 poverty indicators. However, until now, Eurostat has refrained from consistently publishing standard errors and confidence intervals alongside the official poverty indicators (e.g. Eurostat, 2010b; Wolff, 2010). Unfortunately, this is not a feature unique to Eurostat publications. It seems to be rather common practice to ignore the publication of confidence intervals in the case of descriptive (poverty) statistics (e.g. OECD, 2008; Kangas and Ritakallio, 2007; de Vos and Zaidi, 1998; Whelan and Maître, 2007). Furthermore, in the case of analytical studies using a variety of (regression) methods, it is not always clear whether standard errors are calculated accurately.

Confidence intervals do not address all kinds of survey errors (e.g. Groves et al., 2009; Verma et al., 2010). Nevertheless, the estimation of confidence intervals can save money, time and effort. By showing whether differences between point estimates have a high probability of being due to random error, they indicate which differences are not worth further investigation. However, they can only serve this purpose if standard errors have been estimated accurately. In order to do so, among others it is necessary to take account of the sample design and weighting schemes. As is the case for many surveys (e.g. the World Values Survey (WVS), the Survey of Health, Ageing and Retirement in Europe (SHARE) and the Current Population Survey (CPS)), many countries covered by EU-SILC employ complex sample designs involving multiple stages of selection, stratification and clustering. However, as is also the case for other databases (such as the Luxembourg Income Study Database), full documentation of the sample design and accurate sample design variables in the EU-SILC dataset are lacking for a large number of participating countries. Therefore, in this article I explore the overall precision of EU-SILC and document the effect of various assumptions with regard to the sample design on the estimated standard errors. Focusing on the official Europe 2020 poverty reduction indicators, I show that researchers should at least take account of clustering within households when estimating standard errors. Although doing so leads in many cases to an acceptable approximation of the standard error, it is found that by making optimal use of the sample design variables in the EU-SILC dataset, estimated standard errors are in most cases more accurate.

The article is structured as follows. First, I elaborate on the general principles of the computation of standard errors. Second, drawing on the reports published by Eurostat as well as personal correspondence with the national statistical institutes across Europe, I concisely discuss the sample design of EU-SILC and the available sample design variables. Third, I discuss the Europe 2020 poverty indicators and their associated standard errors. In the following section, I illustrate the effect on the standard error of making various simplifying assumptions with regard to the sample design for the Europe 2020 poverty indicators. These assumptions (e.g. simple random sampling) are often implicit in the standard errors as routinely produced by standard statistical software, and reported by poverty analysts. The resulting standard errors are compared to those obtained by using a dataset prepared by Eurostat which contains more complete information on the sample design. In the final section I discuss the wider application of the findings.

2 The estimation of standard errors: some principles

There are several approaches to the estimation of standard errors and the computation of confidence intervals (Heeringa et al., 2010; Wolter, 2007). Standard errors and confidence intervals can be derived analytically, e.g. through a technique called linearisation, and assuming a certain sampling distribution, usually Student's t-distribution or the normal distribution. A completely different approach is based on re-sampling from the original sample a high number of samples in order to empirically derive a sampling distribution (e.g. Jackknife repeated replication or the bootstrap). Subsequently, on the basis of this 'empirical sampling distribution' standard errors and confidence intervals are computed (cf. Mooney and Duval, 1993 for an introduction; and Biewen, 2002; Trede, 2002; Van Kerm, 2002; Davidson and Flachaire, 2007; and del Mar Rueda and Muñoz, 2011 for an application to poverty and inequality measures). There are various methods in between (see Efron and Tibshirani, 1998: 53-56) and each of these methods has its advantages and shortcomings. This section will not go into the details of the various approaches to variance estimation. Rather, it aims at summarising the general principles which always should be taken into account when computing standard errors. Whichever approach is used, in order to get the standard errors right one should replicate as closely as possible the entire procedure of drawing the sample and calculating the desired statistic. There are four main ingredients to this: sample design, weighting, imputation and the computation of the statistic one is interested in (cf. Eurostat, 2002; Heeringa et al., 2010). In this section I shortly discuss each of these issues.

2.1 Sample design

The sample design can seriously affect the standard error. It is most likely that if a researchers assumes a simple random sample when the actual sample design involves clustering and stratification, standard errors will be wrong. Multi-stage designs involve several stages of sampling and sub-sampling and start from the random

selection of clusters of elements (e.g. municipalities, census sections, dwelling blocks), i.e. primary sampling units (PSUs). If the design consists of several stages, the next step consists of drawing a subsample within each cluster. The advantage of (geographical) clustering is that interviewers can collect the interviews in a limited number of geographical areas, reducing the costs of the survey (e.g. Sturgis, 2004: 1). However, a major disadvantage is that clustering can seriously increase the standard error if the variance within clusters is small compared to the between-cluster variance with respect to the variable of interest. Stratification has the opposite effect. Stratification serves the purpose of increasing the representativeness of the sample and decreasing the risk that some parts in the population remain unrepresented. In order to do so, the population is divided into exclusive groups (strata). Subsequently an independent sample is drawn within each of these strata. Especially if the variance between strata is large with respect to the relevant variable, stratification contributes to decreasing the standard error. Usually, the effect of stratification is larger in the case of a clustered sample (cf. Lee and Forthofer, 2006: 9; Howes and Lanjouw, 1998; Kish, 1965). Of course, the effect of the sample design can differ from one variable to another: clusters or strata may differ strongly in the case of one variable and be rather heterogeneous in the case of another. A crucial point is that if the ratio of selected clusters at the first stage to the total number of clusters in the population is small, other stages than the first add little to the standard error (for a mathematical elaboration, see Kish, 1965; Cochran, 1977). Therefore, the common practice is to approximately assess the sampling variance by estimating only the variability among the PSUs, since this is the dominating component of the total variance. In that case it is assumed that PSUs have been sampled with replacement and that no subsampling within the selected PSUs has been applied (this is the so-called 'ultimate cluster' approach, cf. Eurostat, 2002: 12-13; Heeringa et al., 2010: 67). As a result, for a good approximation only accurate information on the first stage of the sample design is needed, considerably simplifying documentation and computation needs.

Several authors have compared confidence intervals for poverty figures under the assumption of simple random sampling with confidence intervals taking the sample design into account. For instance, Howes and Lanjouw (1998: 107) found for Pakistan and Ghana standard errors that are at least 20 per cent higher if the sample design is properly taken into account. Jolliffe et al. (2004: 563) found even a larger impact with standard errors between 1.87 and 2.21 times as large in the case of Egypt. Rodger and Rodgers (1993: 43) found standard errors being 1.5 to three times as large for a poverty index estimated on the basis of US data. Furthermore, Howes and Lanjouw (1998) emphasised that taking the sample design only partially into account can be as misleading as not taking it into account at all. However, the latter is not corroborated by findings of Biewen and Jenkins (2006). They found for German and UK data that once clustering at the household level is accounted for, estimates of standard errors are almost identical to estimates taking account of the entire sample design. This finding is important, as also in the case of EU-SILC and other surveys on income and living conditions (such as those included in the *Luxembourg Income Study*) clustering at the household level can easily be taken into account, even in the absence of accurate sample design variables. Commonly, measures of poverty and income are

calculated at the household level, and assigned to all individuals within that household. This implies that all individuals within that household share the same value, and that the intra-cluster correlation for those variables is therefore by definition equal to 1. If the variance between households accounts for most of the total variance, the lack of accurate sample design variables is less of a problem. Although this assumption should in principle be tested for every statistic and survey separately, if we find similar results as Biewen and Jenkins (2006), it may provide some more trust in confidence intervals which only take account of clustering at the household level. Nevertheless, it should be stressed that this observation relates only to analyses at the individual level of variables defined at the household level (such as inequality in net disposable household income).

2.2 Imputation and weighting

Apart from the sample size and the sample design, standard errors are also influenced by other sources of random error. Among others, these include imputation and weighting. When there is item non-response, sometimes values are imputed (cf. Kalton, 1983: 67-68). If imputation is based on a random procedure, it adds another source of random error. The neglect of imputation generally leads to an under-estimation of the variance: imputation can increase random error, but also the denominator of the variance estimate (the number of respondents, n) can be overestimated if imputed values are treated as observations. As a result, the computation of standard errors should take this into account (Shao, 1996; Shao and Chen, 1998). However, the inclusion of this source of error is not easy. First, depending on the estimation technique and available software, information is needed on (1) the response / non-response status; (2) the imputation method used and information on the auxiliary variables; (3) information on the 'donor'[16]; (4) and information on the imputation classes (Eurostat, 2002: 19). Second, standard estimation procedures in many software packages do not include routines for taking account of imputation for estimating the standard error. Nonetheless, the impact of imputation can be large if there is considerable item non response. A non-response rate of 30% may lead to an under-estimation of the standard error by 10-50% (Kovar and Whitridge, 1995 as cited in Eurostat, 2002: 18). There are few studies on the impact of imputation procedures on standard errors in the case of poverty indicators. One simulation study by Alfons et al. (2009) on the Austrian EU-SILC 2004 data finds that the additional uncertainty introduced by imputation is very limited in the case of the EU at-risk-of-poverty indicator, but somewhat larger for the average equivalent disposable household income. However, it is unclear to what extent these results can be generalised to other indicators or other EU-SILC countries.

Weighting is another potential source of random error. Weights assign more relative importance to some observations than to others in order to restore imbalances in the sample and avoid biased estimates. In general, weights are used to counteract three types of imbalance: unequal selection probabilities, unit non-response and

[16] In some imputation methods, a missing value is imputed by taking the non-missing value of another (otherwise similar) observation; the latter is called the "donor".

(remaining) differences between the sample and known population data (Kalton, 1983: 69-75; Heeringa et al., 2010). In some cases imbalances in the sample occur on purpose, for instance some small strata may be over-represented to enable reliable estimates of these strata. For obtaining population estimates, respondents are given weights which are inversely proportional to the probability of being selected. Weights are also used to counterbalance unit non-response. In that case response propensity scores are estimated, i.e. the probability that a selected unit will cooperate in the survey. Consequently, the probability weight is multiplied by the inverse of the response propensity score. Finally, with post-stratification weights are adjusted such that the estimated distribution corresponds to known population totals, usually regarding demographic variables such as age and sex. In doing so, post-stratification may also increase precision by compensating coverage errors in the sample frame (cf. Groves et al., 2009: 348). Even though weights are aimed at reducing potential bias of survey estimates, they may substantially increase standard errors. This is especially the case if the variance of the weights is large. Therefore, it is important to take weighting into account when computing standard errors. In EU-SILC for all countries weights have been developed to counteract variations in selection probabilities and unit non-response as well as to bring some demographic estimates in line with external population data (cf. Eurostat, 2010c).

2.3 Complex poverty measures

The formulae for calculating standard errors do not only depend on the sample design, imputation and weighting, but also on the computed statistic. Standard errors are more straightforward to compute for some indicators than for others. For instance, the standard error of a proportion or the mean is well known and can easily be adapted to more complex sample designs (Kish, 1965; Cochran, 1977). Many poverty indicators consist of headcounts with a fixed (i.e. not random) poverty threshold. For instance, the Europe 2020 deprivation indicator estimates the proportion of the population which is deprived of at least 4 out of 9 items. In other words, in this case, the standard error is equal to that of a proportion. The same holds for the proportion of households with very low work intensity. As long as the poverty threshold is not estimated from the survey data itself, all poverty measures of the family of the well-known FGT-class of poverty measures have standard error formulae similar to those of a proportion or mean (cf. Foster et al., 1984: 763; Kakwani, 1993; Jolliffe and Semykina, 1999).

However, this is not always the case. In the case of the at-risk-of-poverty indicator, the poverty threshold is estimated on the basis of the survey data: it is equal to 60 per cent of the median equivalent household income in the (weighted) sample. Over the past 15 years, using linearisation, formulae and software for computing standard errors of many commonly used poverty indicators have been developed, including those which rely on poverty thresholds estimated from the sample. Several authors have derived formulae for standard errors in the case that the poverty line is estimated as a share of average or median income (e.g. Preston, 1995). Some authors have combined this issue with additional considerations such as stochastic dominance

over a range of poverty lines (Davidson and Duclos, 2000), the (complex) sample design (Zheng, 2001), the complex sample design and the influence of raking (the use of weights to balance the sample) (Berger and Skinner, 2003) or the fact that household size should be considered a random variable as well (Thuysbaert, 2008). Recently, macros for the linearisation of all Laeken poverty indicators have been published for the statistical software package SAS (Osier, 2009). Importantly, linearisation relies on asymptotic assumptions, i.e. assumptions regarding a sufficiently large sample size. For population totals based on samples such as those in EU-SILC, with thousands of households included, there is no problem. However, one should be more careful when the method is applied to relatively small subsamples (cf. Osier, 2009: 170).

Many statistical software packages (e.g. SAS, SPSS, Stata) enable in a user-friendly way the computation of standard errors for proportions and means while taking account of the sample design and weighting. Usually, first the survey design variables must be indicated using a specific command (e.g. the *svyset* command in Stata or *CSPLAN* in SPSS). Thereafter specific commands must be used for estimating means and proportions while taking the survey settings into account (e.g. *svy: mean* in Stata, *CSDESCRIPTIVES* in SPSS or *PROC SURVEYFREQ* in SAS). However, ready-made procedures to compute standard errors of more complex poverty indicators and inequality measures are not included in a standard way. Estimation procedures which take account of the sample character of the poverty line, the complex sample design and weighting have been implemented in the freely available software package DAD (Duclos and Araar, 2006; Araar and Duclos, 2009)[17]. Among others, DAD accommodates inference for the FGT class of poverty measures in the case of a relative (estimated) poverty line, while taking the sample design into account. More recently, most of the modules of DAD have been implemented in the software package Stata under the name DASP (Araar and Duclos, 2007)[18].

Not all poverty indicators can be estimated using DASP (e.g. the relative median at-risk-of-poverty gap). In that case one could turn to SAS and make use of the macro's published by Osier (2009). Another possibility is to apply the bootstrap method (a resampling method), in which case no formulae for computing the standard error and confidence intervals have to be derived. Shao and Chen (1998) studied the reliability of the bootstrap approach for quantiles and the low income proportion (of which the EU at-risk-of-poverty rate is a specific application) and found that even with complex sample designs the bootstrap performed reasonably well. Davidson and Flachaire (2007), compared in a more recent paper asymptotic and bootstrap inference in a Monte Carlo-type experiment. They found that in the case of a complex sample design bootstrapping inequality measures leads to inference that is not accurate even for very large samples, whereas bootstrapping poverty indices leads to satisfactory results[19].

[17] http://132.203.59.36/DAD. [Now: http://dad.ecn.ulaval.ca/ (September 2012)]
[18] http://132.203.59.36/DASP/index.html. [Now: http://dasp.ecn.ulaval.ca/ (September 2012)]
[19] For non-smooth indicators such as many of the Laeken poverty indicators the jackknife is not recommended (e.g. Shao and Chen, 1998: 1071; del Mar Rueda and Muñoz, 2011). In the

3 The sample design of EU-SILC: what do we know and what is available?

The European Union Statistics on Income and Living Conditions (EU-SILC) is the EU reference source for micro data on income and living conditions. The dataset includes internationally and cross-temporary comparable variables for all EU Member States and some other countries. Many EU indicators designed to monitor poverty and social inclusion in the EU are based on EU-SILC (e.g. European Commission, 2006; Marlier et al., 2007).

The reference population of EU-SILC consists of private households residing in the participating countries at the moment of selection. Currently 31 countries are involved in the EU-SILC process, namely all EU Member States plus the four non-EU members Iceland, Norway, Switzerland and Turkey. Nevertheless, the 2008 cross-sectional user database (UDB) contains information on only 27 countries (excluding France, Malta, Switzerland and Turkey). For the analysis presented in this article, EU-SILC 2007 data of France and Belgium have been included as well: France because 2008 data is missing completely and Belgium because in contrast to the 2007 data, in the 2008 data the sample design variables are missing. Considerable differences between participating countries exist in terms of sample design, sample frame and data source (e.g. Eurostat, 2010a). In some countries, single stage designs are in use, whereas in other countries two- or three-stage designs are employed. In some countries (notably Hungary and France) two and three-stage designs are combined, depending on the region (stratum) and panel. Most countries apply stratification on at least one stage. Both sampling with equal probabilities and probabilities proportional to size are in use and in some cases systematic sampling is applied (for an overview by country, see the annex in Goedemé, 2010b). Additionally, it must be noted that EU-SILC has an important panel component, with a 4-year rotational panel design in the great majority of countries. Also with regard to the sample frame important differences exist, with potential problems of representativeness in the German and the Dutch case (Goedemé, 2010b: 9). Response rates vary substantially across countries ranging from 95 per cent in Romania to 55 per cent in Denmark (Eurostat, 2010a: 14). Last but not least in a number of countries many (income) variables in EU-SILC are based on (probably more reliable) register data rather than survey data. Recently, Lohmann (2011) has shown that this difference in data collection methods may substantially affect EU-SILC estimates. Although all these issues are very important for interpreting EU-SILC estimates, the remainder of this article will focus more narrowly on the consequences of the sample design and weighting for estimated standard errors. Verma et al. (2010) provide a more complete overview of both sampling and non-sampling error in EU-SILC.

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case of the at-risk-of-poverty indicator (FGT0 and FGT1) the resulting standard errors using the bootstrap are very close to those obtained on the basis of linearisation using the DASP module for Stata [See the annex to this chapter].

Table 2: Number of persons, households and PSUs in the EU-SILC UDB, the Eurostat EU-SILC dataset and the sample design as reported by the national statistical offices

country code	country	persons	households	PSUs in UDB	PSUs in Eurostat data	Reported number of PSUs
AT	Austria	13,631	5,711	5,711	5,711	5,711
BE07	Belgium	15,493	6,348	243	243	275
BE08	Belgium	15,108	6,300	6,300	6,300	275
BG	Bulgaria	12,191	4,344	506	1,415	1,415
CY	Cyprus	10,025	3,355	3,355	3,355	3,355
CZ	Czech Republic	26,933	11,294	2,362	2,364	2,362
DE	Germany	28,904	13,312	13,312	13,312	No information
DK	Denmark	14,836	5,778	5,778	5,778	5,778
EE	Estonia	13,032	4,744	4,744	4,744	4,744
ES	Spain	35,970	13,014	1,994	1,994	2,000
FI	Finland	26,481	10,472	10,472	10,472	10,472
FR07	France	25,907	10,498	9,017	9,017	349
GR	Greece	16,869	6,504	1,064	1,064	1,056
HU	Hungary	22,363	8,818	4,875	5,245	4,184
IE	Ireland	12,551	5,247	1,723	1,723	1,747
IS	Iceland	8,644	2,887	2,887	2,887	2,887
IT	Italy	52,433	20,928	749	749	912
LT	Lithuania	12,150	4,823	4,823	4,823	4,823
LU	Luxembourg	10,147	3,779	3,779	3,779	3,779
LV	Latvia	13,120	5,166	912	912	930
NL	Netherlands	25,448	10,337	462	462	463
NO	Norway	14,216	5,553	5,553	5,553	5,553
PL	Poland	41,200	13,984	468	5,093	5,912
PT	Portugal	11,786	4,454	541	541	542
RO	Romania	19,131	7,805	779	779	780
SE	Sweden	18,825	7,452	7,452	7,452	7,452
SI	Slovenia	28,958	9,028	774	1,672	2,799
SK	Slovakia	16,546	5,450	5,450	5,450	5,450
UK	United Kingdom	21,043	8,936	1,014	1,014	1,065

Notes: The number of PSUs has been counted after the application of stratification by the region variable (DB040, UDB), respectively the proper stratification variable (DB050, Eurostat data) in countries where the PSU variable (DB060) is not unique across strata; however in some countries PSUs have been regrouped to avoid splitting of PSUs due to households moving from one region to another (see Goedemé, 2010b).

Source: EU-SILC 2008 (BE, FR: 2007) UDB, the specific dataset prepared by Eurostat, National Intermediate EU-SILC 2008 Quality Reports and personal communication with Eurostat and national statistical offices.

From Table 2, it can be seen that the sample size varies between close to 9,000 persons (3,000 households) in the case of Iceland and more than 50,000 persons (21,000 households) in the case of Italy. In countries where the sample design consists of several stages, the number of PSUs is substantially lower, ranging from 275 in Belgium to nearly 6,000 in Poland. The number of explicit strata at the first stage varies from 1 (no stratification) to over 500 strata in Hungary (see Table 3). Additionally, in many countries with systematic sampling, implicit stratification has been applied (meaning that data have been ordered according to several criteria). This is for instance the case for the UK and Norway.

The results presented in this article are based on two different versions of EU-SILC: the EU-SILC UDB as available to the research community (henceforth: 'UDB'), and a more complete dataset prepared by Eurostat (henceforth: 'Eurostat data'). As mentioned earlier, the data in the UDB referring to the sample design are incomplete: for almost one third of countries PSUs cannot be accurately identified and for all countries the original stratification variable is missing for confidentiality reasons. As a proxy to the stratification variable, one could use a variable which contains the region of residence at the moment of the interview (in contrast to the stratum at the moment of selection). However, in that case the number of strata is seriously under-estimated. In contrast to the EU-SILC UDB, the Eurostat data contain the proper stratification and PSU variables. Nevertheless, even in the case of the Eurostat data some discrepancies exist between the data and the reported number of primary strata and PSUs (see Table 2 and Table 3). In addition, in the Eurostat data several strata contained only one PSU. By lack of information on the nature of these PSUs (self-representing or not[20]), with the exception of the UK data, all strata which contain one PSU have been re-grouped on the basis of (geographical) proximity and average equivalent net disposable household income [21] (cf. Eurostat, 2002: 51-52). As far as the UK EU-SILC is concerned, the single PSU is a self-representing PSU (i.e. Northern Ireland) in which a simple random sample of households has been drawn.

[20] If a PSU is self-representing, it is included with a probability equal to 1, which means that the PSU is rather a stratum than a PSU. For variance calculations this makes a difference with the case in which a stratum in the dataset contains only one PSU which has been selected (or contains respondents) among a larger amount of PSUs which populate the stratum in reality, but were not selected in the sample.

[21] For an in-depth discussion on the quality of the sample design variables in the 'EU-SILC Eurostat' dataset, see Goedemé (2010a). For a more precise description of the problems associated with the sample design variables in the UDB and the use of the region variable as a stratification variable, see Goedemé (2010b).

Table 3: Number of strata in the EU-SILC UDB, the Eurostat EU-SILC dataset and the sample design as reported by the national statistical offices

country	UDB	Eurostat data	Reported sample design
AT	3	247	247
BE07	3	11	11
BE08	3	11	11
BG	2	56	56
CY	1	9	9
CZ	8	53	53
DE	1	1	?
DK	1	1	1
EE	1	3	3
ES	18	93	93
FI	1	26	26
FR07	22	22	86
GR	4	90	90
HU	3	526	529
IE	1	138	138
IS	1	1	1
IT	5	288	288
LT	1	7	7
LU	1	160	160
LV	1	4	4
NL	1	40	40
NO	1	1	1
PL	6	211	211
PT	1	7	7
RO	8	88	88
SE	1	1	1
SI	1	6	6
SK	1	48	48
UK	1	31	31

UDB: number of strata as identified by the region variable (DB040)

Source: EU-SILC 2008 (BE, FR: 2007) UDB, the specific dataset prepared by Eurostat, National Intermediate EU-SILC 2008 Quality Reports and personal communication with Eurostat as well as national statistical offices.

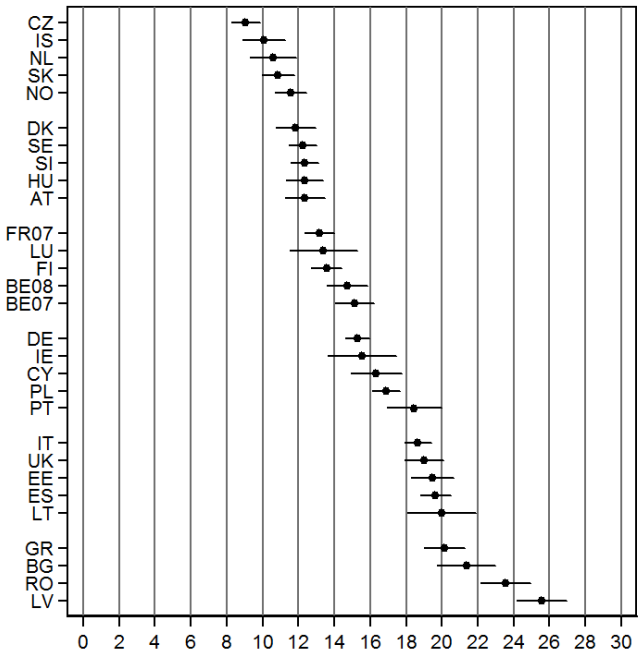
4 The Europe 2020 poverty reduction indicators

Sample design effects depend on the variable(s) one is interested in as well as on the computed statistic. As it is impossible to test the effect of various assumptions with regard to the sample design on the estimated standard error of every variable and statistic in EU-SILC, three indicators have been chosen which are related to the main fields of interest covered by EU-SILC: income, deprivation and labour market participation. More in particular the analysis is focused on the indicators which define the poverty reduction target as established by the European Council in June 2010 (European Council, 2010): the at-risk-of-poverty rate, an indicator of severe material deprivation and an indicator of the work intensity of the household. The target is defined as the absolute number of the population which is poor or socially excluded according to at least one of these three indicators. Nevertheless, in this article the three indicators are analysed separately.

Being at-risk-of-poverty means living in a household with an equivalised net disposable household income below 60 per cent of the national median. Household income is equivalised using the modified OECD equivalence scale which attaches a weight of 1 to the first adult, a weight of 0.5 to all other household members aged 14 and over and a weight of 0.3 to household members aged less than 14. The equivalised household income is obtained by dividing total household income by the sum of the individual equivalence weights. All household members 'receive' the same equivalised household income. In other words, it is assumed that the living standard of all household members is the same (e.g. Atkinson et al., 2002; Marlier et al., 2007). In line with Eurostat practice, no top-bottom coding of income has been applied[22]. It must be stressed that in all countries, except Ireland and the United Kingdom, the income reference period is equal to the calendar year preceding the survey year. Severe material deprivation is measured by an index of nine items relating to financial stress and the enforced lack of some durables. All persons living in a household which at the moment of the interview lacks at least 4 out of 9 items are considered severely materially deprived. The list of items as well as the threshold is the same across all EU Member States (cf. Wolff, 2010; Guio, 2009; and for a theoretical discussion Goedemé and Rottiers, 2011). The third indicator relates to the work intensity of the household. It is calculated by adding up the total number of months all household members at working age have worked during the income reference period, expressed in full-time equivalents. This is divided by the total number of months they could have worked. If the ratio is below 0.20, the household is considered to have a very low work intensity.

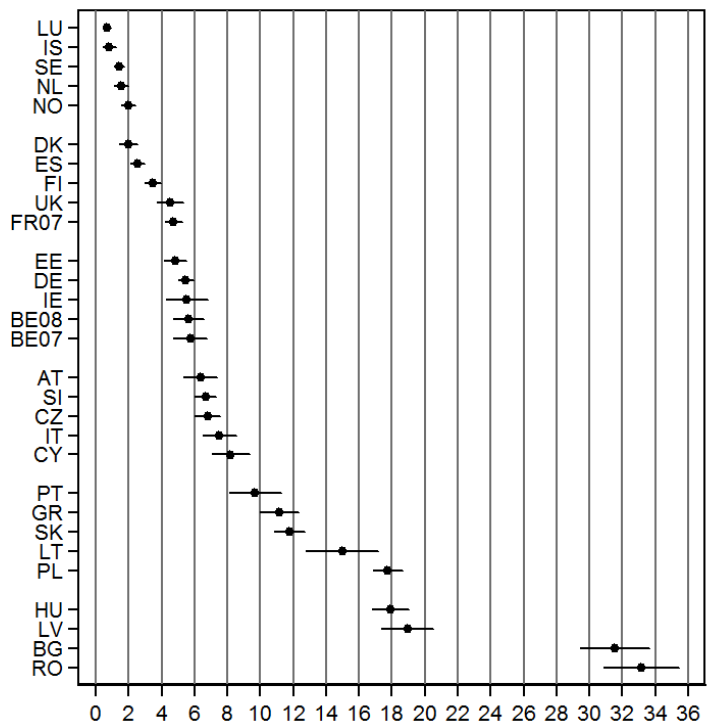
[22] In most countries many types of top-bottom coding would not make a big difference: neither for the estimated number of poor (cf. Van Kerm, 2007), nor for the estimated standard errors (figures available from the author).

Figure 3: At-risk-of-poverty rate with 95% confidence interval



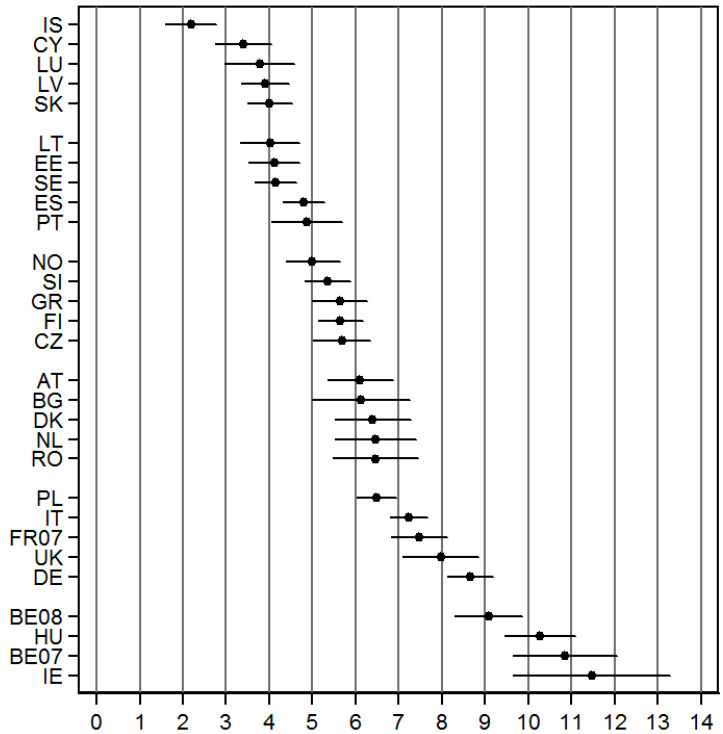
Source: 'Eurostat EU-SILC' 2008 (BE, FR: 2007), own calculations.

Figure 4: Severe material deprivation rate with 95% confidence interval



Source: 'Eurostat EU-SILC' 2008 (BE, FR: 2007), own calculations.

Figure 5: Share of population living in household with very low work intensity with 95% confidence interval



Source: 'Eurostat EU-SILC' 2008 (BE, FR: 2007), own calculations.

Figures 3 to 5 depict the point estimates for all three indicators together with 95% confidence intervals. The confidence intervals are estimated on the basis of the best available sample design information in the dataset prepared by Eurostat while using the DASP module for Stata (which means for nearly all countries full information on primary strata and almost complete information on primary sampling units, see column 'Eurostat data' in Table 2 and Table 3 and the description of scenario 4 in section 5). These are the estimates which function as the benchmark for all other estimated standard errors presented in the next section. The at-risk-of-poverty rate ranges from 9 per cent in the Czech Republic to 26 per cent in Latvia. Compared to the at-risk-of-poverty indicator, the differences between European countries are much larger in the case of the indicator of severe material deprivation. In Luxembourg and Iceland less than 1 per cent of the population is estimated to be severely materially deprived compared to 33 per cent in Romania. The variation in estimates for the population living in a household with a very low work intensity is somewhat in between, ranging from less than 4 per cent in Iceland, Luxemburg, Cyprus and Latvia to over 10 per cent in Hungary, Belgium (2007) and Ireland. Overall, the country rankings differ much between the indicators. Rankings are most equal in the case of the at-risk-of-poverty and the severe material deprivation rate (Spearman's rank

correlation coefficient of about 0.5). Also at the micro level income, deprivation and work intensity are only weakly correlated (absolute values of correlation coefficients vary between 0.10 and 0.52)[23].The precision of the estimates strongly depends on the indicator and the country under consideration. The width of the 95% confidence intervals ranges between 1.4 and 3.8 percentage points in the case of the at-risk-of-poverty rate, between 0.5 and 4.6 percentage points in the case of the deprivation rate and between 0.9 and 3.6 percentage points in the case of the low work intensity indicator.

5 The effect of making simplifying assumptions

In section two it has been argued that taking account of the sample design is of crucial importance for estimating standard errors accurately. However, as has been shown in section three, in many cases adequate information with regard to the sample design is lacking in the EU-SILC UDB. In this section I illustrate the importance of various assumptions with regard to the sample design. Additionally, the standard errors based on the EU-SILC UDB will be compared to those obtained using more complete information available in the 'Eurostat EU-SILC data'.

Standard errors have been estimated along four different scenarios. In scenario 1 (labelled 'persons'), it is assumed that EU-SILC consists of a simple random sample of individuals. In scenario 2 (labelled 'households') it is assumed that EU-SILC consists of a simple random sample of households. In scenario 3 (labelled 'UDB') the sample design variables of the EU-SILC UDB are taken into account, which means that whenever applicable – and as far as it is possible with the EU-SILC UDB – account is taken of stratification and clustering at a higher level than the household level. As discussed in section three, this information is very incomplete (see column 'UDB' in Table 2 and Table 3). Finally, in scenario 4 (labelled 'Eurostat data') the more complete sample design information available in the Eurostat EU-SILC data has been used to take as much as possible account of clustering and stratification.

In all four scenarios it is assumed that PSUs are sampled with replacement. Imputation, as well as systematic sampling are ignored, but account is taken of weighting and the characteristics of each indicator. Even though weighting is taken into account, the separate effect of poststratification has not been accounted for. The neglect of systematic sampling and poststratification probably leads to a (slight) over-estimation of the standard errors, whereas the neglect of imputation could result in a more serious under-estimation of standard errors. Neither systematic sampling, nor imputation can be easily handled by lack of sufficient information in the dataset as well as the lack of user-friendly software. For every scenario standard errors have been estimated for all three Europe 2020 poverty indicators. In the case of the at-risk-

[23] Estimates by country can be found in Goedemé (2010b). The weak correlation between deprivation and income poverty has been extensively documented in the literature, e.g. Dewilde (2004, 2008) and Whelan and Maître (2007).

of-poverty rate, the fact that the poverty line is estimated from the data has been taken into account. The estimation procedure is based on linearisation, using the DASP module and the generic commands for the robust estimation of proportions in Stata (Araar and Duclos, 2007).

Apart from gaining some insight into the overall precision of EU-SILC estimates, the aim of the analysis is threefold. Although all three indicators are analysed at the individual level, they are measured at the household level. Therefore, at least clustering at the household level should be taken into account when computing standard errors: household members do not form independent units of observation, but are clustered within households (cf. Biewen and Jenkins, 2006; Verma et al., 2010: 49). In order to show the importance of this issue, standard errors assuming a sample of households (scenario 2) will be compared to assuming a simple random sample of individuals (scenario 1). Second, EU-SILC is not the only dataset which can be used for the measurement of income and living conditions and which lacks accurate sample design variables. Therefore, it is interesting to see whether the finding of Biewen and Jenkins (2006) for UK and German data can be replicated with EU-SILC data or whether, as emphasised by Howes and Lanjouw (1998), good estimates of the standard error are can only be achieved if the entire sample design is taken into account (scenario 2 and 4; cf. section 2.1). Third, by comparing scenarios 2, 3 and 4 it will be possible to evaluate whether making as much as possible use of the incomplete sample design information in the UDB leads to better estimates of standard errors than simply accounting for clustering within households.

When household variables are analysed at the individual level, researchers should take account of clustering at the household level. Results presented in Table 4, Table 5 and Table 6 indeed show that if clustering at the household level is ignored, in the case of all three indicators standard errors are seriously underestimated. On average, the standard error which takes account of clustering at the household level is about 70 per cent larger than the standard error which assumes a simple random sample of individuals. Usually, the effect is strongest in the case of the at-risk-of-poverty indicator and weakest in the case of the work intensity indicator. Clustering at the household level has the strongest effect in Romania (standard errors double) and the weakest effect in Denmark (standard errors are around 30 per cent larger).

Table 4: A comparison of estimated standard errors of the at-risk-of-poverty rate, EU-SILC 2008 (BE, FR: 2007)

		Standard error by scenario			
	point estimate	persons	households	UDB	Eurostat data
scenario		(1)	(2)	(3)	(4)
AT	12.36	0.33	0.57	0.57	0.57
BE07	15.13	0.30	0.53	0.56	0.55
BE08	14.72	0.32	0.58	0.57	n/a
BG	21.36	0.40	0.78	0.93	0.83
CY	16.34	0.40	0.73	0.73	0.73
CZ	9.06	0.22	0.39	0.42	0.41
DE	15.29	0.22	0.35	0.35	n/a
DK	11.84	0.42	0.57	0.57	n/a
EE	19.46	0.40	0.61	0.61	0.61
ES	19.65	0.24	0.43	0.44	0.44
FI	13.56	0.30	0.45	0.45	0.44
FR07	13.15	0.25	0.43	0.42	n/a
GR	20.14	0.32	0.59	0.59	0.59
HU	12.34	0.25	0.47	0.49	0.49
IE	15.53	0.48	0.96	0.98	0.98
IS	10.09	0.38	0.60	0.60	n/a
IT	18.67	0.20	0.36	0.39	0.39
LT	19.99	0.52	0.97	0.97	0.97
LU	13.40	0.53	0.95	0.95	0.95
LV	25.57	0.37	0.71	0.72	0.72
NL	10.59	0.35	0.54	0.66	0.66
NO	11.55	0.32	0.45	0.45	n/a
PL	16.88	0.20	0.39	0.40	0.40
PT	18.45	0.40	0.75	0.78	0.78
RO	23.57	0.32	0.69	0.74	0.72
SE	12.25	0.27	0.41	0.41	n/a
SI	12.33	0.23	0.38	0.37	0.40
SK	10.87	0.24	0.47	0.47	0.46
UK	19.00	0.29	0.54	0.55	0.56

n/a: 'Eurostat EU-SILC' dataset does not offer additional information. Standard errors based on linearisation using the DASP module for Stata. The fact that the poverty line is estimated from the data has been taken into account.

Source: EU-SILC 2008 (BE, FR: 2007); own calculations.

From Tables 4 to 6 it is also apparent that in many cases standard errors estimated while accounting for clustering within households (scenario 2) correspond relatively closely to standard errors taking as much as possible account of the sample design (scenario 4). For all three indicators, the estimated standard error in scenario 2 is on average less than 10 per cent below the standard error estimated in scenario 4. Even for many countries where at the first stage a sample has been drawn of large primary sampling units such as (groups of) municipalities or census areas, the estimated standard errors are relatively close to each other in both scenarios, repeating the finding of Biewen and Jenkins (2006). Nevertheless, this finding cannot be

generalised: in several cases relatively large discrepancies can be found (e.g. the Netherlands with regard to the at-risk-of-poverty indicator; Italy, Portugal, Belgium 2007 and Romania in the case of the deprivation indicator; and the Netherlands and Belgium 2007 for the work intensity indicator). In other words: as stressed by Howes and Lanjouw (1998), whenever good sample design variables are available, they should be used for estimating standard errors and confidence intervals.

Table 5: A comparison of estimated standard errors of the severe material deprivation rate, EU-SILC 2008 (BE, FR: 2007)

		Standard error by scenario			
	point estimate	persons	households	UDB	Eurostat data
scenario		(1)	(2)	(3)	(4)
AT	6.36	0.27	0.52	0.52	0.52
BE07	5.74	0.21	0.34	0.52	0.52
BE08	5.64	0.23	0.48	0.47	n/a
BG	31.53	0.49	0.94	1.08	1.08
CY	8.20	0.32	0.58	0.58	0.58
CZ	6.81	0.19	0.34	0.39	0.39
DE	5.46	0.16	0.24	0.24	n/a
DK	1.97	0.21	0.28	0.28	n/a
EE	4.85	0.23	0.35	0.35	0.35
ES	2.55	0.11	0.20	0.23	0.22
FI	3.47	0.18	0.25	0.25	0.25
FR07	4.71	0.17	0.27	0.27	n/a
GR	11.17	0.30	0.54	0.61	0.60
HU	17.89	0.29	0.56	0.62	0.57
IE	5.53	0.32	0.59	0.65	0.64
IS	0.82	0.13	0.20	0.20	n/a
IT	7.53	0.16	0.30	0.55	0.52
LT	14.97	0.59	1.11	1.11	1.11
LU	0.68	0.08	0.13	0.13	0.13
LV	18.95	0.38	0.69	0.81	0.80
NL	1.55	0.14	0.23	0.23	0.23
NO	1.96	0.15	0.22	0.22	n/a
PL	17.75	0.22	0.42	0.44	0.46
PT	9.69	0.32	0.62	0.81	0.81
RO	33.16	0.42	0.90	1.22	1.17
SE	1.44	0.10	0.16	0.16	n/a
SI	6.67	0.19	0.32	0.33	0.33
SK	11.76	0.26	0.48	0.48	0.48
UK	4.50	0.19	0.39	0.41	0.41

n/a: Eurostat database does not offer additional information. Standard errors based on linearisation using Stata.

Source: EU-SILC 2008 (BE, FR: 2007); own calculations.

Does this also apply to incomplete and sometimes inaccurate sample design variables? The answer can be found when comparing scenarios 2 (households) 3 (UDB) and 4 (Eurostat data). In the case of four countries, the UDB contains full

information on the sample design, as the sample design consists of a simple random sample of households (Denmark Iceland, Norway and Sweden), so standard errors can be computed accurately directly from the UDB. Also in the case of Belgium (2008), France (2007) and Germany no information can be added using 'Eurostat data', as both the UDB and the 'Eurostat data' do not contain the necessary information on the sample design.

In most countries, the difference between third and fourth scenario consists of applying a more detailed stratification. In seven countries stratification is applied to a sample of households and in eleven countries stratification is applied in a multi-stage design with larger primary sampling units (see Table 2 and Table 3). The impact of adding stratification is relatively limited. As a result, for all three indicators, independent of the level of clustering, the difference between the UDB estimates (scenario three) and estimates based on the Eurostat data (scenario four) is trivial (less than 2 per cent difference). The difference is somewhat larger in Belgium (2007) and Finland (job intensity) as well as Romania (deprivation), but still below 10 per cent. In almost all countries, for all three indicators, the standard errors in scenario three are closer to those obtained in scenario 4 ('Eurostat data') than the standard errors in scenario two (households). This is especially the case for samples with relatively large primary sampling units (e.g. Belgium 2007, the Netherlands, and Romania). Within countries, the exceptions usually relate to only one indicator.

In four countries (Bulgaria, Hungary, Poland and Slovenia) both the number of strata and the number of PSUs increase when going from scenario three (UDB) to scenario four (Eurostat data). For all four countries, the difference between both scenarios tends to be larger. In Bulgaria and Hungary standard errors in scenario three overestimate the standard error compared to those obtained using the 'Eurostat data'. Nevertheless, scenario three outperforms scenario two for the Bulgarian data[24]. In the case of Poland and Slovenia standard errors using the UDB tend to underestimate the standard errors in comparison with the standard errors based on the Eurostat data. Similarly, simulations on confidential France 2008 data indicate that standard errors for France 2007 data are substantially underestimated, especially in the case of the at-risk-of-poverty rate and the deprivation rate. Nevertheless, in all three countries scenario three (UDB) outperforms scenario two (households), except for the at-risk-of-poverty indicator in Slovenia (where the difference between both scenarios is small).

[24] Please note that in the case of Hungary also the 'Eurostat data' do not contain fully accurate sample design variables.

Table 6: A comparison of estimated standard errors of the share of people living in household with very low work intensity EU-SILC 2008 (BE, FR: 2007)

		Standard error by scenario			
scenario	point estimate	persons (1)	households (2)	UDB (3)	Eurostat data (4)
AT	6.10	0.26	0.39	0.39	0.39
BE07	10.85	0.28	0.49	0.64	0.62
BE08	9.08	0.26	0.40	0.40	n/a
BG	6.12	0.25	0.49	0.61	0.58
CY	3.41	0.21	0.34	0.34	0.33
CZ	5.68	0.19	0.32	0.34	0.34
DE	8.66	0.19	0.27	0.27	n/a
DK	6.39	0.37	0.44	0.44	n/a
EE	4.11	0.22	0.31	0.31	0.31
ES	4.80	0.14	0.23	0.24	0.24
FI	5.64	0.21	0.28	0.28	0.26
FR07	7.48	0.21	0.33	0.33	n/a
GR	5.63	0.22	0.31	0.32	0.32
HU	10.26	0.23	0.41	0.46	0.42
IE	11.47	0.44	0.86	0.93	0.93
IS	2.19	0.21	0.30	0.30	n/a
IT	7.23	0.14	0.22	0.26	0.23
LT	4.02	0.23	0.35	0.35	0.35
LU	3.78	0.29	0.42	0.42	0.41
LV	3.90	0.18	0.27	0.28	0.28
NL	6.45	0.27	0.36	0.48	0.47
NO	5.00	0.23	0.32	0.32	n/a
PL	6.48	0.14	0.23	0.23	0.23
PT	4.87	0.23	0.39	0.41	0.41
RO	6.46	0.21	0.41	0.51	0.50
SE	4.14	0.17	0.24	0.24	n/a
SI	5.35	0.18	0.26	0.26	0.26
SK	4.01	0.16	0.27	0.27	0.27
UK	7.97	0.23	0.44	0.46	0.45

n/a: Eurostat database does not offer additional information. Standard errors based on linearisation using Stata.

Source: EU-SILC 2008 (BE, FR: 2007); own calculations.

6 Discussion and conclusion

If estimates are based on samples, they should be accompanied by appropriate standard errors and confidence intervals. This is true for scientific research in general, and is even more important if these estimates are used to inform and evaluate policy measures such as those aimed at attaining the Europe 2020 poverty reduction target. In order to compute accurate standard errors, the sample design, weighting, imputation and the complexity of the indicator should be taken into account. This requires proper sample design variables in the dataset, good documentation, and adequate software which takes these issues into account. In this article I have

complemented the existing documentation on the sample design of EU-SILC and I have argued that user-friendly software exists for taking account of the sample design and weighting for estimating standard errors and confidence intervals. In addition, the effect of various assumptions with regard to the sample design on estimated standard errors has been evaluated for the three Europe 2020 indicators of poverty and social exclusion.

The main findings of the analysis can be summarised as follows. First of all, it should be stressed that in all circumstances one should take account of clustering within households when variables that are measured at the household level are analysed at the individual level, which is the case for most poverty indicators, and all EU2020 indicators. Otherwise, standard errors are severely underestimated, regardless of the sample design. Second, in line with Biewen and Jenkins (2006), the analysis shows that when standard errors take account of clustering at the household level, they are in many cases a good proxy for the standard errors which take account of the full sample design. This gives some hope for EU-SILC countries which completely lack sample design information (e.g. Germany, Belgium 2008) and also for the analysis of other surveys where sample design variables are missing (e.g. those included in the Luxembourg Income Study Database). Nevertheless, at the same time it is shown that in some cases standard errors are still largely under-estimated, which means that whenever good sample design variables are available, they should be used (cf. Howes and Lanjouw, 1998). Third, the latter recommendation even holds when sample design variables are incomplete or not fully accurate. More precisely, the results presented in this article indicate that in the case of many EU-SILC countries, reconstructing the sample design variables from the available information in the UDB often leads to more accurate standard errors, even though the difference with assuming a simple random sample of households is not always very large. A detailed description of how to reconstruct the sample design variables is provided in Goedemé (2010b). A do-file with the necessary code for reconstructing the sample design variables with Stata can be downloaded from the internet[25]. I would like to stress that with standard software packages currently available, it is not more difficult to take account of the entire sample design than to simply take account of clustering at the household level, provided good sample design variables are available.

To what extent are these recommendations also applicable to other analyses (other variables, other types of analysis (e.g. regressions), or other data sources.)? The results presented in this paper show that the effect of clustering (and stratification) depends on the variable of interest, the sample design and the country of interest. However, although all three indicators analysed here are not strongly correlated, in most cases results consistently indicate that making as much as possible use of the available sample design information leads to the most accurate standard errors. Therefore, one can have some confidence in the results presented here. Nonetheless, it offers no guarantee. In fact, in principle the accuracy of estimates of standard errors should be evaluated for every analysis separately. In addition, the Eurostat data which

[25] http://doiop.com/SvysetEU-SILC2008

act as a benchmark do not provide good sample design variables for Hungary and further research is needed with regard to self-representing PSUs, especially in the case of the Italian and French datasets. Finally, the analyses do not take account of systematic sampling, post-stratification and imputation. Especially the latter could strongly affect estimated standard errors.

More generally, some conclusions can be drawn for researchers, data providers and policy makers. First, it should be stressed that random error is an issue of concern, even for point estimates for the total population. Depending on the indicator, between 1 in 10 (indicator of severe material deprivation) and 1 in 4 (indicator of very low work intensity) of the country-by-country comparisons is not statistically significant at the 95% confidence level, despite the relatively large sample size of EU-SILC in many participating countries. Of course, especially with regard to subgroup analyses, researchers will sometimes be disappointed about the lack of precision of their EU-SILC estimates. Not much can be done about this. However, from a scientific point of view it is more honest to recognise that on the basis of the data a hypothesis cannot be tested than to treat uncertain findings as if they were exact figures. Additionally, the estimates presented in this article show that the standard error heavily depends on the variable and country of interest. As a result, I would not recommend to adhere to general guidelines about the precision of a dataset and always compute statistical tests and report the precision of every estimate of interest (taking the findings summarised previously into account). In addition, even though confidence intervals give only some idea of the random error associated with estimates, they may also act as a general warning for the exact use of estimates based on samples and make readers more cautious about both random and non-random error.

Second, given the importance of good sample design variables, data providers should ground the decision with regard to the provision of these variables on a balanced scientific discussion about the confidentiality risks entailed by the disclosure of this information. If the necessary variables cannot be included in the UDB, other approaches should be considered. For instance, replicate weights could be provided alongside the EU-SILC UDB. If constructed appropriately, replicate weights enable researchers to bootstrap their estimates taking account of the sample design and weighting schemes (cf. Kolenikov, 2010: 99-100; Heeringa et al., 2010)[26].

Third, obviously random error means an important challenge to the definition and evaluation of poverty reduction targets. On the basis of EU-SILC data, the European Council agreed to reduce the number of Europeans affected by poverty or social exclusion with 20 million. In the case of the total EU estimate, EU-SILC will provide relatively precise figures for evaluating progress towards reaching this target. However, the target has to be translated into national policies with member states

[26] It should be noted that Eurostat is currently working on these issues and several projects are running to improve the sample design variables as well as to evaluate the feasibility of various approaches which should allow researchers to properly estimate standard errors for all EU-SILC countries.

formulating their own targets and sub targets (Frazer et al., 2010). This is much more problematic. For instance, in the case of Belgium between 2,036,005 and 2,334,322 persons can be estimated to live in poverty or social exclusion with 95% confidence (EU-SILC UDB 2008, own calculations). In the context of the Europe 2020 Strategy, the Belgian federal and regional governments aim to reduce this number with 380,000 persons by 2020 (National Reform Programme of Belgium 2011). However, if the variance remains the same, the EU-SILC estimate should change in the coming years by at least 210,000 persons in order to be able to say with 95% confidence that the difference between the two point estimates is not equal to *zero*[27]. In other words, if EU-SILC is to function as an accurate policy-monitoring tool for reaching such precise targets, its *effective* sample size should be increased dramatically. Given the financial constraints many of Europe's national statistical institutions currently have to face, this is rather unlikely to materialise in the near future. A more realistic solution, which is technically more demanding, could lie in the use of simulation methods as well as administrative data to estimate changes in relation to the Europe 2020 poverty reduction targets.

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[27] Figure applies to a two-tailed test. For a one-tailed test at least a difference of around 177,000 persons is needed. The estimation does not take account of the fact that the proportion is partially based on a random poverty line. Please note that for inter-temporal comparisons spanning a period of less than 5 years, one should take account of the covariance between the two years under evaluation as a result of the panel character of EU-SILC. The present estimate ignores this potential covariance. In addition, in many countries PSUs have been selected for the entire duration of EU-SILC, so also for differences between point estimates separated by more than 4 years, one should take account of the entire variance-covariance structure.

8 Annex: Linearisation vs. the bootstrap (not included in original text)[28]

Various approaches exist for estimating standard errors and confidence intervals. The figures presented in this Chapter 2 are estimated on the basis of an analytical approach. A completely different approach is based on re-sampling from the original sample a high number of samples in order to empirically derive a sampling distribution. Subsequently, on the basis of this 'empirical sampling distribution' standard errors and confidence intervals are computed. The bootstrap is one such approach. An introduction to the bootstrap can be found in Mooney and Duval (1993) and Efron and Tibshirani (1998). Among others, Rao and Wu (1988), Rust and Rao (1996), Shao (1996) and Kolenikov (2010) discuss the bootstrap in the case of complex sample designs.

In a footnote in this chapter, I argue that in the case of the at-risk-of-poverty indicator (FGT0 and FGT1) the resulting standard errors using the bootstrap are close to those obtained on the basis of linearisation. The figures presented in Table 7 take account of the sample design variables as they are available in the EU-SILC 2008 (2007) UDB. For both approaches, the effect of imputation and post-stratification is ignored. In the case of the bootstrap several additional simplifications have been applied, which may introduce some bias in the estimates: weights have not been re-computed for every bootstrap replication (for each replication the weights from the original sample are used) and in every replication as many PSUs have been sampled as in the original sample (for complex sample designs one less than in the original sample should be sampled and weights should be re-scaled for a more precise bootstrap, especially if the number of PSUs per stratum is small (which is not the case in the EU-SILC UDB)). I have applied a bootstrap with 1000 replications, confidence intervals are estimated using the bias-corrected percentile method.

As can be observed from Table 7, overall, the width of confidence intervals does not differ much between linearisation and the bootstrap. As far as FGT0 is concerned, in 22 out of 29 countries the difference is 5 per cent or less of the confidence interval estimated on the basis of linearisation. The maximum difference is found for Finland (13 per cent or 0.2 percentage points). In absolute terms, in 21 countries the difference is less than 0.1 percentage points. The largest difference can be found in Ireland and Portugal (0.4 percentage points, i.e. 0.2 percentage points at each side of the confidence interval). In 16 cases the bootstrap results in a larger confidence interval than the procedure based on linearisation, so there is no clear-cut trend with larger confidence intervals in the case of one approach instead of another. Rather similar results are found in the case of FGT1. In 24 countries the difference is less than

[28] The estimates presented in this subsection date from before my stay at Eurostat. During and after my stay at Eurostat, I have further improved the sample design variables in the UDB, which may have resulted in (slightly) different estimates. Unfortunately, my stay at Eurostat was too short to test all findings with the bootstrap approach using the sample design variables available to Eurostat.

5 per cent of the confidence interval based on linearisation. The difference is largest in Romania, Slovakia and Greece with a relative difference between 10 and 12 per cent. In all countries, except for Greece and Romania, the absolute difference is less than 0.1 percentage points[29]. In 14 countries the bootstrap results in larger confidence interval than linearisation. All in all, the differences are very small (especially in terms of the point estimates) and should only occasionally change conclusions.

For evaluating the importance of using the correct sample design variables, using the linearisation approach, I compare in Chapter 2 the standard error under the assumption of a simple random sample of persons, respectively households and the re-constructed sample design variables in the EU-SILC 2008 UDB[30]. The ratios of the standard errors under the three different scenarios largely converge with those obtained using the bootstrap (see Table 8). Again, the most important conclusion is that taking account of clustering within households has the strongest effect. However, in some cases, taking account of clustering within the 'correct' primary sampling units, leads to a substantial further increase in estimated standard errors and confidence intervals[31]. Please note that this effect is for some countries much stronger if it is assumed that the poverty line is fixed (i.e. not estimated on the basis of the data).

[29] Please note that given the lower point estimates in the case of FGT1, an absolute difference of 0.1 percentage points is to some extent 'more important' in the case of FGT1 than in the case of FGT0.

[30] Please note that I do not compute design effects. These need to be estimated under different assumptions. Here I simply simulate three different scenarios which EU-SILC users are likely to apply (in each case the original weights are used).

[31] On the basis of data for the United Kingdom, Berger and Skinner (2003: 465) have found that for FGT0, the effect of taking account of the sample design and weighting scheme do not depend on the level of the poverty line (i.e. the quantile and the percentage chosen for setting the poverty line).

Table 7: The width of 95 per cent confidence intervals of a low income proportion with the poverty threshold equal to 60 per cent of the national median equivalent net disposable household income (FGT0 and FGT1); Linearisation (L) and the bootstrap (B) compared

	FGT0				FGT1				
	estimate	L	B	absolute difference		estimate	L	B	absolute difference
AT	12.35	2.24	2.18	0.06	AT	2.59	0.70	0.74	0.03
BE07	15.01	2.23	2.11	0.12	BE07	3.37	0.74	0.75	0.00
BE08	14.57	2.25	2.31	0.05	BE08	3.20	0.65	0.64	0.01
BG	21.36	3.66	3.82	0.16	BG	6.59	1.59	1.56	0.03
CY	16.37	2.87	2.83	0.04	CY	3.29	0.79	0.76	0.03
CZ	9.05	1.63	1.69	0.06	CZ	2.07	0.56	0.58	0.01
DE	15.02	1.37	1.32	0.05	DE	4.01	0.48	0.48	0.00
DK	11.48	2.21	2.17	0.04	DK	2.75	0.83	0.84	0.01
EE	19.39	2.41	2.41	0.00	EE	5.05	0.89	0.93	0.04
ES	19.30	1.75	1.81	0.05	ES	5.54	0.69	0.67	0.02
FI	13.55	1.75	1.97	0.22	FI	2.74	0.46	0.47	0.02
FR07	13.05	1.72	1.82	0.10	FR07	2.82	0.53	0.52	0.01
GR	19.65	2.31	2.48	0.16	GR	5.36	0.92	1.03	0.11
HU	12.32	1.99	1.96	0.03	HU	2.64	0.56	0.56	0.00
IE	15.50	3.85	4.28	0.43	IE	3.37	1.13	1.13	0.01
IS	10.00	2.36	2.37	0.01	IS	2.19	0.71	0.71	0.00
IT	18.35	1.54	1.49	0.04	IT	5.20	0.62	0.60	0.02
LT	19.70	3.83	3.51	0.32	LT	5.73	1.47	1.53	0.06
LU	13.30	3.75	3.51	0.23	LU	2.77	0.95	1.02	0.06
LV	25.44	2.84	2.84	0.00	LV	7.92	1.29	1.27	0.02
NL	10.28	2.61	2.54	0.07	NL	2.32	0.82	0.84	0.02
NO	11.10	1.75	1.74	0.02	NO	3.08	0.65	0.66	0.01
PL	16.77	1.58	1.60	0.02	PL	4.41	0.59	0.62	0.03
PT	18.45	3.06	3.44	0.38	PT	4.98	1.16	1.23	0.07
RO	23.47	2.90	2.87	0.03	RO	8.29	1.73	1.55	0.18
SE	11.96	1.59	1.58	0.01	SE	2.97	0.54	0.52	0.02
SI	11.61	1.46	1.47	0.01	SI	2.64	0.44	0.43	0.01
SK	10.80	1.82	1.89	0.07	SK	2.73	0.69	0.76	0.07
UK	18.82	2.17	2.22	0.05	UK	4.92	0.82	0.81	0.01

Notes: estimate = point estimate, L= width of confidence interval using linearization, B = width of confidence interval using the bootstrap. Uncorrected sample design variables as available in the EU-SILC UDB. Linearisation on the basis of the DASP module for Stata (Araar and Duclos, 2007). Bootstrap with 1000 replications, bias-corrected percentile confidence intervals. Standard errors and confidence intervals take the random error of the poverty line into account. Top-bottom coded using the LIS-procedure, zero and negative incomes dropped from the data.

Source: EU-SILC UDB 2007 / 2008, own calculations.

Table 8: The ratio of estimated standard errors under different assumptions with regard to the sample design, ratio on the basis of linearization (L) and the bootstrap (B) compared, At-risk-of poverty indicator with poverty threshold equal to 60 per cent of the national median income (FGT0 and FGT1)

	FGT0				FGT1				
	persons / households		UDB / households			persons / households		UDB / households	
	L	B	L	B		L	B	L	B
AT	0.57	0.57	1.00	0.99	AT	0.58	0.57	1.00	1.02
BE07	0.56	0.58	**1.06**	**1.00**	BE07	0.53	0.52	1.04	1.04
BE08	0.56	0.58	1.00	1.00	BE08	0.58	0.60	1.00	0.97
BG	0.51	0.49	1.19	1.18	BG	0.49	0.49	1.17	1.16
CY	0.55	0.55	1.00	1.00	CY	0.57	0.61	1.00	1.00
CZ	0.55	0.59	1.06	1.11	CZ	0.55	0.57	**1.05**	**1.11**
DE	0.63	0.66	1.00	1.00	DE	0.70	0.72	1.00	1.00
DK	0.73	0.75	1.00	1.00	DK	0.75	0.72	1.00	1.00
EE	0.64	0.65	1.00	1.00	EE	0.67	0.64	1.00	1.00
ES	0.55	0.52	1.02	1.04	ES	0.55	0.54	1.01	0.97
FI	0.67	0.69	1.00	1.03	FI	0.70	0.67	1.00	1.01
FR07	0.59	0.59	1.01	1.00	FR07	0.60	0.62	1.06	1.03
GR	0.55	0.57	1.00	1.10	GR	**0.55**	**0.60**	1.03	1.04
HU	0.53	0.49	**1.09**	**1.03**	HU	0.55	0.55	1.05	1.08
IE	**0.50**	**0.57**	1.02	1.02	IE	0.51	0.52	1.01	0.99
IS	0.64	0.67	1.00	1.00	IS	0.71	0.73	1.00	1.00
IT	0.56	0.60	1.08	1.07	IT	0.56	0.57	1.08	1.04
LT	0.53	0.56	1.00	1.00	LT	0.54	0.52	1.00	1.00
LU	0.55	0.54	1.00	1.00	LU	0.59	0.58	1.00	1.00
LV	0.53	0.53	1.03	1.06	LV	0.54	0.56	1.05	1.04
NL	0.65	0.66	1.23	1.23	NL	0.66	0.68	1.05	1.09
NO	0.72	0.73	1.00	1.00	NO	0.75	0.78	1.00	1.00
PL	0.50	0.51	1.02	1.02	PL	0.50	0.54	**1.07**	**1.16**
PT	0.54	0.56	1.04	1.03	PT	0.53	0.54	1.09	1.09
RO	0.46	0.45	**1.07**	**1.01**	RO	0.46	0.45	**1.24**	**1.08**
SE	**0.67**	**0.72**	1.00	1.03	SE	0.74	0.74	**1.00**	**0.95**
SI	0.61	0.62	0.99	0.99	SI	0.67	0.66	1.01	1.01
SK	0.52	0.54	1.00	1.00	SK	**0.50**	**0.43**	1.00	1.00
UK	0.54	0.56	1.02	1.01	UK	0.54	0.54	1.04	1.01

Notes: Figures in bold indicate a difference in ratios of at least 0.05. Uncorrected sample design variables as available in the EU-SILC UDB. Linearisation on the basis of the DASP module for Stata (Araar and Duclos, 2007). Bootstrap with 1000 replications, bias-corrected percentile confidence intervals. Standard errors and confidence intervals take the random error of the poverty line into account. Top-bottom coded using the LIS-procedure, zero and negative incomes dropped from the data.

Source: EU-SILC UDB 2007 / 2008, own calculations.

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Chapter 3. The Evolution of Poverty in the European Union: Concepts, Measurement and Data

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This chapter is the result of a collective effort, many discussions and revisions. My direct contribution to the text is mainly concentrated in sections 5 and 6, including the empirical analysis, textboxes and figures in the annex as well as the concept and overall structure of the text (jointly with Koen Decancq). Josefine Vanhille prepared the German SOEP data for analysis.

Abstract

This chapter considers the measurement of poverty in the European Union (EU). Starting from a definition of poverty that is suitable for the European context, a flexible measurement framework is proposed based on the Foster-Greer-Thorbecke class of poverty measures. Three key issues need to be addressed in the measurement of poverty. First, one has to determine the appropriate metric of individual well-being. Second, a cut-off value or threshold needs to be established under which persons are considered to be poor. Third, it is necessary to outline an aggregation procedure to attain a poverty figure for society as a whole. In what follows, we discuss the different answers that are implicit in the poverty measures applied in this book* and the EU's social strategy. EU Statistics on Income and Living Conditions (EU-SILC) are introduced as the main data source for poverty analysis in the EU. Finally, an illustration is provided of how the different conceptual choices in the measurement of poverty affect the empirical findings regarding the evolution of poverty between 2005 and 2009. It turns out that the selection of individual well-being metric and the choice between a county-specific and a pan-European poverty line strongly affect observed patterns of poverty in the EU.

* Cantillon, B. and Vandenbroucke, F. (eds.), *For Better For Worse, For Richer for Poorer. Labour market participation, social redistribution and income poverty in the EU*, Oxford: Oxford University Press.

Preamble

As far as I am aware of, until now little attention has been paid to the importance of top-bottom coding of variables in relation to estimated standard errors and significance tests. For the empirical part of this book chapter, I have done several tests, which show that in some cases top-bottom coding may strongly reduce estimated standard errors. The results (not included in the original text) can be found in the appendix at the end of this chapter.

1 Introduction

Eradicating poverty is arguably one of the greatest challenges facing mankind. In 2010, the European Commission identified as its fifth Europe 2020 target a 20-million decrease in the number of persons in or at risk of poverty and social exclusion within the next ten years. In order for such a quantitative target to make sense, a clear measure is required of poverty and social exclusion. Indeed, even if it is true that we tend to recognize extreme poverty when confronted with it, the abundance of definitions and measures of poverty in the specialized literature suggests that it is not so easy to pour such intuitions into an operational poverty measure. Yet, as the old motto goes: 'to measure is to know'. So before proceeding with the rest of this book, it is important to consider in greater detail not just the concept of poverty applied in the European Union (EU), but also how it is measured and on the basis of which data.

In fact, there is a long list of on-going conceptual discussions on the definition and measurement of poverty. What exactly do we mean by poverty? Is it a one-dimensional or a multidimensional phenomenon? Should the focus be on the severity of poverty or on the extent to which it manifests itself in different life domains? Where should the poverty line be drawn? Should it follow changes in the prevailing living standard? Should a single poverty line be applied across the EU or are country-specific lines preferable? Should one merely count the number of poor or also consider how the depth of poverty varies across the poor population?

The answers to such (complex) questions reflect our value judgements on the notion of poverty. Different people may disagree on how poverty is most appropriately defined and measured. Poverty has many faces, and hence different perspectives on poverty may lead to different empirical conclusions. In this chapter, we identify some of the (implicit) value judgements underlying the various poverty measures applied in this book and the EU's social strategy. Further, we show how different initial choices ultimately lead to different empirical findings.

The measurement of poverty hinges heavily on the availability and quality of appropriate data. For this reason, this chapter briefly reviews some of the methodological features of the main data source for measuring poverty in Europe, namely the EU Statistics on Income and Living Conditions (EU-SILC), and what they imply for the measurement of poverty.

This chapter begins with a discussion of a poverty definition that is widely used in European policy circles. In the third section, this notion is translated into a suitable measurement framework based on the familiar Foster, Greer and Thorbecke (FGT) class of poverty measures. Three key issues pertaining to the measurement of poverty are discussed: the metric of well-being, the poverty line and the sensitivity to the distribution among the poor. The section concludes with a reflection on whether there is room for agnosticism on these issues, taking into account partial poverty orderings and robustness. Section four shows how the key poverty measures used in this book and in the EU's social strategy reflect specific answers to the conceptual questions posed. Subsequently, in section five, EU-SILC is introduced as a dataset for

the measurement of poverty. Section six considers the empirical relevance of the three central questions identified in section three using EU-SILC data from 2005 and 2009. An overview of conclusions is presented in section seven.

2 Defining poverty

Given the focus in this chapter on poverty in the European Union, let us first consider the poverty definition proposed by the Council of the European Communities (1975):

> 'Persons beset by poverty: individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life of the member state in which they live'.

Many approaches to the measurement of poverty tie in with the above definition and similar definitions have been proposed by other authors, including Townsend (1979). The proposed definition of poverty has three notable features. First, it refers to a lack of resources, suggesting that poverty is a situation that is forced upon people, rather than being a matter of free choice. The list of relevant resources can be defined restrictively or more broadly, so as to include not only cash and other incomes, wealth and services, but also human resources, such as health and education, and social capital. Second, the notion of a minimum acceptable way of life can likewise be understood in a narrow sense or more broadly, in terms of, for example, Sen's notion of basic 'functionings' or 'capabilities'. Functionings are the doings and beings of individuals, such as being healthy, having a good job, being safe, having a decent standard of living, being able to appear in public without shame and so on. The capabilities are the set of potential functionings that a person can obtain (Sen, A., 1983, 1985a). Further, the definition implies that what is regarded as the minimum acceptable way of life can vary from one country to another, and that the level of resources needed to achieve that way of life can change as societies become wealthier or poorer (see Goedemé and Rottiers (2011) for a recent discussion).[32] Finally, it should be noted that the above definition aims at identifying the poor at the individual level. In order to determine poverty at the societal level, which ultimately is the aim of this chapter, individual poverty needs to be aggregated to an overall poverty figure.

In the Europe 2020 target, as well as the current European discourse, poverty is often linked to the notion of 'social exclusion'. Social exclusion is a broader, more encompassing and arguably vaguer concept than poverty. The European Commission (2004: 10) defines social exclusion as 'A process whereby certain individuals are pushed to the edge of society and are prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as

[32] Traditionally, this issue is referred to as the 'relativity' of poverty. There have been heated discussions in the literature whether poverty is indeed relative. See, for instance the exchange between Amartya Sen and Peter Townsend in *Oxford Economic Papers* in 1985 (Sen, A., 1983, 1985b; Townsend, 1985).

a result of discrimination. This distances them from job, income and education opportunities as well as social and community networks and activities. They have little access to power and decision-making bodies and thus often feeling powerless and unable to take control over the decisions that affect their day to day lives.' The wide scope and vagueness of the notion social exclusion means that it can encompass many different concerns and fit into divergent, even conflicting, political agendas. At the same time, though, these characteristics undermine its analytical usefulness (Atkinson et al., 2002: 3; Daly, 2010). Hence, the focus in the present chapter is on the notion of poverty.

Furthermore, in the European discourse since the 2001 Laeken summit, the notion of poverty has received the epitheton 'at risk of'. This prefix may seem to suggest an underlying probabilistic analysis of a person's likelihood of becoming poor (as is customary in the literature on vulnerability; see Ligon and Schechter (2003)). This is not the case however. The prefix is in fact motivated by the current (political) disagreement on how the complex and multidimensional concept of poverty should be translated into a single indicator (see also Daly, 2010, who argues that the term 'at risk of poverty' actually destabilizes the very meaning of poverty). Some of the relevant points of disagreement are discussed in the next section. Suffice it to say at the moment that the phrase 'at risk of poverty' will be reserved for the official headline poverty indicator (see textbox 1 for a precise definition). The next section concludes with an explicit treatment of the room for agnosticism and disagreement in relation to poverty as a concept.

3 Measuring Poverty

Once an appropriate definition of poverty has been formulated, the next step is to translate this definition into a computable poverty measure. In practice, a wide variety of such poverty measures is used. Some are remarkably simple, others are quite complex. In this chapter, we use a framework for the measurement of poverty that incorporates most of the commonly used approaches in the literature.[33]

3.1 A Framework for the Measurement of Poverty

Let $X=(x_1, \dots , x_i, \dots , x_n)$ be a vector containing an indicator of well-being x_i for each of the n individuals in a society. A poverty measure attributes to each vector X a number reflecting the magnitude of poverty in that society. In this paper, we make use of the popular class of poverty measures introduced by Foster et al. (1984). These measures have the following mathematical structure:

$$P_\alpha(X) = \frac{1}{n}\sum_{i=1}^{n} \max\left\{\left(\frac{z - x_i}{z}\right), 0\right\}^\alpha ,$$

[33] See Foster (1984), Seidl (1988) and Zheng (1997) for more comprehensive surveys on the measurement of poverty.

where z is the poverty line and α is a parameter capturing the 'sensitivity to the distribution among the poor'. The expression $\left(\frac{z - x_i}{z}\right)$ measures the individual normalized poverty gap, which is the distance between the well-being of person *i* and the poverty line *z*, normalized by the poverty line itself. To obtain a measure of overall poverty in the society, these normalized poverty gaps of all poor individuals are taken to the power α and then averaged. This class of poverty measures has some attractive properties, such as *additive decomposability* (Foster, J. et al., 1984, 2010).[34]

In the remainder of this section, the focus is on the three main building blocks of the above formula, i.e. x_i , z and α. Each of these building blocks captures a fundamental question about the measurement of poverty. While these questions may be distinct, their answers are related. First, x_i is an indicator of individual well-being. In order to be able to say anything sensible about the measurement of poverty in a society, one first needs to ask the question: 'Poverty of what?' In other words, poverty needs to be measured in an appropriate *metric* of well-being. Such a metric of well-being may be one-dimensional or multidimensional. Second, a poverty line *z* needs to be fixed so that a group of individuals is identified as poor. This is the *identification* step. Various methods exist to distinguish the poor from the non-poor. As will become apparent, the selection of an appropriate poverty line in the context of the EU poses some additional challenges. Third, the magnitude of poverty among the individuals of a society should be *aggregated* to an overall poverty figure for that society. The parameter α plays an important role in this final aggregation step and gives expression to the sensitivity of the measure to the distribution among the poor. Moreover, it allows one to focus straightforwardly on various aspects of poverty, such as its incidence, depth and severity.

An aspect that is not covered by the proposed class of poverty measure is poverty's persistence over time. In this chapter, however, the focus is on the measurement of poverty based on cross-sectional data, hence intertemporal aspects are beyond its scope.

3.2 Selecting a Metric of Well-Being

First, an appropriate metric of well-being for measuring poverty needs to be selected. In this respect, one can distinguish between one-dimensional approaches (where the relevant information on individual well-being consists in a single indicator) and approaches that are multidimensional (where individual well-being is expressed by

[34] An additive decomposable poverty measure increases when *ceteris paribus* the poverty in a subgroup of the population increases (the larger the population share, the larger the impact). This is a desirable property for a measure of European poverty. Indeed, it is preferable that a European poverty measure should increase with an increase in poverty in any Member State. However, additive decomposability comes at a price: additive decomposable measures are blind for some of the social aspects of poverty, such as considerations about the rank of an individual in the society (see Bosmans (2011) for an overview on an alternative class of rank-dependent poverty measures).

means of a vector rather than a single indicator). Let us first consider the one-dimensional approaches.

3.2.1 One-Dimensional Approaches

Most empirical poverty estimations use either income or expenditure to assess an individual's poverty status. The question of what is the most appropriate one-dimensional metric has been the subject of extensive discussion in the literature. Given the emphasis in the definition of poverty on the lack of *resources*, income seems a natural choice. Yet, as income-based measures often neglect assets and savings, many consider it counter-intuitive to identify as poor an individual who is temporarily income-poor but able to maintain a high level of consumption. Indeed, through saving and borrowing, an individual may be able to smooth consumption over time, so that current total expenditure may be a better proxy than current income for their real (life-cycle) economic resources and therefore also a more suitable way of assessing an individual's poverty status (Slesnick, 1993; Chaudhuri and Ravallion, 1994; Deaton, 1997). The extent to which individuals actually smooth their consumption is an empirical matter. After a review of research on the topic, Deaton (1992: 218) concludes: 'there is much less evidence for low-frequency smoothing, with consumers using assets or loans to smooth their consumption in the face of long-term or life-cycle fluctuations in income.' This suggests that, in practice, results obtained through income-based poverty measures may not be misleading, provided that the reference period for income is not unduly short.

Pragmatically, there are some additional considerations to take into account when choosing between income or consumption as a one-dimensional metric of well-being. Consumption or expenditures are more commonly used to assess an individual's poverty status in developing countries, since income is often harder to measure in such contexts (Ravallion, 2010: 2). However, in large-scale surveys in developed countries, income data are more easy to collect than expenditure data. Also EU-SILC, the standard data-set for poverty analysis in the EU (see section five), provides only income data, so that almost all recent comparative poverty analyses for the EU are based on such information.

When opting for income as the metric of well-being, a number of additional specifications need to be made in relation to the relevant time span, the exact income concept, the intra-household distribution, and any correction for differences in household needs. In what follows, these aspects are discussed consecutively.

The Expert Group on Household Income Statistics, also known as The Canberra group (2001), has made some recommendations for internationally and inter-temporally harmonized and comparable statistics on household income. First, it recommends a reference period for household income of one year. A sufficiently long reference period reduces the impact of short-term fluctuations, but it also poses higher

demands on survey respondents.[35] Moreover, the longer the reference period, the less effective retrospective questioning (Debels and Vandecasteele, 2008).

Second, the Canberra group recommends a definition of the concept of disposable income as summarized in Table 9 (see also section six). One may want to go a step further by including in-kind income components, especially social transfers through health care and education. The question of how disposable income can be extended beyond its cash components is discussed at length in Verbist and Matsaganis s(forthcoming).

Table 9: Recommended definition of disposable household income

	Employee cash and near-cash income (wages, salaries, bonuses...) including the cash value of 'fringe benefits' (goods and services provided to the employee as part of employment)
+	Income from self-employment (profits/losses from unincorporated business, royalties)
+	Net value of home production (for barter or consumption)
+	Imputed rent for owner-occupied dwellings
+	Net income from rentals
+	Property income (interest and dividends received less costs paid)
+	Current transfers received: Social insurance benefits from employers or government schemes Universal or means-tested social assistance benefits Pensions received from individual private plans Regular inter-household cash transfers received or support received from non-profit institutions
=	TOTAL INCOME
-	Current transfers paid: Employers' social insurance contributions Employees' social insurance contributions Taxes on income Regular taxes on wealth Regular inter-household cash transfers paid (e.g. to other households or charities)
=	DISPOSABLE INCOME

Source: adapted from Table 2.1 in The Canberra Group (2001: 18).

Although the measurement framework is formulated at individual level, data limitations often force poverty researchers to measure poverty at household level.

[35] A number of studies assess the effects of opting for monthly or annual income reference periods, with mixed evidence. Böheim and Jenkins (2006) find little effect of the income reference period on accuracy, while the monthly measure outperforms the yearly income concept according to Cantillon et al. (2003).

Typically, only the overall income or expenditure level for the household is observed, without further information on the intra-household distribution of resources. Therefore, one often proceeds on the basis of the assumption of equal sharing or full income pooling within the household. This approximation is obviously problematic in contexts where household resources are not shared equally and may lead to considerable underestimations of poverty among certain vulnerable groups, such as children (see for instance Burton et al. (2007); Dunbar et al. (2012)).

Finally, one may want to correct for differences in household needs when measuring poverty. To obtain a comparable measure of income across divergent households, equivalence scales are applied to disposable income, aligning the income concept and the needs associated with its use. Equivalence scales are most widely used to adjust for household composition: the needs of a household grow with the number of household members, but arguably not proportionally.[36] Needs for space, electricity and other shared goods have substantial economies of scale. To correct for such economies, household income and expenditure are divided by an equivalence scale, leading to so-called equivalized incomes. Much has been written on what are the most appropriate equivalence scales (see for instance Buhmann et al. (1988); Coulter et al. (1992a, 1992b); de Vos and Zaidi (1997)). Moreover, economies of scale are likely to vary across the income distribution, time and place. However, it is standard practice in empirical poverty research to use the so-called modified OECD scale, which assigns a value of 1 to the household head, 0.5 to each additional adult member and 0.3 to each child.

3.2.2 Multidimensional Approaches

One may want to go even further and also correct for other factors differentiating between households beyond their monetary resources and size. Furthermore, resources in other domains of life (such as health) are not freely exchangeable for monetary resources, or the resulting prices might not be appropriate for poverty analysis. If one wishes to take such additional information into account, individual well-being can no longer be described by a one-dimensional indicator. Inevitably, the measurement of poverty becomes multidimensional. In their report for the Commission on the Measurement of Economic Performance and Social Progress, Stiglitz, Sen and Fitoussi (2009: 14) assert that, 'to define what well-being means, a multidimensional definition has to be used', while Narayan (2000) shows on the basis of a large-scale survey that the global poor likewise perceive well-being and poverty as multidimensional notions.

In a multidimensional approach, individual well-being x_i is described by a vector of outcomes rather than by a single indicator. Let us assume that there are m dimensions of well-being, so that $x_i = \left[x_i^1,...,x_i^j,...,x_i^m\right]$ where x_i^j gives the outcome of person i in dimension j. The formula of the FGT, however, needs to be modified in

[36] When in-kind incomes are included in the income concept, the principle of equivalence scales should also be applied to this dimension, in order to correct for differing needs in, for example, health care and education, see chapter 6 in this book.

order for it to capture this multidimensionality. Broadly speaking, two options present themselves.

First, one can apply the one-dimensional FGT to each of the *m* dimensions separately. This is a dimension-by-dimension approach leading to a dashboard or portfolio of *m* poverty indicators (one for each dimension). An example of such a portfolio of indicators is the set of common indicators for social inclusion agreed at the 2001 Laeken summit (see section 4 of this chapter and Atkinson et al. (2002); Marlier et al. (2007) and Daly (2010) for more details). A portfolio has the advantage of covering a complex and multidimensional reality while offering the possibility to focus on each of the indicators in detail. Under the assumption that the outcomes in the different dimensions of well-being cannot be compared or if the aim of the analysis is to evaluate the impact of specific policies, a dashboard approach would seem appropriate (see Ravallion (2011) for a well-argued defence). However, such a dimension-by-dimension approach by definition excludes information on the correlation structure between the different indicators. The concern of whether or not the same persons fall below the poverty line in the various dimensions is a key motivation for adopting a multidimensional approach in the first place. Pogge (2002: 11) writes: 'Consider institutional schemes under which half the population are poor and half have no access to higher education. We may plausibly judge such an order to be more unjust when the two groups coincide than when they are disjoint (so that no one bears both hardships)' (see Decancq (2009) and Ferreira and Lugo (2012) for similar arguments).

In order to be able to take due account of the correlation between the indicators, an alternative approach is required that begins with the construction of a well-being index for each individual.[37] These individual well-being indices can subsequently be used as x_i variable in a FGT formula (see, for instance, Alkire and Foster (2011)). The question then becomes how to select an appropriate index of individual well-being that aggregates the various outcomes. Designing such an index echoes the eternal philosophical debate on the Aristotelian question regarding the nature of the 'good life' (see also Rawls (1971: 80)). In practice, one has to make three interdependent choices in the construction of a well-being index (Decancq et al., 2009; Decancq and Lugo, 2013). The first choice concerns the *transformation* of the outcomes in the various dimensions. Especially if the outcomes involve different measurement units, they need to be transformed or standardized, to allow reasonable comparison and aggregation. The second question relates to the relative *weight* given to the different outcomes. These weights play a crucial role in determining the trade-offs implied by the well-being index. If one dimension is assigned a greater weight, for example, then a higher outcome is required in the other dimensions to compensate for a loss in the former. For reasons of agnosticism or simplicity, the weights are often set equally in

[37] Such an approach is implicit in the multidimensional analyses by Tsui (2002), Bourguignon and Chakravarty (2003), Maasoumi and Lugo (2008), Alkire and Foster (2011) and the references therein. Thorbecke (2008) provides a survey .

empirical analyses.[38] The complex question of which dimensions to select in a multidimensional analysis is a particular case of the weighting problem. Indeed, not selecting a certain dimension is equivalent to attributing it a weight of zero. Finally, an *aggregation* procedure needs to be agreed for aggregating the different standardized and weighted outcomes into a single index. Typically, the method chosen is an additive averaging procedure, which presupposes perfect substitutability between the dimensions, but alternatives with more restricted substitutability are conceivable, for example through multiplicative averaging (as in the new version of the HDI, UNDP 2010).[39]

A rather crude but empirically attractive example of a multidimensional poverty approach is the so-called *counting approach* (see, for instance, Atkinson, 2003; Alkire and Foster, 2011). In a counting approach, the outcomes in each dimension are collapsed to a binary scale (taking either the value 0 or 1). These binary values are then (equally) weighted and added, so that a well-being index is obtained that boils down to counting the number of dimensions in which the binary scale takes the value 1. Recent theoretical work on the counting approach has rediscovered and given substance to the old practice in the sociological literature of counting the number of deprived dimensions as a measure of the *width* of poverty (Mack and Lansley, 1985; Vranken, 2002). An example of this approach is the European indicator of material deprivation (e.g. Guio, 2005b, 2009) described in detail in textbox 2.

3.3 Fixing the Poverty Line

Given a particular metric of well-being, the poverty line identifies those who are to be considered as poor. Where to draw the poverty line is a matter of value judgements and, taking into account the poverty definition applied, should reflect society's views on what are acceptable and unacceptable levels of well-being.

3.3.1 Different Methods for Fixing the Poverty Line

There are a number of methods to determine the poverty line.[40] This subsection outlines those methods and considers their merits in respect of constructing an EU poverty measure (see Deleeck et al. (1992: 3-5) and Atkinson et al. (2002: 83-98) for more extensive discussions).

[38] Decancq and Lugo (2013) survey various approaches to selecting an appropriate weighting scheme, classifying them as either data-driven, normative or hybrid. Decancq et al. (2011) present an empirical application based on Flemish data where equal weighting receives little support in a simulated voting procedure on alternative weighting schemes among affected individuals.

[39] The outcomes in a multidimensional poverty analysis are typically measures of functionings such as indices of living standards, health and level of education. However, one can apply the same multidimensional toolbox to measure chronic poverty if the outcomes are well-being levels in various points in time (Foster, J., 2009).

[40] For more detailed information, see the surveys by Callan and Nolan (1991), Ravallion (1994), Van den Bosch (2001) and Vrooman (2009).

Administrative or statutory lines. These poverty lines are equal to the minimum income support offered under the prevailing social security or social assistance system. In some countries, the resulting thresholds might have a prima-facie legitimacy, based upon the assumption that they reflect a political consensus (or at least a majority view) on the minimum level of income acceptable in a particular society. However, the question of whether a guaranteed minimum income suffices to keep persons out of poverty cannot be answered if a statutory poverty line is applied. It is moreover difficult to argue that such country-specific thresholds can be used for cross-country comparisons, particularly in view of the practical complication that some countries do not even have a minimum guaranteed income (e.g. Van Mechelen et al., 2011). Although this approach has been used extensively in the United Kingdom (cf. Morris and Preston, 1986 and references therein) and occasionally in cross-national studies (e.g. Gustafsson and Lindblom, 1993), it has fallen in disuse for the reasons mentioned above.

Statistical lines. Under the statistical method, the poverty line is defined as a function of the underlying distribution, often a certain percentage of median or mean household equivalized income. This is the method most commonly applied in cross-national research on income poverty in the developed world, most likely because it requires no information other than micro-data on household income. Statistical lines can differ in their reliance on the mean or the median, and in the setting of the particular percentage. As far as the EU poverty indicators are concerned, the median is preferred to the mean, because it is less sensitive to outliers and extreme observations, unaffected by top-bottom coding, and less sensitive to sampling error (Atkinson et al., 2002: 94). The percentage is largely arbitrarily chosen, but 40, 50 and 60 % seem the most commonly applied thresholds. The EU headline at-risk-of-poverty indicator uses 60 % of the median equivalized disposable income as a poverty line (see textbox 1 for more details).

Subjective lines. Subjective poverty lines are based on the responses of survey participants to questions such as: 'What is the minimum income with which your household could make ends meet?' While the answers to this question correlate quite strongly with income, methods have been designed to derive an estimate of the poverty line that is unbiased by this correlation (Goedhart et al., 1977; Hagenaars, 1985; Deleeck et al., 1992). Unfortunately, the resulting poverty lines vary from country to country, according to patterns that are not only difficult to explain but also unstable over time. One problem would appear to be that results are sensitive to small changes in the wording or placement of the survey questions (Van den Bosch, 2001, provides a review). This is presumably why subjective poverty lines have fallen into disuse in the course of the past decade (Vrooman, 2009).

Budget standards. Budget standards have been used in pioneering poverty studies by Rowntree (Rowntree, 2000 [1901]) and others. A budget standard is a specific basket of goods and services which, when priced, can represent a particular standard of living for a reference household in particular circumstances and with particular characteristics (Bradshaw, 1993). In principle, the method is simple: first one draws up a list of goods and services that are deemed indispensable; then one

estimates the lifespans of the goods and corresponding prices; and finally one adds up the resulting amounts. In practice, however, this is of course 'a ghastly chore' (Bradshaw, 1993: 236). A variety of sources of information is used in the selection of items, including other budgets, expert opinion, actual spending patterns, public opinion, and value judgements.

Budget standards have been put forward recently in various European countries (see Storms et al. (2011) for a review). To date, no attempt has however been made to define budget standards that allow comparison between countries (although Storms et al. (2011) do formulate a proposal in this respect). As budget standards are specific to the characteristics and circumstances of the reference households, it is not self-evident to use budget standards as a poverty line for sample survey data. However, budget standards are useful for validating poverty lines derived from other methods, in particular the statistical method. For Belgium, a budget standard for 2008 turned out to be surprisingly close to 60 % of median household equivalized income (Storms and Van den Bosch, 2009). It would be interesting to repeat such an exercise for other countries, in particular for the newly acceded EU Member States with lower average incomes (Goedemé and Rottiers, 2011).

Finally, the use of a multidimensional metric of well-being requires either to set a dimension-specific poverty line (for a dimension-by-dimension approach) or to select a cut-off value of the obtained well-being indices that distinguishes poor from non-poor persons. In the counting approach, one typically selects a number of deprived dimensions as poverty line. For the severe material deprivation index, this cut-off is 4 dimensions (see textbox 2 for more details, and Nolan and Whelan (2011a) for a critical appraisal of this choice).

3.3.2 Fixing a Poverty Line for the European Union

Unlike in the case of the official US measure of poverty (Orshansky, 1965, 1969; Blank, 2008), most poverty analyses for the EU define the poverty line in relative and in national terms, taking 50 % or 60 % of the country-specific median income as a poverty line (i.e. a statistical approach). [41] Over time, such poverty lines fluctuate as the median changes. As explained above, though, this choice is just one of several alternatives, and it should therefore be open to public scrutiny and debate (Atkinson et al., 2002; Kangas and Ritakallio, 2007). In what follows, three particularities are discussed of the standard practice in the EU of choosing a *floating*, *relative* and *country-specific* poverty line, as opposed to the American approach of setting a *fixed*, *absolute* and *pan-US* poverty line (see also Besharov and Couch, 2012).

Floating. A poverty line that is allowed to fluctuate in real terms is called a floating poverty line. A poverty line that, on the contrary, is kept constant in real terms is a fixed poverty line anchored at a point in time, or an anchored poverty line

[41] See, among others, Zaidi and de Vos (2001); Atkinson et al. (2002); European Commission (2002, 2007, 2009); Marlier et al. (2007); OECD (2008) ; Bäckman (2009); European Commission, 2009. Notten and de Neubourg (2011) provide a comparison of the two approaches for the US and 15 EU Member States.

for short. An anchored poverty line is only adjusted over time for changes in the price level. Some circumspection is in place when interpreting poverty figures obtained with a floating poverty line. After all, with a floating poverty line, it is conceivable that a decrease in the well-being of all poor persons is cancelled out by a simultaneous lowering of the poverty line, which may in itself lead to a declining poverty figure.[42] On the other hand, anchored poverty lines may fail to capture possible changes in the perception of the minimum acceptable living standard in a given society, since they are fixed at construction.

Relative. A poverty line expressed as a percentage of the median varies when the income distribution changes (hence it is not anchored and is floating by definition). Such poverty lines are commonly referred to as relative poverty lines, for obvious reasons. However, a poverty line may also be conceived as a physiological minimum for human survival, which typically does not vary with a changing income distribution. Such absolute poverty lines may fluctuate, though, with price evolutions of the items necessary to attain the physiological minimum. Ravallion (2010) characterizes poverty lines that are defined as a percentage of the median as 'strongly relative', which at once implies an important drawback: a strongly relative poverty line would ultimately approximate to zero in a situation where an entire population becomes extremely poor. Zheng (1997) hints at a potentially counter-intuitive anti-poverty policy that aims at simply deleting some of the non-poor incomes around the median. Atkinson and Bourguignon (2001) therefore propose a 'weakly relative' poverty line somewhere in between the two extremes of an absolute and strongly relative poverty line. In this approach, an absolute poverty line is applied up to a certain threshold and a strongly relative one is used above that threshold. This notion has been further generalized by Ravallion and Chen (2011).[43]

Country-specific. Three different arguments have been put forward in favour of an EU-wide rather than a country-specific poverty line (see Goedemé and Rottiers (2011: 78-79); and Nolan and Whelan, (2011b: 207-210), as discussed below.

First, poverty figures on the basis of country-specific poverty lines may be adequate for distinguishing poor groups within single Member States, but they sketch only a partial picture of the variation in living conditions and poverty across the EU: the purchasing power of the poor in the less affluent Member States is generally lower than the purchasing power of the poor in the richer EU Member States (see for example Lelkes et al., 2009: 23). On this basis, some authors have argued that these

[42] This was the case, for example, in Finland during the early 1990s: the economic crisis led to a decrease in the floating poverty line and hence poverty supposedly decreased notwithstanding the decline in living standard at the bottom end of the income distribution (cf. Halleröd and Heikkilä, 1999; Ministry of Social Affairs and Health, 1999). In a number of countries, most notably Estonia and Latvia, a similar mechanism seems to have been at play during the current economic crisis (Eurostat on line database, last accessed 20 Dec. 2011).

[43] Recent questionnaire surveys eliciting perception of poverty have shown relativist concerns to be widespread among respondents, particularly in coexistence with absolutist concerns (Corazzini et al., 2011).

poverty figures are not fully comparable cross-nationally and lead to an underestimation of poverty in the less wealthy Member States (see for example Guio, 2005a, 2005b; Beblavy and Mizsei, 2006; Juhász, 2006: 100-101).

Second, it has been contended that the group of persons with whom living standards are compared, i.e. the reference group, is of crucial importance for the measurement of poverty (or social stratification in general) and that reference groups have to a large extent Europeanized (Förster et al., 2004; Delhey and Kohler, 2006; Fahey, 2007; Whelan and Maître, 2009).[44]

A third argument for a Europeanized poverty line comes from Brandolini (2007) and Fahey (2007), who contend that, even if reference groups were not strongly Europeanized, the national at-risk-of-poverty rate would still miss an important aspect of the heterogeneity and social cohesion in the EU as well as the social dimension of European unification. Therefore, poverty should also be calculated using an EU-wide poverty line (see also Marlier et al., 2007: 153-155).[45]

3.4 Aggregation Beyond the Headcount

When an appropriate metric of well-being and a poverty line separating the poor from the non-poor have been selected, aggregation is required to arrive at a single measure of the extent of poverty in a society as a whole.

The headcount poverty measure *H* is an obvious candidate for this aggregation. It is simply the percentage of poor persons in a given society.[46] The *headcount* can be obtained by setting $\alpha=0$ in the definition of P_α (so that P_0=H). As an indicator, it is easy to interpret and communicate, and by far the most popular measure of overall poverty, but it is obviously a crude index (Watts, 1969; Sen, A., 1976). It also has some unattractive properties, especially when used as a policy target. Consider the example of a policymaker who aims at maximally reducing poverty with a limited anti-poverty budget. The question is how best to spend the available funds? Well, if the extent of

[44] Goedemé and Rottiers (2011), stress however that a distinction should be made between reference groups used for evaluating one's own living standard (i.e. privately-oriented reference groups), and reference groups used for defining what should be the minimum acceptable living standard for society at large (i.e. publicly-oriented reference groups). Even if the latter seem more relevant, the existing literature focusses on the former privately-oriented references groups. The Europeanization of the publicly-oriented reference groups is still an open question for further research.

[45] A poverty index based on an EU-wide poverty line satisfies the property of *subgroup anonymity*. This means that moving a person between subgroups (i.e. countries) with no change of well-being does not affect overall poverty (Ravallion, 2008). Again, whether or not this is an attractive property for a poverty measure is a matter of debate.

[46] The headcount (and all other measures belonging to P_α) is a so-called *replication invariant* poverty measure. Cloning all persons in a society (poor and non-poor) would not affect the extent of poverty in that society. This property allows a meaningful comparison of poverty across societies with different population sizes. There are conceivable questions, however, whereby the focus is on the number of poor persons in the society rather than the percentage (Subramanian, 2002).

poverty is expressed in terms of a headcount, then it makes sense for him to focus on the better-off poor, as this offers the best chance of lifting a maximum number of individuals out of poverty (Bourguignon, François and Fields, 1990). Furthermore, an unchanged headcount of people below the poverty line may conceal a sharp rise in the extent of shortfall from the poverty line.

A natural alternative is to use the income gap ratio I, which is the average normalized amount by which poor incomes fall below the poverty line.[47] One easily checks that setting $\alpha=1$ in the definition of P_α, leads to the overall (normalized) income shortfall divided by the total population (hence $P_1=HI$). Let us return to the example of the policymaker intending to reduce poverty with a limited anti-poverty budget. Using P_1 as a poverty target, clearly it does not matter which poor the policy measures are aimed at, as overall poverty will decrease with the same amount. Conversely, a policymaker may wish to spend the available anti-poverty budget on the poorest of the poor. Bourguignon and Fields (1990) show that such a policy is optimal whenever a poverty measure P_α with $\alpha>1$ is used as a target. This is the case, for example, when α equals 2 such that the poverty gaps are weighted by the poverty gaps (Foster, J. et al., 1984, 2010). When α goes to infinity, only the poorest person matters for the measurement of poverty (reflecting a Rawlsian perspective).

In general, the parameter α may be interpreted as the extent of 'poverty aversion'. The larger α, the greater the impact of the condition of the poorest of the poor on the overall measurement of poverty. Alternatively, α may be seen as the elasticity of individual poverty with respect to the normalized poverty gap, so that a one-per cent increase in the poverty gap of an individual leads to an α-per cent increase in the individual's poverty level (Foster, J. et al., 2010). One of the practical advantages of the Foster-Greer-Thorbecke class of poverty measures P_α is that the same class of measures allows the researcher to switch easily to the most appropriate perspective given the problem at hand. One can focus on the *incidence* or *prevalence* of poverty by setting $\alpha=0$, on its *depth* by setting $\alpha=1$, or on its *severity* by $\alpha=2$. By now, this terminology has become the standard in the studies of international institutions such as the World Bank, so that P_α has assumed a prominent role as a class of poverty measures (Ravallion, 1994).[48]

3.5 Robustness and Partial Poverty Orderings

As demonstrated above, in order to be able to select the most appropriate poverty measure from the extensive toolbox available, at least three (difficult) questions need to be answered. What is the appropriate metric of well-being? Where to draw the poverty line? And how to aggregate poverty figures to society level? The answers to these questions depend to a large extent on value judgements regarding the notion of

[47] *I* is defined here in terms of *incomes*. It is obvious that the definition can be applied irrespective the chosen metric of well-being.

[48] An alternative graphical representation of the incidence, intensity and inequality dimensions of aggregate poverty is provided by the so-called Three I's of Poverty (TIP) curve (Jenkins and Lambert, 1997).

poverty itself. Hence, it is unlikely that unanimity could ever be reached on these issues. Furthermore, even when value judgements are shared, additional problems can arise due to a lack of accurate data. As mentioned before, the fact that the epithet 'at-risk-of' has been added to the headline poverty measures in the EU may be seen to reflect these difficulties.

Rather than to look for unequivocal answers to the three aforementioned questions, one can look for ranges of reasonable answers and empirical indications of the evolution of poverty that are robust for all choices within the selected range (as we do in the sixth section of this chapter). The following (hypothetical) example clarifies this approach. Four co-authors may disagree on where exactly to set the poverty line, yet agree that it should be set somewhere between 40% and 70% of median disposable income. To resolve their dispute, they might decide to adopt an agnostic perspective and compute poverty for any poverty line within this range. However, agnosticism comes at a price. Consider the unfortunate case where poverty has increased for all poverty lines up to 64% of median disposable income, but decreased for all higher poverty lines.[49] Without narrowing the range of relevant poverty lines (say, to 57%-63%), the four co-authors will not be able to unambiguously ascertain whether poverty has increased or decreased.

To allow for such disagreements, partial poverty orderings may be applied. Partial poverty orderings require unanimous poverty rankings for a class of poverty measures or a range of poverty lines (see Zheng, 2000, for a survey). As illustrated above, they cannot order any pair of societies, but where they can, they provide strong results (see also Sen (2009) on the usefulness of partial orderings in welfare economics in general).[50]

Furthermore, one may want to remain agnostic on the metric of well-being. In several EU Member States, a consistent poverty approach has been introduced whereby individuals are said to be consistently poor only if they are both income-poor *and* poor according to the material deprivation index (Förster, 2005; Nolan and Whelan, 2011b).[51] The four co-authors, who furthermore disagree on the most appropriate metric of well-being, will agree that consistently poor persons should be considered to be poor. They will also agree that a person who is non-poor according to both criteria is not poor. They may well disagree, however, on the status of individuals who are poor according to one criteria but not the other.

[49] This situation is quite inconvenient for the co-authors, in particular if a policymaker expects them to come up with an unequivocal answer regarding the evolution of poverty.

[50] In a series of papers, Foster and Shorrocks (1991, 1988) uncover a powerful link between a unanimous agreement between the class of P_α's for a given α and any poverty line and stochastic dominance of the *α+1*'th order. Furthermore, Atkinson (1987) shows that reaching unanimous agreement for all additive separable poverty measures (which is a much wider class than the FGTs) for all poverty lines is equivalent to second-order stochastic dominance. See Duclos et al. (2006) for a generalization to the multidimensional case.

[51] Berthoud and Bryan (2011) study the relationship between households' incomes and deprivation scores over time using longitudinal data for the UK.

The consistent poverty approach requires that both conditions are fulfilled (hence it is a so-called 'intersection' approach to multidimensional poverty, see Duclos et al. (2006)). In contrast, the Europe 2020 procedure reflects a 'union' approach, where a person is considered poor or socially excluded if he is poor or socially excluded according to at least one of the three criteria (i.e. being income poor, materially deprived, and/or belonging to a jobless household). The Europe 2020 poverty indicators and their relation to other poverty measures used in this book are the topic of the next section.

4 Poverty Measurement in the European Union: An Overview

The object of this section is to show how the set of indicators of poverty and social exclusion used in the EU's social strategy fit into the poverty measurement framework discussed in the previous section. For an in-depth discussion of the EU's involvement in the struggle against poverty, see Marlier et al. (2007) and Frazer et al. (2010).

4.1 The European Social Strategy and Poverty Measurement

Though the EU has shown an interest in the living standards of its citizens from its inception, work on poverty indicators was given a boost at the Lisbon European Council of March 2000, where the Member States established the Social Inclusion Process with the aim of making decisive inroads into eradicating poverty by 2010. A novel method of governance, known as the Open Method of Coordination (OMC), was introduced which involves common objectives to be achieved by national policies. In assessing Member States' progress towards the common objectives, comparable and robust indicators were deemed of key importance. A first set of eighteen such indicators on poverty and social exclusion was adopted at the Laeken European Council in December 2001 (hence the often-used term 'Laeken indicators'). It is effectively a portfolio of indicators designed in accordance with a number of methodological principles, as formulated by Atkinson et al. (2002). Important considerations were the comparability between Member States and the balance and transparency of the total portfolio. In subsequent years, the portfolio was further extended to include a broad range of indicators covering various aspects of social protection and social inclusion. The EU-SILC data were created specifically as an information source for compiling comparable indicators on social cohesion.[52]

In June 2010, the European Council went one step further and defined a specific target in its Europe 2020 strategy: '20 million less [sic] people should be at risk of poverty and exclusion according to three indicators (at-risk-of poverty; material deprivation; jobless household), leaving Member States free to set their national targets on the basis of the most appropriate indicators, taking into account their national circumstances and priorities' (European Council, 2010: 12).

[52] For a more detailed treatment of the EU-SILC data-set, see section five.

4.2 A Portfolio of Indicators

Let us take a closer look at the portfolio of indicators of poverty and social exclusion as it stood in 2009 (European Commission, 2009). Only indicators included in the portfolio of 'overarching' indicators are taken into account. In line with the framework defined above, for each indicator a metric of well-being[53], a poverty line and a method of aggregation are specified (see Table 10).

As Table 10 shows, the metric of well-being varies substantially. Many indicators are defined in terms of disadvantage and, in some cases (e.g. duration of unemployment), it is not straightforward to define a corresponding metric of well-being. While the choice of indicators is constrained by data availability, it is possible to identify the domains that are regarded as important in respect of poverty and social exclusion: income, material living standard, education, employment and medical care. No attempt is made to create a composite or multidimensional index of poverty or social exclusion summarizing all indicators. Marlier et al. (2007: 182-185) state that this is to encourage countries to pursue balanced policies aimed at improving their performances in all domains, rather than to concentrate on an opaque overall score (see also Atkinson, 2010, for a discussion).

Interestingly, the aggregation method used is nearly always a headcount (FGT with α set at 0), despite the drawbacks of this approach. Presumably the easy interpretability of a headcount overrides other concerns. As an indicator of the poverty gap, the median normalized poverty gap is used. This measure does not belong to the class of FGT poverty measures and is not additively decomposable, but it has the advantage of being robust to outliers.

[53] Most indicators are in fact defined in terms of disadvantage. Where possible, the corresponding metric of well-being is specified; where not, this is indicated by the word 'reverse' in brackets.

Table 10: Commonly agreed primary indicators on social inclusion, included in the overarching indicators of the Open Method of Coordination on Social Protection and Social Inclusion in 2009

Measure	Metric of well-being (x_i)	Poverty line (z)	Aggregation
At-risk-of poverty rate (AROP)	Equivalized disposable household income	60% of median household income	FGT (α= 0)
Relative median at-risk-of- poverty risk gap	Equivalized disposable household income	60% of median household income	Median poverty gap
Early school leavers	Educational level	Having only lower secondary education or less	FGT (α= 0)
Long-term unemployment rate	Duration of unemployment (reverse)	>= 12 months	FGT (α= 0)
People living in jobless households	Share of eligible persons with paid job in households	= 0	FGT (α= 0)
Self-reported unmet need for medical care	Receiving medical care when needed (binary)	n.a.	FGT (α= 0)
At-risk-of-poverty rate anchored at a fixed moment in time	Equivalized disposable household income	60% of median household income in 2005	FGT (α= 0)
In-work at-risk-of-poverty rate	Equivalized disposable household income	60% of median household income	FGT (α= 0)
Persistent at-risk-of-poverty rate	Equivalized disposable household income	60% of median income in 2005 in current year and two of the three preceding years	FGT (α= 0)
Employment gap of immigrants	Employment (binary)	n.a.	FGT (α= 0), difference between immigrants and non-immigrants
Material deprivation rate	Number of items lacking (i.e. not able to afford if not possessed) out of 9	>= 3	FGT (α= 0)

5 Data for Poverty Measurement in the European Union

There are various cross-national comparative surveys providing data for studying poverty and social exclusion in the EU, such as the Survey of Health, Ageing and Retirement in Europe (SHARE), the European Quality of Life Surveys (EQLS) and the European Social Survey (ESS). [54] However, these surveys either cover only part of the population (SHARE), or they have a small sample size (EQLS), or they contain only limited information on income and living conditions (ESS). Consequently, after its launch in 2004, EU-SILC quickly became the EU reference source for micro-data on income and living conditions. Many indicators designed to monitor poverty and social exclusion in the EU are based on EU-SILC (e.g. European Commission, 2006; Marlier et al., 2007).

This section assesses EU-SILC as a data-set for measuring poverty in the European Union and, for reasons explained below, the German SOEP data-set as complementary data source for Germany.

5.1 EU Statistics on Income and Living Conditions (EU-SILC)

The reference population of EU-SILC consists of private households residing in the participating countries at the moment of selection.[55] Currently thirty-one countries are included in the EU-SILC data-set, namely all EU Member States plus the four non-EU members Iceland, Norway, Switzerland and Turkey. However, some countries are not represented for all years in the User Database (UDB).

In 2004 EU-SILC replaced the European Community Household Panel (ECHP) as the common European source for data on income and social inclusion. ECHP ran as a long-term panel structure in fourteen European Member States over the eight-year period from 1994 to 2001. The persistence of quality problems, such as low response rates, steady attrition rates, incomplete geographical coverage and poor timeliness, led to its termination in 2001. To accommodate these quality problems, EU-SILC pays additional attention to the sample design, internationally-harmonized income definitions, and EU-wide coverage (Clemenceau and Museux, 2007).

Common guidelines for EU-SILC assure output harmonization of the survey results (see for example Eurostat, 2010b). Within these guidelines, national statistics offices have a certain degree of discretion to implement the guidelines according to the national conditions. While basic rules on definitions, time reference, minimum effective sample sizes, etc. are legally binding, considerable differences remain between participating countries in terms of sample design, data collection and post-collection processing (e.g. Eurostat, 2011), with varying impact on the comparability of the results. These aspects are discussed consecutively.

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[54] For more information, see respectively http://share-project.org; http://www.eurofound.europa.eu/surveys/eqls/ and http://www.europeansocialsurvey.org/.

[55] It should be noted that people residing in institutions are excluded. This may cause some bias, especially when studying poverty among elderly (Peeters et al., 2011).

Sample design. With respect to sample design, the common guidelines prescribe a nationally representative probability sample of the population residing in private households within the country. The guidelines on sample design have been implemented differently in the various countries. In some, the sample consists of a simple random selection of households, individuals, or dwellings/addresses. In others, a more complicated procedure is followed, which in the first stage involves the random selection of clusters (communities or census areas, for example) from which households are subsequently drawn in the second or third stage (see the annex in Goedemé (2010) for more details).[56]

Data collection. Generally, data are collected by means of face-to-face personal interviews. At the same time, the survey design is sufficiently flexible to allow the use of (previously existing) national sources. In a number of countries, the national statistics office opted for reasons of reliability to base many income variables on administrative data rather than on survey data, as this approach avoids the issue of respondents' accuracy in reporting detailed retrospective information. Recently, Lohmann's (2011) research on the relationship between employment, earnings and poverty has shown that this difference in data collection method may substantially affect estimates based on EU-SILC.

Post- collection processing. Unit non-response rates for EU-SILC vary substantially between countries, ranging from 5 per cent in Romania to 45 per cent in Denmark (Eurostat, 2010a). The high non-response rates in several countries may compromise data representativeness and thus comparability between countries. Correcting for the resulting potential biases then becomes especially important. Countries have however employed different models to deal with the problem of unit and item non-response, involving respectively reweighting and imputation (Verma and Betti, 2010; Wolff et al., 2010), which adds to the complexity of inter-country comparison. Furthermore, countries also vary substantially in terms of the manner in which negative and extreme values are treated (Verma and Betti, 2010). In view of this problem, top-bottom coding may be used to mitigate its impact on comparability (see also Section 6). Unfortunately, the variables concerning response status of households and individuals are not available to researchers. This rules out the possibility of testing for patterns of non-response across the population.

5.2 German Socio-Economic Panel (G-SOEP)

For Germany, notable problems arose from the fact that until 2007, at least part of the sample was selected by quota sampling instead of representative probability sampling, preventing the computation of probability sample weights and

[56] Additionally, EU-SILC has an important panel component, in the form of a four-year rotational panel design. This means that, every year, a quarter of the sample is replaced with a new representative sample of households. In other words, every household can participate for a maximum of four consecutive years. Exceptions to this Eurostat recommendation are France and Norway, where the panel duration is nine, respectively eight, years, and Luxembourg, where a pure panel is supplemented annually with a new, additional sample (Wolff et al., 2010: 41).

compromising representativeness, particularly of certain (smaller) population groups (Hauser, 2008; Frick, J. and Krell, 2011). In the context of the present book, whenever applicable and possible, use is made of the German Socio-Economic Panel (G-SOEP) as a second data-set to test the sensitivity of the empirical results.

The G-SOEP is an on-going household panel survey, conducted annually since 1984 and representing the resident population of Germany with, as of 2006, a total of eight subsamples (Wagner et al., 2007). The G-SOEP data used in this book are constructed in such a way that they correspond as closely as possible to Eurostat's recommendations for the EU-SILC data, in order to ensure international comparability in terms of structure (a representative cross-sectional data-set for each survey year), the population covered (private households), weighting factors (post-stratified household inverse probability weights), accounting period (previous calendar year), and content of the common variables analysed (in particular total disposable income). Having said that, it was impossible to account for all differences between the two surveys with a potential impact on comparability, e.g. with regard to post-collection processing (different methods are employed to deal with extreme values, negative incomes, partial unit non-response, item non-response, …) and variable coverage (the G-SOEP data-set contains no comparable indicators on material deprivation, for instance).

6 An Illustration: Poverty Trends in the European Union between 2005 and 2009

The aim of the analysis presented in this final section is to illustrate the empirical impact of alternative choices with regard to the measurement of poverty (in terms of metric of well-being, poverty line and sensitivity to the distribution among the poor) on the observed evolution of poverty in the EU between 2005 and 2009. The initial focus is on poverty in the EU as a whole (excluding Bulgaria, Malta and Romania); subsequently, attention is paid to individual EU Member States. For more elaborated discussions of European poverty trends and what drives them, the reader is referred to the other chapters in this book as well as to Ward et al. (2009), Aktinson and Marlier (2010), and Notten and de Neubourg (2011).

6.1 Poverty in the European Union

Use is made of the two most commonly applied *metrics of well-being*, namely equivalized household disposable income (using the modified OECD equivalence scales) and a counting measure based on an index of nine deprivation items (listed in textbox 2). [57] The disposable income concept used in the analyses corresponds to the

[57] For the income-based indicators, income generally refers the previous calendar year, whereas most of the deprivation items refer to the situation in the survey year. In some countries, the impact of the financial crisis was already noticeable in 2009: there were increases in the number of deprived households in Ireland, Lithuania, Estonia, Latvia, and –

income concept employed in official Eurostat statistics. This diverges slightly from that proposed in the Canberra Group recommendations outlined in Section 3.2.1. First, it does not take account of imputed rent for owner-occupied dwellings and the value of home production.[58] Finally, the extent to which fringe benefits are recorded in the EU-SILC data varies between countries. Additionally, disposable incomes are – in contrast to standard Eurostat practice – top-bottom coded.[59] This procedure reduces the effect of the different treatment of negative incomes across the EU (see Verma and Betti (2010), for further details). In order to take due account of relative price differences between countries and differences in exchange rates, income in national currencies is divided by Eurostat's purchasing power parities for final household consumption. (see Van Mechelen et al. (2011: 36-37) and OECD (2006)).

For the poverty measures based on disposable income, an exploration is made of a range of country-specific *poverty lines* around the standard choice of 60% of the country-specific median disposable income (40-70% of the country-specific median) and a range of EU-wide poverty lines (40-70% of the European median). A sensitivity analysis is performed for the threshold for material deprivation on a scale from 7 to 1 (i.e. a person is considered to be deprived if deprived on at least seven items, on at least six items, and so on).

For each case, the three most commonly used *FGT indices* are considered, i.e. $\alpha = 0; 1$ and 2. This yields nine alternative comparisons, as shown in Table 11, together with the main finding on poverty trends between 2005 and 2009. Since EU-SILC is based on a sample, 95 % confidence intervals are estimated and reported in the graphs included in the annex. Maximum account is taken of the sample design and weighting schemes (see Goedemé (2011) for a full discussion and illustration).[60]

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albeit less strongly – Spain, Greece and Hungary (Eurostat online database, last accessed on 25 November 2011).

[58] The impact of imputed rent on poverty and inequality estimates has been studied by, among others, Frick and Grabka (2003), and Sauli and Törmälehto (2010). The measurement and impact of including production for own consumption is discussed in Paats and Tiit (2010). Brandolini et al. (2010) employ an even wider income concept: they focus on the total net worth, which takes account of as many assets and debts as possible.

[59] We use LIS top-bottom coding, i.e. top-coding income at 10 times the median of non-equivalized income and bottom-coding income at 1 per cent of equivalized mean income. Our sensitivity analysis has shown that top-bottom coding (and the exact procedure applied) does not strongly affect the qualitative results presented in this chapter. However, especially for FGT(2) the effect on point estimates and estimated standard errors is non-negligible (figures available from the authors, see also Van Kerm (2007)).

[60] For the estimation of the 95 per cent confidence intervals of the difference between the two years, it is assumed that the 2005 and 2009 samples are independent, which is true for most countries. This assumption simplifies the estimation of standard errors of the difference. It should be kept in mind that partially overlapping confidence intervals of two estimates do not necessarily imply that the difference is not statistically significant at the given confidence level (e.g. Schenker and Gentleman, 2001; Wolfe and Hanley, 2002; Afshartous and Preston, 2010; Cumming, 2009). Standard errors and confidence intervals have been estimated with the DASP module for Stata (Araar and Duclos, 2007) as well as standard Stata estimation commands.

Proceeding row-by-row, first a comparison is made of the results for the three FGT measures for the metrics of well-being based on disposable income combined with a country-specific poverty line. Each graph in the annex consists of three panels showing the 95% confidence intervals for the FGT(0), FGT(1) and FGT(2) for both years. These figures are so-called 'poverty incidence curves' as introduced by Ravallion and Bidani (1994). The horizontal axis represents alternative choices for the poverty line, whereas the FGT value can be read from the vertical axis.

Table 11: The evolution of poverty in the EU, an overview (EU-SILC 2005-2009)

Metric of well-being	Poverty line	FGT(0)	FGT(1)	FGT(2)
Equivalized household disposable Income	40-70% of country-specific median income	Figure 6a =	Figure 6b =	Figure 6c =
	40-70% of EU median income	Figure 7a ↓	Figure 7b ↓	Figure 7c ↓
Deprivation index	1-7	Figure 8a ↓	Figure 8b ↓	Figure 8c ↓

Note: In the case of the last two rows, for all examined poverty lines, changes between 2005 and 2009 are significantly different from zero with more than 99.99% confidence . In the case of the first row, no single change is found to be statistically significant with at least 85% confidence (two-sided test).

Source: EU-SILC UDB 2005, 2009; authors' calculations.

In the first row of Table 11 we adhere to the official at-risk-of-poverty indicator, which measures country-specific poverty by a headcount using a poverty line defined as a percentage of the country-specific median income and measures European poverty by the population weighted average. As can be seen from the top panel of Figure 6, no substantial changes are found between 2005 and 2009.[61] About 16% of the

[61] Given the existing doubts about the quality of the German EU-SILC data (especially during the first years of EU-SILC (Frick, J. and Krell, 2011; Goedemé, 2011), the analyses were run with and without Germany. To some extent, the poverty standstill is driven by German data. Excluding Germany from the analysis, poverty declines significantly: at 60 per cent of national median income, the total percentage of EU citizens at risk of poverty drops by just under a percentage point (from almost 17 to just over 16 per cent). Even though, in percentage points, this change may seem rather small, it amounts to approximately 3.2 million fewer Europeans in poverty. Similar qualifications hold for the (squared) normalized poverty gap ratio.

individuals are poor, which amounts to nearly 80 million people, roughly equivalent to the population of Germany. About 5% of the EU population is to be considered poor with a poverty line at 40% of the median. For reasons explained above, we did the same exercise replacing the German EU-SILC data with G-SOEP data. To some extent, the poverty standstill observed between 2005 and 2008 is driven by German data. If G-SOEP data are included in the analysis, a slight but significant decrease of about half a percentage point is observed for all levels of the poverty line in the case of FGT(0), and even smaller decreases are observed for higher levels of the poverty line in the case of FGT(1) and FGT(2).

The picture is very different if one analyses income poverty with an EU-wide poverty line, corresponding to the second row of Table 11, as shown in Figure 7. Poverty is then found to have substantially declined between 2005 and 2009, and this is especially so at lower levels of the poverty line for the headcount FGT(0), whereas this evolution is more obvious at higher levels of the poverty threshold in the case of the squared poverty gap ratio FGT(2). For the poverty line set at 60 % of the EU-wide median income, the headcount dropped from 23 % of European citizens in 2005 to around 21 % in 2009 (a decrease by about 10 million persons in poverty, roughly the population of Belgium).

Similarly, if one takes a perspective based on material deprivation (the third row of Table 11), the poverty headcount dropped from over 17 % to around 15 % of EU citizens using at least three items as a threshold (see Figure 8 in the annex). Also in the case of FGT(1) and FGT(2) substantial decreases in material deprivation can be observed. As can be seen from the figure, only a very small proportion of the EU population is estimated to be deprived on seven or more items.

6.2 Poverty in the Individual Member States

Even though the observed changes for the EU as a whole are remarkable, they mask even larger fluctuations within individual Member States. For this reason, a detailed look is taken at the EU Member States for the FGT(0) measure (which corresponds to the measurement choices summarized in the first column of Table 11). Figure 9 represents the country-specific evolution of the poverty headcount between 2005 and 2009 for respectively the official at-risk-of-poverty indicator, the income poverty indicator with an EU-wide poverty line, and the indicator of material deprivation. The poverty line corresponds to respectively 60 % of country-specific median income, 60 % of the EU-wide median income (German EU-SILC data) and at least three out of nine items. As it turns out, the type of indicator (income poverty versus deprivation) and the kind of poverty line applied (country-specific or EU-wide) makes an even bigger difference than was the case in Figure 6, Figure 7 and Figure 8.

Let us again begin with the official poverty measure with poverty lines defined as a percentage of country-specific median income (Figure 9a). The difference between the country with the lowest headcount (9 % in the Czech Republic) and that with the highest (26 % in Latvia) is relatively small. Changes seem to follow no specific pattern. Percentage-point changes in the at-risk-of-poverty rate are substantial in Latvia (+6),

Sweden (+4), Poland (-4) and Ireland (-4). Smaller changes are observed in Finland (+2), the Czech Republic (-2) and Slovakia (-2). In the other countries, changes are not statistically significant at the 95 per cent confidence level. The increase observed with German EU-SILC data, is not corroborated when using the G-SOEP data.

Again, the picture changes though if one applies an EU-wide poverty line (Figure 9b), which results in a larger cross-national variation in the poverty headcount. In the poorest EU Member States, it exceeds levels of 50 %, which is much higher than the headcount in the richest Member States (under 10 %). In just four years, the poverty headcount decreased by between 10 and 30 percentage points in the poorest Eastern European EU Member States, who joined the EU in 2004, with Hungary being an important exception. By contrast, in the richest Member States, the poverty headcount did not decline by much; in some cases, it actually increased slightly. As can be seen from Figure 9c, results obtained with an EU-wide poverty line are similar to those relating to the indicator of material deprivation, which also uses a single poverty line for all EU Member States, though the observed differences between countries are somewhat smaller.

Finally, the question arises whether the three indicators point in the same direction for all the individual countries. In a quarter of the Member States under consideration, this is indeed found to be the case. For instance, in the Czech Republic, Slovakia and Poland, all three indicators consistently point to a significant decrease in the poverty headcount. In seven countries, there is agreement only for the two indicators with an EU-wide poverty threshold. Remarkably, only in Latvia substantial decreases in financial poverty with an EU-wide threshold and decreases in deprivation are combined with considerable increases of the at-risk-of-poverty indicator. Finally, it is noteworthy to mention that in Ireland, substantial increases in material deprivation are accompanied by substantial decreases in the income-based indicators.

These contradicting trends may be attributable to the fact that the deprivation indicator more readily captures the impact of the economic crisis than income does, as the latter concerns the income for the year preceding the moment of the interview.

In sum, for our analysis of the evolution of EU poverty it is clear that the choice of the metric of well-being, the place of the poverty line and the degree of sensitivity to the distribution among the poorest are not merely theoretical concerns, but that they also matter empirically.[62] In particular, the findings show that the chosen metric of well-being and the setting of the poverty line (country-specific or EU-wide) lead to substantially different conclusions.

[62] Similar findings have been reached for developing countries, Laderchi et al. (2003) for instance, study the empirical impact of the definition and measurement of poverty in India and Peru.

7 Conclusion

The focus in this chapter is on the measurement of poverty in the European Union. The starting-point is a widely accepted definition of poverty in the EU context. The class of FGT poverty measures offers a powerful and flexible toolbox for measuring poverty. Three decisions need to be taken in order to be able to measure poverty. These relate to the determination of the most appropriate metric of well-being x_i, the setting of the poverty line z, and the sensitivity to the distribution among the poor α. All three decisions involve value judgements with regard to the notion of poverty, implying that some disagreement between individuals is inevitable.

The famous at-risk-of-poverty measure reflects a particular answer to the three aforementioned questions. Although the official at-risk-of-poverty measure is easy to interpret and communicate, it should be used with care. As a policy target, the at-risk-of-poverty measure provides incentives to focus on the richest among the poor. Moreover, poverty measured by at-risk-of-poverty can decrease in a situation where a deterioration in living standards specifically affects the median of the distribution. Rather than to rely on a single poverty indicator, one should apply a broad portfolio of poverty measures including robustness and sensitivity checks (Atkinson et al., 2002).

Some progress has been made recently in the literature on poverty measurement by the introduction of a more encompassing definition of well-being through the application of multidimensional techniques. More sophisticated approaches have been developed for fixing a poverty line, such as the budget standard method; and increased computational power has resulted in more reliable assessment of the statistical precision of results obtained. However, the quality of a poverty analysis obviously depends crucially on the quality of the underlying EU-SILC data. Further improvements, such as a broadening of the portfolio of indicators of human well-being (expenditures, objective health characteristics, subjective well-being and happiness), larger sample sizes and more precise information on the sampling procedure can only improve the measurement and our understanding of the nature of European poverty.

8 Acknowledgements

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9 Annex to Chapter 3

9.1 Textboxes included in the original text

Textbox 1: The at-risk-of-poverty indicator

Being at-risk-of-poverty means living in a household with an equivalized net disposable household income below 60% of the national median equivalized net disposable household income. The net disposable household income is equal to the sum of the income of all household members net of taxes. More precisely, it includes cash or near-cash employee income, company cars, cash profits or losses from self-employment (including royalties), social benefits, income from rental of a property or land, 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, and tax on income and social insurance contributions.

Total net disposable household income is equivalized using the modified OECD equivalence scale. This scale attaches a weight of 1 to the first adult, a weight of 0.5 to all other household members aged 14 and over, and a weight of 0.3 to household members under the age of 14. The equivalized household income is obtained by dividing total household income by the sum of the individual equivalence weights. All household members are attributed the same equivalized household income. In other words, it is assumed that the living standard of all household members is the same.

Subsequently, the median equivalent net disposable household income is estimated at the individual level for each Member State. Persons with an equivalent net disposable household income below 60 per cent of the median are considered to be at risk of poverty.

In all countries except Ireland and the United Kingdom, the income reference period is equal to the calendar year preceding the survey year, which means that information on the composition of the household (and the equivalence scale) does not always correspond to the income information. In Ireland, the income reference period consists of the twelve months preceding the interview, whereas in the United Kingdom current income is multiplied by 52 or 12 (depending on whether it is provided as a weekly or a monthly amount). More information on this and other EU-SILC-based indicators can be found in Atkinson et al. (2002), Marlier et al. (2007) and on the Eurostat website*.

*http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/introduction

Textbox 2: Severe material deprivation

Severe material deprivation is measured by an index of nine items relating to financial stress and the enforced lack of a list of durables (see the table below). All persons living in a household which, at the moment of the interview, is deprived on at least four out of nine items are considered to be severely materially deprived. The list of items and the threshold are the same across all EU Member States. This indicator is currently under revision and will probably contain an updated list of items by 2015. Guio (2009) provides extensive background information on this indicator.

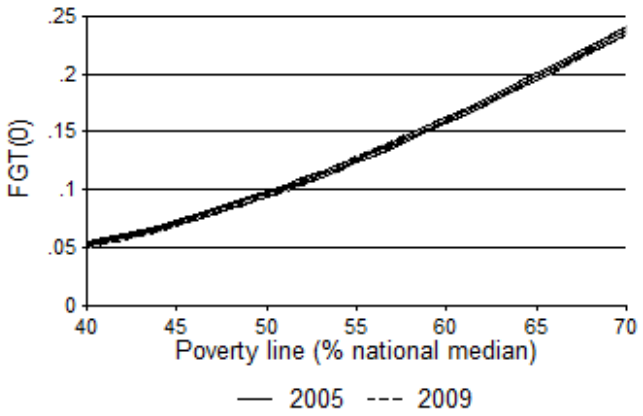
Table 12: Items of the material deprivation indicator

Item	The household…
1	has been in arrears on mortgage, rent payments, utility bills, hire purchase installments or other loan payments over the last 12 months
2	does not have the capacity to afford paying for one week annual holiday away from home
3	does not have the capacity to afford a meal with meat, chicken, fish or vegetarian equivalent every second day
4	does not have the capacity to face unexpected financial expenses equal to the at-risk-of-poverty threshold (monthly average) estimated on the basis of EU-SILC of two years ago
5	cannot afford to keep the home adequately warm
6	does not have a telephone because it cannot afford it
7	does not have a colour TV because it cannot afford it
8	does not have a washing machine because it cannot afford it
9	does not have a car because it cannot afford it

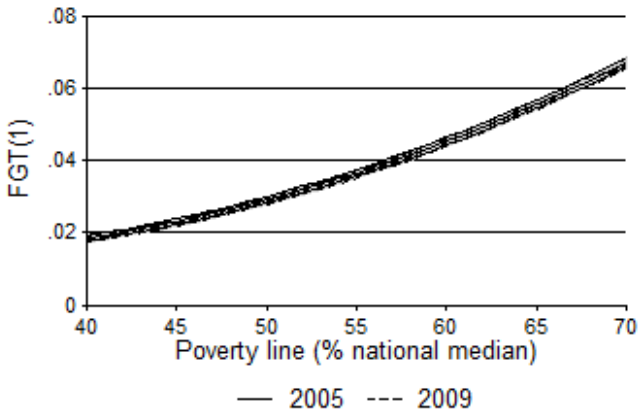
9.2 Figures included in the original text

Figure 6: Poverty trends in the European Union, EU-SILC 2005 – 2009 with the poverty threshold expressed as a percentage of the national median income

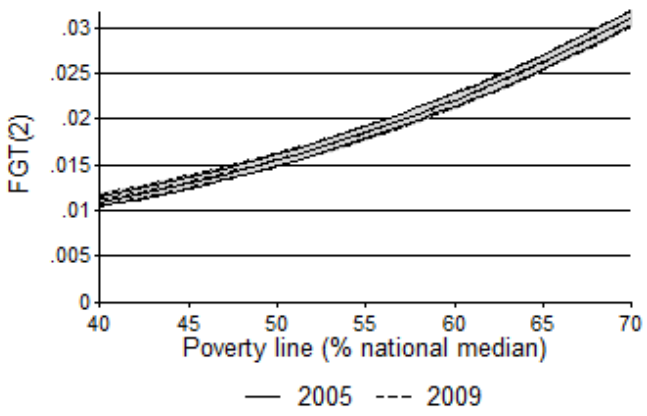
(a)



(b)



(c)

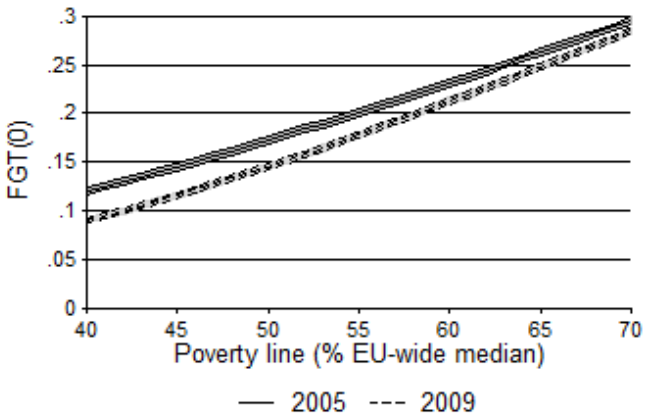


Notes: EU27 minus Bulgaria, Malta and Romania. Area shaded in grey represents 95% confidence intervals. Standard errors take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that poverty line has been estimated on the basis of the data (Araar and Duclos, 2007).

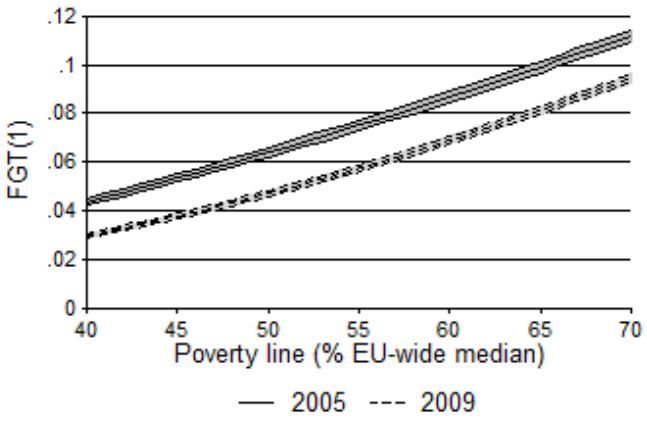
Source: EU-SILC 2005 and 2009 UDB, Eurostat (PPPs), authors' calculations.

Figure 7: Poverty trends in the European Union, EU-SILC 2005 – 2009 with the poverty threshold expressed as a percentage of the EU-wide median income

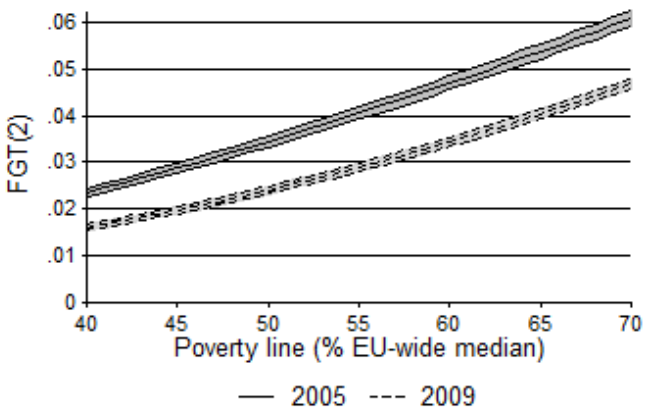
(a)



(b)



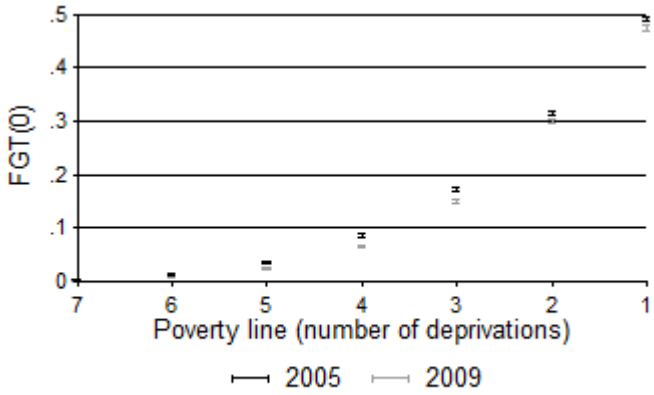
(c)



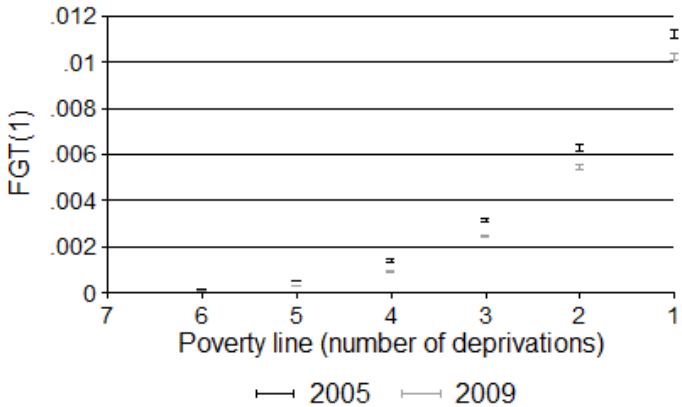
Notes: EU27 minus Bulgaria, Malta and Romania. Area shaded in grey represents 95% confidence intervals. Standard errors take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that poverty line has been estimated on the basis of the data (Araar and Duclos, 2007).
Source: EU-SILC 2005 and 2009 UDB, Eurostat (PPPs), authors' calculations.

Figure 8: The evolution of material deprivation in the European Union, EU-SILC 2005 – 2009

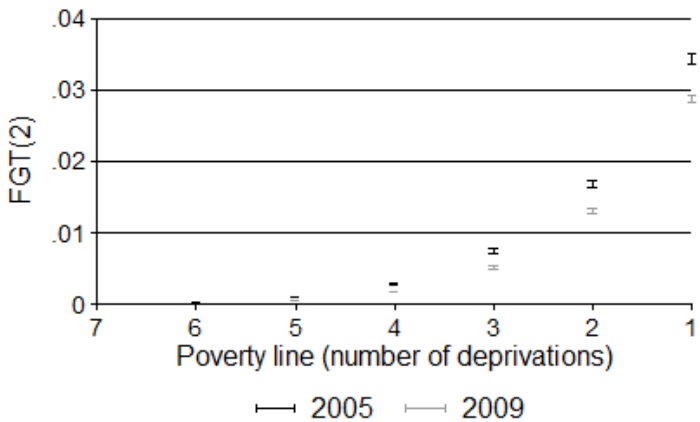
(a)



(b)



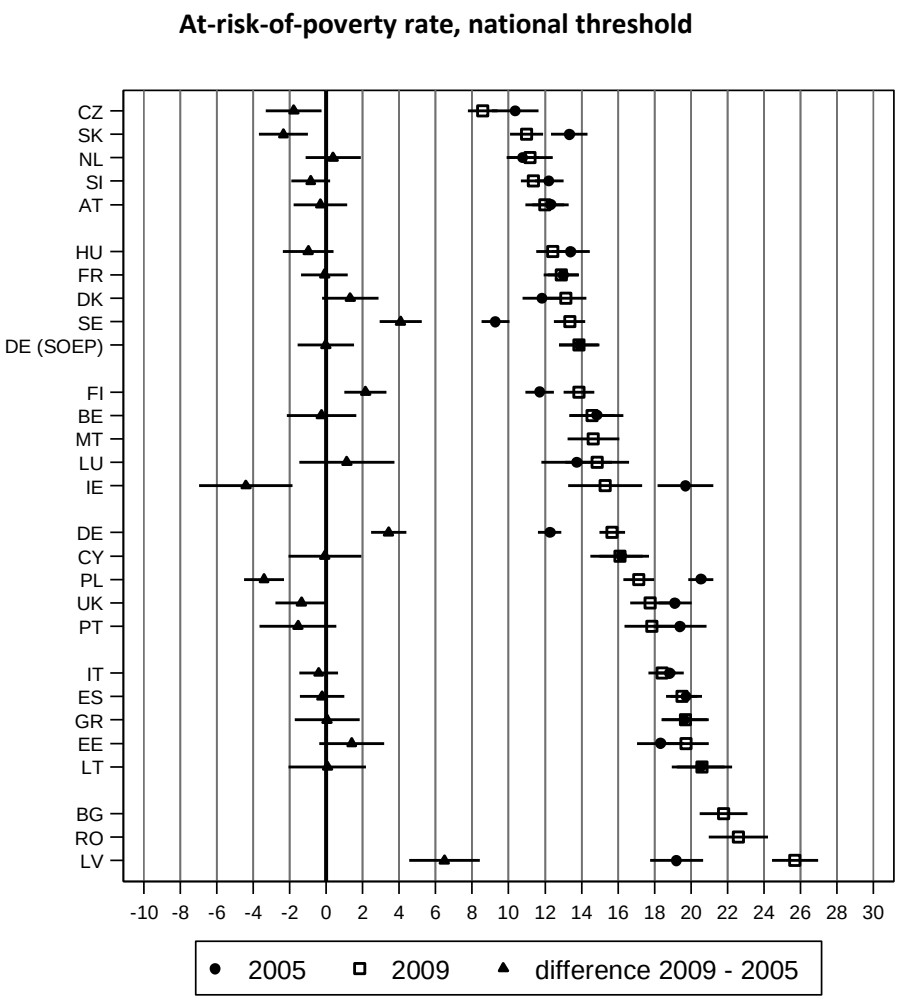
(c)



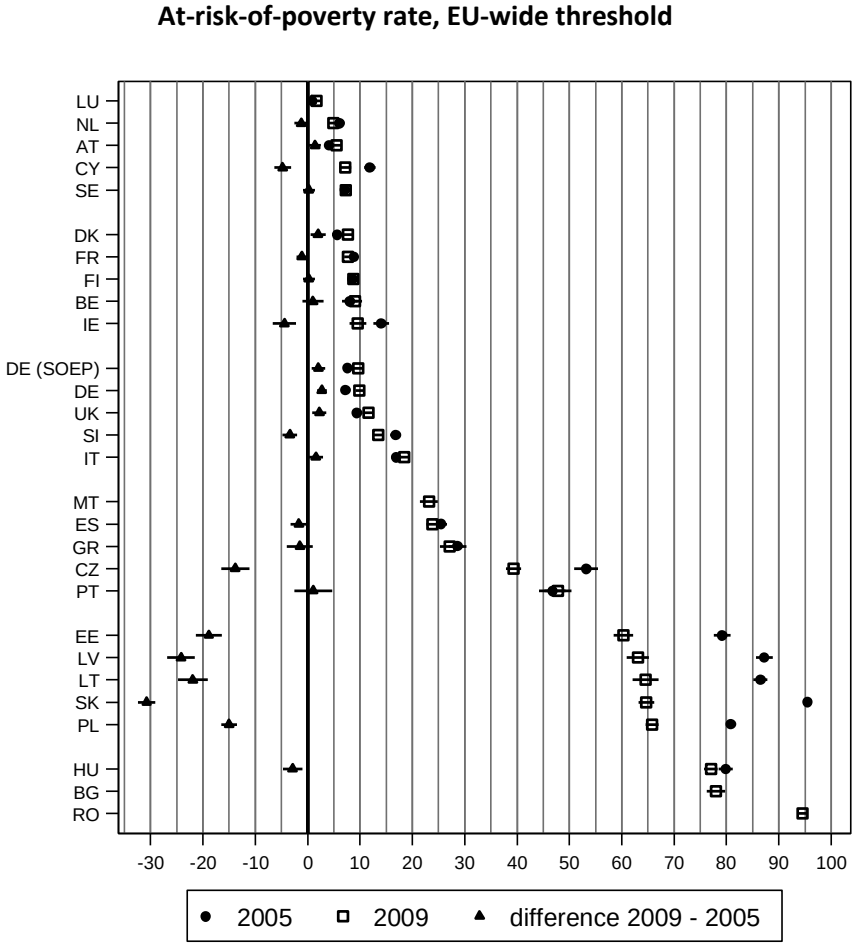
Notes: FGT1 and FGT2 not normalised. EU27 minus Bulgaria, Malta and Romania. 95% confidence intervals, estimated taking account of sample design (cf. Goedemé, 2011).
Source: EU-SILC 2005 and 2009 UDB, authors' calculations.

Figure 9: FGT0 of the at-risk-of-poverty indicator with the poverty line set at 60 % of the national median equivalized net disposable household income (a), of a similar indicator with the poverty line set at 60 % the EU-wide median equivalized net disposable household income (b) and of the EU indicator of material deprivation with the poverty line set at three out of nine deprivation items (c), EU-SILC 2005 and 2009 compared

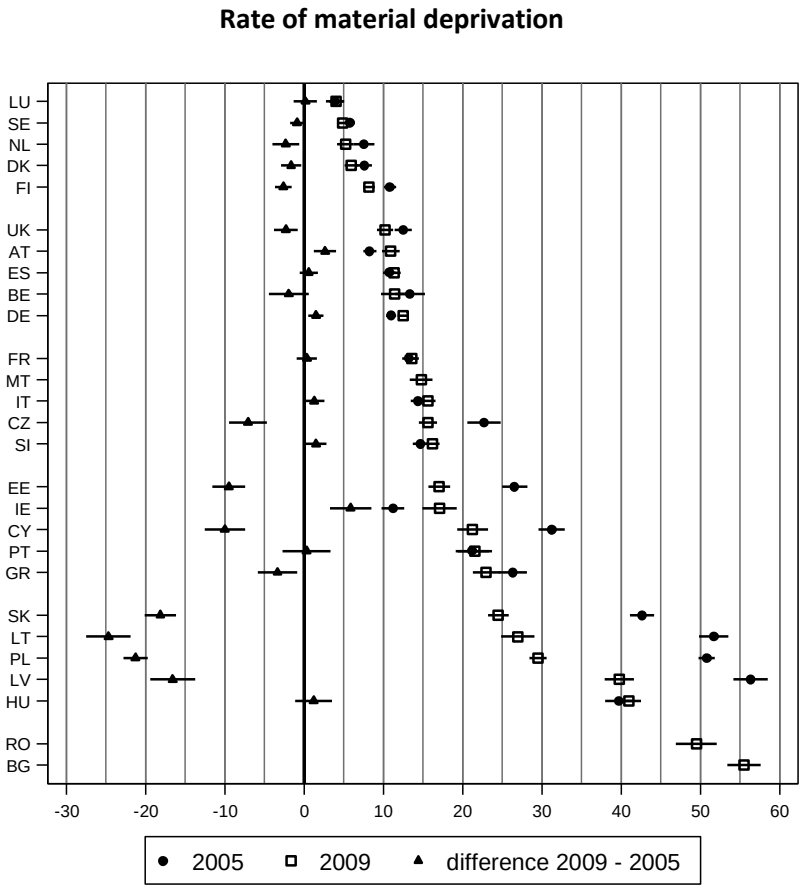
(a)



(b)


At-risk-of-poverty rate, EU-wide threshold
LU
NL
AT
CY
SE
DK
FR
FI
BE
IE
DE (SOEP)
DE
UK
SI
IT
MT
ES
GR
CZ
PT
EE
LV
LT
SK
PL
HU
BG
RO
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
100
2005
2009
difference 2009 - 2005

(c)



Notes: Countries sorted by EU-SILC 2009 estimates. 95% confidence take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that the poverty line has been estimated on the basis of the sample (see Araar and Duclos, 2007). Estimates for Bulgaria, Malta and Romania in panel (c) are based on an EU-wide poverty threshold including all EU27 countries. In order to maximise cross-temporary consistency, for the other countries the threshold is estimated excluding the latter three countries. In the case of DE(SOEP), the EU-wide threshold has been estimated including G-SOEP instead of EU-SILC data for Germany.

Source: EU-SILC 2005 and 2009 UDB, G-SOEP, Eurostat (PPPs), authors' calculations.

9.3 The importance of top-bottom coding (not included in original text)

Extremely low and negative incomes as measured in surveys like EU-SILC pose an important challenge to poverty research. In some cases they point to measurement error, whereas in others the values maybe correct, but may be an invalid indicator of the living standard or the command people have over goods and services. In addition, even if extreme values do not result from measurement error and are a valid indicator of the living standard, while being small in number, they may have a disproportionately large impact on estimated poverty and inequality indices,

undermining the reliability of the estimates. Several methods exist for 'cleaning' the data and reducing the impact of extreme observations, such as trimming (i.e. dropping extreme observations from the dataset), winsorizing (i.e. imputing a bottom and a top value for incomes which cross these values), and (semi-) parametric tail modelling (by which the tails of the income distribution are modelled on the basis of a known distribution, such as the Pareto distribution). Van Kerm (2007) discusses each of these methods in more detail and, on the basis of EU-SILC 2004, has evaluated their impact on a series of inequality and poverty measures. As is summarised in a footnote in Chapter 2, Van Kerm (2007: 14) finds that "Unsurprizingly, besides removing self-employment income recipients, only trimming has a somewhat marked impact on the headcount ratio. The impact remains relatively low anyway, at least for a poverty line set at 60% of the median income [...]". In addition, Van Kerm reports that top-bottom coding has a more important effect on FGT1 estimates. Van Kerm (2007: 17) recognises however, that further research is necessary to evaluate the impact of top-bottom coding on estimated standard errors. In this chapter for Oxford University Press, we do not apply Eurostat practice to use the data 'as they are' in the EU-SILC UDB. In contrast, we apply the LIS procedure for top-bottom coding[63], which is a particular form of winsorizing. The following graphs illustrate why we have decided to do so.

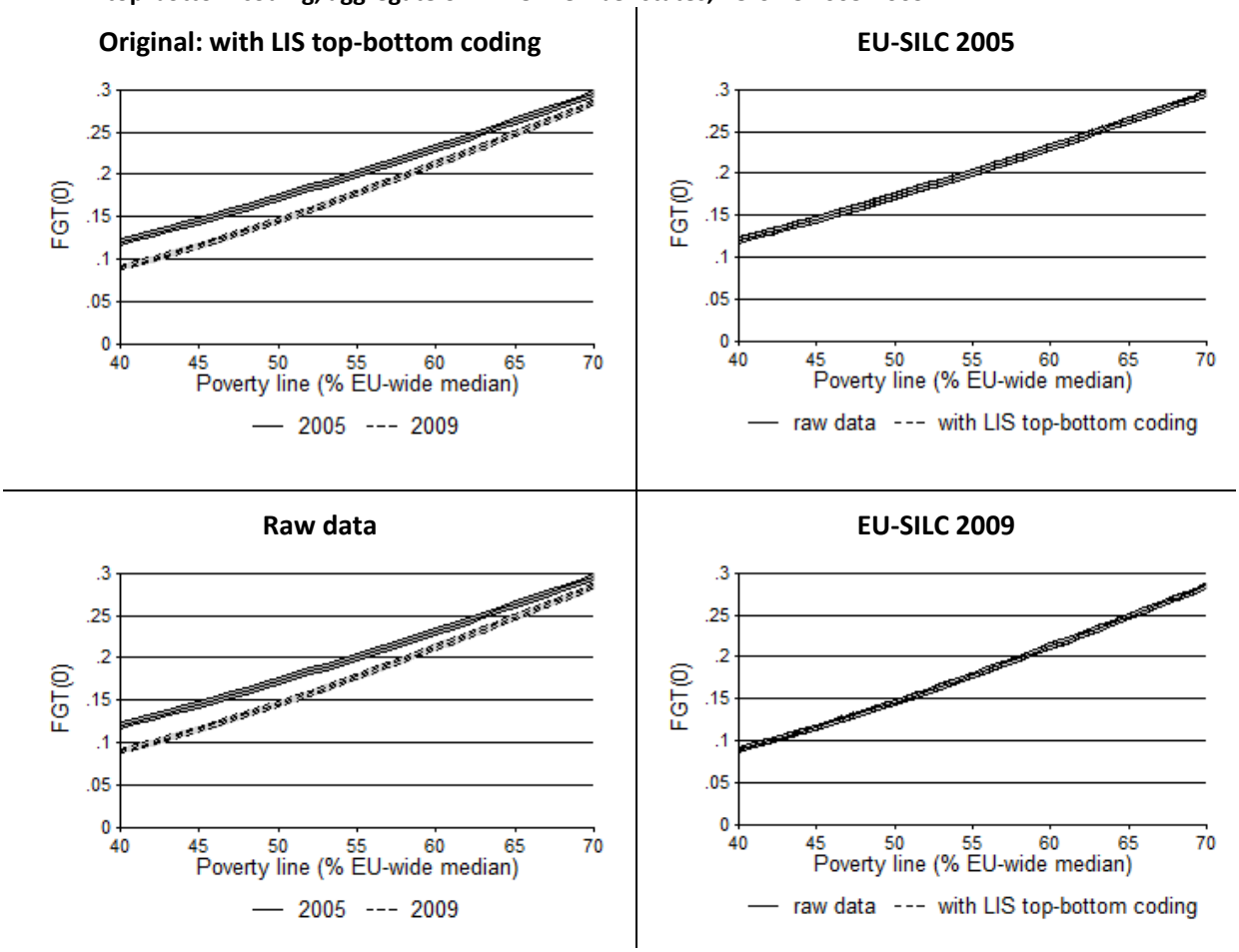
The graphs below illustrate the potential impact of top-bottom coding on point estimates and confidence intervals for FGT0, FGT1 and FGT2. For each of these poverty measures, results on the basis of the 'raw' data are compared to those presented in this chapter, which rely on the LIS procedure for top-bottom coding. Figure 10 suggests that in the case of FGT0 not only point estimates, but also confidence intervals are *not* strongly affected by top-bottom coding. However, as is illustrated by Figure 11 and Figure 12, top-bottom coding does not only change estimated FGT1 and FGT2 values, but also – particularly in the case of FGT2 – estimated confidence intervals. As far as the analysis of poverty trends in the EU is concerned, using the raw data instead of LIS top-bottom coded data would not change conclusions in the case of FGT0 and FGT1. However, with regard to FGT2 conclusions are very different, namely, in the case of an EU-wide poverty threshold it is not possible on the basis of the raw data to conclude unambiguously that poverty has decreased: only when the poverty line is at least equal to 66 per cent of the EU-wide median, a significant change (with 95% confidence) can be observed. When the poverty line is relative at the national level, similar effects of top-bottom coding can be observed: no effect in the case of FGT0, a small effect in the case of FGT1, and a particularly strong effect on both point estimates and confidence intervals in the case of FGT2.

[63] In the case of LIS top-bottom coding, equivalent net disposable household incomes of less than 1 per cent of the mean equivalent net disposable household income are replaced with the latter value. If non-equivalised net disposable household income amounts to more than 10 times the median net disposable household income, it is replaced with the latter value (only in a second step top incomes are equivalised) (http://www.lisdatacenter.org/data-access/key-figures/inequality-and-poverty/, last accessed in February 2012).

Given the nature of the FGT poverty measures, the observed patterns should not come as a surprise. First of all, winsorizing does not affect the median income, as it leaves the rank of individuals in relation to their income unaffected, except at the bottom and top of the income distribution. In addition, for the poverty headcount (FGT0), the only thing that matters is whether one has an income below the (unchanged) poverty threshold or not. Usually, the imputed values for extremely low incomes are still below the poverty threshold. As a result, winsorizing does not result in a different estimate for FGT0 or its standard error as compared to using the data before top-bottom coding[64]. This is different in the case of FGT1. In that case, all individual poverty gaps are summed and divided by the total number of inhabitants. When the lowest incomes are winsorized (i.e. replaced with a higher income), the total sum of the individual poverty gaps will be lower as compared to using the raw data, and so will be FGT1. In addition, the variance of incomes below the poverty threshold will be lower, and so will be the variance of FGT1. Given that FGT2 is based on the square of the individual poverty gaps, the effect of winsorizing observed for FGT1 can be observed in a strongly magnified form in the case of FGT2.

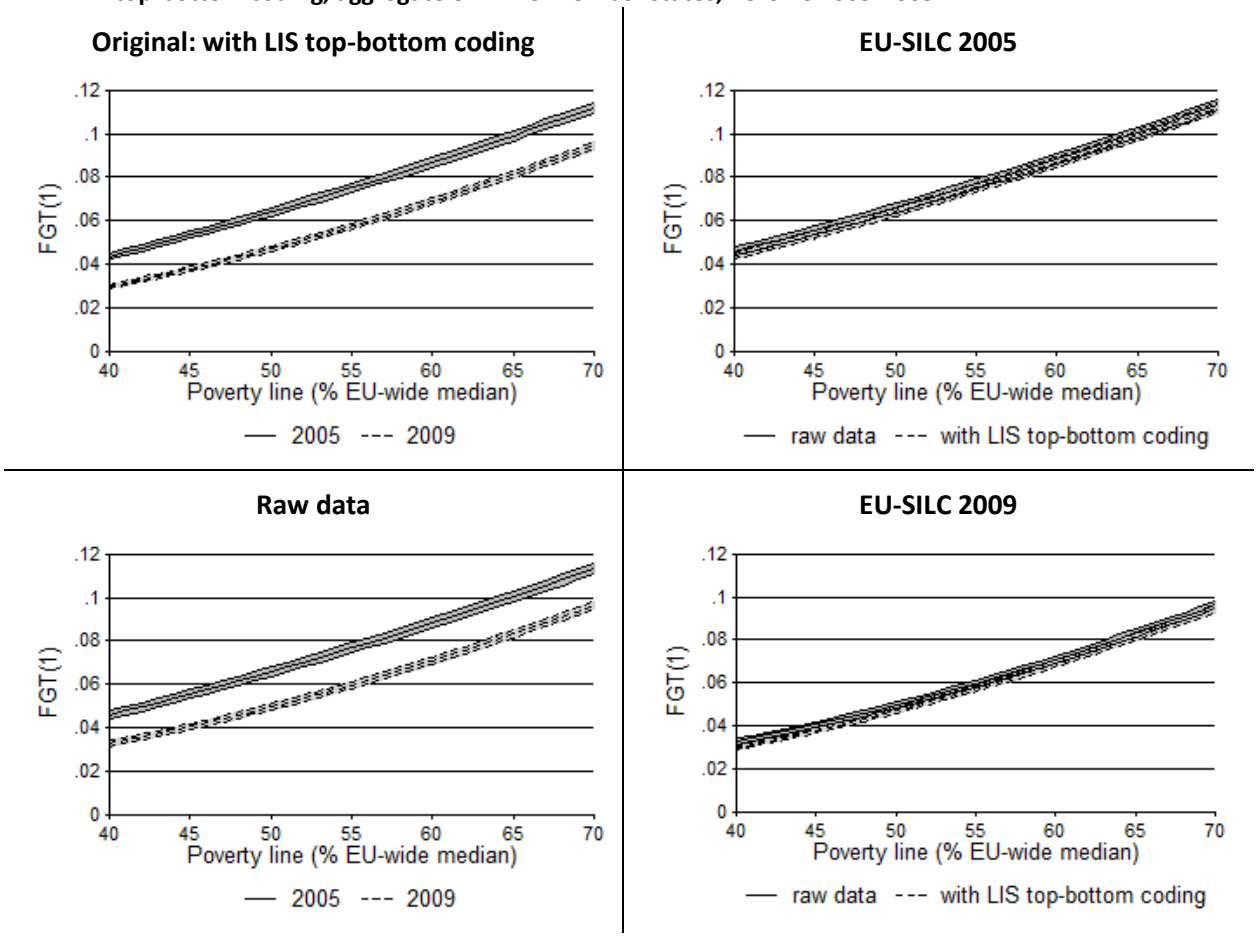
[64] Of course, in the case that the average income is used to define the poverty threshold, winsorizing may both affect the poverty threshold and the poverty headcount (as well as its standard error).

Figure 10: The evolution of FGT0 in the EU, with an EU-wide threshold, with and without LIS top-bottom coding, aggregate of 24 EU member states, EU-SILC 2005-2009



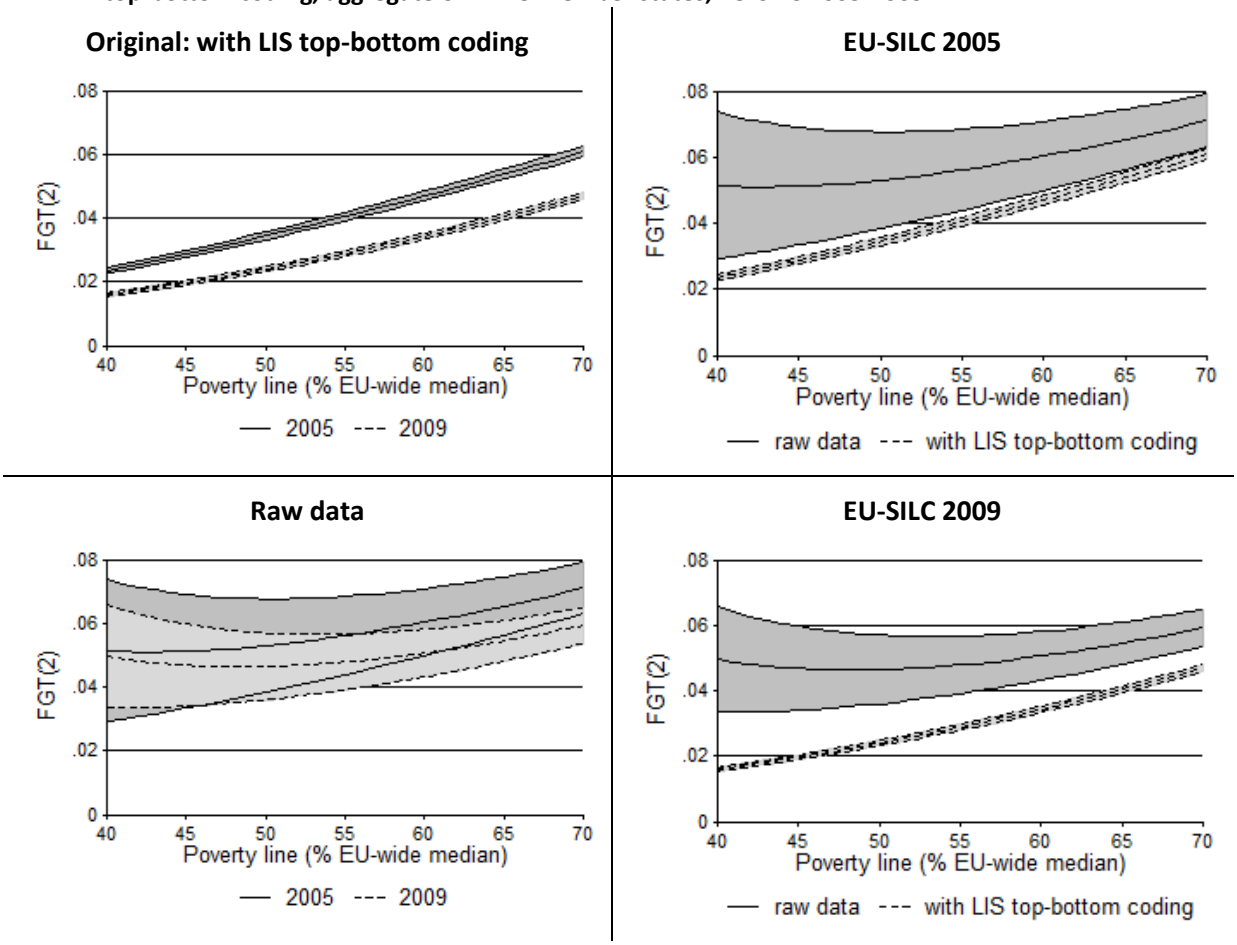
Notes: EU27 minus Bulgaria, Malta and Romania. Area shaded in grey represents 95% confidence intervals. Standard errors take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that poverty line has been estimated on the basis of the data (Araar and Duclos, 2007). Incomes converted to purchasing power standards on the basis of Eurostat's PPPs for final household consumption (Eurostat online database, last accessed in December 2011).

Figure 11: The evolution of FGT1 in the EU, with an EU-wide threshold, with and without LIS top-bottom coding, aggregate of 24 EU member states, EU-SILC 2005-2009



Notes: EU27 minus Bulgaria, Malta and Romania. Area shaded in grey represents 95% confidence intervals. Standard errors take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that poverty line has been estimated on the basis of the data (Araar and Duclos, 2007). Incomes converted to purchasing power standards on the basis of Eurostat's PPPs for final household consumption (Eurostat online database, last accessed in December 2011).

Figure 12: The evolution of FGT2 in the EU, with an EU-wide threshold, with and without LIS top-bottom coding, aggregate of 24 EU member states, EU-SILC 2005-2009



Notes: EU27 minus Bulgaria, Malta and Romania. Area shaded in grey represents 95% confidence intervals. Standard errors take as much as possible account of the sample design (cf. Goedemé, 2011) and the fact that poverty line has been estimated on the basis of the data (Araar and Duclos, 2007). Incomes converted to purchasing power standards on the basis of Eurostat's PPPs for final household consumption (Eurostat online database, last accessed in December 2011).

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Part II: Minimum income protection for Europe's elderly

Chapter 4: The wide disparities in minimum income protection for Europe's elderly

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Abstract

In Europe, the elderly stand out for their heavy reliance on welfare state arrangements for securing their living standard. In spite of relatively high elderly at-risk-of-poverty rates in many EU member states, the past two decades have witnessed a tendency to re-strengthen the link between past contributions and pension benefits, and to rely more strongly on private pensions. At the same time, public pension replacement rates are projected to decrease in a large number of European countries. In this context, minimum income protection for Europe's elderly is likely to become even more important for alleviating elderly poverty than is the case today. Yet, minimum income protection schemes targeted at the elderly have remained largely undocumented in the international literature. Therefore, this chapter reviews existing minimum income policies for the elderly in Europe and develops a typology based on entitlement and eligibility criteria. Building on data from a project involving national experts from 25 EU member states, it is shown that in the 2000s welfare erosion of elderly persons' non-contributory minimum income guarantees has been limited. Moreover, a substantial number of countries has pursued a deliberate policy of increases in minimum income benefits for the elderly. Nonetheless, only in a few countries benefits are adequate for lifting elderly persons above the poverty line. At the same time, differences between EU member states in terms of mode of access and benefit levels remain large.

Preamble

The annex at the end of this chapter includes several analyses and sensitivity checks that have nourished this chapter, but were omitted from the original text. First of all, estimated minimum income levels are in many countries strongly influenced by assumptions regarding housing costs and estimated housing benefit levels. This is further analysed in subsection 6.2. Trends in net benefit levels may also be influenced by changes in the tax system, which is further analysed in subsection 6.3. The graphs included in the text present benefit levels and trends for elderly couples. However, the implicit equivalence scale is not the same for all countries and some countries have changed the implicit equivalence scale over the past 10 years. This is further illustrated in subsection 6.4, which includes some results for elderly singles. In the book chapter, benefit adequacy is evaluated by comparing minimum benefit levels to the median household income. In subsection 6.5 I elaborate on the sampling variance of the estimated median income levels and in subsection 6.6 I present results for an alternative evaluation of benefit levels. Some of these issues are further analysed in Chapter 7, which elaborates on suggestions for further research. This chapter builds heavily on the CSB-MIPI dataset. A general description of this dataset can be found in the appendix at the end of this PhD thesis.

1 Introduction

In most European welfare states the introduction of a guaranteed minimum income scheme has meant an important step in welfare state development. In many countries, categorical minimum income guarantees have been developed for various specific groups. Among others, this is often the case for persons that have reached the legal retirement age. Much research has focused on minimum income protection for able-bodied persons at working age (e.g. Immervoll, 2009; Nelson, 2010; Van Mechelen, 2010; Rat, 2009). In contrast, minimum income guarantees targeted at the elderly have received much less attention in the international literature, with few exceptions (e.g. Pearson and Whitehouse, 2009). Therefore, the first objective of this chapter is to provide an introductory overview of the different types of minimum income protection targeted at Europe's elderly and to document how these schemes have recently been reformed.

One of the core objectives of pension policy should be to ensure that elderly people do not face a risk of falling into poverty (cf. European Commission, 2010b; Eckardt, 2005: 253-254; Augusztinovics and Köllő, 2009). Recently, this has been re-confirmed by the European Commission (2010d) in its Green paper on the future of pension reforms to ensure adequate, sustainable and safe pensions. Minimum income guarantees are a crucial part of old-age income provision in terms of alleviating poverty in old age, especially for persons with 'incomplete' careers or low earnings throughout their working lives (e.g. European Commission, 2006: 56). In a substantial number of EU countries, minimum income guarantees for the elderly are even likely to become more important in the future. A number of factors are responsible for this trend: a tendency in recent pension reforms to re-strengthen the link between contributions and benefits, a growing reliance on defined-contribution pensions (with inherently more uncertainty about future benefit levels), a projected fall in public pension replacement rates and/or benefit ratios in a good deal of EU member states as well as a growing emphasis on price indexation (Meyer et al., 2007; European Commission, 2009: 27-28; e.g. European Commission, 2005; OECD, 2009; Whitehouse, E. et al., 2009; Zaidi et al., 2006; Social Protection Committee, 2006; European Commission, 2010b: 36). Therefore, the second objective of this chapter is to document whether minimum income benefit levels are sufficient for avoiding poverty in old-age, and how adequacy has evolved in the recent past. In addition, it will be explored whether some types of minimum income protection systematically provide more adequate benefits. The focus is on the principal formal safety net of last resort for elderly persons, that is, the main scheme which guarantees a minimum income irrespective of past contributions.

The chapter is structured as follows. In section two I develop a typology of minimum income schemes targeted at the elderly. This typology serves as the basis for a discussion of the cross-European variation in the availability of minimum income protection schemes for elderly persons. Subsequently, in section three I elaborate on trends and levels of non-contributory minimum income benefits. The chapter ends with a concluding discussion and suggestions for further research.

2 Minimum income guarantees for Europe's elderly

In spite of very large differences in the overall set up of European pension systems (e.g. Immergut et al., 2007; Fultz, 2004), in every EU member state at least some regulation can be found which guarantees a minimum income to the elderly. However, the diversity in minimum income schemes is very large. In order to create some terminological clarity, Table 13 presents a schematic overview of six different types of minimum income guarantees targeted at Europe's elderly (cf. Goedemé and Van Lancker, 2009). The distinction between different minimum income guarantees is based on two important entitlement criteria which co-define the mode of access to a scheme: (1) whether access is dependent on past contributions or not, and (2) the type of means testing which is applied[65]. In addition to the income guarantees targeted at the elderly, in some countries the general social assistance scheme remains relevant for guaranteeing a minimum income to the elderly.

Table 13: A schematic overview of 6 different types of minimum income guarantees targeted at Europe's elderly (mid-2000s)

	Contributory	Non-Contributory
No means or income test	**Flat-rate pension** IE, UK, CZ, EE, LT, LU, PL (persons born before 1949)	**Basic pension** DK, NL, SE (until 2003)
Pension test	**Minimum pension** BE, BG, CY, EE, FR, GR, HU, LU, LV, MT, PL, PT, RO (since April 2009), SI, SK (until 2003)	**Conditional basic pension** CY, EE, FI, SE (since 2003), UK (persons aged 80 and over)
Means or income test	**Pension supplement** AT, CY (since 2009), ES, GR, IT (persons insured before 1996), SI	**Social pension** BE, BG, DE (since 2003), ES, FI (since 2002), FR, GR, HU, IE, IT, LT, LV, MT, PT, SE (since 2003), SI, UK

Source: see Table A.1 in the annex.

[65] For an alternative terminology, see Social Protection Committee (2006), OECD (2009) and Pearson and Whitehouse (2009).

More precisely, in the European Union the following contributory minimum income guarantees are available to the elderly:

1) **Flat-rate pensions** are flat benefits paid to all pensioners with a sufficient contribution record. In Ireland and the United Kingdom they exist as separate pension schemes with the level of the pension depending on the (average) number of weeks (years) one has contributed to the scheme. In several other countries, flat pension amounts are an integral part of the pension formula of contributory earnings-related schemes and put a 'floor' beneath the earnings-related part. Whereas in Lithuania, Luxembourg and Estonia (contribution years before 1999) the level of the flat-rate pension also depends on the contribution record, the flat pension amount is equal for all pensioners in the Czech Republic, Poland (persons born before 1949) and Estonia (years after 1999), irrespective of the number of years one has contributed to the scheme.

2) **Minimum pensions** top up pension income from an earnings-related scheme to a pre-defined level. They are an integral part of the earnings-related scheme and, similar to flat-rate pensions, entitlement depends on a minimum contribution record. Minimum pensions are not affected by anything other than public pension income. In Belgium, France, Luxembourg, Latvia and Portugal not only eligibility, but also the level of the minimum pension depends on the contribution record. Conditions and availability of a minimum pension may not be the same for all pensioners within the same country if the pension system comprises separate schemes for different socio-economic groups (for example in Belgium Greece and Portugal). Remarkably, as part of a broader pension reform, in 2004 Slovakia abolished its minimum pension in the earnings-related pension scheme (Human Development Unit, 2004).

3) **Pension supplements** top up pension income either by a fixed amount or to a pre-defined level. In contrast to minimum pensions, entitlement does not only depend on the contribution record in a contributory pension scheme and the level of the pension drawn from this scheme. Eligibility also depends on passing a broader means or income test which takes also other household resources into account. In some countries (for instance Slovenia), the level of the pension supplement depends on the contribution record. A pension supplement is available in Austria, Cyprus (since December 2009), Greece (except for farmers), Italy (persons insured before 1996), Spain, and Slovenia.

Contributory minimum income guarantees do not offer a guaranteed minimum income to all residents of a country. A minimum contribution record (or number of qualifying years) is necessary to benefit from the scheme. Furthermore, also the level of the benefit may be determined by the number of qualifying years. Nevertheless, it should be noted that in a large number of countries many periods out of work also count as qualifying years. Generally, this is the case of periods during which one received an unemployment benefit or an allowance for maternity / paternity or parental leave. In some countries also other periods are taken into account (for example for higher education, childcare, or care for a disabled person) (cf. European Commission, 2010c). Especially if employment is relatively widespread, this may result

in an effective guaranteed minimum for the great majority of the population (for instance, this seems to be the case in the Czech Republic and Luxembourg).

In the majority of EU member states the elderly are (also) protected by non-contributory minimum income guarantees which can be granted from a certain age, usually the legal retirement age. These minimum income guarantees are not dependent on a minimum contribution record. Three different types of non-contributory minimum income schemes can be discerned:

1) In Denmark and the Netherlands a **basic pension** is provided to all elderly persons, regardless of previous contributions or current income. Since 2005, in both countries the age at which the basic pension can be received is 65. For all persons born before July 1939, the retirement age was 67 years in Denmark. In both countries, the benefit level depends on the number of years one has resided in the country. In contrast to all other minimum income guarantees discussed in this section, the basic pension schemes in Denmark and the Netherlands form the cornerstone of the overall public pension system (e.g. Overbye, 1997). The basic pension in Denmark is less 'pure' than the Dutch basic pension scheme. The Danish basic pension consists of a basic component which is only tested against high earnings and a supplementary component which is subject to a broader means test. Whereas the high-earnings test excludes around 1 per cent of pensioners, the supplement is received in full by only 64 per cent and at a reduced rate by another 26 per cent of pensioners (figures for 2002 as quoted in Green-Pedersen, 2007: 469). Similar basic pension schemes were available in Finland (transitory period ended in 2001) and Sweden (transition started in 2003). However, they have been converted into conditional basic pensions.

2) In five EU member states a **conditional basic pension** is available for the elderly. This is the case in Cyprus, Estonia, Finland, Sweden (since 2003) and – for persons aged 80 and over – the United Kingdom. Apart from residence conditions, eligibility is also 'pension-tested'. In other words, it serves as a top up to other (contributory) pensions. In addition, it should be noted that in Finland and Sweden the level of the benefit also depends on the number of years one has resided in the country. The amount does not vary by other sources of income. The relation between conditional basic pensions and basic pensions is similar to the relation between minimum pensions and flat-rate pensions: whereas flat-rate and basic pensions put a floor beneath earnings-related pensions, minimum pensions and conditional basic pensions guarantee a minimum by topping up earnings-related pensions.

3) Almost all other EU member states provide a categorical and means-tested **social pension** targeted at the elderly. In some countries residence history conditions apply (Slovenia, Spain). With some exceptions, the received benefit is equal to the difference between the threshold of the means test and the part of the household's income that is taken into account. There are very large differences between means tests, both with regard to the income base (for example earnings, pensions, assets) and the unit of assessment (for example the claimant, the household or the extended family).

Finally, in all countries that do not provide a non-contributory minimum income targeted at the elderly, a general social assistance scheme is available which is not targeted at a specific age group. This is the case for the Czech Republic, Luxemburg, Poland, Romania and Slovakia. As Romania introduced in April 2009 a minimum pension, by the end of the 2000s Slovakia was the only EU member state left with no minimum income guarantee targeted at the elderly. A detailed overview by country of the available minimum income guarantees is provided in Table A.1 in the annex.

In many countries, the schemes listed in this section are not the only source of protection against poverty in old-age. Some earnings-related pension schemes include additional redistributive elements. For instance, in Belgium (employees' earnings-related pension) and the United Kingdom (State Second Pension), years with low earnings are under some conditions treated as if contributions are paid on a higher earnings level. Other sources of a guaranteed minimum living standard include favourable taxation; the availability of subsidised goods and services to all inhabitants, the elderly in general or just the category of benefit recipients; benefits offered by related schemes such as disability and survivors' pensions; as well as housing benefits (in cash or in kind) (cf. Dewilde and Raeymaeckers, 2008; Verbist, 2006; Verbist and Matsaganis, forthcoming).

3 Benefit levels: a look at the past 10 years

As mentioned earlier, one of the principle objectives of pension policy should be to ensure that elderly people do not face a risk of falling into poverty (cf. European Commission, 2010b; Eckardt, 2005: 253-254; Augusztinovics and Köllő, 2009). For this reason, in this section I will document trends and levels of the main non-contributory minimum income scheme which constitutes for the vast majority of the elderly the principal formal safety net of last resort (cf. the cells shaded in grey in Table 13). In addition, the question is asked whether some types of non-contributory minimum income schemes systematically provide more adequate benefits and whether legislated indexation mechanisms are a good predictor of trends in gross benefit levels.

This section consists of three parts. In the first part, I elaborate on data and measurement issues related to the evaluation of levels and trends in of minimum income benefits. Subsequently, I will discuss trends in gross benefit levels in the 2000s and the main reforms to the minimum income schemes during the past decade. In the third part of this section, trends in the adequacy of net minimum income packages are assessed by means of the so-called model family approach.

3.1 data and measurement

As part of a project on the evolution of minimum income protection in Europe, the Herman Deleeck Centre for Social Policy (CSB) has compiled a dataset with information on the evolution of guaranteed minimum incomes for older people without sufficient resources. This dataset, the CSB Minimum Income Protection

Indicators dataset (CSB-MIPI), contains information on all EU member states, except Cyprus and Malta, as well as three US states (Nebraska, New Jersey and Texas). A broad network of national experts has provided the necessary input for the data. A detailed description of assumptions, procedures, strengths, weaknesses and an overview of the national experts involved in the project can be found in Van Mechelen et al. (2011).

National experts had some freedom to choose which scheme is the typical 'guaranteed minimum income for older people without sufficient resources'. The underlined schemes listed in Table A.1 in the annex correspond to those included in the CSB-MIPI database. Except for Bulgaria and Poland, these are the main non-contributory minimum income schemes targeted at the elderly (in terms of coverage and number of beneficiaries). In countries where both social pensions and (conditional) basic pensions are available, the latter have been included due to a more limited role of the fully means-tested benefits. In all countries, except for Austria, a national scheme has been included. In the case of Austria, results refer to the region of Vienna. In half of the countries a social pension is included in the database. This is not the case for Denmark and the Netherlands (basic pension) as well as Estonia, Finland and Sweden (conditional basic pension). Furthermore, in some countries the general social assistance scheme has been included because there was no specific non-contributory guaranteed minimum income for the elderly (Czech Republic, Luxembourg, Romania and Slovakia), because minimum guaranteed income levels were lower than those of the general social assistance scheme (Slovenia), or because eligibility criteria of the social pension were too strict (Lithuania before 2006). Unfortunately, CSB-MIPI does not contain information on the Bulgarian 'social pension for old age' or the Polish 'Permanent allowance', but includes information on the Bulgarian and Polish minimum pension instead.

In other words, the role of the various minimum income schemes included in the analysis differs from country to country and is not fully comparable. This is also reflected in the number of beneficiaries (around 2009): whereas in Denmark and the Netherlands close to 100 per cent of the elderly population benefits from the basic pension scheme, in Sweden and Finland conditional basic pensions are received by about 50 per cent of the elderly. In contrast, social pensions are received by around 20 per cent of the elderly population in Ireland and the United Kingdom. In most other countries less than 5 per cent of the elderly receive a social pension, even though there are some exceptions (particularly Portugal with 11.5 per cent of the elderly receiving a social pension) (Van Mechelen et al., 2011: 12-13)[66].

Net minimum income benefits are simulated for elderly singles and elderly couples. If applicable, account is taken of non-discretionary housing benefits, income taxes, social contributions as well as local non-income taxes. As far as housing benefits are concerned, it is assumed that the model families are renting an apartment with one bedroom at two-thirds of the national median rent. In some countries alternative datasets and assumptions are used (France, Italy and Latvia), if these are more

[66] Bahle et al. (2011: 176-179) provide a long-term view on the number of beneficiaries.

reliable. Given that assumptions with regard to rent do affect in some countries the level of housing benefits, it should be kept in mind that conclusions could differ if other housing costs would be assumed (Van Mechelen et al., 2011: 24-29). Importantly, the simulated model families are more representative for Western European countries than for Southern and Eastern European countries: in the latter countries elderly people do more often own their dwelling and live more often together with their children (cf. Van Mechelen et al., 2011: 31-35). Furthermore, benefit levels refer to *maximum* benefit levels assuming that there are no other sources of income in the household. This means that we are not able to perceive changes in income or means tests, as long as they do not affect the maximum benefit level that people can receive if they have no other resources. Benefit amounts refer to the situation on 30 June in 2001 and 2009.

3.2 Trends in gross benefit levels

Changes in gross benefit levels of non-contributory minimum income schemes can be influenced by several factors. First of all, in many countries official updating mechanisms are in place (cf. Table 14). Second, on top of these, in some countries (for example Belgium and Portugal) governments have pursued a deliberate policy of increases in minimum income benefits for elderly persons, beyond legislative obligations. Third, as a result of policy reform a scheme may be changed (as, for example, in the Czech Republic and Lithuania) or even completely replaced (as, for example, in Slovakia). Fourth, gross benefit levels of couples can also change when the implicit equivalence scale changes. In that case trends in gross benefit levels for couples do not exactly correspond to trends in benefit levels for singles or other household types.

European countries can be divided into three broad groups with regard to the real evolution of maximum gross benefit amounts[67]: countries in which gross benefit levels have roughly remained constant during the 2000s; another group of countries in which serious increases in gross benefit levels have taken place and a small group of countries in which gross benefits have declined in real terms over the past decade.

The first group consists of countries where gross benefits have not changed very much in real terms between 2000 and 2009, with increases ranging between -2 and 15 per cent (see Figure 13). All types of non-contributory minimum income schemes are represented in this group: basic pension countries (Denmark and the Netherlands), conditional basic pension countries (Finland), social pension countries (Austria, Germany, Hungary, Italy, Spain and France), and countries relying on general social assistance (Luxembourg). In addition, changes in the Polish minimum pension are included in Figure 13. At the same time, also many different types of indexation

[67] In the case of Italy amounts reflect the *assegno sociale* without the *maggiorazione sociale* for persons aged 70 and over (introduced in 2002). Due to data limitations, gross amounts include in the case of Slovakia (before 2004) the heating allowance and in the case of Luxembourg the housing allowance. For all other countries, only the amount referring to the minimum income scheme is included.

mechanisms are represented in this group: indexation to prices (Spain, Finland, France, Italy), wage indexation (Denmark[68] and the Netherlands), purely ad hoc indexation (Hungary) and various other indexation mechanisms (Austria, Germany, Luxembourg and Poland) (see Table 14).

Table 14: Legislated mechanism to adjust minimum income guarantees for the elderly, 2000s

		indexation mechanism				
country	benefit type	prices	wages / income	prices + wages	other	ad hoc
AT	social pension (Vienna)				pensions (prices)	
BE	social pension	x				
BG	minimum pension	x			Social insurance income growth	x
CZ	social assistance	x				since 2007
DE	social pension				price, wage, sustainability factor, budget survey	
DK	basic pension		x			
EE	conditional basic pension	x			social tax revenue	
ES	social pension	x				
FI	conditional basic pension	x				
FR	social pension	x				
GR	social pension					x
HU	social pension					x
IE	social pension					x
IT	social pension	x				
LT	Social assistance / social pension					x
LU	social assistance			x		
LV	social pension					x
NL	basic pension		x			
PL	minimum pension	x	x			
PT	social pension	x			GDP (partially)	
RO	social assistance	x				
SE	conditional basic pension	x				
SI	social assistance	x				
SK	social assistance					x
UK	social pension		x			

Notes: If sources contradict each other, preference has been given to European Commission (2009).

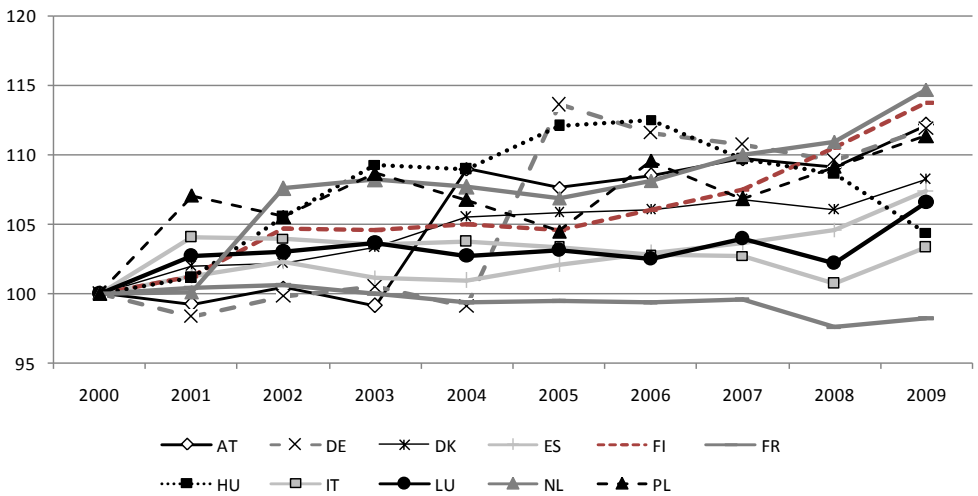
Source: Social Protection Committee (2006); European Commission (2010c; 2010a: 6-7; 2009: 192-200); Kusá and Gerbery (2009: 13), OECD (2009).

In two countries within this group, entirely new social pension schemes have been introduced during the 2000s. In 2003, Germany has introduced a social pension

[68] The basic pension is annually indexed in line with wage increases of the two preceding years. If nominal wage growth exceeds 2 per cent, part of the excess increase is allocated to a social spending reserve (OECD, 2009: 185).

targeted at the elderly and people with a permanently reduced earnings capacity (Bahle et al., 2011: 91-92). Until then, the principal formal safety net of last resort consisted of the general social assistance scheme. Benefit levels of the new social pension remain the same as for the general social assistance scheme, but the new means test of the social pension is more generous. Two years after the introduction of the new scheme, gross benefit levels have been increased with nearly 15 per cent (in line with increases in the general social assistance scheme). In contrast, in France gross benefit levels remained nearly constant over the past 10 years. Nonetheless, in January 2007 the old *minimum vieillesse* (which consisted of a number of schemes) has been replaced with a much simpler, unified scheme, at least for new beneficiaries. In contrast to the old scheme, non-married partners are treated the same as a married couple (cf. Augris and Bac, 2009: 25-26).

Figure 13: Trends in gross benefits for couples, in constant prices. Countries with relatively little change (2000=100)



Source: Evolution of gross benefit levels: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Harmonised indices of consumer prices (HICP) and exchange rates from Eurostat online database (extracted in June 2010); own calculations.

In three other countries, new supplements (which are not included in Figure 13) have been introduced to existing guaranteed minimum incomes. Italy introduced in 2002 a new supplement (*maggiorazione sociale*) for social pension recipients aged 70 and over and increased the supplement for those below 70. Initially, the latter led to a combined increase of the social pension and the supplement for persons below 70 of about 17 per cent. However, the supplement eroded again due to inflation (cf. Monacelli, 2007). Denmark implemented in 2004 a new means-tested supplementary pension benefit targeted at basic pension beneficiaries with little cash savings. The new supplement amounts to about 5 per cent of the full basic pension benefit, and is also indexed to wages (OECD, 2009: 185). Quite similar to Italy, Hungary introduced a

supplement for persons aged 75 and over in 2006 (Social Protection Committee, 2006: 4). Excluding these new supplements, gross benefit levels followed very different patterns in the 2000s: they remained nearly constant in Italy, followed an inverted U-curve in Hungary and gradually increased in Denmark. In the remaining countries various patterns can be observed. In Finland minimum benefits have been increased on an ad hoc basis, on top of price indexation. The increases in the Finnish conditional basic pension are quite remarkable, as until 2000 its level was in real terms still the same as that of the basic pension in the mid-1960s (Kangas, 2007: 283). In contrast, in Austria, Luxembourg, the Netherlands and Poland real increases in benefit levels are the result of the legislated indexation mechanism (which in Poland was interrupted between 2005 and 2008 (Chlon-Dominczak and Strzelecki, 2010)).

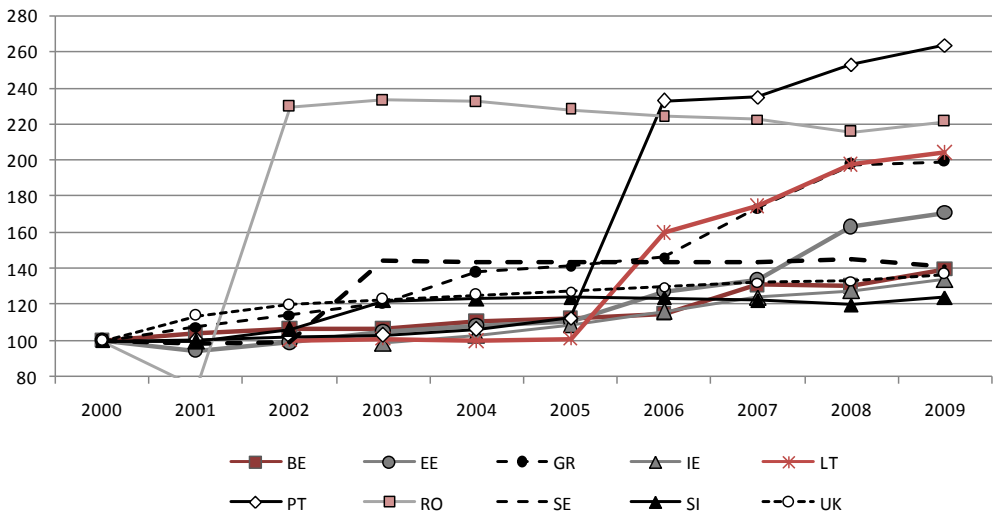
The second group of countries displays considerable real increases in gross benefit levels (see Figure 14). All except basic pension countries are represented in this group: a conditional basic pension is provided in Sweden and Estonia, social pensions in Belgium, Greece, Ireland, Lithuania, Latvia, Portugal, Slovenia and the United Kingdom, and the general social assistance scheme in Romania and Slovenia. Similar to the previous group, many different indexation mechanisms are applied: price indexation (Belgium, Romania, Slovenia, Sweden); earnings indexation (United Kingdom), purely ad hoc indexation (Greece, Ireland and Lithuania), and various other indexation mechanisms in Estonia and Portugal. In nearly all these countries, the minimum income scheme has been substantially reformed during the 2000s.

The largest real increases in gross benefit levels occurred in Romania, Lithuania, Portugal and Greece. In three of these countries (Lithuania, Portugal and Romania), the exceptional increases are rooted in substantial reforms. Dedicated to radically crack down on old-age poverty, the Portuguese government introduced a new social pension in 2006 which provided the elderly with a minimum income guarantee twice as high as the Old-Age Social Pension introduced thirty years earlier (Chuliá and Asensio, 2007). Starting with persons aged 80 and over in 2006, accessibility rapidly broadened to persons aged 65 and over in 2009. At the same time, gross benefit levels further increased. Whereas the old social pension provided benefits at a fixed rate, the new social pension pays the difference between the threshold and the available resources in the household (Bahle et al., 2011: 126), as is the case in most countries. In Romania, general social assistance benefits first decreased by 35 per cent in 2001, a continuation of the yearly erosion of social assistance benefits since their introduction in 1995. In 2002 a modernised social assistance scheme was implemented and benefits tripled in comparison with the year before (cf. Ilie and Radutiu, 2003)[69]. In addition, the government decided to index social assistance levels in line with the consumer price index (Paşa and Paşa, 2003: 59-60). However, since 2005 social assistance benefits have again been subject to erosion. Similar to Portugal, also in Lithuania the elderly could benefit from considerably higher gross benefit levels as the result of social pension reform. Until 2006, eligibility conditions

[69] Even after the sharp increase in gross benefit levels in 2002, their real value remained 30 per cent lower than at the time they were first introduced in 1995.

for the Lithuanian social pension were very narrowly defined (such as taking care of someone or have given birth to at least 5 children). Therefore, most elderly had to fall back on general social assistance, which since 2004 provided lower benefits than the social pension (cf. Lazutka and Poviliunas, 2009: 22). In 2006 eligibility conditions of the social pension have been broadened to all persons at retirement age who have no right to receive a State social insurance or other pension (cf. European Committee of Social Rights, 2007: 42-43). If this change from social assistance to the social pension is taken into account, gross benefit levels were in 2009 twice their level of 2002. In Greece, the social pension has not been reformed over the past 20 years. Nevertheless, gross benefit levels have doubled in 10 years' time. Currently, as part of austerity measures in return for a rescue package easing the sovereign debt crisis, Greece is implementing radical reforms in pensions, including the introduction of a new guaranteed minimum income scheme for the elderly (cf. Matsaganis and Leventi, 2011).

Figure 14: Trends in gross benefits for couples, in constant prices. Countries with high increases in benefit levels (2000=100)



Note: Due to a lack of data, the base year is 2001 for Ireland and 2002 for Lithuania.

Source: Evolution of gross benefit levels: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Harmonised indices of consumer prices (HICP) and exchange rates from Eurostat online database (extracted in June 2010); own calculations.

In the other countries within this group gross benefit levels increased somewhat less spectacularly, but nonetheless considerably. In Estonia (+70 per cent), benefit increases occurred without any major reform to the non-contributory scheme[70]. In

[70] According to the indexation mechanism, a higher increase should have been implemented in 2009. However, in response to the crisis, legislation was changed such that a lower indexation

contrast, benefit increases between 24 and 41 per cent were accompanied by reforms in Belgium, Ireland, Slovenia, Sweden and the United Kingdom. Belgium was the first to introduce a new social pension in 2001, which – among others – was associated with a less strict means test, as well as with increased benefit levels. Until then, the elderly had to rely on the general social assistance scheme, without age-related top ups. From 2006 onwards, a 2-yearly evaluation of supplementary indexation on top of inflation became legally binding and led to further benefit increases, enhancing the difference with the general social assistance scheme (cf. Goedemé et al., 2012). Slovenia reformed its social assistance scheme in the opposite direction. Whereas until September 2001 persons aged more than 60 years or persons permanently incapable of work were entitled to higher social assistance benefits, the reform introduced a uniform amount regardless of age. At the same time, benefit levels were increased (Stropnik and Stanovnik, 2002: 93-94). In 2003, Sweden replaced the *Folkpension* (a basic pension with a conditional supplement) with a single conditional basic pension (the *Garantipension*). In contrast to the previous basic pension, the new conditional basic pension is subject to income taxation, which largely offsets the strong increase in gross benefit levels. With the introduction of the Pension Credit in 2003, also the United Kingdom implemented a new minimum income scheme targeted at the elderly. The Pension Credit consists of two means-tested schemes. The Guarantee Credit is available to all persons aged 60 and over and replaces the previous Minimum Income Guarantee. In order to remove disincentives to saving, persons aged 65 and over can now – possibly on top of the Guarantee Credit – also apply for the Savings Credit if they have some modest savings (cf. Glennerster, 2007: 258-259; Evans and Williams, 2009: 99-101; 172-175). As, strictly speaking, the Savings Credit is only available for persons with some savings, Figure 14 shows the gross benefit level of the Minimum Income Guarantee and the Guarantee Credit, without the Savings Credit. In Ireland, both contributory and non-contributory pension levels were strongly increased as part of the first National Anti-Poverty Strategy (1997-2007) (Russell et al., 2010: 5-6). This was further reinforced in 2006 with the introduction of the *State pension (Non-Contributory)*, the new social pension. Even though the benefit structure is largely the same, the means test was reformed and benefit levels further increased.

In only three countries benefit levels decreased significantly during the 2000s: the Czech Republic, Latvia and Slovakia (see Figure 15). The Czech Republic and Slovakia have substantially reformed their social assistance schemes in the mid-2000s, whereas benefit changes in Latvia are the result of the lack of adequate indexation, only partially compensated by some ad hoc increases in 2003 and 2006. The 2004 reform in the Slovak Republic created a uniform basic amount for all social assistance recipients, which was 60 per cent below the level of the maximum social assistance benefit 'for objective needs' in the old scheme. However, at the same time many different supplements were introduced for specific groups (Kusá and Gerbery, 2009). This was also the case for the elderly. If it is assumed that both partners of an elderly

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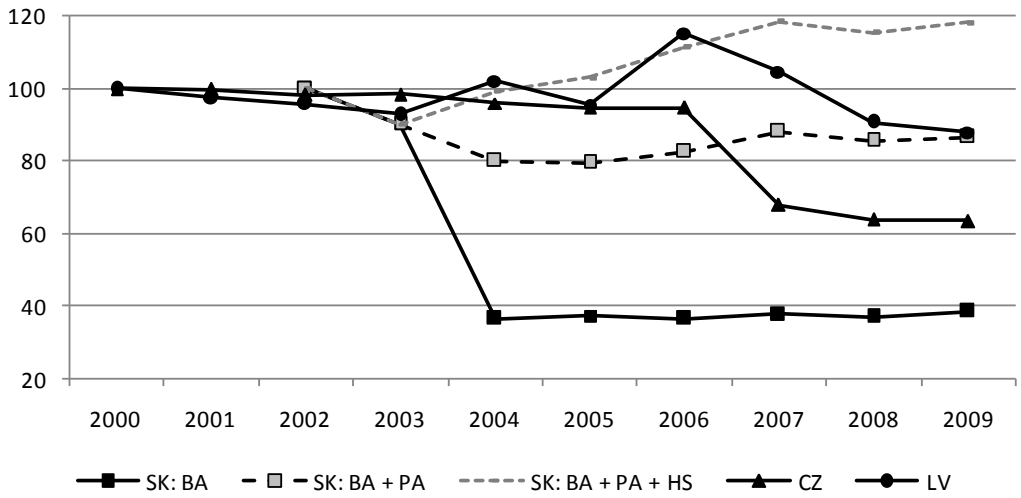
could be applied if projected GDP growth is negative, resulting in a lower indexation in 2009 (Võrk et al., 2010: 8).

couple receive this supplement, total gross benefits would by the end of the 2000s still be 10 per cent below their value in 2002. In addition, housing supplements have been introduced which – if received in full – have contributed to an *increase* in maximum benefit levels of about 18 per cent by 2009. However, it is not clear to what extent these supplements can be accumulated and are granted without reduction to elderly persons without other income sources. In the Czech Republic social assistance has been reformed in 2006. As the result of the reform, gross benefit amounts have decreased considerably. Similar to what has happened in Slovakia, housing benefits have largely compensated for the decline in the living minimum. In spite of legislated price indexation since 1996, governments have delayed revaluations of gross benefit amounts, leading to an erosion of benefits already before 2006. Rather than reinforcing the commitment of the government in the mid-1990s to index benefit levels, the Czech government decided in 2007 to abolish legislated price indexation (Sirovátka, 2011). This resulted in a further decline of gross social assistance levels in 2008.

Figure 15: Trends in gross benefits for couples, in constant prices. Countries with decreasing benefit levels (2000=100)



Notes: Slovak 2004 value refers to May 2004, all other values to January of each year. For Slovakia 2002 is the base year. BA: Basic amount, PA: Protection Allowance, HS: Housing Supplement.

Source: Evolution of gross benefit levels: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Harmonised indices of consumer prices (HICP) and exchange rates from Eurostat online database (extracted in June 2010); own calculations.

It can be concluded that in all countries except for the Czech Republic, Latvia and Slovakia gross benefit levels were in real terms at the same or even a higher level in 2009 than at the start of the decade. This does not necessarily mean that gross benefit levels kept up with the evolution of the average living standard in society. If

compared to growth in the average gross wage, in most countries with very strong growth of gross benefits in real terms, benefit levels have increased (much) faster than the average gross wage. However, there are important exceptions such as Estonia where increases in gross benefit levels were just sufficient to keep pace with very strong growth in the average wage. The other way around, in countries with relatively limited increases in real benefit levels (cf. Figure 13), average wages grew more strongly than gross minimum income benefits, except for those countries in which average wages were marked by periods of no or only modest growth in real terms. Examples include Austria, Germany, the Netherlands, Spain and Italy (CSB-MIPI, own calculations).

In a large number of countries, the observed evolution of benefit levels in real terms is not the result of major reforms to the minimum income guarantees, but rather due to the available indexation mechanisms on the one hand and substantial ad-hoc increases on the other. In the Czech Republic, Lithuania, Portugal, Slovakia, Slovenia, Sweden, as well as Romania major reforms have taken place and affected gross benefit levels. In Belgium, France, Germany and the United Kingdom, increasing benefit levels did not directly result from important reforms, but rather resulted from the indexation mechanism and separate ad hoc benefit increases. Furthermore, as has been observed in the case of social assistance for the 1990s (Cantillon et al., 2004; Cantillon and Van Mechelen, 2003) and for public pensions in the second half of the 20th century (Whitehouse, E. R., 2009), the official indexation mechanism is only loosely linked to real changes in gross benefit levels. In several countries where indexation is based on increases in consumer prices, gross benefit levels have grown faster than inflation (for example Belgium, Finland, Spain). Furthermore, in Denmark, Hungary, Italy and Slovakia, the implementation and increase of special supplements have contributed to benefit increases. In contrast, in the Czech Republic and Romania, in spite of indexation on the basis of prices, benefit levels have eroded from time to time during the 2000s. Similarly, there does not seem to be a strong relation between the type of minimum income guarantee and the evolution in gross benefit levels: with the exception of basic pension schemes, both large and small real increases have been realised in the case of conditional basic pensions, social pensions and general social assistance schemes.

3.3 The adequacy of net minimum income packages

If gross benefit levels have substantially increased in real terms in many EU member states, the question arises whether, concomitantly, the adequacy of net minimum incomes has improved during the 2000s. Two different kinds of factors mediate the relation between the observed trends in gross benefit levels and the adequacy of benefits: (1) changes in related schemes; and (2) changes in what could be considered an adequate minimum income. As far as the former set of factors is concerned, net minimum income packages are not only determined by the gross benefit level of the minimum income guarantee, but also by related schemes. Therefore, in this section model family situations are used to estimate net minimum income packages which take account of (changes in) taxation, social contributions and non-discretionary

housing benefits. Another factor affecting the adequacy of minimum incomes, consists of potential changes in what is considered an adequate minimum income. In order to estimate what could be considered an adequate minimum income in the EU member states, I compare benefit levels with the so-called at-risk-of-poverty thresholds which are often used in European poverty research and the EU Open Method of Coordination with regard to social inclusion. Of course, there could be a legitimate discussion about this yardstick (see Atkinson et al., 2002; Goedemé and Rottiers, 2011), especially in times of economic crisis or fast economic growth, when this threshold may change rather quickly[71]. Nevertheless, it functions as an important poverty threshold at the European as well as the national level in many countries and has been put forward by the European Parliament as a benchmark for setting minimum income levels (European Parliament, 2009). At least, the ratio of minimum benefit levels and the at-risk-of-poverty threshold shows the potential redistributive capacity of the minimum income packages for elderly persons. The at-risk-of-poverty threshold is equal to 60 per cent of the median equivalised net disposable household income in each country. In order to compute the median income, household incomes have been divided by the equivalent household size (using the modified OECD-scale) for making income levels comparable across household size and composition (cf. Goedemé, 2011).

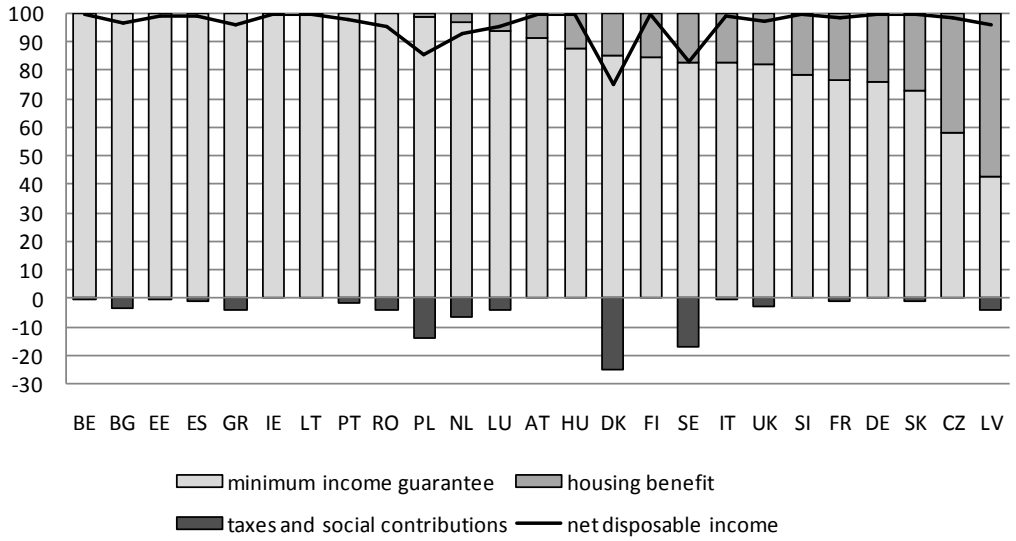
In order to illustrate the potential effect of related schemes on changes in net minimum income packages, Figure 16 depicts the weight of the various income components in the total income package for an elderly couple in June 2009[72]. In nine countries, the income package consists only of the minimum income guarantee. Surprisingly, in two countries (Latvia and the Czech Republic) the housing benefit comprises about half of the total income package, which means that it is at least as important for guaranteeing a minimum living standard to people without other resources as the income from social assistance (Czech Republic), respectively the social pension (Latvia). Also in several other countries housing benefits account for a substantial share of the total income package. Please note that in a number of countries (for example Germany and Sweden), the level of housing benefits is strongly dependent on assumptions regarding housing costs. As a result, both the total net minimum income and the share of the housing benefit in the income package may be higher if higher housing costs would be assumed. Furthermore, the relative weight of housing benefits may be different for other household types. Except for Denmark, the share of housing benefits in the total net disposable income is higher for elderly singles than for elderly couples (see Annex 6.1).

[71] In fact, as a result of the economic crisis, at-risk-of-poverty thresholds of EU-SILC 2010 were in nominal terms in six countries lower than those of EU-SILC 2009. This was especially so in Latvia (-17 per cent), Lithuania (-16 per cent) and Estonia (-8 per cent). In other words, in these countries net minimum income packages would look (much) less generous if they would be compared to the pre-crisis median equivalent net disposable household income (own calculations on the basis of Eurostat on line database).

[72] Unfortunately, not for all countries a similar exercise is possible with CSB-MIPI data for 2001.

In addition to housing benefits, the level of net minimum incomes is also determined by taxes and social contributions. In half of the EU member states covered by CSB-MIPI, elderly persons on a minimum income guarantee have to pay local or other non-income taxes. In Denmark, Greece, Luxembourg, the Netherlands, Poland and Sweden income taxes and/or social contributions have to be paid, which are particularly high in Denmark and Sweden. In contrast, in Austria, Finland, Germany, Hungary, Ireland, Lithuania, Slovakia and Slovenia, no taxes or social contributions are levied on gross benefits. Luxembourg recently introduced a negative income tax for social assistance recipients, but it is lower than the social security contributions and local taxes which have to be paid. Taxes and social contributions reach a substantial level especially in countries with a minimum pension, a basic pension or a conditional basic pension (at least in Sweden)[73].

Figure 16: Income components as a percentage of total gross income, elderly couple, June 2009



Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations

How has the adequacy of non-contributory net minimum income guarantees evolved between 2000 and 2010? Figure 17 depicts equivalent net minimum income packages for an elderly couple as a percentage of the national median equivalent net disposable household income, both for 2001 and 2009. At the end of the 2000s, with the exception of Portugal and France, net non-contributory minimum income benefits for elderly couples were below the poverty line (60 per cent of the median), albeit in one third of countries net minimum income packages were not very far below this

[73] See Annex 6.3 for more details on changes in taxes and social contributions between 2001 and 2009.

threshold. There are marked differences across countries, with benefit levels ranging from 17 per cent of median income in Romania to 75 per cent in Portugal. Over the past 10 years, in over one third of the countries net minimum income packages have declined in comparison with the median net disposable household income. In the case of Denmark, France, Sweden as well as the Polish minimum pension, the relative decline in benefit levels has brought net disposable incomes on or below the poverty line. During the same period, in Portugal, Greece, Belgium, the United Kingdom and Ireland the adequacy of net minimum income seems to have been substantially increased, even though – except for Portugal – not sufficiently to lift them above the at-risk-of-poverty threshold[74].

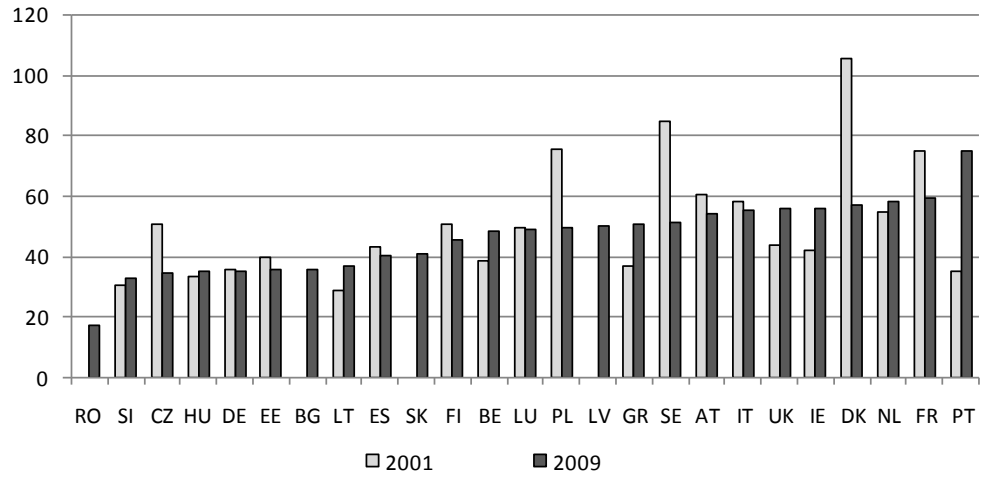
Due to changing implicit equivalence scales, in some countries the trend for elderly singles is not exactly the same as for couples. In fact, between 2001 and 2009 the minimum net income package of singles grew faster than that of couples in Czech Republic, Latvia, Italy, Germany, Sweden and the United Kingdom. In contrast, in Austria, Ireland, Romania, Slovakia and particularly Estonia, net minimum incomes of couples grew faster than those of singles. In other words, in these countries the adequacy of minimum income benefits for elderly persons living alone has developed (even) less favourably than for couples. Similarly, cross-national differences in implicit equivalence scales also mean that the ranking of countries is not entirely the same in the case of minimum income guarantees for single persons. For instance, the net minimum income package for elderly singles is only about 56 per cent of the median income in Portugal and 59 per cent or more of median incomes in Latvia, the United Kingdom and the Netherlands. Especially in the case of Estonia, Greece, Lithuania and Portugal do the minimum income packages for elderly singles compare unfavourably to those for couples (as a percentage of the median equivalent net disposable household income). In contrast, in Latvia, Belgium, the Czech Republic and the Netherlands it is the other way around[75]. Furthermore, it should be noted that in the case of Sweden and Germany, the observed trends may be the sensitive to the housing assumptions used in the model family simulations. For these countries, national experts indicated that assumed rent levels were relatively low. If higher rent levels would be assumed (more in line with assumptions for 2001), adequacy may have been improved over the past ten years in Germany, and may have dropped to slightly less than 60 per cent of the median equivalent net disposable household income in Sweden[76].

[74] For most countries, observed trends are similar if net minimum income packages would be compared to the net income of a couple at active age living on average male and average female earnings. Exceptions are Estonia, Italy and Spain (stronger growth than net average wages but weaker growth than the median equivalent net disposable household income), the Netherlands (stronger growth than median equivalent net disposable household income, but weaker growth than net average wages. For Denmark, the drop in adequacy is much less pronounced if net minimum income packages would be compared to net average wages (see Annex 6.6).

[75] See Annex 6.4 for more details.

[76] See Annex 6.2 for more details on the importance of housing assumptions.

Figure 17: Equivalent net minimum income of an elderly couple as a percentage of the median equivalent household income, 2001-2009



Note: Values of median income from Eurostat, EU-SILC 2010 (except for Ireland and United Kingdom EU-SILC 2009). Median incomes refer to 2009 (2008-2009 in the case of Ireland). Please note that the underlying data on median disposable incomes is not fully comparable across time and across countries (for 2001). In addition, a margin of statistical error should be taken into account. As a result, small cross-national differences and changes over time should be interpreted with caution (see Annex 6.5 for more details).

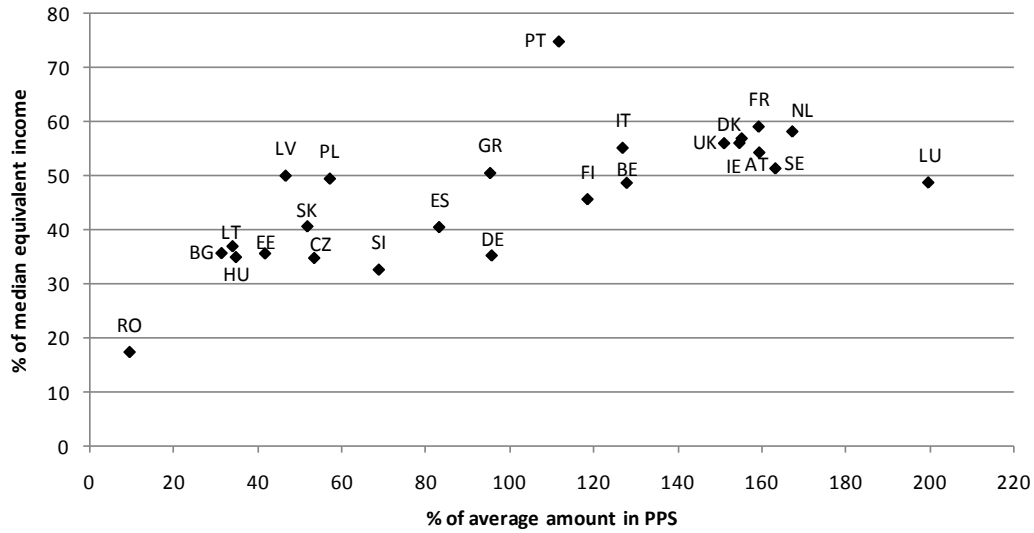
Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); Eurostat (extracted in December 2011), own calculations.

Do these relative differences also hold from a more absolute perspective? As Figure 18 shows, at least for 2009 there was a relatively strong positive correlation between net minimum income levels as a percentage of median income and expressed in purchasing power standards (Pearson correlation coefficient of 0.71)[77]. In other words, in countries where benefit levels are low from a European perspective (i.e. in purchasing power standards), they tend to be low also from a national perspective (i.e. as a percentage of median incomes). Nonetheless, there are important exceptions, such as Portugal and Luxembourg. In addition, it should be noted that the cross-national differences in purchasing power of minimum income packages are even larger than the cross-national differences in relative benefit levels. For example, in 2009, an elderly couple living on social assistance in Luxembourg is estimated to

[77] Similar results are obtained for 2001. Purchasing power standards (PPS) are an artificial currency which can be used to directly compare differences in purchasing power across countries. In principle, with a benefit of 200 PPS twice as much can be purchased as with a benefit of 100 PPS. As the absolute amounts in PPS are meaningless (the currency is nowhere used to buy goods and services), benefit levels in PPS in Figure 18 are expressed as the unweighted average benefit level in the EU (100 on the X-axis).

have had 10 times more purchasing power than a similar couple living on social assistance in Romania. In contrast, an elderly couple in Romania received around 17 per cent of the median net disposable household income, whereas in Luxembourg this amounted to about 49 per cent, 'only' about 2.8 times more than in Romania.

Figure 18: net minimum income of an elderly couple in purchasing power standards (PPS) and as a percentage of the national median equivalent net disposable household income, 2009



Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); Eurostat (extracted in December 2011), own calculations.

Similar to trends in gross benefit levels, there is no close relation between the type of minimum income benefit and the level of income protection it offers. Nevertheless, it is remarkable that especially in 2001 basic pension countries (Denmark, Sweden and the Netherlands) tended to provide relatively generous minimum benefits. Furthermore, the level of general social assistance schemes included in this study was nowhere above 50 per cent of the national median equivalent net disposable household income in 2009. In contrast, the level of social pensions was in some countries very low (below 40 per cent of median incomes in Estonia, Germany, Hungary and Lithuania), but in others relatively high (59 per cent or more of median incomes in France and Portugal).

4 Conclusion

Minimum income protection for the elderly is largely uncharted territory in the international literature. Nonetheless, it can be expected that in a substantial number of EU countries minimum income schemes targeted at the elderly will become more important in the future. Therefore, the objectives of this chapter are to provide more insight into the different types of minimum income protection targeted at Europe's elderly, to document how these schemes have evolved during the 2000s and to explore whether benefit levels are sufficient for avoiding poverty in old-age.

In all EU member states elderly persons can rely on at least one type of minimum income guarantee. In many countries the main formal safety net of last resort is a specific scheme targeted at the elderly. However, the kind of minimum income guarantees available to the elderly differ widely across countries. On the basis of entitlement conditions, a useful distinction can be made between six different types of minimum income schemes: three types of contributory schemes (flat-rate pensions, minimum pensions and pension supplements); and three types of non-contributory schemes (basic pensions, conditional basic pensions and social pensions). These schemes vary in the extent to which they are means tested. In a number of countries the general social assistance scheme remains the principal formal safety net of last resort for the elderly.

In order to gain more insight into the trends and levels of the formal safety net of last resort for the elderly, the new CSB-MIPI data have been analysed. These data contain information on the principal *non-contributory* minimum income scheme targeted at the elderly. The analysis shows that – except for Latvia, Slovakia and the Czech Republic – gross benefit levels have remained constant, or have grown in real terms over the past 10 years. In fact, in a non-negligible number of countries increases have been larger than what could be expected of legislated indexation mechanisms (for example Belgium, Finland and Portugal), and even doubled in Romania, Lithuania, Greece and Portugal. In some cases the observed trends are a result of substantial reforms. However in many other countries, increases have been ad hoc and were not directly driven by reforms. It remains to be seen how minimum income schemes have evolved during the crisis, especially in countries where benefit levels have strongly been increased in the past and which are particularly hard hit by the crisis (for example Greece, Portugal, Ireland).

In addition, the analysis shows that the level of net minimum income packages for the elderly varies considerably across Europe, both in absolute and in relative terms. Several countries (Portugal, Greece, the United Kingdom, Ireland and Belgium) substantially improved benefit adequacy over the past 10 years. At the same time, in one third of the countries included in this study, the potential to lift the elderly above the at-risk-of-poverty threshold has probably decreased – in some countries quite severely so (Denmark, Sweden, France, the Czech Republic). In about half of the EU member states, net minimum income packages are well below the at-risk-of-poverty threshold in 2009. Only Portugal (for couples) and the Netherlands (for singles) offer

minimum income protection above this poverty line. In other words, many governments still have a long way to go for ensuring a decent living standard to all members of their elderly population. Important in this respect, is that the type of minimum income scheme does not seem to be strongly related to the level of net minimum income packages and that in a number of countries, housing benefits substantially contribute to guaranteeing a minimum level of resources.

Finally, several challenges for future research can be identified. First of all, it would be useful to extend the range of available model family simulations in order to gain more insight into minimum income situations in which elderly people have limited savings, are confronted with high medical costs, own their dwelling or live together with other family members, a situation quite common in Southern and Eastern European countries. Second, little is known about the key drivers of reforms and benefit levels of minimum income guarantees for the elderly. For obvious reasons, it would be useful to better understand the factors which facilitate the introduction of more adequate minimum income guarantees and the conditions under which net minimum income packages are likely to become less adequate. Third, model family simulations help to gain more insight into the interaction between various policies which determine net minimum income packages and into the level of protection they offer. However, they are much less helpful for measuring their overall impact on reducing old-age poverty. Some exercises using micro-simulation techniques have been done already (e.g. Figari et al., 2008, 2011). It would be useful to expand these studies to a broader range of countries and a wider time period. Such studies could make an important contribution to better understand how old-age poverty can most efficiently and effectively be reduced in the European Union, especially among the most vulnerable.

5 Acknowledgements

This chapter could not have been written without the input of the national experts involved in the CSB-MIPI project. Earlier versions of this chapter have been presented at a MIPI workshop (supported by Equalsoc) in June 2010 in Stockholm, at the 8th ESPAnet Conference, September 2010, a CSB Lunch seminar, a meeting with the European Commission in Brussels in December 2010 and at a Gini Workshop in Antwerp, November 2011. Comments and suggestions received from participants are much appreciated. In particular, I am grateful to Kenneth Nelson, Ive Marx, Natascha Van Mechelen, Sarah Marchal and Sarah Carpentier for valuable comments and suggestions on previous versions of this chapter. All remaining errors are mine. Funding from the Research Foundation – Flanders is gratefully acknowledged.

6 Annex to Chapter 4

Table A.1: European minimum income guarantees targeted at the elderly, mid-2000s

Country	Minimum / Flat-rate pension	Pension supplement	Basic pension	Conditional basic pension	Social pension
Mode of access	Contributions	Contributions, means test	Residence history	Residence history, pension test	Income / means test
AT	only notaries	Ausgleichszulage			Dauerleistung (Vienna) [a]
BE	Group-dependent				IGO/Grapa (since June 2001)
BG	all pensioners				social pension for old age (Социална пенсия за старост)
CY [b]	all pensioners	Grants to pensioners' households with low income (since December 2009)		Social pension (Κοινωνική Σύνταξη) / Special Allowance (Ειδική Χορηγία) (2002- 2009)	
CZ	all pensioners				(general social assistance)
DE					Guarantee of sufficient resources during old age (Grundsicherung im Alter und bei Erwerbsminderung, since 2003)
DK			Folkepension		Means-tested part of Folkepension
EE	all pensioners			National pension (Rahvapension)	
ES		complementos de mínimos de pensiones de la seguridad social			Non-contributory old-age pension (Pensión no Contributiva de Jubilación)
FI				National pension (Kansaneläke)	Special Assistance for Immigrants (Maahanmuuttajan erityistuki)
FR	employees				Minimum vieillesse (until 2006) Allocation de solidarité aux personnes âgées (since 2006/2007)
GR	Group-dependent	EKAS			OGA
HU	all pensioners				Old-age Allowance (időskorúak járadéka)
IE	all pensioners				Old Age (Non-Contributory) Pension / State Pension (Non-Contributory) (since 2006)
IT		Integrazione al trattamento minimo (65+, old system) / Maggiorazione sociale			Assegno sociale **/** Maggiorazione sociale (70 and over)
LT	all pensioners				social pension (šalpos pensija)

Country	Minimum / Flat-rate pension	Pension supplement	Basic pension	Conditional basic pension	Social pension
LU	all pensioners				(general social assistance)
LV	all pensioners				State Social Security Benefit (Valsts sociālā nodrošinājuma pabalsts)
MT	all pensioners				Age pension (Penzjoni ta' l-Eta)
NL			Algemene Ouderdomswet		Aanvullende inkomensvoorziening ouderen (since 2010)
PL	employees and self-employed				Social assistance (Permanent Allowance)
PT	Group-dependent				Old-Age Social Pension (pensão social de velhice) / Solidarity Supplement for Old Persons (complemento solidário para idosos, since 2006))
RO	employees and self-employed (since 2009)				(general social assistance)
SE				Garantipension	Maintenance Support for the Elderly (äldreförsörjningsstöd)
SI	employees and self-employed	pension support for old-age pensioners (varstveni dodatek)			State Pension (državna pokojnina) / (general social assistance)
SK	until 2003				general social assistance, with special conditions for persons above retirement age
UK	all pensioners			Over 80 Pension	Pension Credit (Guarantee Credit and Savings Credit**)**

Notes: The underlined schemes are those included in section 3. In some cases a minimum pension is only provided to one or several socio-professional groups and not to all the insured, in that case the socio-professional groups covered by the minimum pension are indicated. In other cases all socio-professional groups can benefit from a minimum pension, but rules and/or benefit levels differ between groups ("Group-dependent"). For many countries, different sources regularly contradict each other. If necessary, the website of the relevant Ministry or responsible administration as well as national experts have been consulted. Specific notes: [a] In Austria social assistance is organised at the regional level, at least in Vienna there is a specific social assistance benefit for the elderly. [b] The access to (but not the level of) the new Grants to pensioners' households with low income is dependent on having at least some public or occupational pension. Therefore, it can be considered to be a pension supplement rather than a social pension.

Sources: Matsaganis et al. (2003); Sachi and Bastagli (2005); European Commission (2006); Social Protection Committee (SPC) (2006); Asenova and McKinnon (2007); various contributions to Immergut et al. (2007); OECD (2007); Goedemé and Raeymaeckers (2008); Economic Policy Committee (AWG) and DG for Economic and Financial Affairs (2009) European Commission (2010c); International Social Security Association (ISSA) (2010); Matsaganis and Leventi (2011) and the questionnaires of the CSB-MIPI dataset (Van Mechelen et al., 2011). Various sources contradict each other. If necessary the website of the relevant Ministry has been consulted. I would also like to thank Daniel Gerbery, Nataša Kump and Costas Stavrakis for providing me with further information on the minimum income protection system in respectively Slovakia, Slovenia and Cyprus.

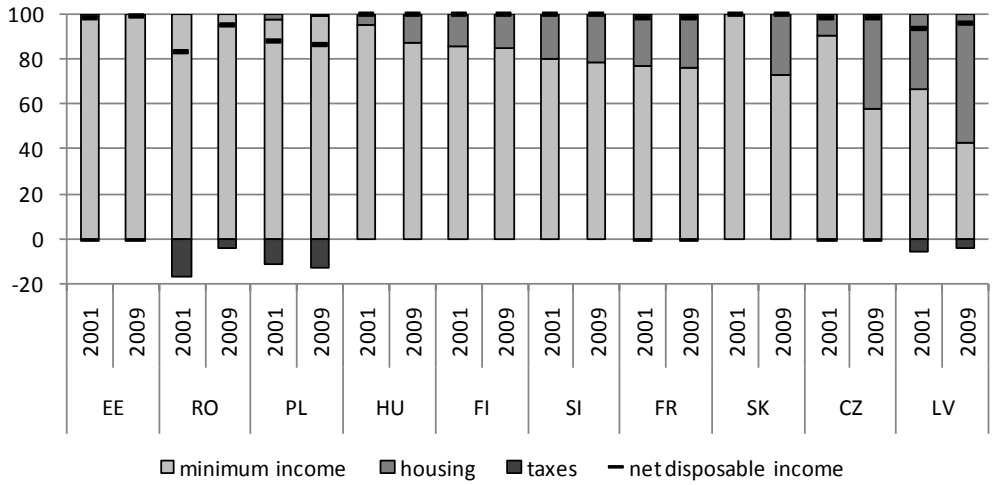
6.1 The importance of housing benefits (not included in original text)

Only for a limited set of countries does CSB-MIPI contain detailed information on the composition of net minimum income packages, especially regarding housing benefits. As in some countries the level of housing benefits depends on housing costs, assumptions with regard to trends in housing costs can considerably affect findings with regard to trends in net minimum income packages in general and the share of housing benefits in particular. For a limited number of countries CSB-MIPI contains separate information on trends in housing benefits. Except for France, all countries listed in Figure 19 were added to CSB-MIPI in wave II (Van Mechelen et al., 2011). In these countries, median rent levels have been estimated on the basis of EU-SILC 2007 and have been uprated/downrated using Eurostat's harmonised index of consumer prices for housing (actual rentals only) to rent levels of 2001 and 2011. For each year, it is assumed an apartment with one bedroom is rented at two thirds of the median rent in the private sector. In the case of Hungary, it is assumed that the apartment is rented in the social housing sector. Please note that in Slovakia the housing benefit is fixed, regardless of real housing costs, whereas in the Czech Republic the housing benefit compensates for housing costs up to a relatively low level defined by law. For Latvia, the estimate of the housing benefit equals the average housing allowance, which is estimated on the basis of administrative data.

Figure 19 confirms that also in 2001 housing benefits played an important role in catering resources to minimum income beneficiaries. Furthermore, it illustrates that housing benefits have become more important in Hungary and Latvia, and especially so in Slovakia and the Czech Republic.

In section 3.3, I refer to the bigger share of housing benefits in gross minimum income packages for elderly singles as compared to elderly couples. Figure 20 illustrates this point. It is clear that in some countries the difference with elderly singles is even quite big, which further stresses the point that housing allowances are a crucial part of minimum income packages in the European Union. For the Czech Republic and Latvia the model family simulations even suggest that housing benefits are the primary source of income for minimum income beneficiaries. In eight other countries housing benefits still comprise over a fifth of gross incomes.

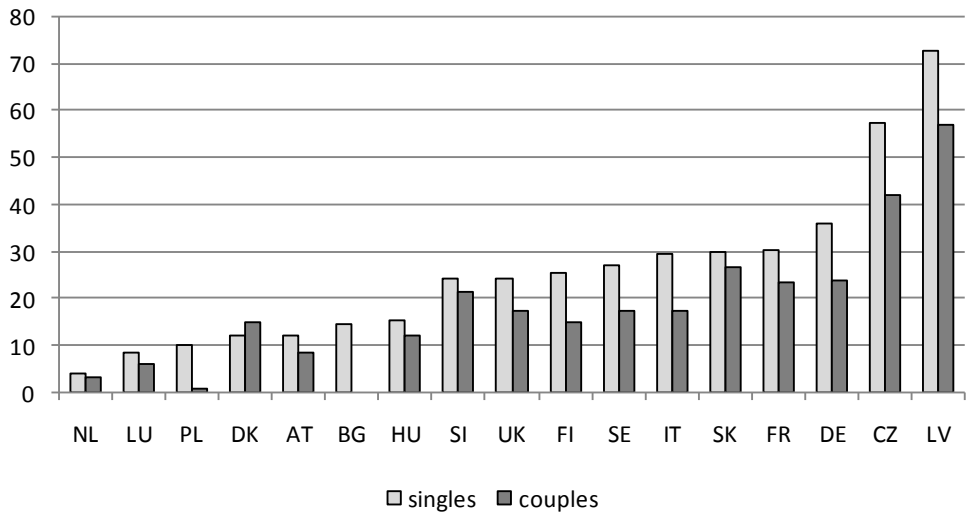
Figure 19: Income components as a percentage of total gross income, elderly couple, June 2001 and June 2009



Note: The graph includes only countries for which a detailed decomposition is available for both years.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

Figure 20: Share of housing benefit in gross minimum income package, June 2009



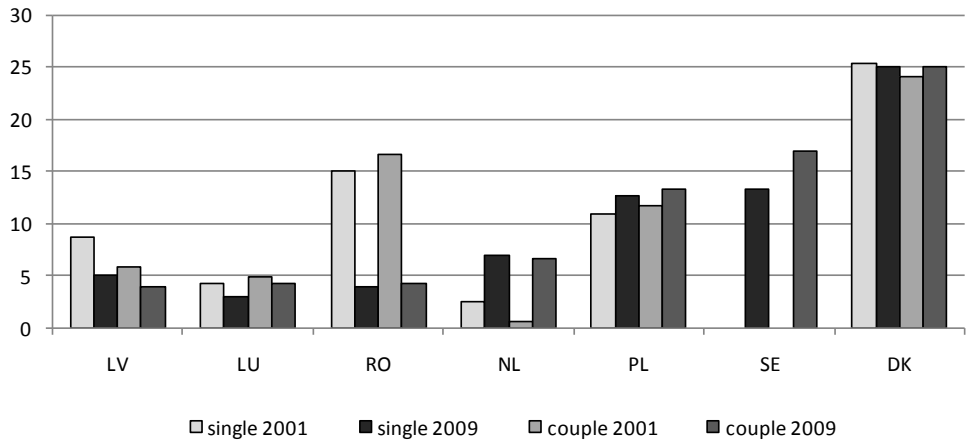
Note: only countries with non-discretionary housing benefit shown.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

6.2 Changes in taxes and social contributions (not included in original text)

As noted earlier, the model family simulations in CSB-MIPI take account of income taxes, social contributions and local property and other non-income taxes. In several countries, trends in taxation have played an important role in explaining the different development of gross as compared to net minimum income benefits. This is further illustrated in Figure 21. Most important changes have occurred in Sweden, the Netherlands and Romania. As discussed in this chapter, Sweden converted in 2003 its basic pension into a conditional basic pension scheme. In addition, it made the conditional basic pensions subject to taxation. In contrast, in the Netherlands elderly persons receive since 2001 special income tax credits, which were reduced by 2009. However, between 2001 and 2009 new social contributions have to be paid, which explains the increase in taxation observed in Figure 21. As far as Romania is concerned, benefit levels in 2001 were so low, that local taxation amounted to about 15 per cent of maximum gross social assistance benefits. The estimated local taxes for 2009 are in real terms about one quarter below their level of 2001. As a result, the most important driver of the lower tax rate in 2009 as compared to 2001 is not the lower tariff applied in 2009, but the large increase in gross social assistance benefit levels.

Figure 21: Taxes and social contributions as a percentage of total gross minimum income packages, 2001 and 2009



Note: only countries are shown with taxes and social contributions of at least 5 per cent of gross minimum benefit packages.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

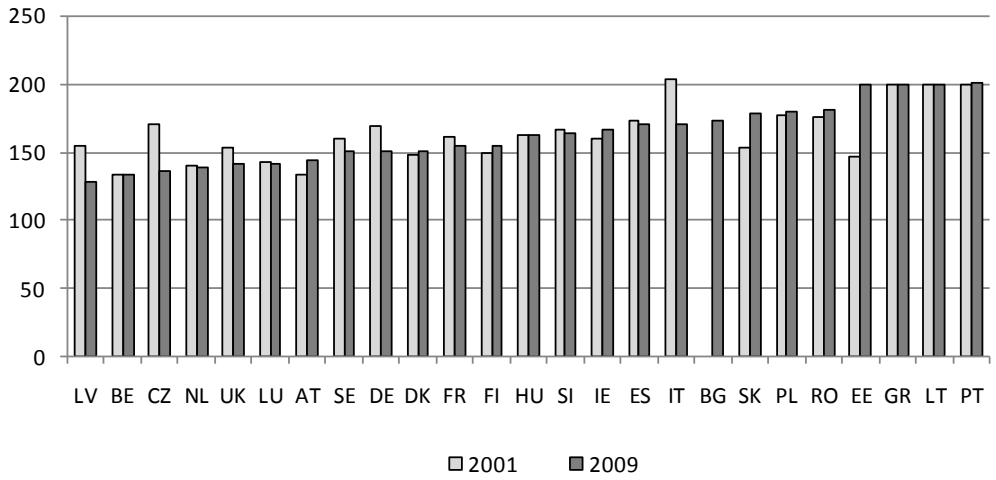
6.3 Singles vs. couples (not included in original text)

In section 3.3, I shortly discuss the evolution of minimum income packages for singles as compared to those of couples. In this annex, I provide more details on the 'implicit equivalence scale' in minimum income packages for elderly persons. The 'implicit equivalence scale' corresponds to the ratio of the minimum income package for a couple and the minimum income packages for a single person household. There is a large international variation in these implicit equivalence scales. In addition, in some countries the implicit equivalence scale has considerably changed between 2001 and 2009. The differences mean that trends in minimum income protection for singles have not been the same in all countries as trends for couples. Furthermore, cross-national differences in implicit equivalence scales mean that an evaluation on the basis of the at-risk-of-poverty threshold, which uses one specific equivalence scale, will result in different country rankings if one looks at singles instead of couples. Of course, whether benefits are more adequate for singles than for couples, strongly depends on assumptions regarding economies of scale.

As can been observed from Figure 22, in most countries net minimum income packages take account of some economies of scale. However, there are large differences between countries. In 2009, minimum income packages were fully individualised in Estonia, Greece, Lithuania and Portugal. In contrast, in the Netherlands, the Czech Republic, Belgium and Latvia, elderly couples received only 40 per cent more than elderly singles. In seven countries, net minimum income packages of singles has grown remarkably more strongly than for couples. This is especially so in the Czech Republic, Italy and Latvia. In five countries net minimum income packages of elderly couples increased considerably more strongly than for singles. This is especially so in Slovakia, and Estonia. In many cases (for which detailed data are available), the changing implicit equivalence scale is caused by a change in housing benefits or by a change in the share of housing benefits in the minimum income package, rather than by changing the implicit equivalence scale of the minimum income scheme targeted at the elderly.

In most countries, taxes have little impact on the implicit equivalence scale of minimum income packages. Exceptions are Latvia in 2001 (taxes increase difference with singles with nearly 5 percentage points) and Sweden in 2009 (taxes decrease difference with singles with nearly 7 percentage points).

Figure 22: Net minimum income package of elderly couples as a percentage of the net minimum income package of elderly singles, 2001 and 2009

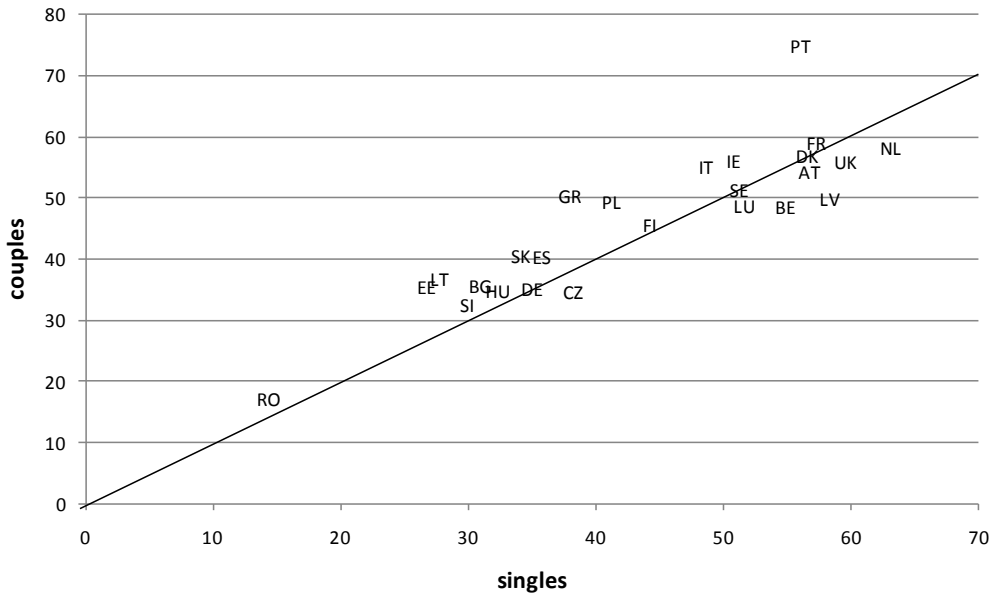


Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

The equivalence scale used for estimated the median equivalent net disposable household income, assumes that a couple needs 1.5 times the income of a single for having the same living standard. Consequently, with this benchmark, in about one quarter of EU countries the net minimum income package for elderly singles will be considered to be more adequate than for elderly couples (countries with an implicit equivalence scale of less than 1.5), whereas in the other half of countries it is the other way around. Nevertheless, the correlation between results for singles and for couples is very strong (Pearson correlation coefficient of 0.96 for 2001 and 0.88 for 2009). This is further illustrated for 2009 in Figure 23. Quite remarkably, the net minimum income package for elderly singles in Portugal is still below the 60 per cent threshold, whereas it is much higher than this threshold for elderly couples.

As can be observed from Figure 24, Italy is the only country in which an improvement in the adequacy of the net minimum income package for a single person is accompanied with a decline in the adequacy of a minimum income package for an elderly couple. In all other countries, trends are in the same direction for both singles and couples.

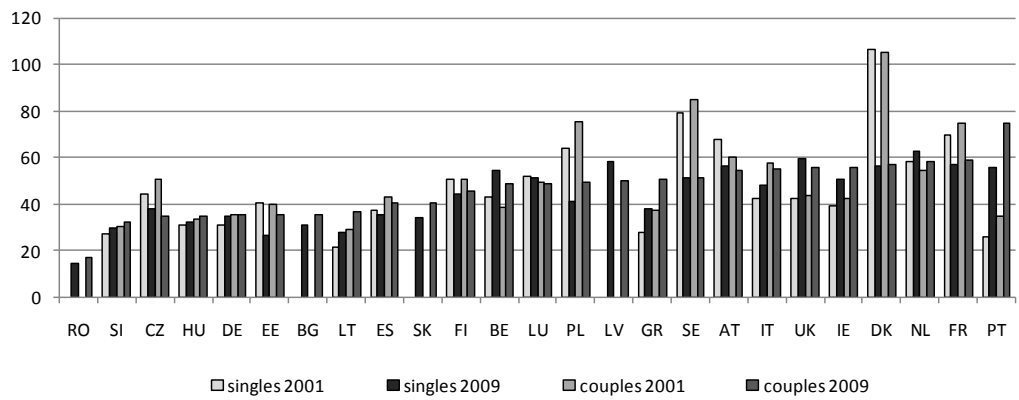
Figure 23: Net minimum income packages as a percentage of the median equivalent net disposable household income, June 2009



Notes: The 45° line is shown. Values of median income from Eurostat, EU-SILC 2010 (except for Ireland and United Kingdom EU-SILC 2009). Median incomes refer to 2009 (2008-2009 in the case of Ireland).

Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); Eurostat (extracted in December 2011), own calculations.

Figure 24: Net minimum income packages of elderly singles and elderly couples as a percentage of the median equivalent net disposable household income, 2001 & 2009



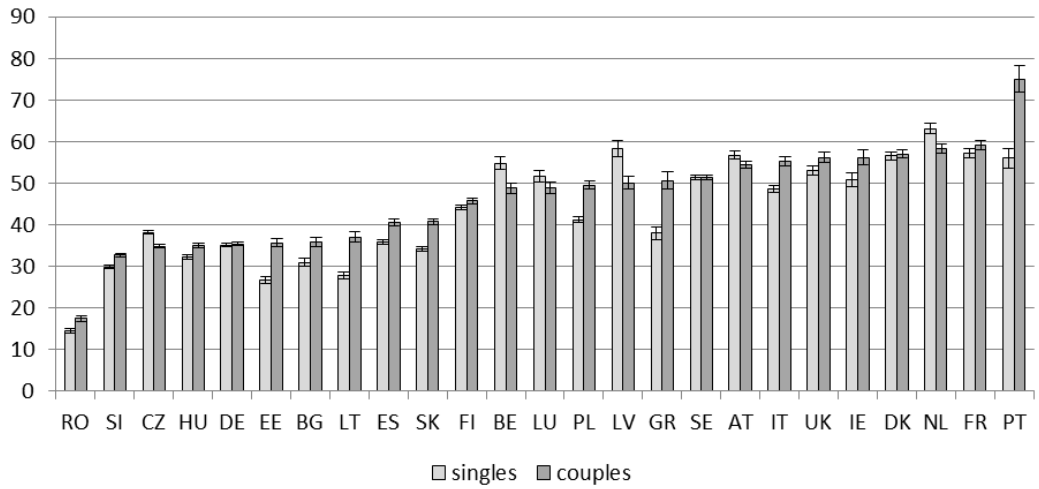
Notes: Values of median income from Eurostat, EU-SILC 2010 (except for Ireland and United Kingdom EU-SILC 2009). Median incomes refer to 2009 (2008-2009 in the case of Ireland) and various sources for 2001.

Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); Eurostat (extracted in December 2011), own calculations.

6.4 The confidence interval of estimated benefit adequacies (not included in original text)

In section 3.3, the adequacy of minimum income packages is evaluated by expressing minimum income benefit levels as a percentage of the national median equivalent net disposable household income in each country. (In what follows, I call this indicator 'benefit adequacy' in short.) Given that the national median income is estimated on the basis of a sample one should take account of the sampling variance of the median income when evaluating levels and trends in benefit adequacy.

Figure 25: Equivalent net minimum income of an elderly single and an elderly couple as a percentage of the median equivalent household income, with illustrative 95% confidence intervals, 2009



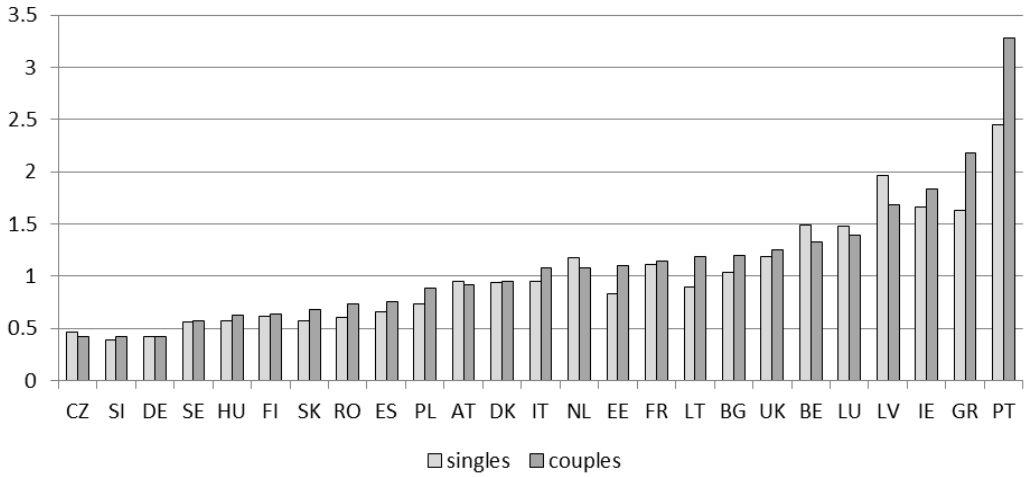
Note: Estimated on the basis of linearization, using the epctile command developed by Stas Kolenikov. Estimates take as much as possible the sample design into account (cf. Goedemé, 2011). For consistency of income reference periods EU-SILC 2010 for all countries, except for IE and UK (EU-SILC 2009).

Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); EU-SILC 2009 UDB version 2, and EU-SILC 2010 UDB, version 1; own calculations.

For illustrative purposes, Figure 25 shows the level of minimum income packages as a percentage of the median net disposable household income for 2009 (EU-SILC 2010) with 95 per cent confidence intervals. For the estimation of confidence intervals, it is important to note that only the denominator is subject to sampling variance. The confidence intervals in this graph have been computed starting from the estimated 95 per cent confidence interval of the median income (on the basis of linearization). The upper bound is obtained by dividing the minimum income level by the lower 95 per cent confidence bound of the median equivalent income and the lower bound is obtained by dividing the minimum income level by the upper 95 per cent confidence bound. It is easy to show that the resulting confidence interval is always non-

symmetric with the upper bound being further away from the median than the lower bound (assuming that the minimum income level is always larger than 0). In addition, with a constant denominator, the confidence arm of a higher minimum income level will be larger in percentage points and equal as a percentage of the ratio of that income level and the median, in comparison with a lower minimum income level. As both Figure 25 and Figure 26 show, in most countries one should not worry too much about a problem of sampling variance: non-random errors and cross-national comparability probably are more important issues of concern.

Figure 26: Length of the upper 95% confidence arm of equivalent net minimum income of an elderly single and an elderly couple as a percentage of the median equivalent household income, 2009



Note: Estimated on the basis of linearization, using the epctile command developed by Stas Kolenikov. Estimates take as much as possible the sample design into account (cf. Goedemé, 2011). For consistency of income reference periods EU-SILC 2010 for all countries, except for IE and UK (EU-SILC 2009).

Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); EU-SILC 2009 UDB version 2, and EU-SILC 2010 UDB, version 1; own calculations.

The problem is somewhat more complicated when one is interested in the difference between countries and across time. In that case, the question is whether the ratio of the minimum income package (*MIP*) and the median income (*MED*) of year (country) 2 are different from the same ratio in year (country) 1. Similar to what is the case for the comparison of two averages, one cannot simply compare the confidence intervals of the point estimates to see whether they are significantly different or not. However, a direct estimate of the standard error and confidence interval of the difference between two ratios of a non-random factor and an estimated median are not directly available. One way of solving the issue can be found if the ratios are re-written as a ratio of the level of the minimum income packages and a ratio of the median incomes.

In other words, if we are to test whether the benefit adequacy in 2009 has increased in comparison with 2001, we should test whether:

$$\frac{MIP_{2009}}{MED_{2009}} > \frac{MIP_{2001}}{MED_{2001}}$$

.

With *MIP* > 0 and *MED* > 0, this formula can be rewritten as:

$$\frac{MIP_{2009}}{MIP_{2001}} > \frac{MED_{2009}}{MED_{2001}}$$

.

In other words, if we know the confidence interval of the ratio of the median incomes, we are able to say something on the significance of the observed difference in benefit adequacy. Price and Bonett (2002) present a distribution-free formula for the computation of the confidence interval of a ratio of two medians of independent samples, based on a logarithmic transformation. In the example above, we may be interested only in the upper confidence bound of the ratio of the median incomes. However, it is interesting to not directly refer to the upper confidence bound, but to the factor *UB* with which the ratio of medians is to be multiplied to compute the upper confidence bound, such that we can reformulate the test as[78]:

$$\frac{MIP_{2009}}{MIP_{2001}} > \frac{MED_{2009}}{MED_{2001}} * UB$$

.

Once we know *UB*, we can rewrite the hypothesis test in terms of the original ratios of minimum income packages and the respective median incomes. In other words, the factor *UB* coincides with the minimum ratio of the estimated benefit adequacy in year (country) 2 and year (country) 1 necessary to detect a significant difference with a confidence level corresponding to the one used for calculating *UB*. Note that *UB* is independent of the level of the minimum income package. Furthermore, if a two-sided confidence interval of the ratio of the median incomes would be computed, that confidence interval would be non-symmetric with the upper bound being further away from the estimated ratio than the lower bound.

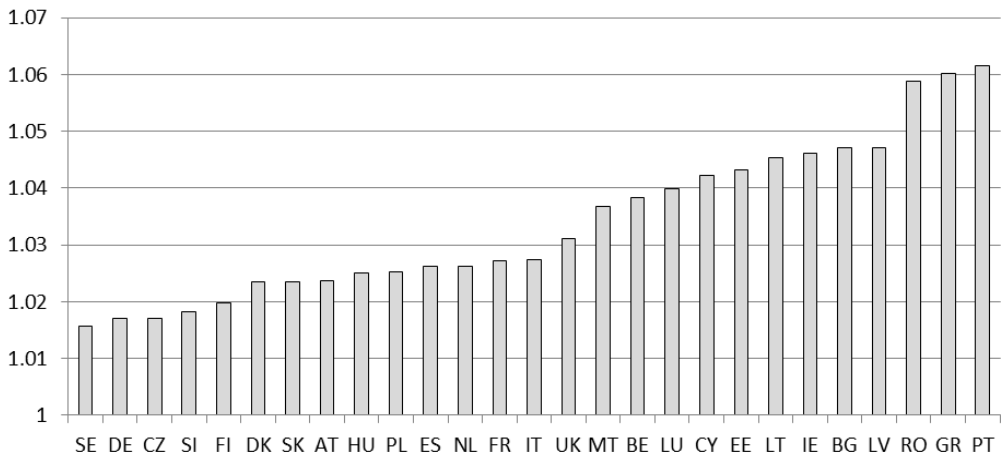
Figure 27 shows *UB* corresponding to a statistically significant difference in benefit adequacy between two years or countries with 95 per cent confidence, under the assumption that the estimated variance of the median is the same and that the samples used to estimate the median are independent[79]. In other words, the figures

[78] In the case of a ratio of two medians, the upper and lower value of the confidence interval are obtained by multiplication and not by addition, in contrast to the confidence interval of, for instance, the median itself.

[79] I use the formula of Price and Bonett (2002) for the variance of the ratio of the medians, but not for the estimation of the variance of the median itself, as this is probably based on the assumption of a simple random sample. Instead, I use the user-written Stata command *epctile* of Stas Kolenikov to estimate the variance of the median, which is based on linearisation and takes the sample design into account.

in the graph can be interpreted as the minimum ratio of two estimates of benefit adequacy to be obtained to observe a statistically significant difference with 95 per cent confidence, with the largest value of benefit adequacy in the numerator. As the graph shows, EU-SILC based estimates are sufficiently precise to detect relatively small differences in benefit adequacy. If the variance of the median between ECHP and EU-SILC (2010) would be the same, an increase in benefit adequacy of 3 per cent would suffice to detect a significant difference with 95 per cent confidence. Only in Romania, Greece and Portugal an increase of more than 5 per cent would be necessary. However, even in that case, an increase of less than 4 percentage points would suffice if the benefit adequacy in the base year would be equal to 60 per cent of the median income. If these values are compared to the observed changes in benefit adequacy between 2001 and 2009, only in the case of Luxembourg (singles and couples) and Germany (couples) the change in benefit adequacy is not significantly different from zero with 95 per cent confidence.

Figure 27: Minimum ratio of benefit adequacy to have a significant difference with 95% confidence if the variance of the median would in both cases be equal to the one found in EU-SILC 2010



Note: Incomes top-bottom coded using the LIS procedure. Estimated on the basis of linearization, using the epctile command developed by Stas Kolenikov. Estimates take as much as possible the sample design into account (cf. Goedemé, 2011). For consistency of income reference periods (IE and UK) and data availability (CY): EU-SILC 2010 for all countries, except for CY, IE and UK (EU-SILC 2009).

Source: EU-SILC 2009 UDB version 2, and EU-SILC 2010 UDB, version 1; own calculations.

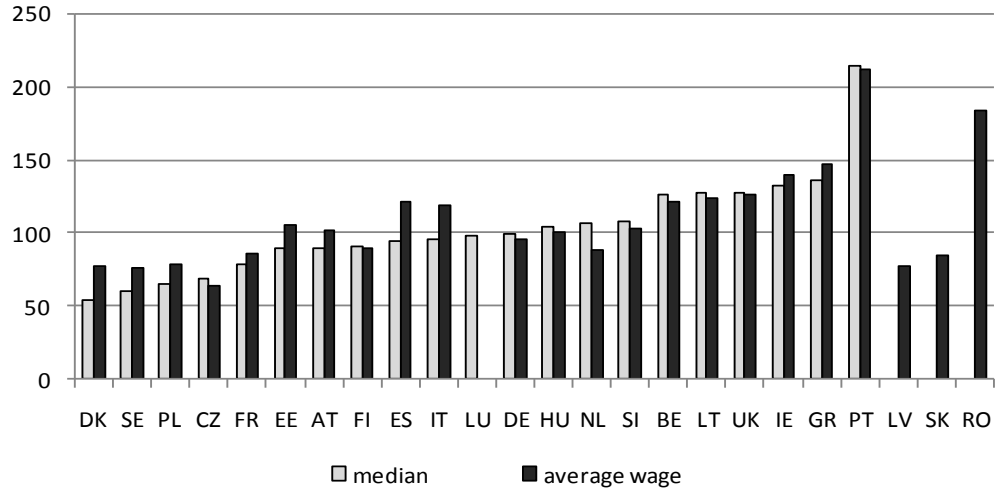
6.5 An alternative evaluation of trends in adequacy (not included in original text)

From a theoretical perspective, the use of the median equivalent net disposable household income as a benchmark for minimum income packages has some attractive features. Among others, it gives a clear indication of the redistributive capacity of the guaranteed minimum income. One of the disadvantages, however, is that a cross-national comparative data source with income data for 2001 does not exist, and that figures are not fully comparable across time, due to a change in the underlying data sources. It is impossible to trace the exact impact of these changes in data sources on trends in the median income. In addition, for a number of countries, Eurostat does not publish median income levels for 2001 (Latvia, Slovakia and Romania).

CSB-MIPI contains an alternative benchmark. National experts have been asked to estimate the net income of a two earner couple which earns the average female and the average male wage. Of course, this indicator has its own shortcomings. First of all, theoretically it is less attractive as it refers to the average rather than the median (it is more sensitive to the extremes), and it refers to a very specific income situation, rather than being a reflection of the 'average' income situation in society: it neglects many income sources which are included in the median disposable household income, and a two-earner couple with both partners working on the average wage may be more representative for one country than for another. Furthermore, the estimation of average wages has its own limitations and in many countries there are methodological changes across time, resulting in breaks in series (Van Mechelen et al., 2011: 37-38). Nonetheless, it is a standard benchmark for minimum income protection and the level of pensions (e.g. OECD, 2011).

Figure 28 compares the relative changes between 2001 and 2009 of net minimum income packages as a share of two benchmarks. For seven countries, the relative growth rate differs less than five percentage points between the two benchmarks. The most remarkable differences between the two benchmarks are discussed in a note in Chapter 4: "For most countries, observed trends are similar if net minimum income packages would be compared to the net income of a couple at active age living on average male and average female earnings. Exceptions are Estonia, Italy and Spain (stronger growth than net average wages but weaker growth than the median equivalent net disposable household income), the Netherlands (stronger growth than median equivalent net disposable household income, but weaker growth than net average wages. For Denmark, the drop in adequacy is much less pronounced if net minimum income packages would be compared to net average wages." In addition, Figure 28 shows that in comparison with net average wages adequacy has decreased in Latvia and Slovakia, and strongly increased in Romania.

Figure 28: Growth rate (per cent) of net minimum income package for an elderly couple in comparison with the median equivalent net disposable household income and the net income of a two-earner couple living on the average female and average male wage, 2001-2009



Source: MIPI-CSB version 2/2011 (Van Mechelen et al., 2011); Eurostat (extracted in December 2011), own calculations.

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Chapter 5: The long-term evolution of non-contributory pensions in Europe

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Abstract

Over the past two decades, pension reforms have been at the top of the agenda of social policy makers in Europe. In many countries, these reforms have resulted in less generous public pensions. At the same time, minimum income protection for the elderly has received attention from policy makers, but much less so from social policy researchers. Therefore, in this paper, I explore how benefit levels of non-contributory minimum income schemes for the elderly have evolved between 1990 and 2009 in 13 'old' EU member states. Building on two new cross-national and cross-temporary comparable datasets on minimum income protection in Europe, it is shown that over the past 20 years the erosion of the principal safety net of last resort for elderly persons has been limited. Moreover, in a substantial number of European countries a deliberate policy of large increases in minimum income benefits has been pursued, leading to a remarkable convergence of relative benefit levels.

Over the past 20 to 30 years, current and projected increases in public pension spending have led to the implementation of widely documented pension reforms in the North, East, South and West of Europe (e.g. Natali, 2008; Fultz, 2004; Immergut et al., 2007; Hinrichs, 2000; Bonoli and Palier, 1998; Kangas et al., 2010; Müller, 2002; Bonoli and Palier, 2007; Holzmann et al., 2009; Ebbinghaus, 2011). Authors have mainly focused on the politics of pension reform and its results in terms of changes to the main public pension scheme and the public-private mix in old-age provision. As has been observed by Zaidi et al. (2006: 3), "[a] common trend is that the pension benefits drawn from the public pension systems are on the decline, and thus the average public pension benefit ratio has dropped in the majority of the countries. Moreover systematic reforms have changed the nature of pension provision from defined benefit type provisions to defined contribution type provisions. In general, but with exceptions, this type of change is likely to shift more risks towards individuals [...], with a more restrictive redistribution in favour of the lower income individuals." (see also Grech, 2012) Unfortunately, in the literature on pension reforms, less attention has been paid to changes in minimum income protection schemes for Europe's elderly (some exceptions can be found in Immergut et al., 2007; and Pearson and Whitehouse, 2009).

In this article, I contend that the limited attention paid to minimum income protection for the elderly is unjustified because (1) it is an important element in alleviating poverty in old-age, (2) it is likely to become more important in the future, and (3) trends in minimum income protection may be very different from trends in overall pension reform. Therefore, I explore how non-contributory minimum income schemes for the elderly have evolved over the past 20 years in 13 'old' EU Member States. On the basis of two new data sources, particular attention is paid to trends in benefit levels and the number of beneficiaries, two key variables which determine the poverty-reducing impact of minimum income schemes.

The article is structured as follows. In the first two sections I provide more background information on the research question and propose a terminological clarification with regard to different types of non-contributory minimum income schemes for the elderly. In the next section, I sketch an overview of non-contributory minimum income schemes targeted at the elderly in the early 1990s. Subsequently, I shortly discuss the CSB-MIPI and EuMin data sets which I will use in the following section to document developments in minimum income schemes targeted at the elderly over the past twenty years. In the last analytical section the question is asked whether benefit generosity has converged in the EU15. The article concludes with a discussion of the implications of the findings.

1 Background

Although non-contributory minimum income schemes targeted at the elderly have largely been neglected in the literature on pension reforms, a focus on minimum

income guarantees is justified for an interrelated set of reasons. First, the provision of adequate levels of retirement incomes to ensure that elderly people do not face a risk of falling into poverty should be one of the core objectives of pension policy, as has been emphasised at the Laeken European Council in 2001 and confirmed in 2006 (cf. Eckardt, 2005: 253-254; European Commission, 2010a: 16; 2006: 10-11)[80]. Recently, this has been re-confirmed by the European Commission (2010b) in its Green paper on the future of pension reforms. Minimum income guarantees are a crucial part of old-age income provision in terms of alleviating poverty in old age, especially for persons with 'incomplete' careers or low earnings throughout their working lives (e.g. European Commission, 2006: 56). Therefore, a good understanding of the dynamics of minimum income protection is not only relevant for evaluating whether pension policy invests sufficiently in meeting one of its core objectives, but also for explaining cross-national and cross-temporary differences in old-age poverty.

Second, in a substantial number of countries minimum income guarantees for the elderly are likely to become more important in the future due to a tendency in recent pension reforms to re-strengthen the link between contributions and benefits, a growing reliance on defined-contribution (private) pensions, a projected fall in public pension replacement rates in a good deal of EU member states, a growing reliance on price indexation as well as improved benefit levels of the minimum income guarantees themselves (Meyer et al., 2007; European Commission, 2009: 27-28; e.g. European Commission, 2005; OECD, 2009; Whitehouse et al., 2009; Zaidi et al., 2006; Monacelli, 2007). As a result, a good understanding of the dynamics of minimum income protection in the past, may be helpful to better foresee and comprehend the future.

Third, there are good reasons to assume that the dynamics of reform of non-contributory minimum income protection schemes are different from contributory earnings-related pension schemes. This is not only because both types of schemes tend to serve a different purpose (crudely poverty avoidance, respectively income maintenance), but also because reforms to minimum income benefits tend to affect current pensioners whereas pension reforms to contributory schemes tend to be implemented with long phase-in periods (and affect a different group of voters). Hence, there is no reason to assume that changes to minimum income protection schemes have gone in the same direction as overall pension reforms.

For these reasons, in the next sections I will track the changes to non-contributory minimum income schemes in 13 'old' EU member states, mainly focusing on those aspects which tend to most directly affect the poverty-reducing capacity of minimum income benefits: the mode of access and the level of benefits.

[80] Of course, the importance of this goal has varied over time and across countries, Germany is an example in point, see Berner (2005: 16-17).

2 Types of minimum income schemes

Before discussing the evolution of minimum income schemes for the elderly, it is helpful to clearly define different types of minimum income protection schemes. As is also the case for other areas of social policy, the Babylonian swamp of minimum income schemes for the elderly is populated by many different terms which may denote the same type of benefit as well as similar terms which are used to indicate very different types of schemes. In order to overcome these language problems, I follow the categorisation introduced in Goedemé (2012). On the basis of the mode of access (i.e. eligibility criteria) *non-contributory* minimum income guarantees targeted at the elderly can be subdivided into at least three types: basic pensions, conditional basic pensions and social pensions.

Basic pensions are demogrants or universal benefits (cf. Perrin, 1967; Deleeck and Cantillon, 1986). They are granted to all citizens above a certain age, regardless of other sources of income. However, other conditions – especially with regard to residence history – may apply, both for establishing eligibility and defining the benefit level. Similar to basic pensions, **conditional basic pensions** are granted to all citizens above a certain age. In contrast to basic pensions, the level of conditional basic pensions is reduced depending on the level of other (public) pension income in order to top up total (public) pension income to a pre-defined level. In several cases eligibility and the level of the benefit is also dependent on the residence history of the claimant. The third category consists of categorical means-tested **social pensions** targeted at the elderly. Administratively, social pensions may be part of a general social assistance scheme or can be part of the public pension system. Eligibility depends on a means test which takes, apart from pensions, also other income sources into account. Sometimes a minimum residence record of several years before submitting the claim is required.

In addition to these minimum benefits, in a majority of EU member states *contributory* minimum income guarantees are available to the elderly such as contributory minimum pensions and means-tested pension supplements. Finally, in several European countries the general social assistance scheme remains the typical formal safety net of last resort for elderly without sufficient pension entitlements.

3 Origins and situation in the early 1990s

Apart from a few exceptions, guaranteed minimum incomes ensured as a right to all persons above a certain age are a relatively recent phenomenon. What is remarkable however, is that in nearly all EU15 countries, the elderly were the first category in the population which was covered by a modern minimum income protection scheme. Only later on, general or categorical social assistance schemes have been added in order to cover the entire population.

A few governments initiated minimum income protection regardless of past contributions and targeted at the elderly well before the Second World War. Denmark (1891), France (1905) Sweden (1913) as well as the UK (1908) and Ireland (1908/1924) all developed in the late 19th – early 20th century (partly) means-tested benefits targeted at the elderly[81]. However, they – and Denmark in particular – did not provide a minimum income guarantee in its modern sense (i.e. as a right), differences between local communes (Denmark, France) persisted, and relatively important levels of discretion aimed at distinguishing between the deserving and non-deserving poor continued to exist (Nørgaard, 2000: 193-195; Baldwin, 1990: 69-71; Petersen, 1990: 71-72; Overbye, 1997: 102-104; cf. ILO, 1936a: 284-286). Moreover, the level of benefits was very low, mainly aimed at supplementing income from work (Myles, 1984: 16). Nevertheless, the development is remarkable, as it took (large segments of) the elderly out of the field of the very stigmatizing poor relief of the day. In addition, this evolution contrasts sharply with what happened in most of Continental and Southern Europe. In the latter parts of Europe, public contributory pensions have been introduced as an answer to old-age poverty (cf. Palme, J., 1990), leaving elderly without sufficient entitlements until the second half of the 20th century behind. By the early 1990s, every EU15 country guaranteed some form of non-contributory minimum income to its elderly population. At the start of the 1990s three different groups can be discerned in function of the main non-contributory minimum income scheme for the elderly: basic pension countries, countries with social pensions, and social assistance countries.

In the late 1940s and the mid-1950s Sweden (1946/1948), Denmark (1956), Finland (1956) as well as the Netherlands (1957) converted means-tested minimum income schemes targeted at the elderly into non-contributory basic pensions. The latter were not intended to be the final safety net for the elderly, but rather constituted the cornerstone of the new public pension systems (Palme, J., 1990; Overbye, 1997; Myles, 1984; Kapteyn and de Vos, 1999). At the start of the 1990s, a part of the basic pension was means-tested in Denmark and tested against other pension income in Finland and Sweden. Importantly, in all countries entitlement to and the level of the benefit strongly depended on the number of years of residence, which meant that especially for migrants the general social assistance scheme remained the safety net of last resort. Nonetheless, the principal non-contributory minimum income scheme targeted at the elderly consisted of the basic pension.

In nearly half of the EU15 countries, modern categorical social pensions have been introduced as the public safety net of last resort for the elderly. In France (1956), Belgium (1969), Italy (1969), Portugal (1980) Greece (1982) and Spain (1991), these minimum income schemes developed before the general social assistance scheme for the total population (insofar as the latter has been developed afterwards) and were from the start a categorical means-tested scheme targeted at the elderly, with its own

[81] Some of the measures were also targeted at the disabled and not only at the elderly. The British Old-Age pension Act of 1908 has been implemented in the Irish Free State only in 1924 (Palme, J., 1990: 43). Sweden is a somewhat ambivalent case, as the principal part of the 1913 pension reform consisted in the introduction of universal insurance.

institutional design, separate from other social assistance initiatives (cf. Eardley et al., 1996; Immergut et al., 2007; Horusitzky et al., 2005; Overbye, 1997; Matsaganis et al., 2003; Deleeck et al., 1980: 34-37; Cantillon et al., 1987: 98-101; Denaeyer, 1969; Augris and Bac, 2009: 23-24; Nauze-Fichet, 2008; Sacchi and Bastagli, 2005). In Spain some non-contributory means-tested benefits targeted at the elderly existed from before 1991 which are since then subject to a long phasing-out period (*Pensiones Asistenciales* and *Subsidio de garantía de ingresos mínimos*) (Arriba and Moreno, 2005: 160-167), but they were discretionary and not based on specific rights such that claimants could not appeal against their denial (Chuliá, 2007: 533). Although Ireland also developed categorical social assistance targeted at the elderly, it stands somewhat apart from the other countries. In contrast to the continental and Southern European countries, Ireland was much later in introducing contributory pensions. As a result, the means-tested scheme implemented in 1924 remained much more relevant for income provision in old age than in other EU countries and became one of the most important of the many Irish categorical social assistance schemes (cf. Eardley et al., 1996).

In the third group of countries, in the early 1990s, the main safety net of last resort for the elderly was the general social assistance scheme. Although with a large difference in timing, both the United Kingdom (1908) and Luxembourg (1960) first introduced categorical means-tested minimum income schemes for the elderly before generalising these schemes to the entire population (respectively in 1948 and 1986) (National Statistics, 2005: 2-3; Atkinson, 1991: 120; Eardley et al., 1996: 254-255). In contrast, in West Germany (1961/1962) and Austria (1970s), from the start modern minimum income protection for the elderly consisted of the general social assistance scheme, even though for some specific groups of elderly persons categorical schemes had been introduced in the inter-war period. In both countries, social assistance has a strong regional dimension, and even more so in Austria than in Germany (ILO, 1936a: 344-346; 1936b: 58-62; Knoll, 1955; Bahle et al., 2011; Lampert, 1980: 409-416; Böhme, 2005: 7-9; Eardley et al., 1996: 161-162). Whereas in Germany the benefit rates were defined by the regions, but within a national upper and lower limit set by federal law, social assistance was fully defined at the regional level in Austria resulting in large differences between regions (e.g. with regard to benefit levels, means tests, and the requirement to pay back received benefits if possible) (Schmid, 2008: 7-9; Leibetseder and Kranewitter, 2010; Bahle et al., 2011: 53-57; Pfeil, 2001: 49-50; Fuchs, 2007: 9-11). In East Germany, people had to wait until the re-unification for the first modern social assistance scheme with a legal right to social assistance. In spite of the unification, several differences with the 'old *Länder*' remained until 1996 (Hockerts, 1994; cf. Hanesch et al., 1994: 120-121; Willing, 2008: 386-388). Remarkably, in Austria, Germany and the United Kingdom long-term beneficiaries such as persons above the legal retirement age were entitled to 'above-normal' benefit levels (Eardley et al., 1996: 45, 164-167; Schmid, 2008: 28; Evans and Williams, 2009: 99-101; 172-175; Glennerster, 2007: 258-259). On top of these higher rates, in four Austrian regions (Burgenland, Carinthia, Upper Austria and Vienna)

additional top ups were provided to the elderly (Pfeil, 2001: 219-225; Fink and Grand, 2009: 15; Fuchs, 2007: 11-12)[82].

In addition to these non-contributory minimum income schemes (basic pensions, social pensions, general social assistance and a conditional basic pension), in most countries other types of *contributory* minimum income guarantees have been introduced. In Belgium, Spain, France, Greece, Luxembourg, Portugal and the United Kingdom large groups of pensioners are protected either by minimum pensions or flat-rate pensions. In addition, similar to the Austrian *Ausgleichszulage*, Italy *(Integrazione al Trattamento Minimo*) and Spain (*Complementos de Mínimos de Pensiones de la Seguridad Social*) provided hybrid pension supplements which were both dependent on past contributions and a means test (Matsaganis et al., 2003; Arriba and Moreno, 2005; Sacchi and Bastagli, 2005; Monacelli, 2007). A detailed overview of the pension systems in the EU15 countries and the pension reforms implemented since the early 1980s can be found in Immergut et al. (2007).

4 Two new data sources

The main focus of the analysis that follows is on the generosity of non-contributory minimum income schemes. This will be illustrated by the evolution of gross benefit levels in constant prices and in comparison with the average gross wage. Data on gross benefit levels and average gross wages are derived from the Herman Deleeck Centre for Social Policy Minimum Income Protection Indicators dataset (CSB-MIPI). A detailed description of assumptions, procedures, strengths, weaknesses and an overview of the national experts involved in the project can be found in Van Mechelen et al. (2011). Due to data limitations, the evolution of gross benefits is discussed from 1992 until 2009. The figures on benefit levels refer to 'maximum' gross benefit amounts for elderly couples, i.e. the level of the minimum income that elderly couples would receive if they would have no other income apart from the minimum income guarantee (such as housing benefits, income from work or other pension income)[83]. In addition, if relevant, it is assumed that beneficiaries have a complete residence record. CSB-MIPI also includes model family simulations of net benefit levels to which I will occasionally refer. These model family simulations take also non-discretionary housing benefits, taxes and social contributions into account.

[82] Furthermore, in the United Kingdom elderly persons aged 80 and over with a limited contributory state pension could, since 1971, fall back on the category D pension, a conditional basic pension (Perry, 1986: 171; Blake, 2003).

[83] In principle the figures are based on yearly amounts divided by 12. In the case of Italy amounts correspond to the *pensione sociale* including pension supplements for persons below the age of 70 and from 1996 onwards to the *assegno sociale*.

Table 15: Overview of minimum income schemes included in the analysis

	1990	1991 – 1994	1995	1996 – 1998	1999	2000	2001	2002	2003	2004	2005	2006	2007 – 2009
BE	Gewaarborgd Inkomen voor Bejaarden (SP)						Inkomensgarantie voor ouderen (SP)						
DE	Sozialhilfe (GSA)								Grundsicherung im Alter und bei Erwerbsminderung (SP)				
DK	Folkepension (BP+SP)												
ES	Pensión no Contributiva de Jubilación (SP)												
FI	Kansaneläke (BP + CBP)			Kansaneläke (CBP)									
FR	Minimum Vieillesse (SP)												Allocation de solidarité aux personnes âgées (SP)
GR	OGA for the uninsured (SP)												
IE	Old-Age Pension (Non-Contributory) (SP)											State Pension (Non-Contributory) (SP)	
IT	pensione sociale (SP)		Assegno sociale (SP)										
NL	Algemene Ouderdomswet (BP)												
PT	Pensão social de velhice (SP)											Complemento Solidário para Idosos (SP)	
SE	Folkpension (BP) + Pensionstillskott (CBP)								Garantipension (CPB)				
UK	Income Support (GSA)					Minimum Income Guarantee (SP)			Pension Credit (Guarantee) (SP)				

Notes: BP: basic pension; CBP: conditional basic pension; SP: social pension; GSA: general social assistance.

Source: CSB-MIPI (Van Mechelen et al., 2011).

In addition, minimum income dynamics are illustrated by the number of beneficiaries of the non-contributory minimum income schemes. These data are derived from the Dataset on Minimum Income Protection in Europe (EuMin), compiled at the Mannheim Centre for European Social Research (MZES) (Bahle et al., 2011). Unfortunately, the database does only cover a selection of years for the 1990s. For the Nordic countries, the Netherlands, Italy and Greece I build on administrative sources to complete the database. The number of beneficiaries usually refers to the situation on December 31st of each year.

Table 15 provides a detailed overview of the schemes included in the analysis. Given that in Luxembourg no special provisions exist for the elderly (within the general social assistance scheme) and that in Austria these are defined at the regional level, the latter two countries are not included in the discussion that follows. When a new minimum income scheme is introduced, in many cases this only applies to new beneficiaries entering the scheme. In these cases, gross benefit levels refer to the new scheme, whereas caseloads refer to the total number of beneficiaries of both the old and the new non-contributory minimum income scheme.

5 Trends in non-contributory pensions

By the end of the 1980s, under the pressure of fiscal imbalances and population ageing, in nearly all EU15 countries the trend towards extending and increasing pension rights had come to an end. At the same time, cost containment became the principal purpose of pension reform. Nevertheless, as we will see, the dynamics of reform have sometimes been very different in the area of non-contributory minimum income protection for the elderly. In the text that follows, I make a distinction between three groups of countries, which I will discuss one after another. The first group consists of countries with a basic pension scheme. Given that basic pensions were in the early 1990s the foundation of the public pension system, in these countries major pension reforms affected almost by definition these schemes. This is very different in countries in which either a social pension or the general social assistance scheme (with special provisions for the elderly) constitutes the main formal safety net of last resort for elderly persons. Within this group, fore ease of presentation, a distinction is made between countries with very strong growth in gross benefit levels and countries with moderate growth and declining benefit levels.

5.1 Basic pension countries

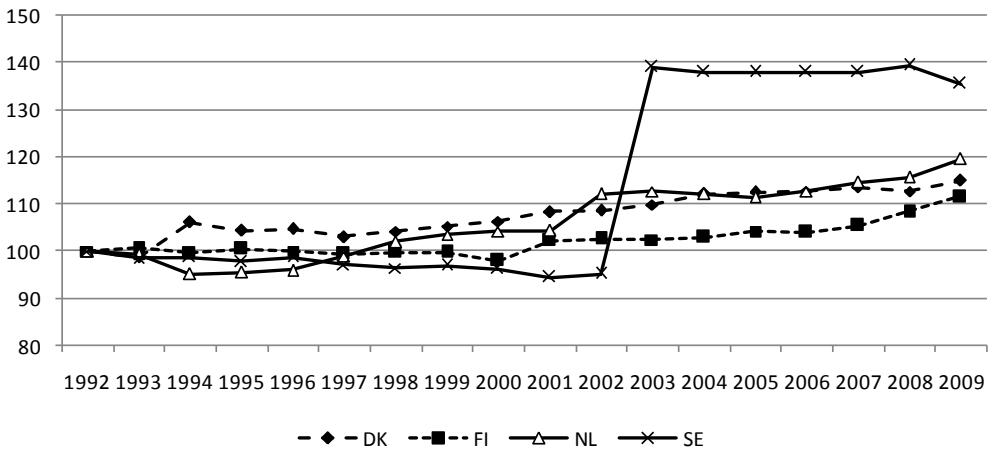
In contrast to the minimum income protection schemes in other countries, basic pensions are the cornerstone of the pension system in the Nordic countries and the Netherlands. Over the past 20 years, basic pension schemes have been radically reformed in Finland and Sweden. Finland was the first country to convert its basic pension into a pure conditional basic pension. From 1996 onwards the national pension was entirely tested against other public pension income, with a phase-out period until 2001 (cf. Social Insurance Institution (2002: 97), see also Table 16).

Notably, whereas until 2000 benefit levels were in real terms still at their level of the mid-1960s (Kangas, 2007: 283), from 2001 onwards they have been gradually increased. Also in Sweden the basic pension has been replaced with a conditional basic pension (the *Garantipension*). As a consequence, since 2003 the number of beneficiaries has been halved (cf. Table 16). In addition, its gross level was increased in order to compensate for the abolishment of a tax allowance (launched in 1999). Consequently, in net terms, benefit levels increased much less (CSB-MIPI, own calculations). Given that the level of (conditional) basic pensions depends on the number of years one has resided in the country, people with a limited residence record could end up with a relatively low (conditional) basic pension. In the early 2000s, Sweden and Finland were the first of the four basic pension countries to introduce a social pension targeted at the elderly without a sufficient residence history (mainly immigrants). At least in Sweden this led to a significant decrease in the number of elderly social assistance beneficiaries, even though in both countries the number of beneficiaries of the new social pension is relatively low (less than 1 per cent of the population aged 65 and over (EuMin database))[84].

Less radical changes in the area of minimum income provision for the elderly have taken place in Denmark and the Netherlands. In the early 1990s Denmark increased the weight of the means-tested component of the basic pension by slightly increasing the means-tested part and decreasing the basic amount of the basic pension as well as by re-introducing a 'high-earnings test' in 1994 (Overbye, 1997: 107, 112). In addition, in 1994, the Danish *Folkepension* became liable to taxation (NOSOSCO, 1997: 97), and similar to Sweden, gross benefit levels increased, although net benefit levels did not (CSB-MIPI, own calculations). The level of benefits and access to the scheme were improved ten years later. First, a means-tested supplementary benefit (the so-called pensioners' cheque) was introduced in 2003 (OECD, 2009: 185). One year later, the retirement age was lowered from 67 to 65 years, which led to a substantial increase in the number of beneficiaries (e.g. Green-Pedersen (2007: 470), see also Table 16). Over the past 20 years, reforms of the Dutch *Algemene Ouderdomswet* have been limited to the individualisation of benefits, applied since 1994 (Kapteyn and de Vos, 1999: 276). As can be seen from Figure 29, in all four countries benefit levels did not increase much in the 1990s. In Sweden and the Netherlands they even slightly decreased in real terms due to a temporary suspension of indexation (Anderson, 2007: 730-731; Palme, M. and Svensson, 1999: 368). Although gross benefit levels increased in real terms during the 2000s, relative to average gross wages, benefit levels (strongly) declined in the Nordic countries and slightly increased in the Netherlands (see Table 17). In net terms, in all four countries minimum benefit levels lost ground to couples living on average male and average female earnings (CSB-MIPI, own calculations).

[84] In 2011, the Finnish Special Assistance for Immigrants has been abolished. Since then, Finland has introduced a new conditional basic pension (the Guarantee Pension, *Takuueläke*), of which the benefit level is not dependent on the residence history. It co-exists with the national pension (*Kanseläke*), but has a higher benefit level and somewhat different pension test (Kela, 2011).

Figure 29: The evolution of gross basic pension levels for couples, in constant prices, 1992-2009



Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Consumer price index: before 1996: Laborsta, from then on: HICP from Eurostat (last accessed on April 1 2011), own adaptations and calculations.

In 1997 Overbye (1997: 110-111) explained the evolution of basic pension countries. All of them first introduced universal means-tested benefits. Due to rising affluence, the number of citizens increased who paid for means-tested pensions without being likely to benefit from them in the future. As a result, means tests were made more generous or abolished altogether. Provided the public pension was their main source of income in old-age, further increases in the average standard of living implied that a growing section of voters could expect a dramatic drop in their income level when they reached retirement. In the absence of well-developed markets of private pension insurance, this increased the demand for public second-tier earnings-related pensions. However, once mandatory second-tier public (or occupational) pensions were well in place, much of the popular pressure for a high flat-rate minimum pension evaporated. In order to contain rising public expenditures as a result of earnings-related schemes, it became necessary to test increases in the tax-financed national pension at least against income from the new second-tier pension schemes, or to replace the national pension with various types of means-tested pension supplements, which are cheaper ways to provide a minimum pension guarantee. In addition, once income-testing becomes more important for the national pension, the number of persons who receive a national pension declines, and so does the number of voters dependent on it.

It seems that over the past 20 years, except for the Netherlands, the basic pension countries have further followed the path described by Overbye: Finland (1996) and Sweden (2003) converted their basic pensions into pension-tested benefits whereas means-testing was extended in Denmark with regard to the basic amount, and in the

form of pension supplements. As earnings-related pensions were private (occupational) in the Netherlands and Denmark, the rationale for radically reforming the basic pension scheme in the direction of a conditional basic pension was much weaker in these countries than in Finland and Sweden. By limiting the indexation of benefit levels (the Netherlands and Sweden), increasing the means-tested component (Denmark) and increasing taxation on pensions (Denmark and Sweden), the relative cost of these schemes has also been kept under control.

Table 16: Number of beneficiaries of old-age non-contributory minimum income schemes as a percentage of the population aged 65 and over, 1992-2009

	1992	1995	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Basic pension countries													
DK		88.8		89.3	89.5	89.7	89.8	92.7	99.4	101.6	101.9	101.6	101.0
FI	103.1	104.1	103.0	100.8	65.4	64.0	62.1	60.2	58.1	56.8	53.7	55.8	54.4
NL	107.0	107.5	107.9	108.4	108.8	109.2	110.2	111.0	111.6	111.8	112.5	113.2	113.8
SE		103.2		104.7	105.0	105.5	57.9	56.4	54.4	52.6	50.7	48.4	46.4
Strong growers													
BE	7.1	6.7	5.9	5.5	5.3	5.8	5.7	5.4	5.1	4.9	4.9	4.9	5.2
GR		2.1	2.0	2.2	2.4	2.6	2.7	2.9	3.0	3.1	3.2	3.2	3.3
IE	28.0	25.1	22.9	21.4	20.8	20.2	19.7	19.0	18.5	21.1	20.9	20.4	19.9
PT	9.0	5.8	4.4	3.4	3.2	3.1	2.8	2.5	2.3	3.1	5.0	10.5	13.9
UK	13.4	14.6	14.0	13.1	13.4	13.9	14.0	18.9	19.5	19.6	19.4	18.9	18.6
Moderate growth and decline													
DE	0.7	1.3	1.3	1.4	1.4	1.3	2.2	2.1	1.9	1.9	2.0	2.1	2.0
ES	1.1	3.0	3.4	3.4	4.0	4.0	4.0	3.9	3.9	3.8	3.7	3.5	3.4
FR	13.2	11.2	9.0	8.0	7.4	6.8	6.4	6.2	6.0	5.8	5.6	5.5	5.5
IT	8.4	7.6	6.9	6.5		7.0	6.8	6.8	6.8	6.7	6.6	6.6	6.6

Notes: In the basic pension countries the ratio may be higher than 100 per cent due to early retirement pensioners (FI), beneficiaries living abroad, or younger partners receiving a supplement (NL) being included in the numerator. [1]UK: number of beneficiaries aged 60 and over as a percentage of all persons aged 60 and over. Only beneficiaries in Great Britain taken into account. [2]IT: break in series in 2001.

Source: EuMin (Bahle et al., 2011). DK: NOSOSCO, various years. FI: Kela on line database (last accessed January 2012). SE: Pensionsmyndigheten on line database (last accessed February 2012). NL: CBS on line database (last accessed January 2012). IT: ISTAT (2002), INPS and ISTAT, yearly reports on social security and social assistance.

Table 17: Gross non-contributory benefit for an elderly couple as a percentage of the average gross male wage

	1992	1994	1996	1998	2000	2002	2004	2006	2008
Basic pension countries									
DK	91	90	83	76	73	72	74	70	65
FI	45	45	42	40	38	39	36	35	35
NL	42	39	40	44	43	46	46	45	45
SE	45	45	42	39	36	35	49	47	46
Strong growers									
BE	36	34	34	34	33	39	40	42	47
GR	10	17	16	17	21	23	26	27	35
IE	42	42	42	43	43	46	47	51	
PT	36	35	38	39	41	40	41	89	95
UK	29	30	29	28	28	31	32	32	33
Moderate growth and decline									
DE	25	24	18	18	17	19	18	21	20
ES	35	34	34	34	35	37	33	34	
FR	47	46	46	46	46	44	43	42	41
IT	39	37	35	35	41	43	42	41	40
Average	40	40	38	38	38	40	41	44	45

Notes: Breaks in series: BE 2001, DE 2002, ES 2003. Figures for 2008 in case of ES and IE not shown because of break in series in that year.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

5.2 Strong growers

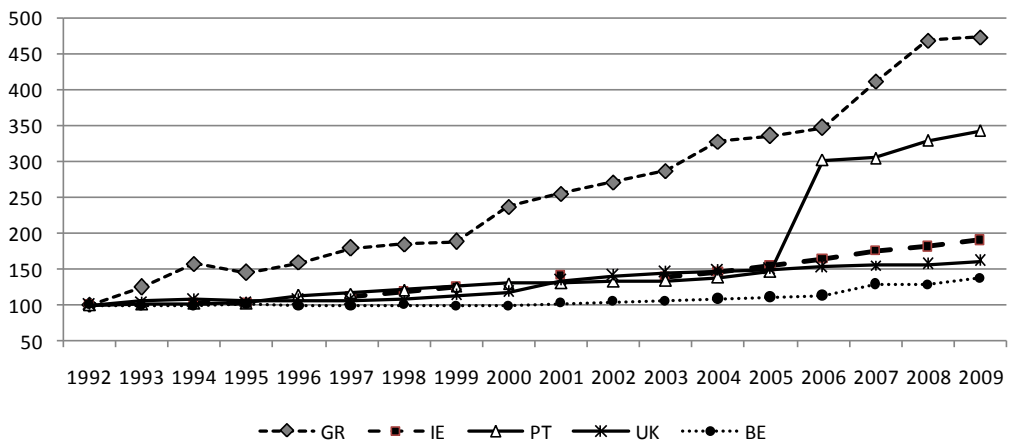
The previous group of countries differs strongly from the other EU15 countries in at least two important respects: First, the minimum income schemes in place at the start of the 1990s were the main building block of the public pension system. Second, given their function within the broader pension system, changes to the mode of access, level and structure of basic pensions potentially affected many more persons than changes to minimum income schemes in the countries which are discussed in this subsection and the next (cf. Table 16).

In five EU15 countries gross benefit levels have strongly increased in real terms over the past twenty years. In three of them (Portugal, the United Kingdom and Belgium), means-tested minimum income schemes have been thoroughly reformed. Benefit increases have been most spectacular in Greece and Portugal where gross benefit levels have more than tripled. Benefit levels have grown less spectacularly, but nonetheless remarkably, in the United Kingdom (plus 60 per cent) and Belgium (plus 37 per cent). With benefit increases of 100 per cent, Ireland is somewhere in between.

Whereas the increases in gross benefit levels in Portugal and Ireland have been accompanied by the introduction of a new social pension, this is not the case for Greece. In Greece, apart from the lowering of the eligible age from 68 to 65 in 1993, the structure of the OGA scheme for the uninsured remained unchanged (Eardley et

al., 1996: 186; Matsaganis, 2005). Nonetheless, the level of benefits was spectacularly increased and more than quadrupled in 20 years' time. In the same period the number of beneficiaries more than doubled, even though it remained relatively low as a percentage of all persons aged 65 and over (cf. Table 16). In Portugal, from the mid-1990s onwards, the Portuguese government started to rapidly increase gross benefit levels of the social pension, which were generally recognised to be too low (Capucha et al., 2005: 228; Chuliá and Asensio, 2007: 631). This trend was further accelerated in 2006, when the Portuguese government aimed at increasing benefit levels to the level of the European at-risk-of-poverty threshold (equal to 60 per cent of the median equivalent net disposable household income) through the gradual implementation of a new social pension. In 2006, the *Complemento Solidário para Idosos* was first implemented for persons aged 80 and over. The age limit has been gradually lowered to 65 years in 2009 while gross benefit levels have been further increased, resulting in a sharp increase in the number of beneficiaries (cf. Table 16). Similar to Portugal, also in Ireland the mid-1990s marked the start of a continuous increase in gross benefit levels. As part of the first National Anti-Poverty Strategy (1997-2007), both contributory and non-contributory pension levels were strongly increased (Russell et al., 2010: 5-6). This was further reinforced with the introduction of the State pension (Non-Contributory) which replaced the Old-Age pension (Non-Contributory). Although the benefit structure is largely the same, the means test was reformed and benefit levels further increased, leading also to an increase in the number of beneficiaries of about 15 per cent in 2006. Similar to the situation in Greece and Portugal, also in Ireland benefit levels have grown faster than the average wage (cf. Table 17).

Figure 30: The evolution of minimum income levels for couples in countries where benefit levels have strongly increased, in constant prices, 1992-2009



Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Consumer price index: before 1996: Laborsta, from then on: HICP from Eurostat website (last accessed on April 1 2011), own adaptations and calculations.

In the United Kingdom and Belgium gross benefit levels increased less strongly than in Greece, Portugal and Ireland. Nonetheless, also in these countries benefit levels grew faster than the average gross wage – at least during the 2000s, but less so in the United Kingdom than in Belgium (cf. Table 17). Until 1999, the United Kingdom did not provide a separate minimum income scheme targeted at the elderly apart from the Over 80 Pension (or Category D Retirement Pension). Instead, general social assistance provided some additional top-ups for the elderly, which over time increased faster than the basic social assistance rate. In 1999 the Minimum Income Guarantee has been implemented, a categorical scheme for the elderly which replaced the general Income Support and was administrated separately by the Pensions Agency. It retained most elements of Income Support, but gross benefit levels were further increased, although additional premiums for the very old were abolished. An even bigger change has been implemented in 2003 with the introduction of the Pension Credit. The Pension Credit consists of two means-tested schemes. The first part, the Guarantee Credit, is available to all persons aged 60 and above and replaces the previous Minimum Income Guarantee[85]. In order to remove disincentives to saving, persons aged 65 and over can now – possibly on top of the Guarantee Credit – apply for the Savings Credit if they have some modest savings (cf. Glennerster, 2007: 258-259; Evans and Williams, 2009: 99-101; 172-175). Since November 2009, the means test disregards a higher level of savings. Figure 30 shows the gross level of the maximum benefit elderly persons could claim from respectively Income Support, the Minimum Income Guarantee and the Guarantee Credit. In 20 years' time, the value of these minimum income guarantees has increased with over 60 per cent in real terms while since the introduction of the Guarantee Credit, the number of beneficiaries has grown with more than a third (cf. Table 16).

In contrast, in Belgium the 1990s were characterised by constant gross benefit levels and the start of a gradual increase in the entitlement age for women from 60 years in 1996 to 65 in 2009 (in accordance with the increasing entitlement age for the public earnings-related pension schemes). Gross benefit levels started to improve only in 2001, to reach a 37 per cent increase by 2009. At the same time, in 2001 a new social pension was implemented, which – among others – was associated with a less strict means test, as well as with increased benefit levels. Whereas in the 1990s benefit levels were still equal to general social assistance levels, the new benefit was associated with large increases on top of the price indexation, with the aim of increasing it to the level of the at-risk-of-poverty threshold. From 2006 onwards, a 2-yearly evaluation of supplementary indexation on top of inflation became even legally binding – even though the new Government Agreement of 2011 scaled down the budget for these increases (Goedemé et al., 2012).

[85] The pensionable age for the Pension Credit will be gradually increased from 2010 onwards (cf. http://pensions.direct.gov.uk/en/state-pension-age-calculator/home.asp, last accessed January 2011).

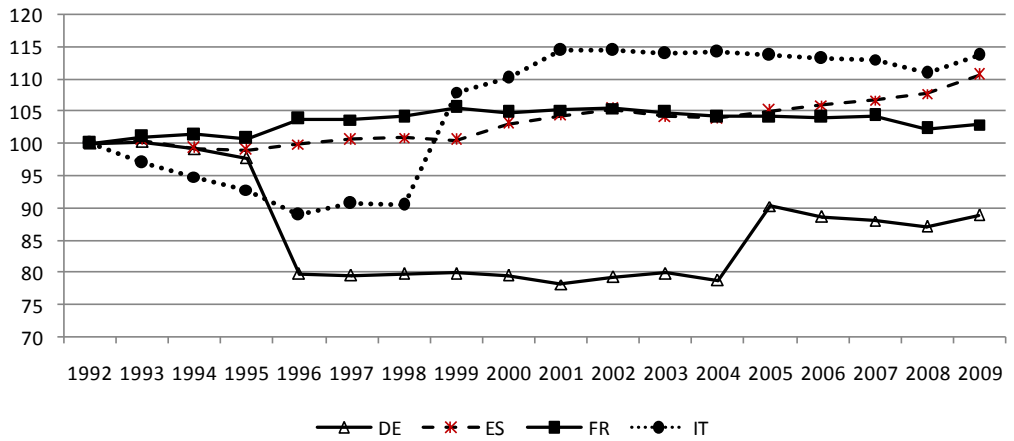
5.3 Moderate growth and decline

In the third group of countries, gross benefit levels have increased only moderately or even declined in real terms over the past 20 years. In comparison with average gross wage growth, social pension benefits were around the same level at the end of the 2000s as they were in the early 1990s in Italy and Spain (mainly due to slow wage growth) whereas in France and (West) Germany benefit levels have not kept up with wage growth over the past 20 years.

Germany is the only EU15 country in which benefit levels by the end of the 2000s were lower than at the start of the 1990s – at least for elderly persons living in the old *Länder*. Until 1995, (West German) elderly social assistance beneficiaries could benefit from a supplement as a part of the general social assistance scheme. However, in 1996, this supplement was limited to the ill and disabled, which meant for a substantial part of the elderly that the maximum gross benefit lost 20 per cent in real terms. In East Germany, only in 1990 a modern social assistance scheme was introduced, tailored to the characteristics of the West German *Bundessozialhilfegesetz*, which was integrally implemented in January 1991 as a result of the re-unification of Germany. Nonetheless, some important differences between East and West remained in place until 1996. For instance, benefit levels were lower and the supplements for the elderly and unemployable were not allocated in the new German States (cf. Hanesch et al., 1994: 120-121; Willing, 2008: 386-388). In 2003 a new means-tested minimum income scheme was implemented, separately for the elderly and disabled, with a different, less stringent means test. The introduction of the new scheme has led to an increase of more than 60 per cent in the number of beneficiaries. Still, this number remains low by international standards (cf. Table 16). Only in 2005 benefit levels were increased again, but remained below the West German level of the early 1990s. However, for old-age people living in the new German states minimum income protection improved remarkably: given that elderly persons never have been entitled to the old-age supplements, means-tested benefits were at the end of the 2000s well above their level in 1991.

Also in Italy, gross benefit levels decreased in real terms in the first half of the 1990s by lack of indexation of the so-called social top-ups to the basic amount (i.e. the *maggiorazioni sociali*). In 1993 the means test of the social pension was changed from an individual to a couple basis, which meant that especially women have suffered a reduction in the social pension if their husband's income was too high for them to qualify (Eardley et al., 1996: 236). The minimum income protection scheme was further reformed in 1995 as part of the Dini pension reform, when the *pensione sociale* was replaced with the *assegno sociale* for all new entrants to the scheme. Benefits were higher than the *pensione sociale*, but supplements were abolished and a stricter means test was introduced, leading to a further decrease in the number of beneficiaries (Table 16). Finally, in the aftermath of the Prodi reform of 1997, benefit levels were strongly increased between 1999 and 2001, to remain more or less constant in real terms until the end of the 2000s. Since 2002, persons aged 70 and over can benefit from increased supplements (Monacelli, 2007; Sacchi and Bastagli, 2005; Ferrera and Jessoula, 2007).

Figure 31: The evolution of minimum income levels for couples in countries with weakly growing or declining benefit levels, in constant prices, 1992-2009



Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); Consumer price index: before 1996: Laborsta, from then on: HICP from Eurostat website (last accessed on April 1 2011), own adaptations and calculations.

In the two other countries, the evolution of gross benefit levels followed a more gradual pattern. Spain implemented a proper social pension only in 1991 (Chuliá, 2007). Since 1995 benefit levels were linked to the level of social security benefits and indexed to prices. Apart from gradual increases from 1999 onwards, the *Pensión de jubliación no contributiva* has not been reformed over the past 20 years. Meanwhile, the number of old-age beneficiaries has increased until 2004 to some four per cent of the population aged 65 and over, after which it slightly decreased again (cf. Table 16). Also in France benefit levels remained more or less constant in real terms over the past 20 years, even though in 2007 the old *minimum vieillesse* was replaced with a new, integrated means-tested benefit. With the new scheme, the dual structure of the old benefit was abolished and, in contrast to the old scheme, non-married partners were treated as a couple. Since its introduction in 1956, the number of beneficiaries of the *minimum vieillesse* has continuously declined as a result of improved coverage by social insurance schemes (Augris and Bac, 2009: 25-27). This trend has been continued over the past two decades, but slowed down since the early 2000s (cf. Table 16).

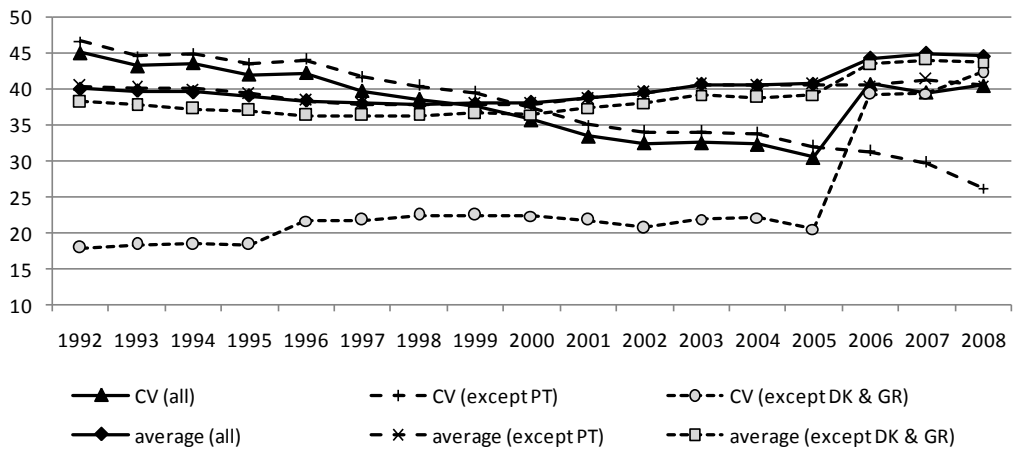
6 A story of convergence?

Given the many different trends in gross benefit levels, one may wonder whether benefit levels have converged or rather diverged. This question is relevant, as European policy makers and several civil societies have argued in favour of a

European minimum income benefit (Vandenbroucke et al., 2012; Goedemé and Van Lancker, 2009). There are many obstacles for the harmonisation of minimum income schemes, though, and a major one is the wide divergence in current benefit levels (cf. Chapter 4). However, if a trend of convergence can be observed, such a project of harmonisation of minimum income schemes may become more realistic in the future.

There are several ways to compare benefit levels, and a common way to do so, is by expressing them as a percentage of average earnings (e.g. OECD, 2011: 108-109). Advantages of this indicator are that it gives some idea of the redistributive capacity of benefits (instead of simply the purchasing power across very different economies and times), and that long-term time series are available (in contrast to median disposable household income, for instance). However, time series breaks are inevitable, as well as cross-national methodological differences (details can be found in Van Mechelen et al., 2011: 37-38). Nevertheless, given the consistency of the results presented in Figure 32, it is most likely that a rather strong convergence has taken place over the past two decades. If the exceptional increases in gross benefit levels in Portugal at end of the 2000s would be ignored, the coefficient of variation has nearly halved between 1992 and 2008. However, convergence has been largely reversed in 2006 if the strong growth in the Portuguese social pension is taken into account (only fully implemented in 2009).

Figure 32: Convergence in gross non-contributory pensions for elderly couples as a percentage of gross average male wages



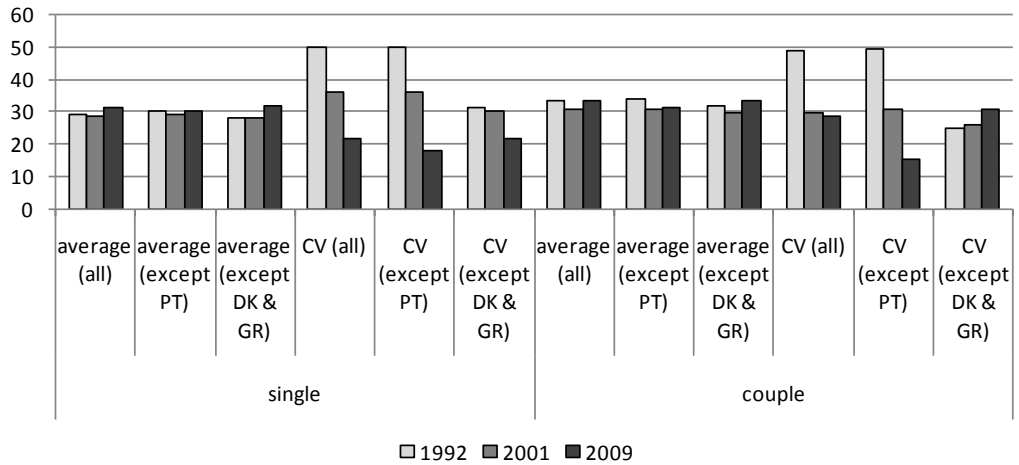
Notes: coefficient of variation (CV) expressed as a percentage. Breaks in series: BE 2001, DE 2002, ES 2003 & 2008, IE 2007. Time series stops in 2008 due to missing data for some countries.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

During the 1990s, convergence has primarily been driven by the strong decline in the generosity of the Danish basic pension and the strong increase in benefit generosity of the Greek social pension. From the 2000s onwards, the convergence process is

much more diffuse: Denmark continues to downwardly converge to the average, a pattern which can also be observed for France. At the same time, Greece, Belgium, the United Kingdom and several other countries (further) catch up. In other words, whereas during the 1990s, convergence has primarily been driven by declining generosity in a single country (Denmark) and increases in another (Greece), divergence at the end of the 2000s has been primarily driven by exceptional increases in benefit generosity in Portugal (cf. Figure 32). Similar observations can be made if net benefit levels (which take account of taxes, social contributions and non-discretionary housing benefits) are compared to the net income of a couple earning an average male and an average female wage. The important difference is that for singles, convergence continued during the 2000s, whereas for couples convergence halted in the same period (if the new social pension in Portugal is included in the analysis) (cf. Figure 33). In any case, the fact that the inclusion or exclusion of a few countries from the analysis can result in rather different conclusions regarding convergence trends, means that one should be rather cautions with drawing too strong conclusions about convergence processes in the area of non-contributory pensions in the old EU Member States.

Figure 33: Convergence in net non-contributory pensions for elderly singles / couples as a percentage of the (equivalent) net income of a couple earning the average male and average female wage



Notes: CV = coefficient of variation. Finland missing for 1992 (if Finland is excluded for 2001 and 2009, results do not substantially change). In the case of elderly singles, amounts are equivalised using the modified OECD equivalence scale.

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

7 Conclusion

Pension reforms of the past twenty years will generally lead to lower public pensions and a shift of risks towards future pensioners in many countries. Over the same period, most EU15 countries introduced important changes to their non-contributory minimum income schemes for the elderly – the principal safety net for elderly people with low (pension) income. However, there is no common trend towards less generous non-contributory minimum income schemes. On the contrary, in a substantial number of countries generosity was strongly improved. Except for West Germany, over the past 20 years gross benefit levels at least kept pace with inflation, and improved quite dramatically in Greece, Portugal, Ireland, the United Kingdom and Belgium. If benefit levels are compared to average wages, a general pattern of convergence can be observed, which in the 1990s was primarily driven by declining generosity in Denmark and increasing benefit generosity in Greece. By the end of the 2000s, the strongly increasing generosity of the Portuguese social pension resulted in a new divergence of gross benefit levels. At the same time, several countries substantially reformed their non-contributory minimum income schemes. Most notably, Finland and Sweden converted their basic pension into a conditional pension, leading to a substantial decrease in the number of beneficiaries, whereas Denmark, Portugal and the United Kingdom improved access to their schemes, either by lowering the minimum age of eligibility (Denmark), or by changing means tests and improving benefit levels (Portugal, United Kingdom). Also many other countries introduced new non-contributory minimum income schemes, even though this did not lead to considerable increases in the number of beneficiaries.

The observed evolution with regard to non-contributory minimum income schemes for the elderly brings up three important questions. First, it remains to be seen whether the fiscal and economic crisis will not dramatically reverse the observed trend of fast increasing benefit levels, especially in countries like Greece, Portugal and Ireland. Second, given that in many cases non-contributory minimum income schemes seem to evolve differently from overall pension reforms, the question remains as to what are the key drivers and conditions for reforms to these minimum income schemes. At first sight, obvious factors such as the type of minimum income scheme, the number of beneficiaries and the initial level of the benefit do not seem to offer fruitful ground for explaining all of the patterns observed in this study. Apart from applying a more fine-grained analysis to further scrutinise the effect of these factors, it could be asked whether and to what extent improvements in non-contributory minimum income protection are sometimes used to make decreases in the generosity of public pensions politically more palatable, a mechanism which has for instance been observed for the Spanish pension reform of 1985 (Chuliá, 2007: 526-528). Third, currently, for many countries it is not very clear how and to what extent changes to non-contributory minimum income schemes have affected poverty rates (Figari et al. (2008) provide a first comparative analysis). Nonetheless, if non-contributory minimum income schemes really will become more important in the future, a good

understanding of their impact on elderly poverty should be a first priority for further research.

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Chapter 6: The future: a universal basic pension for Europe's elderly?

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Abstract

Harmonisation of social security systems is back on the agenda of European policy makers. However, the introduction of a harmonised scheme poses severe challenges. In this article we explore some options and difficulties associated with the implementation of a harmonised minimum income protection scheme for the elderly. As earlier contributions to the literature already outlined the practical and ethical arguments in favour of a European basic pension, we take the proposal of a European basic income for the elderly as our starting point and assume that a basic income is philosophically and ethically justified. In this paper, we try to broaden the scope of the discussion to the various and often technical options, difficulties and pitfalls associated with the practical design and implementation of a harmonised European minimum income scheme. Hence, we first offer an overview of minimum income guarantees for the elderly in Europe. Second, we make a detailed assessment of the issues involved in the design of a basic pension. Third, we shed some light on the European dimension of this proposal to, finally, conclude with a sketch of three possible 'basic pension scenarios'. Our findings confirm that it is one thing to be in favour of a harmonised scheme of minimum income protection, but another to design a realistic and politically feasible proposal.

1 Introduction

The debate on the desirability of harmonising European social protection schemes is as old as the first treaties leading to the establishment of the EU. Already in 1956, the French Prime Minister Guy Mollet defended the harmonisation of social regulations and fiscal burdens during the negotiations leading to the Treaty of Rome (Scharpf, 2002: 645-646). However, only in the early 1990s the EU set its first steps towards harmonising minimum income protection with "Council Recommendation of 24 June 1992 on common criteria concerning sufficient resources and social assistance in social protection systems" and "Council Recommendation of 27 July 1992 on the convergence of social protection objectives and policies" (Council of the European Communities, 1992a, 1992b). More recently, both the Commission and the European Parliament have called on the Member States to fully implement the Council Recommendation and to provide 'an adequate minimum income for a dignified life'. This minimum income guarantee should be implemented in accordance with common principles (European Commission, 2008). The European Parliament went even further and defined a common target level for social benefits. In its Resolution of 6 May 2009 the European Parliament (2009):

> "Underline[d] its request to the Council to agree an EU target for minimum income schemes and contributory replacement income schemes of providing income support of at least 60 % of national median equalised income and, furthermore, to agree a timetable for achieving this target in all Member States;"

Not only policymakers, but also researchers have been involved in the harmonisation debate. Whereas some pointed to major difficulties of harmonisation and limited desirability of going further than the "elaboration of minimal norms or general principles of qualitative or organisational rather than quantitative nature" (Deleeck, 1987: 243), others called for strengthening the European Union's 'social space' through the nesting of the national welfare states within the European Union and the creation of – among others – supranational 'social sharing schemes' (Ferrera, 2009).

In this paper we further explore the options and difficulties associated with the harmonisation of minimum income protection systems in the EU by discussing the proposal of a European basic pension (BP) as a means of eradicating financial poverty of the elderly in Europe (e.g. Schokkaert and Van Parijs, 2003: 259). As argued by Atkinson (1995: 1, italics as in original) "The proposal of a *basic income/flat tax*, or variations on its central elements, has generated wide interest in a number of countries. […] it should be on the agenda for any serious discussion of tax and social security reform for the twenty-first century." In this paper, we discuss important options and pitfalls which policymakers must face when introducing a universal basic pension targeted at the elderly. The aim is thus conditional: *if* a BP for the elderly is to be implemented, *then* what form could it take? As we shall see in the next sections, the design of such scheme is confronted with several complexities. First of all, the risk of fiscal competition between member states makes the EU the most appropriate level for the decision on introducing a basic pension scheme (cf. Atkinson, 1998: 140-

145; Schokkaert and Van Parijs, 2003: 259). However, as the European Union is neither a state nor a clear supranational entity (cf. Rosamond, 2000) it does not possess all policy tools and levers at the disposal of national governments. Second, EU enlargement in 2004 and 2007 has resulted in a considerable increase of the diversity within the EU in terms of social policy institutions and social security arrangements (cf. Cerami, 2006) as well as in terms of social outcomes (e.g. Marlier et al., 2007: 63-84). This complexity enhances the (theoretical) number of available options in the design of a European basic pension, but also the number of problems that have to be solved. What may look like technical details at first sight, will appear to be choices with potentially important consequences. The specific design of basic income schemes still offers tough nuts to crack, and we hope to move this discussion beyond a purely theoretical debate.

As a starting point, three assumptions must be kept in mind. First, we use the well-known standard definition of basic income, as propagated by Philippe Van Parijs (2004: 8): "A basic income is an income unconditionally granted to all on an individual basis, without means test or work requirement." We assume that this basic income is philosophically and ethically justified, as has been argued by, for instance, Van Parijs (1997) and Raventós (2007). In what follows, we refer to a basic pension (BP) as a basic income targeted at the elderly. Second, we assume that if it is to succeed, every proposal for a basic pension in the EU must start from existing policy arrangements and political praxis (cf. the concept of the *nirvana fallacy* of Demsetz (1969)). Therefore, before embarking on a discussion of policy options, we first present an overview of already existing minimum income guarantees for the elderly in the European Union. The assumption also implies that we take account of the subsidiarity principle in the EU with respect to social policy issues (i.e. social policy remains firmly a national responsibility)[86]. However, as argued by Atkinson et al. (2002: 229-230), we assume that there is – at the European level – enough room for manoeuvre as it comes to setting minimum standards to be met by national social policy actions (as is exemplified by the resolution of the European Parliament mentioned earlier). In other words, we suppose that the EU could for example set the minimum level of guaranteed income benefits for persons above a certain age to be provided by national governments, leaving the *method* of delivery to member states. Finally, the reduction of financial poverty is expected to be one of the main merits of basic income.

We contribute to the existing literature in at least three different ways. First of all, we present an original and systematized overview of the minimum income guarantees for the elderly in each of the 27 EU member states. Second, we offer an overview of the issues involved in the design of a basic pension scheme in the European Union. Van Parijs and Schokkaert (2003: 258-259) spelled out the ethical and instrumental arguments in favour of a European guaranteed minimum pension. However, whereas they explicitly did not go into "the details of the introduction of such minimum income guarantee", we set off at precisely that point. In doing so, we pay more

[86] A general discussion of the subsidiarity principle in the EU can be found in Barber (2005).

attention to the various options that are open to policy makers than in previous articles about minimum income guarantees for the EU's elderly (e.g. Atkinson et al., 2002) and address the specific considerations that must be made in light of recent and future enlargements. However, it is not our objective to propose solutions for all problems and considerations raised. Our aim with this focus is twofold. On the one hand, to contribute to the debate about the possibility of European social policy and the way in which European minimum income schemes could be harmonised to some extent (cf. Deleeck, 1987; Ferrera, 2009, 1996). On the other hand, to contribute to the basic income debate by moving it forward to (practical and ethical) issues involved in the concrete design of a basic pension scheme. Finally, the paper can be considered to offer a groundwork for the further examination of the social and fiscal consequences of the implementation of a European basic income scheme under different scenarios, for instance by using the European micro-simulation model EUROMOD. Since all details of a policy design must be decided upon for such a simulation, it is necessary to first review them and consider the various alternatives which could lead to radically different outcomes in terms of covered population, financial cost and poverty alleviation.

The paper proceeds as follows. In the first section, we consider arguments in favour of first implementing a BP scheme for the elderly. In the following section we present an overview of the minimum income guarantees which are currently in existence across the EU. Although most member states provide a specific minimum income guarantee for the elderly, target groups and entitlement conditions vary a lot. In the third section we turn to the issues involved in the design and implementation of a European universal basic pension and the various options which are available to policy makers. In the fourth section we elaborate further on those issues that relate directly to the European character of the basic pension scheme. In the fifth section we single out three different scenarios in the design of a European basic pension for the elderly. Thereafter we conclude.

2 A focus on Europe's elderly

Although we believe that a strong moral case for implementing a basic income for children can be made, there are some good reasons to restrict accessibility to basic income in the first place to the elderly of the EU. First, in accordance with our concern to fight financial poverty, pensioners face a high average risk of living in financial poverty throughout the Union, on average 19 per cent of those aged 65 and over. Nevertheless, diversity is quite large, ranging from 6 per cent of the elderly in the Czech Republic and the Netherlands over 16 per cent in Austria, France and Denmark to close to or more than 30 per cent in the United Kingdom, Latvia, Spain and Cyprus. They even face the highest risk of all age categories in more than half (14) of the EU's

member states (data from Eurostat, 2009)[87]. Second, the elderly are a group for whom social transfers are particularly important. Activation measures such as those designed to increase skill levels and employability may be preferred for the younger generations, but for those already retired socially provided pensions are the most important source of income maintenance (e.g. Atkinson et al., 2002: 230). In other words, pensioners are mostly depending on income transfers to stay out of poverty. Third, due to the age restriction it can be expected that possible negative labour market effects (i.e. people cutting working time or quitting jobs when receiving a basic pension) will be limited. Finally, as we shall see in the next section, in almost all member states some form of minimum income guarantee for the elderly is already in place. As opposed to, for instance, child benefits (that are almost everywhere designed as supplemental benefits), these guarantees vouch for a minimum level of income in the absence of 'sufficient' other income. Such schemes can serve as a realistic starting point for the introduction of a European universal basic pension.

3 An overview of minimum income guarantees for the EU's elderly

In our view, the eventual implementation of a basic pension in the EU will only be realistic insofar account is taken of the social security provisions that characterize European welfare states. Therefore, before we embark upon a discussion of the options and pitfalls in the design of a European basic pension, we first present an overview of minimum income guarantees that exist for the elderly across EU member states.

Pension systems in most EU member states involve a number of different programmes. This derives not only from the fact that within many member states different schemes exist for different groups of persons (e.g. farmers, employees, the self-employed and civil servants), but also from the fact that in most member states persons (have to) participate in different programmes at the same time (e.g. a public and a private programme). Furthermore, over the past decades complexity has been further enhanced by what Natali (2004) coined the 'hybridisation' of pension systems in Europe. Whereas in post-war Europe it was easier to distinguish between two or three kinds of pension systems, nowadays more and more 'hybrids' fill the pension landscape. These hybrids combine some central techniques and instruments of the post-war clusters. Common to these hybrids is an evolution towards partial privatisation and the integration of more programmes into the pension system.

[87] Data refer to 2007 (most recent available data for the entire EU, 13/02/2009). The EU's official at-risk-of-poverty poverty indicator is used. Persons are at risk of poverty if their total net disposable household income is below 60 per cent of the median of the member state in which they live. Household incomes are 'equivalised' to reflect economies of scale for persons living together and the relatively lower cost of children as compared to adults. A complete overview can be found in the annex.

Nevertheless, hybridisation does not necessarily mean (institutional) convergence (cf. Hinrichs, 2001; Bonoli, 2003).

As a result, a wide range of ways to classify and describe pension systems can be found in the existing literature (Goedemé and Raeymaeckers, 2008; Hinrichs, 2001; Immergut et al., 2007; Natali, 2004; OECD, 2007) Due to its comprehensiveness, in this paper we follow the terminology outlined in Immergut and Anderson (2007: 21-23) and consistently applied in *The Handbook of West European Pension Politics*. A distinction is made between three pillars: a public sector pillar (the 'first pillar'), an occupational sector pillar (the 'second pillar') and an individual private sector pillar (the 'third pillar'). Every pillar may be composed of different tiers. In the first pillar, the first tier can consist of a minimum guaranteed pension (with or without a means-tested part) and the second tier of an earnings-related component. In the second and third pillar, in the first tier there can be a mandatory scheme, in the second a subsidised voluntary scheme and in the third a completely voluntary scheme without public subsidies. What is of relevance here, however, is that in almost every EU member state some regulation can be found to guarantee a minimum income to the elderly, be it as a part of the pension system or as a part of the general social assistance scheme, be it with, or without a means-test (see Table 18 for an overview). In general, such regulations are limited to the first pillar (first tier) and the general social assistance scheme. On the basis of the target population and entitlement conditions, four different ways to guarantee a minimum income to the elderly can be discerned.

1) A *minimum pension* in a contributory scheme for persons with enough pension entitlements, without a means-test. This regulation can be found in the first pillar's first tier[88], or it can be part of a broader earnings-related scheme which comprises the first pillar's first and second tier.[89] In half of the cases the scheme is exclusively financed by contributions, in the other schemes it is financed by contributions and government subsidies. Only in Lithuania the minimum pension is exclusively financed by government resources. To the extent that the first pillar comprises different schemes for different socio-economic groups, conditions and availability may not be the same for all pensioners.

2) A *pension supplement* for persons with a low pension, with contributory conditions (i.e. being eligible for a pension) and a means-test (e.g. Denmark (income-tested part of the *Folkepension*), Greece, Italy and Slovenia). Also this regulation is located in the first or second tier of the first pillar.

3) A *guaranteed minimum income* to which the elderly are entitled from a certain age. This is a scheme for which no minimal contribution record is necessary. There are three different kinds of guaranteed minimum income schemes in the European

[88] Cyprus, Czech Republic, Estonia, France, Greece, Ireland, Lithuania, Luxemburg, Poland and United Kingdom.

[89] Austria, Belgium, Bulgaria, Hungary, Latvia, Malta, Portugal, Slovenia and Spain. In Denmark, apart from the basic income in the first tier, a minimum pension can also be found in the second tier's earnings-related scheme.

Union, some with a means test, others without a means test. In Denmark and the Netherlands a '**basic income**' is available to all persons aged 65 and over. In both countries, the benefit depends on the number of years one has resided in the country. This basic income can be situated in the first pillar's first tier. In other member states such as Cyprus, Estonia, Latvia and Sweden a '**conditional minimum income**' is available for the elderly. Apart from residence conditions, eligibility is also 'pension-tested'. Usually, the amount does not vary by other sources of income. Almost all other member states provide a '**means-tested minimum income**' to the elderly. In most cases eligibility and the amount of the benefit are not dependent on the number of years of residence. Rather, in these schemes the amount of the benefit is typically equal to the difference between the threshold of the means test and the part of the household's income that is taken into account. In most cases it concerns a scheme integrated into the general social assistance scheme, but with some specific conditions for the elderly. In others (Belgium, Cyprus, Finland, Greece, Ireland, Italy and Malta) it is rather part of the pension system's first pillar. In almost all countries, guaranteed minimum incomes are exclusively financed by government subsidies. However, in Finland, Italy, the Netherlands and Slovenia, the minimum income is financed by both taxes and contributions.

4) In only a few member states there is no specific scheme for elderly persons without the necessary pension entitlements to draw a (minimum) pension. Nevertheless, in all of these member states a *general social assistance scheme* is available (Czech Republic, Luxemburg and Romania). Romania is the only member state in which the general social assistance scheme is the only source to guarantee a minimum income to the elderly[90]. In all three member states, this scheme is financed by taxes. Of course, in almost all EU member states a social assistance scheme is present, but in member states where special arrangements for the elderly exist, this scheme is virtually irrelevant, except for very specific groups (e.g. in cases of residence requirements for a guaranteed minimum income).

From this short overview it can be concluded that up to now, nowhere an unconditional basic pension for the elderly exists. The Netherlands' AOW (*Algemene Ouderdoms Wet*) and the Danish *Folkepension* come closest. Yet, in both member states the amount is conditional on the number of years of residence between the ages of 15 and 65, respectively 25 and 65. For each year missing, the benefit is reduced by 2, respectively 2,5 per cent.[91] Nonetheless, in a large majority of EU member states special regulations for the elderly exist in order to provide them with a guaranteed minimum income. As we have already mentioned in our introduction, these existing schemes should serve as a realistic starting point for the implementation of a basic pension in the European Union, an exercise in which we engage in the next section.

[90] In April 2009, Romania introduced a minimum pension.

[91] Additionally, a limited income test is applied in Denmark. The benefits of high income earners are thus reduced (more or less 1% of pensioners in 2002) (Green-Pedersen, 2007: 469).

Table 18: minimum income protection for the elderly in the European Union, mid-2000s

	Minimum Pension	Pension supplement	Minimum Income			Social Assistance
			Basic Income	Conditional Basic Income	Means-tested	
Austria	x				x	
Belgium	x				x	
Bulgaria	x				x	
Cyprus	x			x		
Czech Republic	x					x
Denmark	x	x	X			
Estonia	x			x		
Finland					x	
France	x				x	
Germany					x	
Greece	x	x			x	
Hungary	x				x	
Ireland	x				x	
Italy		x			x	
Latvia	x			x		
Lithuania	x				x	
Luxembourg	x					x
Malta	x				x	
Netherlands			X			
Poland	x					x
Portugal	x				x	
Romania						x
Slovakia					x	
Slovenia	x	x			x	
Spain	x				x	
Sweden				x	x	
United Kingdom	x				x	

Notes: for a description of the different categories, see text. Social assistance is only indicated if a minimum income is not available. In some cases a minimum pension is only provided to one or several socio-professional groups and not to all the insured. In Austria the minimum pension is offered only to a small group. Different sources regularly contradict each other. If necessary the website of the relevant Ministry has been consulted.

Source: (European Commission, 2006, 2010; Social Protection Committee, 2006; various contributions to Immergut et al., 2007; Goedemé and Raeymaeckers, 2008; OECD, 2007).

4 Issues in the design of a universal basic pension

If a universal basic pension for the elderly in the European Union is desirable, the question is how a basic pension scheme should look like and how it becomes politically feasible. In line with Atkinson (1998), we believe that a universal basic pension cannot be achieved by individual member states, due to fiscal competition. Therefore, action at EU level is not precluded by the principle of subsidiarity, especially if the EU's role is limited to setting minimum standards, leaving the method of delivery to member states (cf. Atkinson et al., 2002).

In order to find out how a universal basic pension scheme *should* look like, it is helpful to discuss the various possibilities with regard to how such a basic pension scheme *could* look like. Many of the following issues may seem largely technical, but the choice for one option or another may have significant consequences in terms of population covered, fiscal consequences and poverty alleviation[92]. In what follows, we offer an overview of different options and pitfalls in the design of a European basic pension scheme. As is apparent from the comparative social security literature, most important dimensions of social security schemes are the 'mode of access' (a), 'benefit structure' (b), 'financing' (c), and 'governance'(d) (cf. Schulte, 1998; Reman, 1992; Dixon, 1999; Titmuss, 1971; Clegg, 2008; von Maydell, 1993). We draw on these dimensions to select and organise the most important choices that must be made in the design of a European basic pension. A separate section is devoted to the European dimension of the basic pension scheme.

4.1 Mode of access

In designing a basic pension scheme for the elderly, it is necessary to define who the elderly are. Where should the line be drawn? All persons above a certain age? If so, which age? 65 and over as Atkinson et al. (2002) propose? Although such a choice would be in line with actual age thresholds in many existing minimum income schemes[93], in some member states lower age limits are in use (e.g. Estonia, Hungary, Lithuania, Malta, Slovak Republic and United Kingdom), whereas in others higher age limits are (also) applied (e.g. Bulgaria, Latvia, Portugal and again United Kingdom). However, one could also opt for a an age limit which takes changes in the age structure into account. Such a dynamic age limit could accommodate rising costs as a result of ageing as well as the wide cross-sectional variation in age structure in the EU. For instance, it could be defined so that the basic pension scheme would cover a certain percentage of the population (say, the 20 per cent eldest in a member state). In such a case a further question could be whether the basic pension scheme should cover the eldest 20 per cent of the EU population or the 20 per cent eldest persons of each member state. Of course, the choice has tremendous consequences with regard

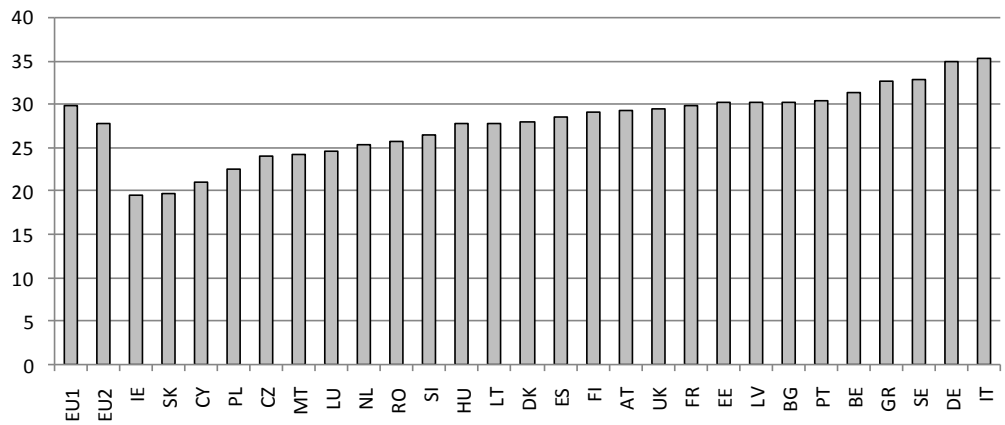
[92] A quantitative illustration for five West European countries, can be found in Atkinson et al. (2002).

[93] Belgium as from 2009, Denmark since 2004, Cyprus, Finland, France, Germany, Greece, Italy, The Netherlands, Portugal, Slovenia, Spain, Sweden and United Kingdom.

to who will ultimately benefit (the most) from such a scheme. Furthermore, this choice will be closely linked to matters of financing (cf. *infra*).

The following graphs may give an idea of the large differences in target population and financial consequences for member states or the EU in three different scenarios. The first figure shows the size of the target population as a percentage of the population between 20 and 59 years old (at which economic activity is most intensive) if an age limit of 65 years would be used. As can be seen from Figure 34, the dependency ratio is highest in Italy and Germany (reaching 35 per cent) and lowest in Ireland and Slovakia (below 20 per cent). As a consequence, if the basic pension is to be financed by the national (active) population, the financial cost is likely to be much higher in relative terms for Italians than for the Irish. Note that the dependency ratio and GDP/capita (taking account of price differences between countries) are not correlated to each other.

Figure 34: Dependency ratio (population of 65 and over to population between 20 and 59 years old) in the EU (2006)



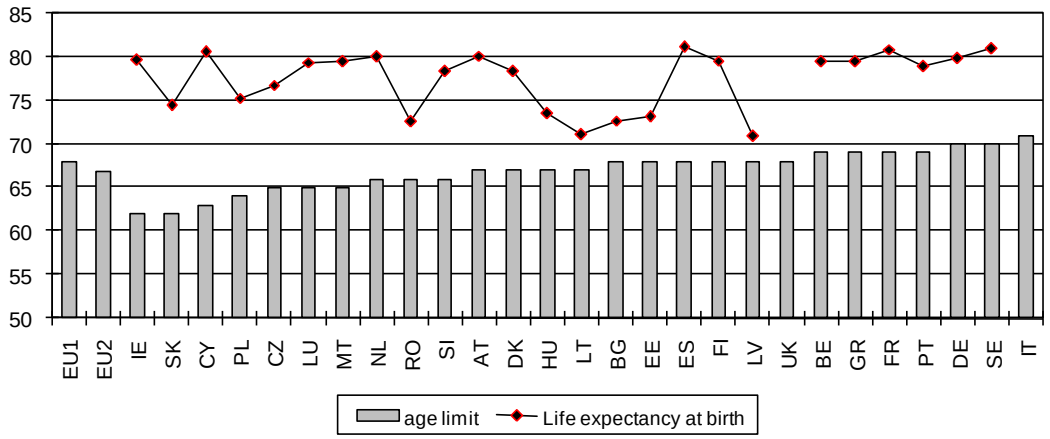
EU1: Dependency ratio of all EU citizens (i.e. country average weighted by population size).

EU2: Country average, not weighted by population size.

Source: Eurostat (2009) ("Population by sex and age on 1. January of each year"), own calculations

However, if the size of the target population is held constant (in proportion to those aged between 20 and 59 years), the age at which persons could benefit from the basic pension would vary tremendously between member states, as is shown in Figure 35. Whereas the Irish elderly could be eligble from the age of 62, Italian elderly would have to wait until their 71st birthday if a dependency ratio of 25 per cent is used as a cut-off point. Note that the age limit is very weakly correlated with the average life expectancy (at birth) in each member state: persons living in member states with a higher age limit do not necessarily live longer.

Figure 35: Life expectancy at birth and age limit for the target population corresponding to a dependency ratio of 25 per cent (in proportion to the population between 20 and 59 years old). EU member states (2006)



EU1: Dependency ratio of all EU citizens (i.e. country average weighted by population size).

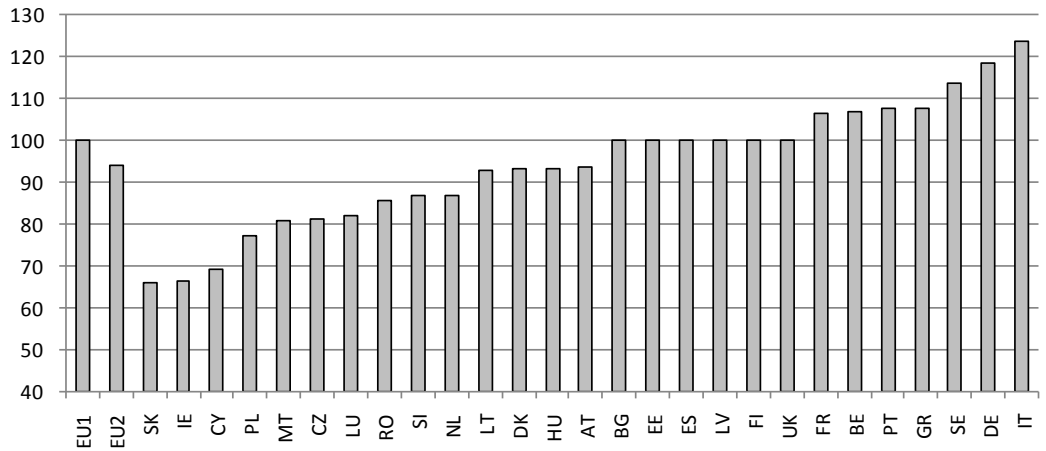
EU2: Country average, not weighted by population size (own calculation).

Since life expectancy for the UK and Italy are missing, no EU averages have been calculated.

Source: Eurostat (2009) ("Population by sex and age on 1. January of each year"), own calculations

Instead of holding the dependency ratio for each member state constant, the European dependency ratio could be used as a point of reference. If a dependency ratio of 25 per cent is chosen, all elderly of 68 and over could apply for the basic pension. Figure 36 shows that the number of elderly persons that would benefit from this scheme would differ in most member states substantially from the number that would benefit if the dependency ratio would be held constant at the national level. Whereas in some member states up to 20 per cent more persons would be eligible (Italy, Germany, Sweden, Greece, Portugal, Belgium and France) and in others the same (United Kingdom, Finland, Latvia, Spain, Estonia and Bulgaria), in a majority of member states fewer persons would be eligible (up to 35 per cent less in Slovakia and Ireland).

Figure 36: Number of elderly in the target population if a European definition is used in proportion to the number of elderly in the target population if a national definition is used. The cut-off is a European dependency ratio of 25 per cent, which corresponds to an age limit of 68 (2006)



A dependency ratio of 25 per cent is used as cut-off point (target population in proportion to those aged 20 to 59 years).

EU1: Country average weighted by population size.

EU2: Country average, not weighted by population size (own calculation).

Source: Eurostat (2009) ("Population by sex and age on 1. January of each year"), own calculations

Defining an age limit would suffice if policymakers would opt for a truly unconditional basic pension (and not merely a minimal income guarantee). However, for many member states this would mean a very radical change in welfare provision, maybe too radical a change to be politically feasible, most certainly if the implementation takes place in one movement. Therefore, policymakers could specify restrictive entitlement criteria. A first issue would likely be how to treat migrants who have not lived during their entire working career in the member state in which they apply for a basic pension. For instance Dutch and Danish (and Canadian) policymakers have made the (level of the) basic pension for the elderly dependent upon the number of years of residence in the country. Since such a restriction is driven by the concern for 'social tourism' (cf. Kvist, 2004: 306), or at least some balance between contribution and benefit, it is closely related to the financing of the basic pension and the level of the benefit. We will return to this issue in the next section.

One step still further away from the basic pension proposal is to make entitlement dependent on the income at someone's disposal. Such an income test could be more or less strict with regard to the kind of income that is taken into account (e.g. only pension income, monetary income in general – including pensions, earnings, welfare – or all financial and non-financial means). Furthermore, the generosity of the test depends on the threshold above which someone is no longer entitled to the income

benefit. Last but not least, there are different possibilities with regard to the unit of assessment. Does one take into account only the income of the person that applies for a minimum benefit or also that of others (the partner, household, family, …)? If the latter option is chosen, the question is how and to what extent the income of others should be accounted for.

One could think of many other entitlement criteria (e.g. having paid a certain amount of contributions or taxes – depending on the financing mechanism), but the more criteria are added, the less the scheme looks like a basic pension scheme and the less likely it is that such a scheme will be converted into a universal basic pension.

4.2 Benefit structure

With regard to the basic pension itself, many choices must be made. However, if policymakers stick to a real BP scenario, the options are more limited. We will first discuss the issues involved in such a scenario, then we will review some alternatives.

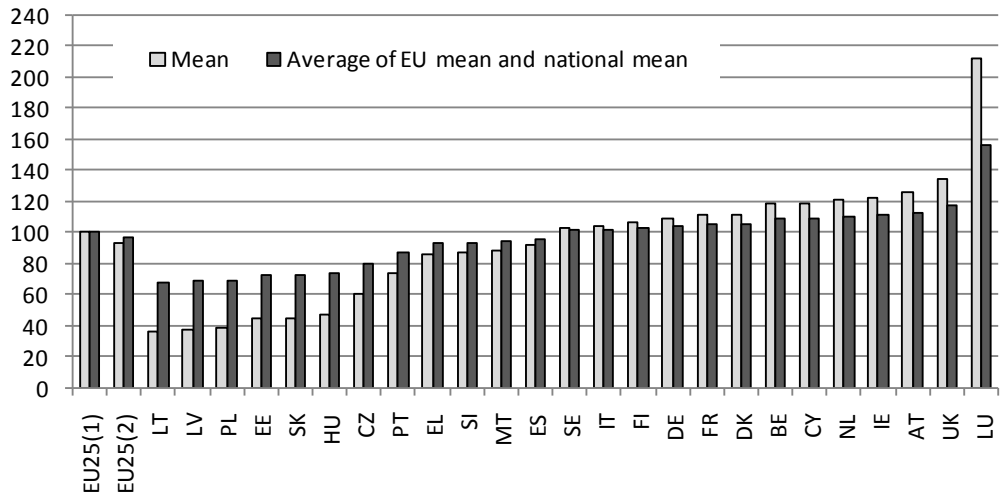
To begin with, the level of the benefit must be defined. First, the basic pension could be a fixed amount. However, it should at least be adapted over time in line with changes in prices. To avoid becoming irrelevant in the future, the benefit must also be linked to the evolution of the average standard of living. Therefore, it could be defined as a percentage of average or median earnings or (equivalent) household income[94]. Second, it could be made relative to the standard of living within each member state or to the standard of living in the European Union as a whole. Whereas the former option could encourage social tourism, the latter could make the benefit largely irrelevant in the richer member states, and make it higher than average earnings in the poorer member states[95]. One could also opt for a mixed approach (say, half the benefit is relative to the national standard of living, half of the benefit is relative to the European living standard)[96].

[94] The difference is quite important. Average respectively median earnings could remain constant, while household income increases. This is for instance the case when there is a rise in the relative number of two earner families. On the other hand, data on earnings are generally more readily available than household income data.

[95] In Fahey (2007) an illustration of the wide differences between member states can be found. As Fahey shows, these do not necessarily entail widely differing views on what constitutes a desirable standard of living (cf. European Commission, 2007; Dickes et al., 2010).

[96] If a European perspective is used (be it a fixed amount or an amount relative to a European average), it is necessary to take account of the variation in prices among member states. Otherwise, with the same basic income, one could buy more goods and services in one member state than in another. Purchasing power parities are a means to tackle this issue, although they are subject to serious limitations (e.g. Milanovic, 2005; Atkinson et al., 2002: 233-237; The Canberra Group, 2001).

Figure 37: Equivalised net disposable mean income in the EU's member states and the average of national mean income and mean income of the EU, in proportion to the mean income of EU citizens (PPS, 2006)



EU25(1): Mean income in the EU (all inhabitants taken together)

EU25(2): Unweighted mean of EU's member states

EU weighted mean income is the unweighted average of national mean income and EU25(1) mean income.

Source: Eurostat (2009) ("Mean and median income by age and gender"), own calculations

In Figure 37, the wide differences in mean net disposable income in the EU's member states are shown. Incomes are equivalised (i.e. adapted to household size, cf. *infra*) and shown in purchasing power standards (PPS). 'Purchasing power standards' is a kind of 'virtual' money unit, which represents national incomes in a common currency adapted to differences in prices between member states. All amounts have been expressed in terms of the average income of all inhabitants of the EU25 (i.e. all EU member states except for Bulgaria and Romania). Clearly, mean income varies greatly across member states with mean income in Luxembourg being almost six times as high as mean income in Lithuania. Alternatively, applying the same benefit level across all member states would lead to substantial increases in the poorest member states and substantial decreases in benefit levels in the richer member states, although these relative losses would be smaller than the increases in most poorer member states. A benefit level of 60 per cent of the average income in the European Union would still be 60 per cent higher than average income in Lithuania and Latvia. At the same time, this benefit would be below 50 per cent of average income in the Netherlands, Ireland, Austria and the UK and below 30 per cent of average income in Luxembourg. If an intermediate option is chosen, the average of national mean incomes and European mean income could be used as a reference point for calculating the basic pension. In such a scenario, the dispersion of benefit levels

between member states is substantially reduced and benefit levels in poorer member states increase relatively more than the decrease in benefit levels which would take place in richer member states. 60 per cent of the reference income would still mean a basic pension which is 11 per cent higher than the mean income in Lithuania and 55 per cent below mean income in Luxembourg. Similar results are obtained if – as in the resolution of the European Parliament – 60 per cent of the median is used to define the level of the benefit.

A second point with regard to the level of the benefit concerns the treatment of household composition and economies of scale. If – as in the proposal and definition of Van Parijs (2004) – the basic pension is fully individualised, then each person receives exactly the same amount. However, two persons living together in the same household each receiving the same benefit can do and have more than a one person household with exactly half that income. For instance, an apartment for a couple is not necessarily more expensive to buy or rent and the cost for heating is the same. In other words, there are economies of scale. Therefore, it could be argued that – if the basic pension is to offer the same material standard of living to all who receive it – the benefit must be higher for individuals living in a single-person household than for persons who share a household with others. At present, this is for instance the case in the Dutch AOW scheme. If an equivalence scale is used to correct for economies of scale, the question is how the scale will be established. In research on income inequality and poverty, different methods are in use and studies are inconclusive about the precise extent of the economies of scale at play (cf. Buhmann et al., 1988; Coulter et al., 1992; de Vos and Zaidi, 1997). Nonetheless, many studies that are concerned with poverty and income inequality in Eastern Europe, as compared to Western Europe, agree that economies of scale are generally lower in Eastern Europe than in Western Europe (e.g. Atkinson and Micklewright, 1992; Förster et al., 2005; Brandolini, 2007). Furthermore, economies of scale can vary over time (e.g. Večerník, 2009: 91-92). Independently of the choice for a 'European' or a 'national' basic pension this issue must be addressed with care. As Atkinson et al. (2002: 236-237, 240-241) have shown, the choice for one equivalence scale or another may have a large impact on the outcome of pension reforms. One could start from the equivalence scales that are implicit in existing minimum income schemes, but these could be the result of budgetary and political concerns as much as concerns with economies of scale (cf. discussion with regard to the use of 'official' poverty lines in e.g. Sen, 1983)[97]. In any case, the issue cannot be ignored: even if each person receives exactly the same amount (implicitly) an equivalence scale is used, i.e. a scale which assumes that there are no economies of scale.

Essentially, a basic pension does not depend on previous contributions, nor on present income. Nevertheless, policymakers could introduce a European BP scheme

[97] The discussion does not end here. If an equivalence scale is used and each partner of a household given the same amount, it is assumed that different household members share household income (or at least collective costs) equally. The common assumption of equal shares in most cases does not correspond to reality. An overview of the literature can be found in Burton et al. (2007).

in several steps to make it more palatable. If so, they could proceed by first introducing a guaranteed minimum income in accordance with new European criteria and then changing the guaranteed minimum income to a true basic pension some years later. In this two-step approach, the first step could involve a reform towards what we termed a 'conditional minimum income'. In such a scenario, the Czech Republic, Luxembourg, Poland and Romania should introduce a (pension-tested) guaranteed minimum income specifically for the elderly and many other member states should convert their means-tested guaranteed minimum income into a pension-tested guaranteed minimum income[98]. The amount of the basic pension in Denmark and the Netherlands, as well as the conditional minimum income in all other member states should already be brought in line with the new BP scheme. In a second step all conditional income schemes could be converted in real basic pension schemes. Furthermore, if the scheme is to be a truly European scheme, residence conditions could be removed or restricted to residence in EU member states. Of course, the desirability of the latter depends on how the scheme is to be financed and the way the level of the benefit is defined (national –European).

4.3 Financing

In accordance with the principle of subsidiarity, financing would probably be left (for most part) to the member states (cf. the resolution of the European Parliament). Nevertheless, some important remarks can be made with regard to this issue as well. The basic pension could be financially integrated in the first pillar of the pension system or be set up as a separate scheme with a separate financial structure. If additional sources must be found by introducing a new tax or social contribution, policymakers should define the tax base (property, pension income, earnings, consumption, …) and the tax unit (the individual, the household, …). Some previous proposals of a BP are accompanied by the proposal to finance it with a flat tax (i.e. a tax set at a fixed proportion of earnings or other income) (e.g. Atkinson, 1995; Levy et al., 2007). However, it could also be financed by a regressive or a progressive tax. Such choices could of course (partly) offset, respectively reinforce, the poverty and inequality-reducing effects of a basic pension[99]. The BP could be financed on a funded basis, a pay-as-you-go basis, or a mix of both. In the case of funding, only 'collective funding' is an option since the level of the pension is not dependent on previous contributions of the individual. However, a choice for funding (as the only financing mechanism) limits the possibility of introducing the basic pension in a short time-span since one would have to wait until a considerable capital has been built up.

[98] These countries are Austria, Belgium, Bulgaria, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Malta, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden and United Kingdom (cf. Table 1). The pension test should be conceived in such a way that vertical efficiency (extent to which leakage of transfers to those above a certain threshold is restricted) as well as horizontal efficiency (extent to which all those below a certain threshold receive the transfer) are maximised (cf. Atkinson, 1998: 121-123).

[99] Not only the progressivity of the tax, but also the choice of the tax base (income or consumption and the kind of income and consumption that is taxed) largely affects the impact of the entire policy change on poverty and income inequality (e.g. Demsetz, 1969).

Furthermore, it excludes the possibility of intergenerational risk-sharing and thus would be of the defined-contribution type (at the cohort level). As such, it could only be a guarantee of not being much poorer than other pensioners. In other words, such a scheme would not offer a guarantee against poverty in relation to the entire population. Therefore, a genuine income guarantee is of the defined-benefit type, which requires intergenerational risk-sharing and, consequently, includes at least an important pay-as-you-go component[100].

A special point of attention for European policymakers should be the way in which the basic pension will be treated by national tax and social security systems. If policymakers would opt for treating them the same as pensions are treated, then European elderly will have completely different net benefits at their disposal, even if they would initially receive exactly the same basic pension in gross terms. As Verbist (2006) has shown, the treatment of pensions by Europe's tax systems varies a lot throughout the EU, with important consequences for the relative income position of the elderly in each member state. If completely left to national governments, governments not in favour of the basic pension might finance the scheme by simply taxing benefits away. In other words, it must be decided to what extent European policymakers define the way the basic pension is to be financed and whether and, if so, how it is to be taxed. Furthermore, it must be decided to what extent the BP will be financed using national and/or European financing mechanisms. We return to this issue in the next section.

A last point to which we would like to direct attention, are changes in the intergenerational distribution of incomes. A budget neutral implementation of a universal BP may imply a compensation by new financial resources. It would be cynical if new or increased taxes would push younger households (with children) under the poverty line, especially if the introduction of the measure would be motivated by reducing poverty in first place[101]. Even a progressive tax could have such negative effects. In other words, the issue of financing should be treated with care and caution, even – or rather, especially – if this is entirely left to the EU's member states.

4.4 Governance

Since fiscal competition is less of a concern in this area, as long as the principles of 'good governance' are respected, matters of organisation would probably be left to

[100] Pay-as-you-go financing does not preclude financing primarily on the basis of intra-generational redistribution – as Schokkaert and Van Parijs (2003) have defended in the case of a guaranteed minimum. The guaranteed minimum could be financed by a tax on (high) pensions in first place.

[101] Levy et al. (2007: 229), simulating the effects of a universal child benefit financed by a general flat tax on gross incomes (including pensions) encounter such a case with lower child poverty but a higher tax burden for persons on already low pensions. They conclude: "This indicates that financing a child basic income with a general flat tax is not a practical proposition on its own. Other financing mechanisms, perhaps using existing tax bases and schedules, would be more appropriate."

national governments. Issues involved are for instance the choice of the institution that will be charged with the administration of the basic pension scheme and the extent of decentralisation. However, some other issues may attract the concern of European policy makers. For instance, what role should the social partners play? Will their role be in line with national customs with regard to the administration of social security institutions and the control of financial flows? To what extent could they negotiate the level (and timely upgrades) of the benefit?[102] Not only the role of social partners in the determination of the level of the benefit must be defined, but also the role of others. Who will ultimately decide upon the basic pension scheme? What role is left for national governments and parliaments? What should be the role of the various EU actors (Commission, Council and Parliament)? However, if payment of the BP would come straight from the EU and not pass through either national or subnational governments – as in the proposal of a 'Euro-Stipendium' by Schmitter and Bauer (2001), it is obvious that the administrative capacities of the EU should be enhanced considerably and that European policymakers should consider all aspects related to the administration and management of the basic pension scheme. The extent to which this option can be reconciled with the principle of subsidiarity would certainly be subject to discussion. Irrespective of the choices one makes, it becomes clear that the *administrability* of a European basic pension, i.e. the extent it can be "administered in a practical and efficient manner in accordance with its primary objectives and within existing constraints" requires careful analysis (cf. De Wispelaere and Stirton, 2007: 524). This is even more so if entitlement would be subject to some form of means or pension test or if people are not required to apply for a basic pension when it is granted automatically. Such an automatic procedure would mean an improvement of the accessibility and take-up of benefits, as it neutralises the effect of a lack of information among potential beneficiaries (cf. Notten and Gassmann, 2008: 266-267), but it could also limit stigma which is associated with means-tested benefits (cf. van Oorschot, 1994; Atkinson, 1998: 131-133; Hernanz et al., 2004). This would be a major step towards the realisation of an improved accessibility of minimum income protection as has been requested by the European Parliament (2009). However, an automatic procedure requires significant administrative capacities.

If the basic pension scheme is to be implemented, policymakers should first consider carefully how the basic pension will interact with existing pension schemes, social assistance arrangements and – as we pointed out earlier – the tax system. At least three issues need special attention: (1) the replacement of existing schemes; (2) derived rights; and (3) treatment by the tax system.

1) In his discussion of the basic income/flat tax proposal, Atkinson (1995: 2) considered a basic income that would replace all social security benefits. Of course, the effect of the reform on the income situation of pensioners is largely influenced by the extent to which existing pension arrangements would be replaced. Would it

[102] A discussion of the role of social partners in the administration of social insurances can be found in for instance Crouch (1999).

replace minimum income guarantees and leave pension schemes on a contribution basis untouched? Or, would it also replace (parts of) (earnings-related) first pillar pension schemes? Such differences not only influence the effect on the income situation of the elderly, but also the cost of the benefit programme and the most appropriate (or logical) way it is to be financed. For instance, a partial replacement of a scheme financed by social contributions with a universal scheme could entail a change to financing by taxes (and a decrease in necessary social contributions). Furthermore, if the basic pension is also to replace the disability scheme (for persons above a certain age), it would be desirable to foresee some adaptation of the basic pension's benefit level to different needs.

2) In some member states beneficiaries of social assistance (or the minimum income guarantee for the elderly) are entitled to 'derived rights' because of receiving social assistance (e.g. social rent, health care at a reduced price etc.). If this is no longer the case with the basic pension scheme, then some at the lower end of the income distribution might end up worse than before the reform (as is illustrated by Atkinson et al., 2002: 232).

3) As we mentioned in the previous section, a different treatment by the tax system could lead to very different outcomes. For instance, in France and Belgium the guaranteed minimum income for elderly persons is exempted from taxes, but pensions are not (although they have a favourable tax treatment). Nevertheless, if the BP would be treated as a pension, then a basic pension as high as the guaranteed minimum income in gross terms, could be lower in net terms (cf. Verbist, 2006: 83).

As becomes clear, it is not sure that no one would lose with the introduction of a BP or some kind of a pension-tested guaranteed minimum income. In order to prevent important income losses for elderly persons, European policymakers could add a rule that states that no pensioner at the bottom of the income distribution should lose from the reform (in net terms). Such a proposal should not only consider the level of the new benefit in comparison with the old one, but also the interaction with the tax system, with other (means-tested) benefits and 'derived rights'.

5 Cross-cutting European issues: some options and pitfalls

As has been pointed out several times in the previous sections, each aspect of the scheme involves a discussion about the extent to which matters must be settled at the European level. In other words, if the EU's role is to be limited to setting minimum standards, the question is which aspects of a basic pension should be subsumed under this heading. Issues which largely affect the cost of the programme should be settled at the European level, this is why we argued for a *European* basic pension in the first place. Therefore, the EU should logically play a role in establishing the level of the benefit and the definition of the target group (coverage) and entitlement criteria. Although financing could be left entirely to the member states (as Atkinson et al.

(2002: 231) propose), maybe there is some role for the EU in this area as well, especially with regard to the accommodation of intra-EU migration.

The definition of the target population and entitlement criteria, the level of the benefit and financing should be considered jointly. If policymakers opt for a basic pension that is the same for all European citizens, the amount should be sufficiently high to be of any meaning to the inhabitants of the richer member states. However, with median incomes in the UK four and a half times higher than in Bulgaria and GDP per capita over three times higher, two important remarks must be made. First, the level of the basic pension must be high enough in all member states. Yet, a uniform basic pension that is adequate for the richer member states, turns out to be too high in the poorest member states if compared to their average living standard[103]. Therefore, if some European dimension is desirable, a mix of the average European living standard and the national standards of living is probably a better option. Second, even in this mixed scenario, the financial resources to provide a basic pension are more limited in the least wealthy member states. Therefore, national resources may not suffice (if the BP for the elderly is not to disrupt their economies and social policy expenditures).

Broadly, one could distinguish between three alternative ways to finance such a scheme: taxing governments, taxing corporations and taxing citizens. Taxing governments is the usual way in which the EU operates. For instance, in the proposal of Schmitter and Bauer (2001) the regional and structural funds and the resources of the Common Agricultural Policy programmes are used to finance a basic income. Taxing corporations, as well as EU citizens directly, involves a Europe-wide tax. Such a tax could for instance take the form of a corporate income tax, a Tobin tax (i.e. a tax on capital transfers) or a European tax on energy. The latter and similar ideas have been advocated by the European Commission since 1992, and by several other actors since then (European Commission, 2004a; Le Cacheux, 2007). Such a tax would bring substantial revenues for the EU (European Commission, 2004b) and would involve redistribution from richer to poorer member states. However, it would not necessarily involve a direct transfer from one government budget to another.

If the level of the benefit would differ among member states and the bulk of financial resources is to be provided by the member states themselves (especially in the richer states), there could be a reasonable concern about intra-EU migration (and 'social tourism' in particular). Is it reasonable to expect from national governments to finance a basic pension for persons who moved to their member state on their 65th birthday? Although it would compromise on the unconditionality of the basic pension and it would complicate the calculation of the benefit level, it seems advisable that in such cases the level of the benefit would depend on the number of years one has resided in each member state. For instance, the benefit could be equal to the sum of

[103] Cf. Figure 4. This is especially the case if the basic income is targeted to particular groups in society and not to all in habitants. It seems absurd to make the Bulgarian elderly much richer than persons at working age. The discussion could be different if all Bulgarians would receive a basic income.

the benefits in each of these member states, weighted by the relative number of years of residence in each member state respectively. A similar procedure is foreseen in the old (1408/71) and new (883/2004) regulations on the coordination of social security schemes in the EU (cf. Rottiers, 2008: 363-364; Verschueren, 2009: 158-159)[104]. However, people who have worked for instance 20 years in Bulgaria and 20 years in the UK risk to receive an inadequate basic pension if they continue to live in the UK. Therefore, a different solution could be using European resources to finance the basic pension of migrant workers. This would relieve poorer member states with many emigrant workers of a substantial cost and enhance their capacity to provide an adequate basic pension for their elderly and it would offset the potential cost of 'social tourism' to richer member states with more 'receiving' migrant workers[105]. Such a regulation would provide substantial incentives for member states to promote (short-time) intra-EU migration.

A last issue to which we would like to direct attention is concerned with enlargement and the legal enforcement of the right to a basic pension. The European Union could – in order to compel member states to provide the basic pension – anchor it in the Treaty (cf. Vandenbroucke, 2002). Apart from this, the issue of future enlargements should be given special consideration. First there is the question about how much time new member states would be given to adapt to the European regulation with regard to a basic pension. Second – and related to the first issue – it should be established from what moment in time citizens of new member states could be entitled to the BP in other member states. Third, if the benefit level or target group is defined in some 'European' way, it should be established how changes in European income and age structures should be dealt with, especially if it would entail some reduction in benefit level or change in the group of persons that is entitled to the basic pension. For instance, if the level of the benefit is set at a percentage of average or median income in the EU, the simple fact of accession of poorer countries to the EU could lead to a lower average or median income and consequently also to a lower level of the benefit. Obviously, such an evolution is to be avoided, not only from a poverty perspective, but also because such a mechanism could give rise to strong resistance against future enlargements.

6 Towards a European Basic pension: three scenarios

How do all these options add up to coherent proposals for a European basic pension? Although the precise specifications of a European basic pension scheme are up to politicians and policy makers, we believe that the ultimate design will fall into one of the following three categories, which can be situated on a continuum from a purely European to a purely national basic pension scheme.

[104] See especially Art. 52 §1(b) of Regulation 883/2004, OJ L166, 30.4.2004, p. 58.
[105] Although overall intra-EU mobility is relatively limited (cf. Ilzkovitz et al., 2007: 22-24).

At one extreme, there is a universal basic pension with equal benefits in all member states (taking differences in prices into account), benefits which are adapted to the household situation using the same equivalence scale all over the EU and provided by the European Union. Benefits are defined as a certain percentage of the median or average income within the EU. The basic pension is completely tax free to ensure that the benefit is the same for everyone in net terms. Benefits are automatically granted to a target group defined at the EU-level (as a percentage of the total population in the EU or using a strict age limit or any other uniform criteria). The basic pension is financed by a European fund, similar to the Cohesion Fund. Such a scheme may seem simple (and so it is in many respects) and effectively solves the problem of migration within the borders of the EU (that could arise from other designs). Nevertheless, it would require that the EU disposes of major administrative capacities. Furthermore, it probably cannot be reconciled with the subsidiarity principle, it neglects the relativity of income and poverty at the national level and could provide disincentives for national governments to provide a decent standard of living for the elderly. Additionally, such a scheme ignores (variations in) economies of scale at the household level and presupposes that – if necessary – international transfers from richer member states to the elderly in poorer member states or from relatively young populations to relatively old populations are desirable and politically feasible.

At the other extreme, EU governments agree to implement some form of a basic pension in each member state, leaving all details of its implementation to the member states. In other words, national governments define themselves the target group, the level of the benefit, the way it is updated over time and the equivalence scale that is used to compensate for economies of scale within households. The way it is to be financed and whether and – if so – how it is to be taxed is left to national member states. For migrants, the level of the benefit depends on the number of years EU citizens resided in the respective member state. Clearly, such a scheme solves many of the problems we identified in the case of the purely European scheme. However, it would result in a scheme that does not resolve properly the issue of intra-EU migration. Furthermore, it does not ensure a decent basic pension in each member state and leads to very different benefits for the elderly of different member states, not only because member states themselves can define the level of the basic pension, but also because of differing national tax and benefit rules. Additionally, it ignores the relatively limited resources in poorer member states and it is a very limited version of a 'European social sharing regime'. In other words, in the purely national scenario the EU's elderly are likely to be treated differently along national lines, not only with regard to the target group, but also the level of the benefit both in relation to each other, as in relation to the active population of the member state in which they live.

The third category, a hybrid of the two schemes above, can take many different forms. It is the most complex one which could try to integrate the strengths of both extremes. Probably, it is the most promising way to achieve some kind of European social sharing regime. Given the minimum income guarantees that are already in existence in most EU member states, such a reform would entail bigger changes in

one member state than in another. In order to make the reform more palatable, we therefore suggested to operate in a two-step procedure. In a first wave of reforms all member states should provide a conditional minimum income to all the elderly, with a benefit level defined at the European level (the only innovation in the case of Denmark and the Netherlands in this phase). The second wave of reforms would convert these schemes into unconditional (but not necessary fully individualised) basic pension schemes. As far as its hybrid structure is concerned, the basic pension could follow uniform rules in all member states, but with results adapted to the situation in each member state. For instance, benefits could be defined as a certain percentage of the median or average income within each member state and are tax free. Instead of applying the same equivalence scale in each member state, member states could be asked to calculate the equivalence scales using a uniform method to assess economies of scales within households. Benefits are automatically granted to a target group which could be defined uniformly as a certain percentage of the *national* population (or some other formula to take different, and changing, age structures into account). Financing could be left to national governments, but at the same time, European funds could be foreseen to ensure that migrant workers in richer member states could benefit from the same basic pension as the other elderly in that member state as well as to support poorer member states in implementing the basic pension scheme. Of course, also this scenario has some of the drawbacks mentioned earlier. Nonetheless, there is more room for manoeuvre to maximise the strengths and minimise the shortcomings of the scheme.

7 Conclusion

The harmonisation of European social security schemes in general and minimum income protection in particular is back on the agenda of European policy makers. With this paper we wish to contribute to this debate by pointing to some options and pitfalls in the design of a harmonised European basic pension scheme. Throughout the paper we assumed that a basic pension for Europe's elderly is a desirable reform, in the first place with regard to the reduction of financial poverty. However, as we have tried to show in this paper, the design of a European basic pension scheme is a complex issue, no matter how it is conceived. Numerous decisions – partly interdependent – have to be made. The choice for one option or another may seem a largely technical issue at first sight, yet it could have a very large impact on the population that would ultimately benefit from the basic pension scheme, the level of the benefit, the financial cost of the scheme and the most appropriate organisational structure. All issues involved should be considered jointly. Nonetheless, each aspect of the basic pension scheme merits its own thorough ethical, technical and empirical discussion. As we have tried to show, being in favour of a European basic pension is one thing, but designing one that fits all necessary and desirable conditions is another.

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9 Annex to Chapter 6

Table 19: At risk of poverty rates (total population and by age group), EU27, 2007 (%)

	Total	0-17	18-64	65+
EU27	16	19	15	19
Belgium	15	17	13	23
Bulgaria	14 p	18 p	12 p	18 p
Czech R.	10	16	8	5
Denmark	12	10	11	18
Germany	15 p	14 p	15 p	17 p
Estonia	19	18	16	33
Ireland	18	19	15	29
Greece	20	23	19	23
Spain	20	24	16	28
France	13	16	12	13
Italy	20	25	18	22
Cyprus	16	12	10	51
Latvia	21	21	18	33
Lithuania	19	22	16	30
Luxemburg	14	20	13	7
Hungary	12	19	12	6
Malta	14	19	12	21
Netherlands	10	14	9	10
Austria	12	15	11	14
Poland	17	24	17	8
Portugal	18	21	15	26
Romania	19	25	17	19
Slovenia	12	11	10	19
Slovak R.	11	17	9	8
Finland	13	11	11	22
Sweden	11	12	10	11
United Kingdom	19	23	15	30

P = provisional data. Source: EUROSTAT on line database.

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Part III: Further research, summary and conclusion

Chapter 7: Four suggestions for further research

In the introduction I highlight the driving question of the research presented in this PhD: how can poverty in the European Union be explained? More in particular, what is the role of minimum income protection in explaining old age poverty in the EU? Since I am convinced that, in order to answer this question properly, important building blocks are still lacking in the literature, I have tried to put some of these building blocks together in this thesis. As it happens with most research, each building block itself needs its own girders, concrete and connection points and brings up new questions – with the risk that the driving underlying question remains unanswered in the end. Nonetheless, the main purpose of this chapter is to indicate some of these further questions, which could result in more solid building blocks or provide important connection points for the answers I am seeking. More in particular, I would like to shortly elaborate on four directions for further research.

During the past few years, I have paid much attention to the estimation of standard errors and confidence intervals. The importance of taking account of the sample design when estimating standard errors has been illustrated in Chapter 2. In the latter chapter, I also point out that the characteristics of the poverty measure are of importance. More in particular, in the case of at-risk-of-poverty type of indicators, it is important to take account of the fact that the poverty line itself is estimated on the basis of the data. The same holds for all indicators which build on the at-risk-of-poverty indicator, such as measures of poverty reduction (e.g. Cantillon et al., 2012) or the redistributive effort required to close the poverty gap (e.g. Vandenbroucke et al., forthcoming) and for models which include the at-risk-of-poverty status either as a dependent or independent variable. Since this complicates substantially the estimation of standard errors, the question can be asked whether researchers should bother about the relativity of the poverty line when estimating standard errors. This is a first important direction for further research.

One of the main research questions in chapters 4 and 5 is about the generosity and adequacy of the benefit levels offered by Europe's minimum income protection schemes targeted at the elderly. Two different tools are needed for an evaluation of the adequacy of minimum income protection schemes: an indicator of the level of protection they offer, and a benchmark which serves to decide to what extent a certain level of protection is adequate. In both chapters, the indicator of the level of minimum income protection builds on model family simulations included in the CSB-MIPI dataset. As I have already indicated in these chapters, the available model family simulations could be further improved and extended in order to increase their reliability and validity. This is a second important direction for further research.

As a natural complement, a third important direction for further research consists in improving the validity of the benchmark which serves to evaluate the generosity and

adequacy of the simulated minimum income packages. As has been discussed in Chapter 1, the development of cross-nationally comparable reference budgets could constitute an important step forward. However, the development of such reference budgets is confronted with several important challenges. These challenges constitute a third direction for further research.

Finally, various options exist for addressing more directly the question about the impact of minimum income protection on old age poverty. In this chapter, I shortly discuss one such option for better understanding the relation between the level of minimum income protection and old age poverty.

In this chapter, I will illustrate the importance and usefulness of further research in the areas just mentioned above, while also pointing to some of the main challenges. The last section concludes.

1 Random vs. non-random poverty lines

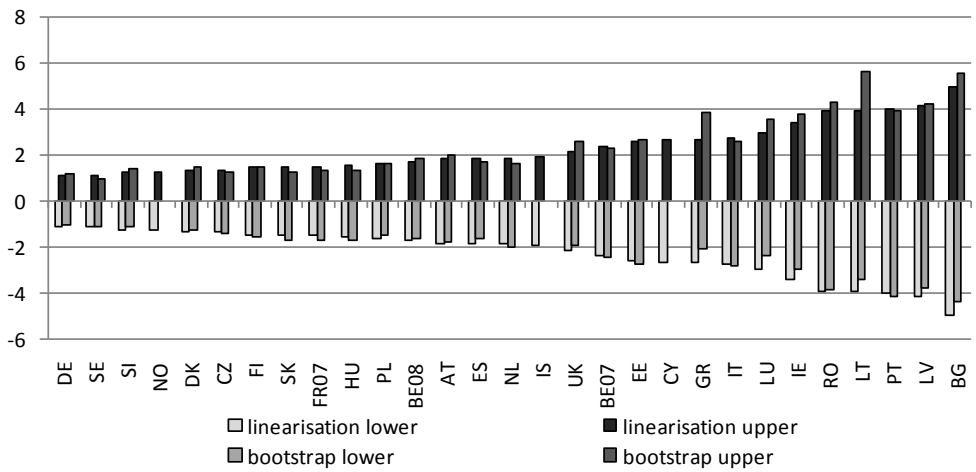
In much of the international comparative literature on poverty, 'relative' poverty measures are in use. These measures define the poverty line as a percentage of median or average equivalent net disposable household income. In what follows, I call poverty lines estimated on the basis of the data 'random'. If it is assumed that they are fixed, or based on some other source (e.g. a budget standard), I call the poverty line 'non-random'. As has been argued in Chapter 2, in the case of a random poverty line, the estimation of the standard error of a poverty index is less straightforward compared to simple proportions or means, given that the poverty line itself is subject to sampling variability (e.g. Preston, 1995; Berger and Skinner, 2003; Osier, 2009)[106]. As a result, if the poverty status – determined by a 'random' poverty line – is regressed on other variables, the standard error of the regression coefficients should take the 'random character' of the poverty measure into account (cf. Pudney, 1999).

Figure 38 shows some tentative estimates of the confidence bounds of the median as a percentage of the median equivalent net disposable household income. The left bars indicate the relative 95% confidence interval on the basis of linearisation, whereas the bars to the right show estimates based on a bootstrap with 1000 replications, starting from the sample design variables as they are. Some simplifying assumptions have been applied. Among others, imputation is ignored and weights have not been recomputed for every replication. In addition, the n out of n bootstrap

[106] Shao and Chen (1998) studied the reliability of the bootstrap approach for quantiles and the low income proportion (of which the EU at-risk-of-poverty rate is a specific application) and found that even with complex (stratified multistage) sample designs the bootstrap performed reasonably well. Davidson and Flachaire (2007) compared in a more recent paper asymptotic and bootstrap inference in a Monte Carlo type experiment. They found that in the case of a complex sample design bootstrapping inequality measures leads to inference that is not accurate even in very large samples, although inference with poverty indices is satisfactory.

has been applied, which means for complex sample designs that estimates may be biased. I would also like to remind that the sample design variables are not very accurate for several countries, especially in the case of Belgium (2008), Bulgaria, France (2007), Germany, Hungary, Italy, Poland and Slovenia. In other words, the figures presented in this sub-section can only be used for illustrative purposes[107]. As is shown in Figure 38, in most countries the median equivalent net disposable household income is estimated relatively accurately, with the 95% confidence bounds being within a range of two per cent of the median income. However, in several other countries the median income seems to be estimated much less precisely, especially in Lithuania and Bulgaria

Figure 38: 95% confidence bounds of the median income as a percentage of the national median equivalent net disposable household income, EU-SILC 2007 / 2008



Note: income top-and bottom-coded using the LIS procedure. Linerisation implemented by epctile command of Stas Kolenikov. Bootstrap with 1000 replications, bias-corrected percentile confidence intervals. Sample design variables used as available in EU-SILC 2007/2008 UDB. Figures for indicative purposes only. For other assumptions, see text. Countries sorted by width of the confidence interval (linearisation).

Source: EU-SILC 2008 (BE & FR 2007) UDB, own calculations.

The question now is whether and to what extent ignoring the randomness of the poverty line leads to under-or over-estimated standard errors. The effect of ignoring the 'randomness' of the poverty line depends among others on the shape of the sampled income distribution (in the case of an income-based measure), the sample design, the type of poverty indicator, the way the poverty line is defined and the interaction of these factors. As far as I am aware of, the literature does not include

[107] Please note that the estimates in this section refer to the first release of the EU-SILC 2008 UDB. In the most recent release (March 2012), France is included and the sample design information is improved at least for Belgium, France, Hungary and Slovenia.

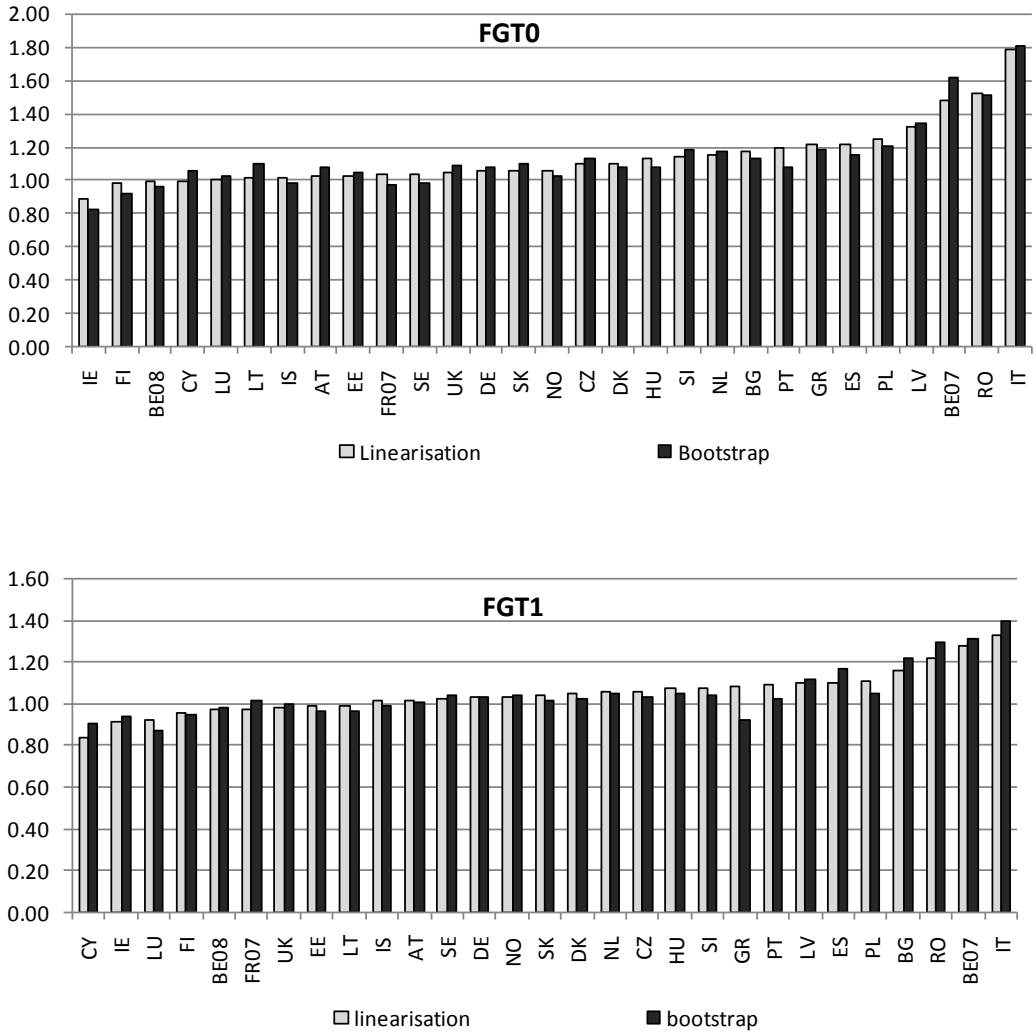
examples of the relation between the standard error of the median and the strength of the effect of each of these factors.

The following example shows, in the case of the at-risk-of-poverty indicator, that neglecting the 'randomness' of the poverty line could both increase or decrease estimated standard errors. However, in most cases neglecting the randomness of the poverty line leads to an *over-estimation* of the standard error (see Figure 39). Similar results for FGT0 are reported by Preston (1995) and Berger and Skinner (2003). This may seem counter-intuitive because when a poverty line is estimated from the data, an additional source of random error is introduced. However, to some extent, the sampling variation of the poverty threshold and the sampling variation of the poverty index, given this poverty line, tend to be mutually compensating. As is explained by Preston (1995) and Berger and Skinner (2003: 465), the higher the percentage of the median which is used as a poverty line, the stronger the over-estimation of the standard error will be if the randomness of the poverty line is ignored. In fact, if the poverty line is equal to 100 per cent of the median, the variance of the percentage below the poverty line will be zero (as it will always be equal to 50 per cent). In contrast, if in the latter case the estimated poverty line (i.e. the median) will be taken as given (i.e. with a non-random poverty threshold equal to the estimated median), the variance of the percentage below this amount will not be zero.

Estimations for the EU-SILC 2008 UDB show that in the case of the at-risk-of-poverty indicator (FGT0 and FGT1) for most countries similar results are obtained, irrespective of whether the bootstrap or linearisation approach is used (cf. Figure 39). Exceptions are Portugal (FGT0) and Greece (FGT1). In most cases the direction of the effect is the same for FGT0 and FGT1, and in most cases the effect is stronger for FGT0 than for FGT1. However, in the case of FGT1, not taking account of the randomness of the poverty line results in an *under-estimation* of the standard error in a somewhat larger number of countries. Finally, it is remarkable that the strongest effects are found in countries with a complex sample design (relatively large PSUs combined with stratification).

Figure 40 illustrates for a number of 'typical' countries in the case of FGT0 the increasing over-estimation of the standard error as the poverty line increases as a percentage of the median. Remarkably, in several countries for a range of poverty lines (e.g. Ireland) the standard error is under-estimated if a non-random poverty line is assumed. Nonetheless, when the poverty line as a percentage of the median approaches 100 per cent, from 70 per cent onwards, in all countries the assumption of a non-random poverty line results in an over-estimation of the standard error. Further calculations show that in general, the strength of the effect decreases as α (of the FGT(α) index) increases from 0 to 2.

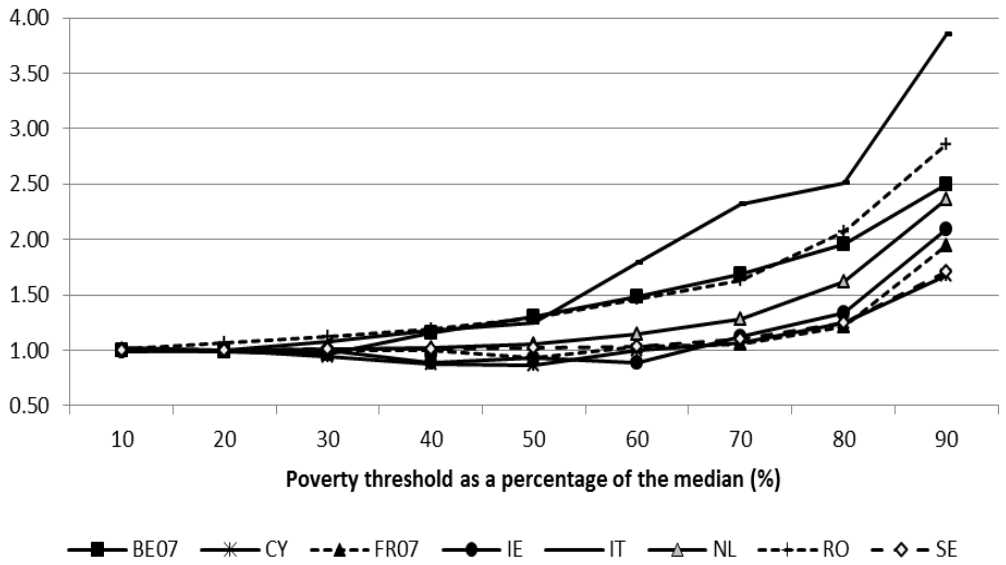
Figure 39: The ratio of the width of 95% confidence intervals assuming a non-random poverty line and 95% confidence intervals assuming a random poverty line, FGT0 and FGT1 – poverty threshold equal to 60 per cent of median income



Notes: Uncorrected sample design variables as available in the EU-SILC UDB. Linearised confidence intervals using the standard Stata commands and the DASP module (Araar and Duclos, 2007). Bootstrap with 1000 replications, bias-corrected percentile confidence intervals. Top-bottom coded using the LIS-procedure, zero and negative incomes dropped from the data.

Source: EU-SILC UDB 2007 / 2008, own calculations.

Figure 40: The ratio of the standard error of FGT0 assuming a non-random poverty line and the standard error assuming a random poverty line, with the poverty line equal to an increasing percentage of the median



Note: selection of countries which cover the 'range' of results found with the 2008 UDB. Uncorrected sample design variables as available in the EU-SILC UDB. Standard error estimated on the basis of linearization, using the standard Stata commands and the DASP module for Stata (Araar and Duclos, 2007). Top-bottom coded using the LIS-procedure, zero and negative incomes dropped from the data.

Source: EU-SILC UDB 2007 / 2008, own calculations.

It would be useful to know under which conditions the randomness of the poverty line increases or decreases the standard error. In addition, it would be interesting to learn to what extent it matters for estimates of the composition of the poor and for estimated standard errors of regression coefficients in models with at-risk-of-poverty type of indicators with a random poverty line, either as a dependent or independent variable. If under certain conditions the randomness of the poverty line does not make a big difference for estimated standard errors, it could make their estimation much easier. To some extent, the simulations with real data as those presented here are helpful for gaining some insight into what are 'possible' effects. However, controlled (Monte Carlo type) experiments (cf. Biewen, 2002; Van Kerm, 2002), both with real and with synthetic data would be useful for gaining more insight into the exact conditions under which the randomness of a poverty line pushes the standard error in one or another direction.

Please note that the randomness of the poverty line is not only an issue of concern in the case of at-risk-of-poverty type of indicators. For instance, some multidimensional poverty measures are confronted with a similar estimation problem. Examples include multidimensional poverty measures for which the weights of various dimensions are

dependent on the prevalence of a deprivation item in the sample (e.g. Guio, 2009), or multidimensional poverty measures based on latent class models which are further used as a dependent or independent variable in regression models (cf. Dewilde, 2004; Dewilde and Raeymaeckers, 2008).

2 Improving the model family simulations

In my view, the model family approach, and more specifically the model family simulations included in CSB-MIPI, can be improved in several ways. This is a second important direction for further research. Some of the options for improvement are shortly mentioned in Chapter 4 and others in Van Mechelen et al. (2011: 49). Here, I would like to summarise more extensively the main possibilities for improving the model family simulations regarding the elderly. I focus on improving the instrument itself, without considering alternative instruments for measuring the level of minimum income protection schemes such as the (semi-)empirical measures of benefit generosity developed by Figari et al. (2012).

An important concern regarding the model families included in CSB-MIPI is related to their representativeness. In sub-section 2.1, I shortly discuss their representativeness in terms of household composition. This is further explored in relation to the housing situation in sub-section 2.2, in which I also discuss other issues related to both the validity and reliability of the housing assumptions for the CSB-MIPI model family situations. The ('external') validity of the simulated minimum income packages as indicators of guaranteed minimum income levels could be substantially improved by increasing the number of model family simulations and broadening the range of model family situations. This is further discussed in sub-section 2.3.

2.1 Representativeness of the household composition[108]

The model family approach is designed to gain more insight into the functioning and evolution of tax-benefit systems. Typically, only a limited number of household and income situations are simulated. Often, these include situations which are not widespread among the population. For instance, in case of elderly persons it is rather uncommon to have no income or savings, apart from the income received from the simulated minimum income schemes. These simplifications are introduced both for reasons of simplicity and comparability as well as for reasons of special interest (what is really the minimum guaranteed income in a society for a certain group of people?). Given that model family simulations cannot / should not be used for distributive analyses, a lack of representativeness of the simulated model families does not make the approach invalid. In contrast, it can highlight situations which may be underrepresented in large-scale surveys, but which are of particular interest to social

[108] See Immervoll et al. (2004) and Van Mechelen et al. (2011: 19) for the development of a similar argument as the one developed here and for an analysis of the representativeness of the OECD model family simulations, respectively other model families included in CSB-MIPI.

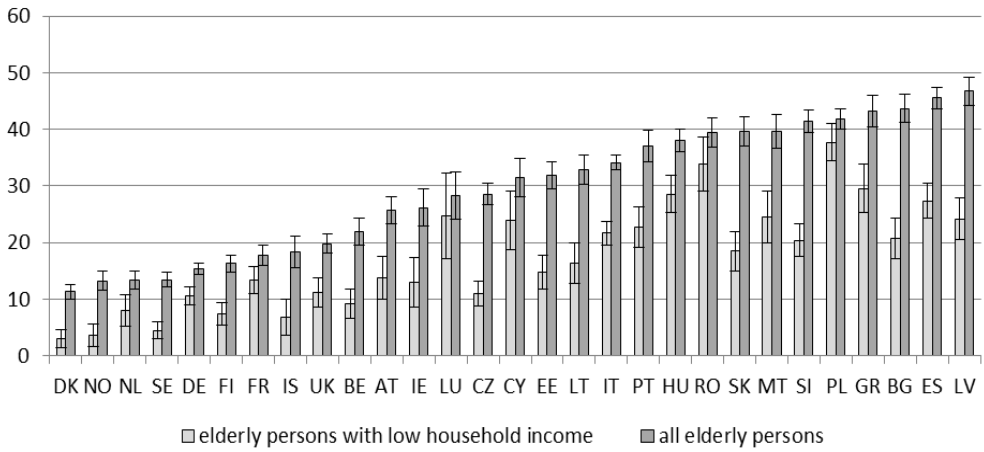
policy makers (e.g. in the case of single parent families with young children). Nonetheless, the simulated situations should be relevant (if certain situations do not occur at all in a country, there is no reason to accuse its government of having an inadequate minimum income protection system for these situations).

Representativeness becomes more of an issue when general statements are made about the generosity of minimum income protection. In fact, implicit equivalence scales differ quite strongly across countries and do change over time (cf. Annex 6.4 to Chapter 4). As a result, in comparison with other countries, a country may be more generous for one household type and less so for another. If, however, the simulated model families cover most common situations in the population, qualified statements about the generosity of minimum income protection schemes are less of a problem – at least to the extent that the low prevalence of other household situations in the population is not driven by a lack of benefit generosity[109]. The following graph shows that the simulated model families do much better cover existing household compositions in West European countries than in Southern and Eastern European countries (although with exceptions such as the Czech Republic). Nonetheless, the choice of simulating the situation of elderly singles and elderly couples is not a bad one: in all countries, at least 50 per cent of all persons aged 65 and over live either as a single or in a couple with the other partner also aged 65 or over (in CSB-MIPI the age criterion refers to the national legal retirement age). One may argue that the relevant reference population consists of elderly persons living on low incomes, as they are more likely to rely on minimum income schemes. As can be observed from the same graph, the two household types cover an even larger percentage of the elderly population in the case of elderly persons living on a low income[110]. Nevertheless, large differences in coverage across Europe remain.

[109] Depending on the precise wording of the research question, the reference population consists only of minimum income beneficiaries instead of the entire population of 'potential beneficiaries'. However, due to lack of data, I limit the discussion to the population of 'potential beneficiaries' living in private households.

[110] Figures are shown for elderly persons living in a single-person household or in a couple with both persons aged 65 or over and with an income below the 30st income percentile of the income distribution of all persons aged 65 and over. Income refers to the equivalent net disposable household income. By taking the 30st percentile as a cut-off point, the relative income position of this group of elderly within the entire national income distribution is not the same across all countries. In fact, the 30st income percentile of the elderly ranges from about 48 per cent of the national median income in Latvia to about 85 per cent of the national median income in Hungary. Nonetheless, all persons with an income below this threshold can be considered to be living on a 'lower income', both in relation to the elderly population and in comparison with the entire national population. The reasons for this choice is the obtained subpopulation sample size, which would for some countries be very low in the case of a uniform cut-off point at – for instance – 70 per cent of the national median equivalent household income.

Figure 41: Percentage of population aged 65 years and over which does *not* live in a household consisting of a single elderly person or an elderly couple (both partners aged 65 and over), EU-SILC 2009



Notes: Low household income defined as having an equivalent net disposable household income below the 30st percentile of the income distribution of persons aged 65 and over. 95% confidence intervals take the EU-SILC sample design as much as possible into account (cf. Goedemé, 2011).

Source: EU-SILC 2009 version 2, own calculations

2.2 The housing situation of the model families

The available model family situations in CSB-MIPI, including those presented in chapters 4 and 5, start from very specific housing assumptions. Housing assumptions are a crucial element of minimum income simulations because the housing situation may not only be an important element of the means test of a minimum income scheme, but may also be an important determinant of the level of housing benefits that families living on low incomes may receive. Furthermore, housing costs (rent, mortgage, utilities, equipment and maintenance costs) account in all EU member states for a large share of household expenditures (cf. Eurostat, 2008). As a result, several authors have argued in favour of calculating minimum income protection levels both before and after housing costs (e.g. Eardley et al., 1996). However, doing so requires valid housing assumptions and adequate data on housing costs.

In fact, as is illustrated by Table 20, the impact of the assumption regarding rent levels on the estimated generosity of minimum income protection schemes can be very large. For two countries – Germany and Sweden – we received two versions of the simulations: one with the standard assumption of rent levels and one with alternative estimates of rent levels. In the CSB-MIPI data, the standard assumption is that elderly couples rent a dwelling with one bedroom in the private sector at two thirds of the median rent (estimated on the basis of EU-SILC data). In the table, this assumption is reflected in the 'original' estimates for 2009. For Germany, an alternative estimate

was provided assuming a rent level equal to the national average of maximum housing costs deemed acceptable by local welfare offices. In the case of Sweden, the alternative estimate assumes a rent level equal to the average level of rent in Stockholm (Van Mechelen et al., 2011: 28). As can be observed from Table 20, net minimum income packages in Germany and Sweden would be substantially higher under these alternative assumptions. Maybe ironically, with the median equivalent net disposable household income as the benchmark for evaluating the adequacy of minimum income schemes, the higher the assumed housing costs, the more adequate minimum income schemes seem to be. One way to address this issue, is to estimate minimum income packages after housing costs. However, doing so further increases the need of having adequate and comparable estimates of housing costs for all countries and requires an adequate procedure for adapting the benchmark (e.g. the at-risk-of-poverty threshold) to an 'after housing costs' situation.

Table 20: Equivalent net minimum income of an elderly couple as a percentage of the median equivalent household income, with alternative housing benefit assumptions for 2009

	1992	2009	
		original	alternative
DE	36	35	41
SE	85	51	58

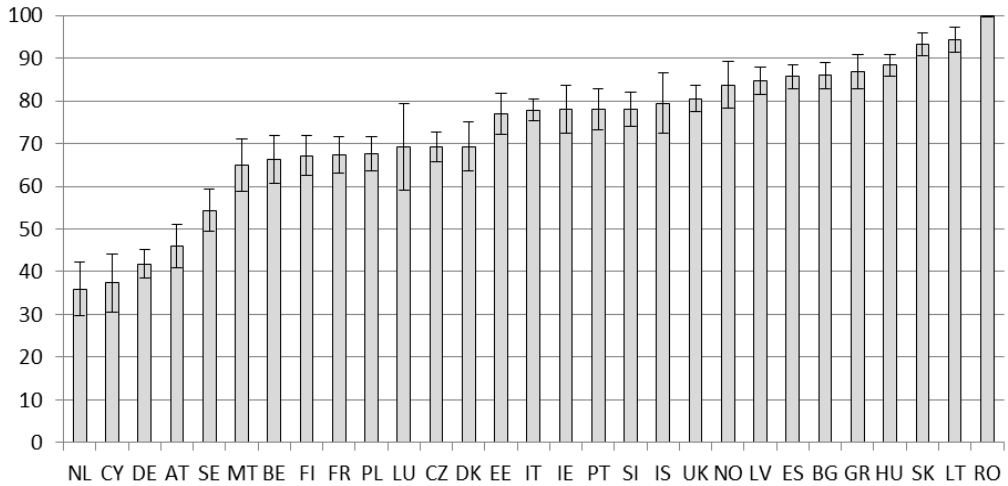
Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011), own calculations.

There are various important elements to the housing assumptions employed in the CSB-MIPI data. As mentioned earlier, for reasons of comparability with the first wave of CSB-MIPI as well as for optimising cross-national comparability, the standard assumption is that (elderly) singles and couples rent a dwelling with one bedroom in the private sector at two thirds of the median rent (estimated on the basis of EU-SILC data). In other words, we assume that a modest dwelling with one bedroom should be sufficient for a decent accommodation for singles and couples. Furthermore, in order to depict minimum income situations, a low rent level is assumed. However, the question arises as to what 'comparability' really means. This question is closely related to the question about what could be considered the minimum acceptable way of life in a certain society (cf. Chapter 1). In what follows, I will point to various limitations of the assumptions regarding the housing situation of model families in CSB-MIPI.

First of all, we assume that minimum income beneficiaries are renting a dwelling. However, from the literature we know that large cross-national differences in the incidence of various forms of tenure status exist in Europe (e.g. Tosics and Hegedüs, 2003; Mulder and Billari, 2010), and that there has been a trend of increasing homeownership in many countries (Dewilde et al., 2011). The question then is whether these observations also hold for elderly people living on low incomes. Indeed, as Figure 42 illustrates, the number of owner-occupiers strongly varies across

the EU, also in the case of elderly people living on low incomes. Remarkably, even among this group of people, owner-occupation is the standard tenure status in a large number of EU member states. This is especially so in the Eastern and Southern EU member countries, in particular in the case of elderly couples.

Figure 42: Percentage of owner-occupiers among 30 per cent poorest elderly persons in terms of equivalent net disposable household income, elderly singles and elderly couples, EU-SILC 2009



Notes: Percentage computed at the individual level (not the household level). 95% confidence intervals take as much as possible account of sample design (cf. Goedemé, 2011), but ignore the relativity of the income cut-off point.

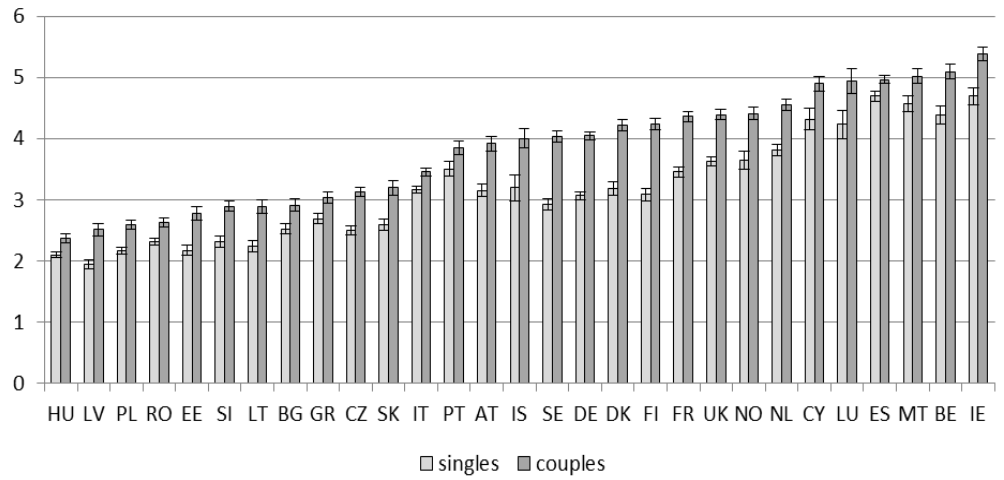
Source: EU-SILC 2009 UDB, version 2, own calculations.

Second, it is assumed that a modest dwelling with one bedroom should suffice for couples and singles. As can be observed from Figure 43, the average number of rooms for a single person aged 65 and over is about 2 in Latvia (probably including a living room and one bedroom), whereas on average, elderly singles in Ireland live in a dwelling with about 5 rooms[111]. Furthermore, even though we assume the same number of rooms for elderly singles and elderly couples, in several countries (especially in the Scandinavian countries and continental Europe), on average elderly couples inhabit a dwelling with about one extra room compared to elderly singles. Largely the same observations can be made for elderly singles and couples living on relatively low incomes. These observations are further illustrated by Figure 44, which shows that even among elderly singles and couples with a relatively low income, the

[111] Given the elaborate instructions by Eurostat, these differences should not be caused by different formulation / interpretation of the question. Please note that kitchens, bathrooms, toilets, corridors, utility rooms and lobbies are not counted as a 'room'. A dwelling with two rooms probably includes one bedroom and one living room.

number of people living in a dwelling with one or two rooms is very low in a large number of countries, especially in the case of couples. Apparently, the assumption that elderly singles and couples would do sufficiently well with a dwelling with one bedroom in order to 'have the living conditions and amenities which are customary' (Townsend, 1979: 31) is much less contentious in the former communist Eastern European countries than in the rest of Europe[112] – even though there is no clear-cut difference between Eastern and Western Europe. This is not only a question of what constitutes decent housing, but also a question of the availability of this kind of dwellings (in casu with one bedroom) on the market.

Figure 43: Average number of rooms by household type, persons aged 65 and over, EU-SILC 2009

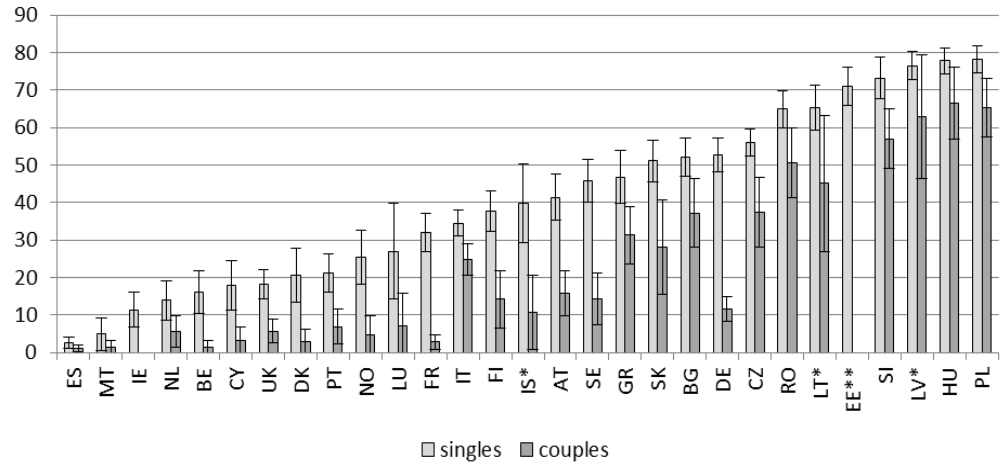


Notes: Couples are two-person households in which both respondents are at least 65 years and have reported that they are one another's partner, 95% confidence intervals take as much as possible account of sample design (cf. Goedemé, 2011).

Source: EU-SILC 2009 UDB, version 2, own calculations.

[112] Leaving aside the question about whether these housing conditions conform to the housing conditions which are widely encouraged or approved.

Figure 44: Elderly singles and elderly couples living in a dwelling with one or two rooms as a percentage of elderly singles and couples belonging to the 30 per cent poorest elderly persons in terms of equivalent net disposable household income, EU-SILC 2009

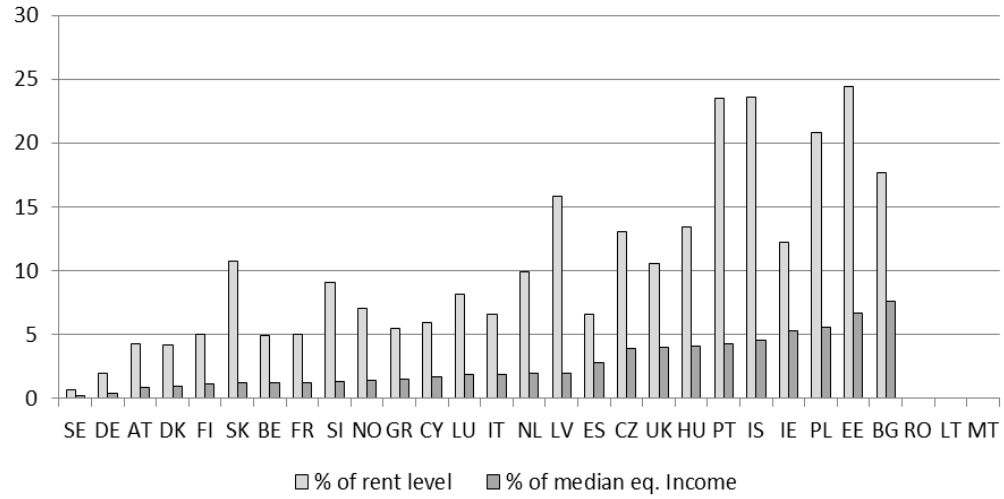


Notes: Couples are two-person households in which both respondents are at least 65 years and have reported that they are one another's partner, 95% confidence intervals take the EU-SILC sample design as much as possible into account (cf. Goedemé, 2011). *In case of couple between 35 and 50 PSUs, potentially unreliable. **In case of couple less than 30 PSUs, omitted because not reliable.

Source: EU-SILC 2009 UDB, version 2, own calculations.

Third, the national median rent for a dwelling with one bedroom is estimated using the EU-SILC data. Before pointing to some potential limitations of this approach, it should be stressed that – in principle – the choice for an empirical estimation of rent levels using a cross-nationally comparable source, is probably the best way forward (for a discussion of other approaches, see Van Mechelen et al. (2011: 24-25)). However, independently of the precise choice of the exact type of dwelling for which the rent level is estimated, statistical reliability is an important issue of concern. As is demonstrated by Figure 45, the statistical reliability of the estimated median rent levels for the third wave of the CSB-MIPI (2012) is relatively low in a large number of countries. In several countries, notably Bulgaria, Estonia, Poland and Ireland, the length of one half of a 95% confidence interval is even over 5 per cent of the estimated median equivalent net disposable household income. This is a serious problem, not only for the estimation of housing benefits, but also (and especially so), if one would like to estimate guaranteed minimum income levels after housing costs. Given that the median income (or a percentage thereof) often functions as a benchmark for evaluating the generosity of minimum income schemes, this large statistical uncertainty surrounding the rent estimates in a non-negligible number of countries is unacceptable. In addition, in principle more refined estimates are necessary, limiting the subsample for instance to dwellings of sufficient quality, in relatively large cities (in accordance with the characteristics of the model families).

Figure 45: The length of one half of the 95% confidence interval of the estimated median rent, as a percentage of the estimated rent level, respectively the estimated median equivalent net disposable household income, EU-SILC 2009



Notes: Data for Malta, Lithuania and Romania unreliable. In principle, median rent paid by households renting a dwelling with one or two rooms in the private market. For reasons of sample size, rent levels refer to the median rent paid for a dwelling in the private market irrespective of the number of rooms in the case of Bulgaria, Estonia, Hungary, Ireland and Latvia; to the median rent of both the private and social market – irrespective of the number of rooms – in the case of Cyprus, and to the median rent paid for a dwelling with two to three rooms rented in the private market in the case of Spain. Rent levels only included if the subsample size includes at least 50 households from at least 40 PSUs. 95% confidence intervals take the EU-SILC sample design as much as possible into account (cf. Goedemé, 2011).

Source: EU-SILC 2009 UDB, version 2; own calculations.

Fourth, it is assumed that minimum income beneficiaries can rent a dwelling at a substantially lower rent level than the national median (i.e. at 2/3rds of the national median rent). As is shown in Table 21, in many countries the correlation (at the household level) between equivalent net disposable household income and the actual rent paid for a dwelling rented in the private market is not particularly strong. The correlation ranges between 0.17 in Malta and 0.60 in Estonia[113]. If the subsample is limited to dwellings with one or two rooms, in 15 countries the correlation is even lower. Given the assumptions regarding the CSB-MIPI model families, the question is rather whether it is reasonable to assume that elderly singles and couples *living on low incomes* find appropriate dwellings (in large cities) at about 66 per cent of the national median rent. As a first tentative empirical evaluation, Figure 46 displays – for

[113] Incomes are top-bottom coded using the LIS procedure. Rent levels are top-coded at the 99th percentile. In most countries, correlations are not stronger if the log of income and/or rent is taken.

countries with a sufficiently large subsample size – the ratio of the average rent paid by elderly couples and singles with an income below 70% of the national median and the average rent paid by all households with an income above that threshold. The graph shows the ratios in the case of people living in dwellings with one or two rooms rented in the private market. Even though sufficient data are available only for four countries, the graph makes clear that further research for a sound empirical basis of the 2/3rds of median rent assumption is indispensable. In Latvia, on average, elderly singles and couples with a low household income pay for a dwelling with one or two rooms about 45 per cent of the average rent paid by households with an income above 70 per cent of the national median income, whereas Swedish elderly singles and couples with a low household income pay on average even slightly more rent than the average rent paid for the same dwelling size by all households with an income above the threshold. It is very likely that important interactions exist with the quality and location of dwellings, with the number of years one is renting the dwelling, as well as with the structure of the housing market. In other words, further research in this area is clearly warranted in view of further improving the empirical basis for the housing assumptions behind the CSB-MIPI model family simulations. EU-SILC certainly offers some room for further investigation into these factors, although it is doubtful that reliable estimates of rent levels can be obtained for even more specific (and smaller) subpopulations (not least with regard to social vs. private housing). At the same time, it is key to carefully consider and question what cross-national comparability and transparency in this context really (should) mean.

Several other issues regarding the housing assumptions in the CSB-MIPI data merit closer attention in the future. For instance, the definition of rent and total housing costs in EU-SILC does not necessarily correspond to the definitions used in minimum income schemes. Furthermore, in some countries housing subsidies are directly paid to the landlord instead of the renter, which results sometimes in under-estimated total housing costs as well as under-estimated total housing benefits (a remark made by the French national expert of the CSB-MIPI network). Given the limited sample size of EU-SILC, it would be worthwhile to investigate the possibilities of other data sources, including administrative data, to gain more insight into the structure and level of rent paid by low income families and families living on minimum income schemes. In addition, the question remains how housing costs are best updated over time in order to construct consistent time series (not only for backward projections, but also for bridging the gap between the timing of the survey and the timing of the CSB-MIPI data). Currently, we have used the Harmonized Indices of Consumer Prices for housing (actual rentals only) published by Eurostat. However, it is unclear to what extent this index reflects trends in rent levels for modest dwellings of sufficient quality. We know that purchasing power parities and general consumer price indices are better suited for computing cross-national and cross-temporary variations in purchasing power of average income families than of low income families (see Van Mechelen et al. (2011: 36-37) and references therein). Probably similar problems arise when indices of housing prices are used for estimating the evolution of housing / rent costs for specific types of dwellings.

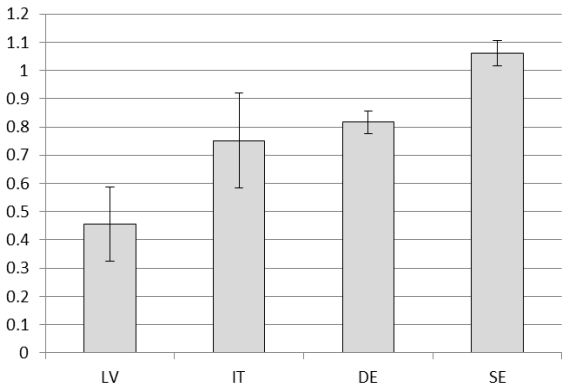
Table 21: Pearson correlation coefficient at the household level of equivalent net disposable household income and rent paid for a dwelling rented in the private market, EU-SILC 2009

	All dwellings	Dwellings with one or two rooms
AT	0.34 ***	0.26 ***
BE	0.22 ***	0.24 **
BG	0.50 ***	0.49 ***
CY	0.40 ***	
CZ	0.43 ***	0.52 **
DE	0.45 ***	0.41 ***
DK	0.28 ***	0.24 ***
EE	0.59 ***	0.61 ***
ES	0.28 ***	0.15
FI	0.45 ***	0.38 ***
FR	0.41 ***	0.34 ***
GR	0.43 ***	0.22 ***
HU	0.46 ***	0.48 ***
IE	0.31 **	
IS	0.33 ***	0.43 ***
IT	0.31 ***	0.26 ***
LT	0.26	
LU	0.41 ***	0.29 **
LV	0.47 ***	0.39 ***
MT	0.16	
NL	0.36 ***	0.35 ***
NO	0.23 ***	0.29 ***
PL	0.34 **	0.35 *
PT	0.26 ***	0.07
RO	0.51 ***	
SE	0.31 ***	0.14 ***
SI	0.23 ***	0.18 ***
SK	0.26 ***	0.36 ***
UK	0.41 ***	0.38 **

Notes: * p<0.1, ** p<0.05, *** p<0.01. P-values estimated taking sample design as much as possible into account (largest p-value of coefficient of regression of both variables on one another (Sribney, 2005)). Correlations at the household level. Values not shown if less than 50 observations.

Source: EU-SILC UDB, version 2; own calculations.

Figure 46: Ratio of the average rent paid by elderly singles and couples with an income below 70% of the national median and the average rent paid by all households with an income above that threshold, dwellings with one or two rooms in the private market, EU-SILC 2009



Notes: Only countries with a sufficiently large subsample size (at least 50 observations of elderly singles and couples with income below threshold). 95% confidence intervals take as much as possible account of sample design, as well as covariance between subsamples. Estimates at the household level.

Source: EU-SILC UDB, version 2; own calculations.

In my view, until today a large need remains with regard to better understanding the housing situation of low income families and the role of housing costs in minimum income protection. Therefore, as a conclusion, it seems safe to re-iterate a few lines of the milestone report by Eardley et al. (1996: 67), now more than 15 years ago: "Housing costs are often a crucial element of the income requirements of low income households, and many countries either include all or part o[f] the costs of accommodation within the assessment of needs for social assistance, or provide some form of separate income-related or means-tested housing allowance to people on low incomes. The relationship between housing needs and low income in a comparative perspective is, however, a matter of considerable complexity. To do justice to this area of assistance, a separate, comprehensive study would be needed […]."

2.3 Extending the range of simulations

An important limitation of CSB-MIPI is the limited set of model families for the elderly in the data: the database contains only information of elderly singles and elderly couples. As we have seen, implicit equivalence scales vary across countries and elderly persons live also in other household arrangements, particularly in Southern and Eastern European countries. Consequently, the results presented in Chapters 4 and 5 may be not representative both for the minimum income schemes and the protected population. Hence, a first useful extension would be to include other household compositions, for instance an elderly couple with an adult child or a single elderly person living with a couple at active age.

Such an extension immediately leads to questions about the functioning of means tests across countries and time. Currently, this is not captured with the simulations. Therefore, in general, it would be very useful to include some cases in which elderly persons have at least some savings or some pension income. In addition, given widespread home ownership in many EU member states (cf. Figure 42), the inclusion of a case in which an elderly couple is an owner-occupier is advisable. Finally, it would be interesting to include cases in which elderly persons face high medical costs, or costs related to living in an elderly care centre. Similar to the problem with housing costs, in this case it is necessary to both gain more insight into the distribution of medical, respectively elderly care costs, and into the distribution of specific benefits / supplements which have been introduced to compensate for these costs.

The proposed improvements of the CSB-MIPI data would lead to a very strong increase in the number of required model family simulations: different rent levels, income levels, household compositions etc. would need to be estimated in each case. If the work is to be done individually by national experts, the budget for CSB-MIPI would need to be increased accordingly. Therefore, in a recent project we have proposed to develop a new model family simulation tool for the European micro simulation model EUROMOD. Given that in this model a large part of the tax-benefit system is simulated in full, it should be possible to efficiently estimate gross and net

minimum incomes for such a large number of model families[114]. National experts could then be asked to explain trends and provide only new estimations for situations which cannot be simulated with EUROMOD (e.g. in relation to savings, associated rights, the impact of discretionary benefits, in the case of medical costs etc.).

Finally, depending on the research question, other minimum income schemes should be covered in CSB-MIPI. In Bulgaria, Poland, Slovenia, Finland and Sweden social pensions are available (or have been introduced during the 2000s) which are not simulated in CSB-MIPI. Instead, CSB-MIPI includes information on the minimum pension of Bulgaria and Poland, social assistance in Slovenia and conditional basic pensions in Finland and Sweden. For the latter three countries, there are good reasons for this: the Slovenian social pension level is below the level of social assistance and in the case of Finland and Sweden CSB-MIPI already contained information on the national pension (which is also the principal non-contributory minimum income schemes in the latter two countries). However, for Slovenia it would be useful to see how and to what extent social assistance tops up the social pension (with or without income disregards?). In addition, it can be argued that in Finland and Sweden the formal safety net of last resort is not the conditional basic pension (which is still subject to residence conditions), but the social pension (which does not depend on the residence history). A similar argument can be made in the case of Denmark and the Netherlands (where general social assistance is the safety net of last resort for elderly persons with a limited residence record). In the future, undoubtedly, it would be useful to continue the current time series, but it would be useful to also gather time series on the final safety net for elderly persons without a sufficient residence record.

3 Are European reference budgets the way forward?

The measurement of poverty as well as the evaluation of the adequacy of minimum income packages, require valid and reliable estimates of financial poverty thresholds. Chapter 1 concludes with a plea in favour of the construction of European reference budgets, validated by means of large-scale surveys about what people consider the minimum acceptable living standard in society (see also Van den Bosch et al., 2009). These reference budgets could – among others – be used to evaluate the adequacy of minimum income packages of certain model families, as well as to construct alternative monetary indicators of poverty. At least, they could contextualise the current at-risk-of-poverty thresholds by showing which kind of living standard could be achieved with a disposable household income at the level of the threshold.

Reference budgets are available for several European countries, but due to large differences in theoretical framework and methodology, results are not cross-nationally comparable (Storms et al., 2011b). In Storms et al. (2011a; 2012), we

[114] At the time of writing, it has not been officially confirmed that the so-called InGrid project will be funded under the 7th Framework Programme of the European Commission.

further elaborate on how such cross-nationally comparable budget standards may be developed. Among others, we pay attention to the following issues: (1) the scale (with which geographical scale in mind will reference budgets be conceived; from which region will persons be chosen to participate in the focus groups (only EU focus groups, national focus groups, or sub-national focus groups?)); (2) a theoretical framework for the sources to be consulted and a method for determining the contents and pricing of the reference baskets; (3) updating the reference budgets across time.

The approach has many strengths in comparison with the at-risk-of-poverty threshold: it includes an empirical test of the level of the poverty line; it accommodates in a theoretically sound way publicly provided goods and services (better than in the case of 'extended income measures'), it integrates the revenue and expenditure side of household budgets; and it provides an empirical test of the equivalence scales to be applied. Of course, the approach is also confronted with several weaknesses. Apart from maximising the cross-national comparability, in my opinion, the principal challenge is the reliability of the approach. Until now, this places a question mark over the credibility of the approach: will similar results be obtained if other experts would be involved in the project, if focus groups would be composed differently? For these reasons, I am much in favour of complementing and validating the proposed reference budgets on the basis of large-scale surveys. One way for doing so, could be to ask respondents' opinion on the necessity of the items included in the reference baskets. Similar questions (without reference to a budget standard) have been asked in previous surveys, such as a Eurobarometer study of 2007 (cf. European Commission, 2007).

From a theoretical point of view, a second important challenge is the correct determination of the scale. Several definitions of poverty, such as the definition of Townsend, stress that poverty is about lacking the resources to obtain the minimum acceptable living standard *of the society to which one belongs*. In other words, the correct scale for constructing reference budgets, corresponds to society[115]. However, what are the boundaries of society and how do we detect them empirically (or deduce them theoretically)? From this perspective, it is important to stress that publicly-oriented reference groups are not necessarily delineated by the boundaries of society and that the question about the scale should be distinguished from the question about the scope of publicly-oriented reference groups. It is useful to remind the distinction Whelan and Maître (2009a, 2009b) make between the weak and the strong version of the Europeanisation thesis. In the weak version, common standards (with regard to the minimum acceptable way of life) in the EU emerge as a consequence of knowledge of conditions in other societies. In the strong version, people increasingly perceive themselves as part of a larger European stratification system. Both version imply that publicly-oriented reference groups have broadened beyond the national boundaries. I would argue that the boundaries of society are

[115] At least, this is the case from a sociological perspective. From a policy perspective, it could be argued that the scale should correspond to the relevant geographical sphere of competence.

Europeanised not necessarily to the same degree as people perceive themselves as part of a larger European stratification system, but to the extent that the mechanisms of social stratification actually do operate on a European basis.

A third challenge is related to the estimation of housing costs. Housing costs easily account for 25 per cent of the reference budgets (cf. Storms et al., 2011b). Currently, in the case of the Belgian reference budgets, housing costs have been estimated on the basis of EU-SILC. As is the case of model family situations, for reference budgets disaggregated data are needed, in order to gain insight into housing costs necessary for a minimum acceptable housing situation for a wide range of specific household compositions, separately for each region (if housing prices tend to differ strongly across regions). However, as I have shown in the previous section, the sampling variance associated with EU-SILC estimates alone can have a serious impact on the estimated minimum budgets for a minimum acceptable living standard, which does injustice to (and undermines the effect of) the effort and precision with which other aspects of the budget are calculated.

In other words, even though we have set important steps forward in the development of a theoretical and methodological framework for the construction of cross-nationally comparable reference budgets, many questions remain open-ended. Currently, in the FP7 funded ImPRovE project, we are working on a first attempt to construct cross-nationally comparable reference budgets for six European countries (Belgium, Finland, Greece, Hungary, Spain and the United Kingdom)[116].

4 Minimum income protection and old age poverty

Answers to the questions raised above could constitute important building blocks, girders and connection points for being able to assess the impact of minimum income protection on old age poverty. To some extent, finding proper answers to these sub-questions are a precondition for solid research into the relation between minimum income protection and old age poverty. However, this does not entirely preclude useful and insightful research that directly addresses the latter question. One type of research that has been conducted is about the relation between the level of minimum income protection as measured with model family simulations and poverty. The basic intuition is that there should be a negative correlation between the level of minimum income protection and financial poverty, especially if both the poverty threshold and the level of minimum income protection are defined as a percentage of the national median equivalent net disposable household income. However, in my view, until now it has not sufficiently been stressed that one should *not* expect that a strong, negative correlation exists between poverty and the level of minimum income protection, and if such a correlation is observed, it would be unwise to interpret it as an indication of a general law (rather than coincidence), or – even worse – as scientific support for a causal relationship. In spite of the fact that one should not expect a strong negative

[116] http://www.improve-research.eu.

correlation, the reasons for why this is the case are very interesting, both from a scientific and a policy point of view. In particular, further research into the relative importance of each of these reasons would be very useful. Various publications focus on the population at working age (Cantillon et al., 2008; Cantillon and Van Mechelen, 2011; Vandenbroucke et al., forthcoming), but to date little attention has been paid to the relation between the level of minimum income packages and old age poverty. Without going into details, I will shortly discuss several pieces of the minimum income protection – poverty jigsaw.

Let us first have a look at the relation between the level of non-contributory minimum income schemes and the at-risk-of-poverty rate among people aged 65 and over. As can be seen from Figure 47, Panel B, a strong relation is clearly lacking, and there even seems to be a slightly positive linear correlation (of about 0.20[117]) between old age poverty and the relative level of minimum income protection schemes. However, as can be observed from the difference between Panel A and Panel B, the crisis and recent policy measures have dramatically changed the old age poverty rate in some countries between EU-SILC 2010 and 2009. Among others, in Estonia, Ireland, Latvia and Lithuania the at-risk-of-poverty rate among persons aged 65 and over (with the threshold equal to 60 per cent of the national median income) dropped with nearly 50 per cent or more. If we would assume that the level of minimum income protection would have been kept constant between 2008 and 2009 (which is not always the case, cf. Chapter 4), the relation looked somewhat different in 2008 and slightly negative, especially if Latvia would be left out of the picture (Pearson correlation coefficient of around -0.20). But overall, also in that case the relation between both variables is very weak and does not seem to be very meaningful.

So, what is the reason for this weak relation between old age poverty and the level of minimum income protection?

First of all, one could say that the population to which the poverty figure refers differs too strongly from the population covered by the CSB-MIPI data (see also sub-section 2 of this chapter). In particular, CSB-MIPI refers to singles and couples, whereas the elderly poverty rate refers to poverty among all persons aged 65 and over. As a result, insofar CSB-MIPI simulated income levels are not representative for the adequacy of the minimum income protection for all household types, the relation between adequacy and poverty would be distorted. However, as can be observed from Figure 48, the picture is not directly clarified (to say the least) by restricting the calculations of poverty to elderly couples and elderly singles.

Second, as long as minimum income packages guarantee an income below the poverty threshold, they do only affect the poverty gap and not the incidence of

[117] Of course, this correlation coefficient is subject to random error, both at the level of selection of countries and at the level of the estimates of poverty and median income of each individual country. Currently, I am working on a paper in which I present a simple method for taking account of both types of sampling variance for estimating the standard error and confidence interval of the correlation coefficient. Here, I only use the correlation coefficient to describe the data as they are, and not to make any inference about a broader population.

poverty. However, as can be observed from Figure 49, also in the case of FGT1 the correlation between the relative level of minimum income packages and old age poverty is far from strongly negative. In fact, the correlation is even slightly positive in the case of elderly couples.

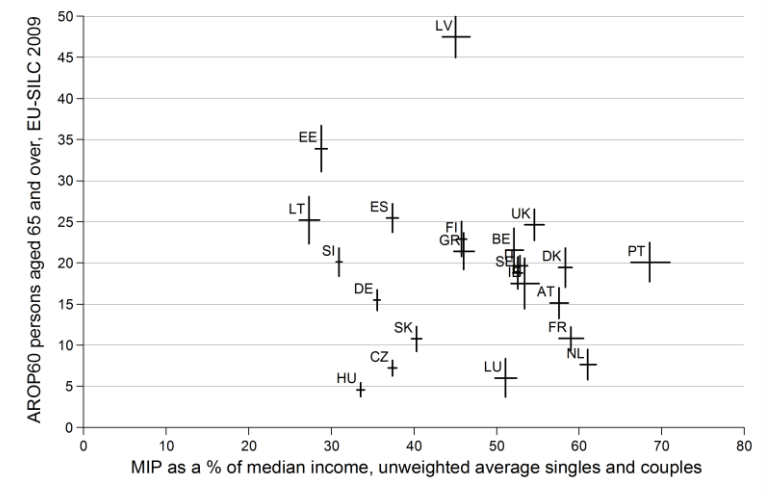
Apart from these explanations which can relatively easily be checked, there are many other reasons which require more time and research to empirically assess, validate and – whenever possible – quantify. However, in many cases, it would be very useful to be able to quantify the importance of these other explanations. For instance, part of the explanation probably lies in the fact that even if the sample is restricted to elderly singles and elderly couples, CSB-MIPI simulations probably are not representative for the generosity of minimum income schemes. This is not only the case for tenure status and assumed rent levels, but also because it is assumed that the generosity of means tests is relatively closely related to the level of minimum income protection. However, there is a wide variety in means tests with regard to unit of assessment, income sources taken into account, income disregards, etc.

Furthermore, even if several family types with some income from other sources would be included in the simulations, the relation with poverty would not be clear-cut. First of all, income and household definitions differ cross-nationally and from those used for estimating poverty figures. Second, surveys are subject to both random and non-random error, including income under-and misreporting. Third, the simulations assume full compliance with tax-benefit legislation and ignore discretionary income top ups or decreases in benefit levels. Fourth, in many countries the number of beneficiaries is very low, and non-take up may be substantial (Hernanz et al., 2004; Fuchs, 2009). Finally, and most importantly, old age poverty probably is first and foremost determined by (1) the coverage and generosity of the general public pension system, as well as elderly people's access to other income sources (wealth, employment, other household members,…); and (2) the income situation of other households in the population. If some countries have relatively generous pension systems which cover the entire population, the generosity of minimum income protection is of little relevance for explaining relative old age poverty: the latter may be close to zero even before minimum income protection schemes comes into play (cf. Sainsbury and Morissens, 2002; Nelson, 2004). The fact that the incidence of old age poverty in Latvia has declined between EU-SILC 2009 and EU-SILC 2010 with over 50 per cent is probably an example of the importance of changes in the income situation of other members in society: it is very likely that the decrease has little to do with the adequacy of minimum income protection schemes[118].

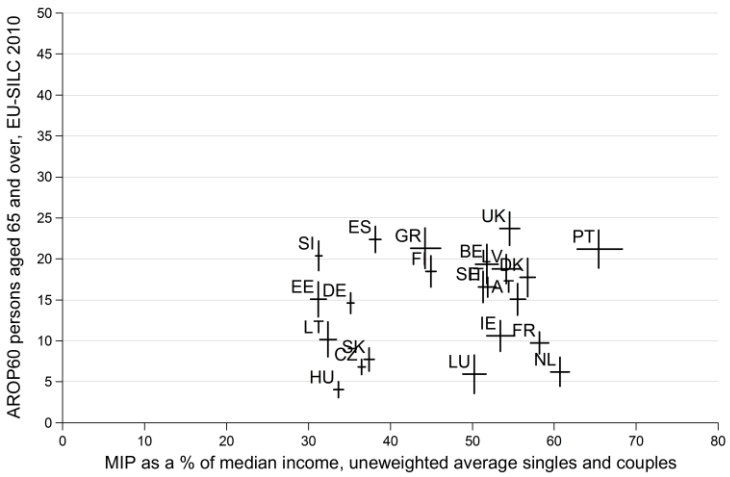
[118] The at-risk-of-poverty threshold for Latvia declined with about 15 per cent in real terms between EU-SILC 2009 and EU-SILC 2010.

Figure 47: The relation between the at-risk-of-poverty rate for persons aged 65 and over and the average level of minimum income protection of elderly singles and couples as a percentage of the median equivalent disposable household income, EU-SILC 2010 & EU-SILC 2009

Panel A: EU-SILC 2009



Panel B: EU-SILC 2010

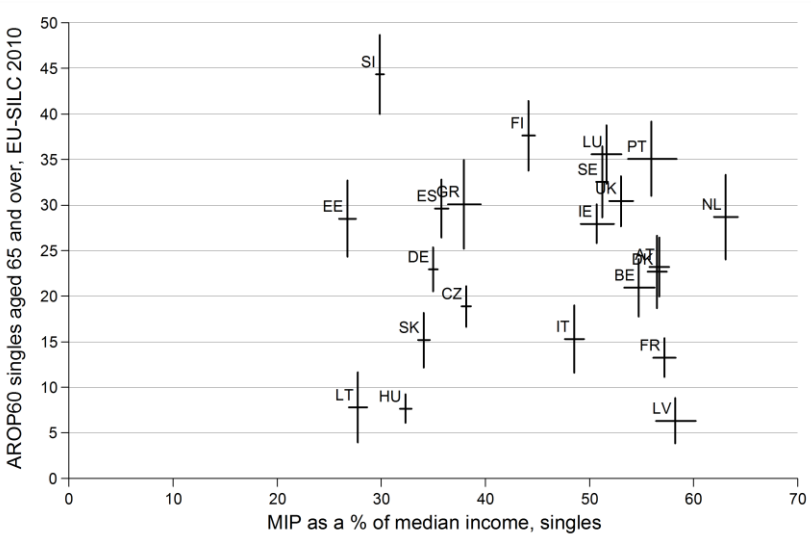


Notes: Only countries with data on non-contributory minimum income scheme in CSB-MIPI. Panel A: both for estimated medians and poverty figures EU-SILC 2010 (except IE & UK: median from EU-SILC 2009); Panel B: medians and poverty figures on the basis of EU-SILC 2009. The size of the crosses indicate 95% confidence intervals and take the sample design as much as possible into account (cf. Goedemé, 2011).

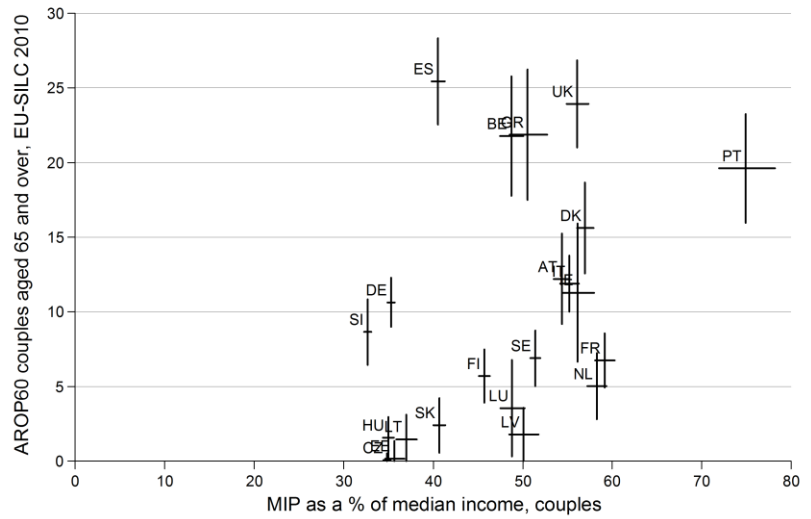
Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); EU-SILC UDB 2009 version 2 & EU-SILC UDB 2010, version 1; own calculations.

Figure 48: The relation between the adequacy of minimum income packages and the at-risk-of-poverty rate among elderly singles and couples, 2009 (EU-SILC 2010)

Panel A: singles



Panel B: couples

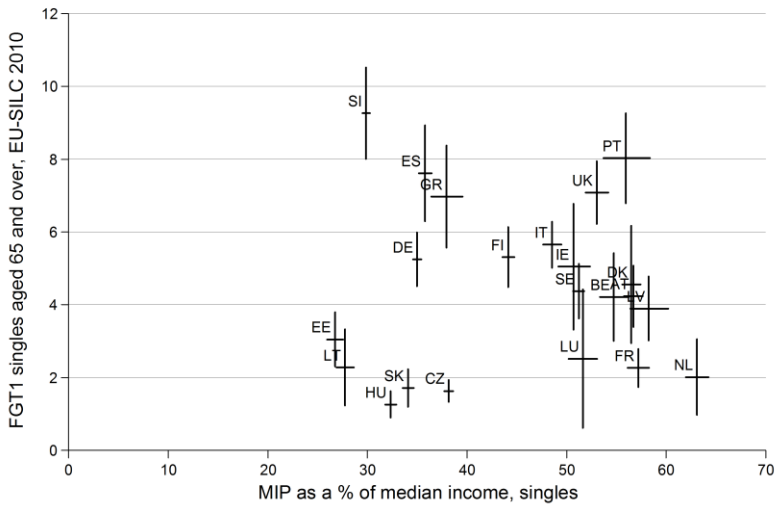


Notes: Only countries with data on non-contributory minimum income scheme in CSB-MIPI. Both for estimated medians and poverty figures EU-SILC 2010 (except IE & UK: EU-SILC 2009). Poverty figures refer to persons aged 65 and over, in couples both persons are 65 and over and have indicated they are one another's partner. The poverty threshold is equal to 60 per cent of the median income. The size of the crosses indicate 95% confidence intervals and take the sample design as much as possible into account (cf. Goedemé, 2011).

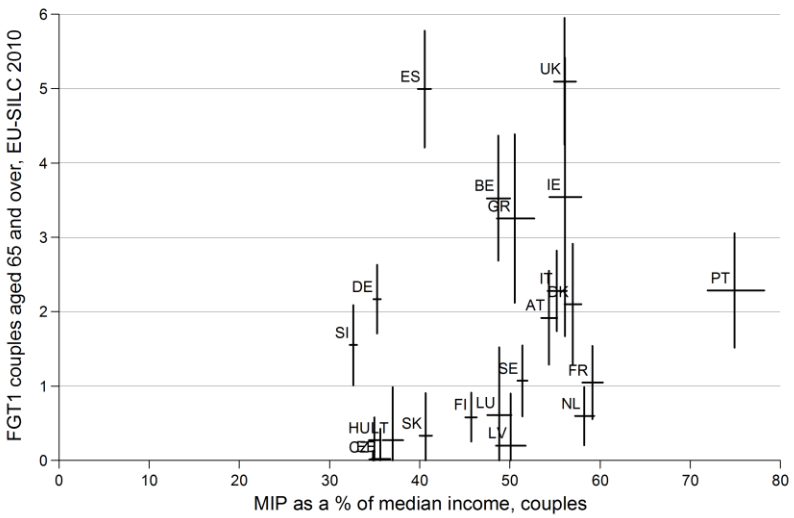
Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); EU-SILC UDB 2009 version 2 & EU-SILC UDB 2010, version 1; own calculations.

Figure 49: The relation between the adequacy of minimum income packages and FGT1 of elderly singles and couples, 2009 (EU-SILC 2010)

Panel A: singles



Panel B: couples



Notes: Only countries with data on non-contributory minimum income scheme in CSB-MIPI. Both for estimated medians and poverty figures EU-SILC 2010 (except IE & UK: EU-SILC 2009). Poverty figures refer to persons aged 65 and over, in couples both persons are 65 and over and have indicated they are one another's partner. The poverty threshold is equal to 60 per cent of the median income. The size of the crosses indicate 95% confidence intervals and take the sample design as much as possible into account (cf. Goedemé, 2011).

Source: CSB-MIPI version 2/2011 (Van Mechelen et al., 2011); EU-SILC UDB 2009 version 2 & EU-SILC UDB 2010, version 1; own calculations.

In spite of these qualifications, there is a clear interest in better understanding and quantifying the impact of the level of minimum income protection on old age poverty. One way for doing so would be to increase the variation in model family situations (cf. section 2), another is to use micro-simulation techniques to empirically estimate the adequacy and impact of minimum income protection schemes (cf. Figari et al., 2011, 2012). The drawback of the latter type of analyses is that (1) they tend to assume full take up and (2) the indicator of benefit adequacy is determined by the current demographic composition of the population. There are also ways in between, and one interesting route would be to try to decipher and quantify the effect of the various factors mentioned previously on a step-by-step basis. This could be done on the basis of EUROMOD. Apart from improving the quality and representativeness of the model family situations as discussed above, one such step is to align the definition of poverty with the income concepts used in each minimum income scheme; making different assumptions regarding non-take up and measurement error is another one. These are only suggestions in relation to the correlation between old age poverty and the level of minimum income schemes. However, explaining the absence of a strong negative correlation reveals the importance of many other factors at play in reducing poverty in old age, and for designing adequate and effective minimum income schemes.

5 Conclusion

In this chapter I discuss four directions for further research. This is not to say that there are no other important directions for further research, but the four discussed here follow directly from the questions asked in the preceding chapters.

Two suggestions for further research are related to the measurement of poverty. First, it would be interesting to know more about the actual behaviour of standard errors when the poverty line is estimated on the basis of the same data that are used to calculate the poverty figure, such as is the case for the at-risk-of-poverty indicator. Preliminary results show that ignoring the 'randomness' of the poverty line could result in both over-and underestimations of the standard error, and that the effect of over-estimation is stronger when the poverty line increases as a percentage of the median. Furthermore, these results suggest that the effect is stronger in the case of complex sample designs, and is weaker if α of the FGT(α) index increases from 0 to 2. These preliminary results show possible effects of ignoring the randomness of the poverty line and show that in some cases neglecting this randomness could considerably bias estimated standard errors. However, they do not provide much guidance to researchers wishing to avoid complex and computationally intensive estimation procedures that take this randomness into account. In contrast, simulations with synthetic data could reveal the precise conditions that influence the behaviour of the standard error, and monte carlo type simulations (with real and synthetic data) could indicate to what extent the randomness of the poverty line should be an issue of concern in more complex analyses such as regressions with the (relative) poverty status either as a dependent or independent variable. By doing so, it

would be possible to advise researchers about the circumstances in which taking account of the randomness of the poverty line could be strongly recommended, and those circumstances in which more complex estimation procedures that take account of this randomness could be ignored.

Second, in my view the measurement of poverty would benefit strongly from the development of cross-nationally comparable reference budgets. Such an approach raises still much methodological concerns, for instance with regard to assuring the cross-national comparability, the reliability of the approach, the determination of the scale (local, regional, national) at which reference budgets must be developed and the correct and reliable estimation of housing costs. One way for checking the reliability of the approach is by using a quasi-experimental design in which, for instance, the composition of the focus groups is different in the control and in the test group, another possibility for increasing the validity and reliability of the approach would be to find an appropriate way for including into the development of the reference budgets results from large-scale surveys about what people consider the minimum necessities for a decent life.

The question of valid, reliable and cross-nationally comparable assumptions regarding housing costs is not only an issue for further research in relation to the construction of reference budgets, but also for improving the model family simulations in CSB-MIPI. This is a third important direction for further research. Even though the CSB-MIPI data currently do provide important insights into the adequacy of minimum income schemes, the results included in this chapter clearly show that the data should be further improved. First, the housing assumptions in the CSB-MIPI data need to be strengthened, at least in the case of elderly persons, and their empirical basis should be improved. The consultation of additional administrative and other survey data seems for many countries a necessity as EU-SILC is not sufficiently precise. Apart from improving the housing assumptions, the validity of conclusions about the generosity of minimum income schemes would benefit strongly from increasing the number of model family types and income assumptions, such that the representativeness of the range of simulations could be improved and variations in means tests can be taken into account. One way for doing so – and we will do this in the InGRID project – is to optimise the model family tool in the micro simulation model EUROMOD. This would guarantee a regular updating process and would allow for linking the results to micro-simulation exercises. Furthermore, this would allow for focusing the questionnaires we send to national experts on the model families and policy measures we cannot simulate in EUROMOD and to collect more information about the actual implementations of the schemes.

Finally, a fourth direction for further research is more directly related to the initial question behind the research agenda of this PhD thesis, namely the relation between the adequacy of minimum income protection as measured with model family simulations and old age poverty. As I have tried to argue, from a theoretical perspective there is no straightforward relation, as many other interfering factors have to be taken into account. It would be very interesting to clarify – and where possible to quantify – the impact of these interfering factors, as these are crucial

variables to design effective minimum income schemes which do not only seem adequate from a first point of view (the standard benefit level) but that also in the real world turn out to function well.

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Summary and conclusion

This PhD thesis covers two fields of study: poverty and minimum income protection. The research presented in this PhD shows that both fields of study are closely related, as are the answers to the central questions in this thesis.

In the first chapter, the central focus is on the definition of poverty, its relation to the debate on EU enlargement, the Europeanisation of reference groups and the consequences for the measurement of poverty. With Stijn Rottiers, I argue that a useful distinction between absolute and relative definitions of poverty cannot be made and that Sen and Townsend more agree than disagree (even though this was not recognised as such by Townsend (1985) himself). More in particular, what is often overlooked is that Townsend's definition of poverty is not only about the activities, living conditions and amenities which are customary, but also about those which are at least widely encouraged or approved. The latter characteristic of Townsend's definition leaves room for Sen's 'irreducible core of absolute deprivation'. In addition, we try to add a small piece of missing theory about the relation between the definition and measurement of poverty and the concept of reference groups. We conclude that a distinction must be made between privately-oriented reference groups and publicly-oriented reference groups. The former come into play when people evaluate their own situation (living standard), whereas the latter matter for evaluating a generalised characteristic or outcome, such as what should be considered the minimum acceptable living standard in society. Insofar current research about the Europeanisation of reference groups has focused on privately-oriented reference groups, it is unclear what this research can contribute to assessing the Europeanisation of publicly-oriented reference groups. The way forward we propose, both for evaluating the Europeanisation of reference groups and for developing more valid poverty indicators, consists in constructing empirically validated poverty lines, determined starting from a publicly-oriented point of view. The development of reference budgets, validated by large-scale surveys about what is considered the minimum acceptable living standard in society seems a promising direction for further research, which satisfies these conditions.

The statistical reliability of poverty estimates is the subject of Chapter 2. In this chapter, I argue that all too often the estimation of correct standard errors and confidence intervals is ignored in poverty research and official publications of the European Commission. Nonetheless, this is not only important from a scientific point of view, but also from a policy point of view, especially if samples are used for evaluating progress to policy targets, such as the Europe 2020 poverty reduction target. Given that sample designs may strongly affect the standard error of estimates based on samples, I pay particular attention to the sample designs employed in EU-SILC, the EU reference source for income and living conditions. I complement the

existing documentation on the sample design of EU-SILC and test the effect on estimated standard errors of various simplifying assumptions with regard to the sample design. It is shown that taking account of clustering within households is of paramount importance, and results in many cases in a relatively accurate estimation of the standard error. However, taking as much as possible account of the entire sample design generally leads to more accurate estimates, even if sample design variables are incomplete. The chapter concludes with a plea for better sample design variables in the EU-SILC UDB and larger effective samples sizes, as the current samples are not accurate enough for adequately monitoring the evolution of poverty in all EU member states[119].

In the third chapter of Part I, I discuss with Koen Decancq, Karel Van den Bosch and Josefine Vanhille many of the other aspects which should be taken into account when measuring poverty in Europe. Among others, we discuss important choices to be made with regard to the metric of individual well-being, the determination of the poverty threshold and the aggregation of individual outcomes to obtain a poverty estimate for society as a whole. In addition, we illustrate how the different conceptual choices in the measurement of poverty affect the empirical findings regarding the evolution of poverty between 2005 and 2009. As is shown in Chapter 3, the selection of individual well-being metric and the choice between a county-specific and a pan-European poverty line strongly affect observed patterns and trends of poverty in the EU. In other words, the choices we make about how poverty should be measured, can have strong effects on how we perceive the world around us.

The second part of this PhD is dedicated to the origins and evolution of minimum income protection targeted at the elderly in the European Union. Among others, I argue that six different types of minimum income guarantees should be distinguished on the basis of the mode of access to the scheme: *contributory* flat-rate pensions, minimum pensions and pension supplements and *non*-contributory basic pensions, conditional basic pensions and social pensions. Whereas flat-rate pensions and basic pensions are not subject to a means test, minimum pensions and conditional basic pensions complement public pension income up to a pre-defined level. In contrast, pension supplements and social pensions are subject to a broader means test. In this PhD, I pay particular attention to the principal safety net of last resort, that is, the main non-contributory minimum income scheme for elderly persons.

In Chapter 4, I first provide an overview of the different types of minimum income schemes available to the elderly in the European Union. Second, the question is asked whether minimum income benefit levels are sufficient for avoiding poverty in old-age, and how adequacy has evolved in the recent past. In addition, it is explored whether some types of minimum income protection systematically provide more adequate benefits. In order to answer these questions, I analyse the CSB Minimum Income Protection Indicators database (CSB-MIPI), which contains – among others – time series of gross benefit levels of minimum income schemes as well as model family simulations for elderly singles and elderly couples (cf. Van Mechelen et al., 2011). The

[119] A more elaborate discussion of the Belgian case can be found in Guio and Goedemé (2011).

analysis of CSB-MIPI data shows that – except for Latvia, Slovakia and the Czech Republic – gross benefit levels have remained constant, or have grown in real terms over the past 10 years. In fact, in a non-negligible number of countries increases have been larger than what could be expected of legislated indexation mechanisms (for example Belgium, Finland and Portugal), and even doubled in Romania, Lithuania, Greece and Portugal. In some cases the observed trends are a result of substantial reforms. However, in many other countries, increases have been ad hoc and were not directly driven by reforms. Furthermore, the analysis shows that the level of net minimum income packages for the elderly varies considerably across Europe, both in absolute and in relative terms. Several countries (Portugal, Greece, the United Kingdom, Ireland and Belgium) substantially improved benefit adequacy over the past 10 years. At the same time, in one third of the countries included, the potential to lift the elderly above the at-risk-of-poverty threshold has probably decreased – in some countries quite severely so (Denmark, Sweden, France, the Czech Republic). In about half of the EU member states, net minimum income packages are well below the at-risk-of-poverty threshold in 2009. Only Portugal (for couples) and the Netherlands (for singles) offer minimum income protection above this poverty line. In other words, many governments still have a long way to go for ensuring a decent living standard to all members of their elderly population. Important in this respect, is that the type of minimum income scheme does not seem to be strongly related to the level of net minimum income packages and that in a number of countries, housing benefits substantially contribute to guaranteeing a minimum level of resources. Keeping the crisis in mind, it remains to be seen how this picture has changed during the past few years.

The timeframe is broadened in Chapter 5, in which I discuss the origins and long-term evolution of non-contributory pensions in 13 ‘old’ EU member states. More in particular, the question is asked how minimum income protection has evolved over the past 20 years, given that in many countries the generosity of the public pension system has been downscaled. I build on two relatively new data sources for answering these questions. Apart from a further analysis of CSB-MIPI data, Chapter 5 builds on the EuMin dataset which covers – among others – administrative information on the number of beneficiaries of minimum income schemes (cf. Bahle et al., 2011). It is shown that a wide range of different minimum income schemes have developed in Europe and that these have followed many different trajectories over the past 20 years. In a substantial number of countries generosity was strongly improved. Except for West Germany, over the past 20 years gross benefit levels at least kept pace with inflation, and improved quite dramatically in Greece, Portugal, Ireland, the United Kingdom and Belgium. If benefit levels are compared to average wages, a general pattern of convergence can be observed, which in the 1990s was primarily driven by declining generosity in Denmark and increasing benefit generosity in Greece. By the end of the 2000s, the strongly increasing generosity of the Portuguese social pension resulted in a new divergence of gross benefit levels. At the same time, several countries substantially reformed their non-contributory minimum income schemes. Most notably, Finland and Sweden converted their basic pension into a conditional pension, leading to a substantial decrease in the number of beneficiaries, whereas

Denmark, Portugal and the United Kingdom improved access to their schemes, either by lowering the minimum age of eligibility (Denmark), or by changing means tests and improving benefit levels (Portugal, United Kingdom). Also many other countries introduced new non-contributory minimum income schemes, even though this did not lead to considerable increases in the number of beneficiaries.

In contrast to the previous chapters, in Chapter 6, I take a more policy-oriented point of view. More in particular, together with Wim Van Lancker I discuss the options and pitfalls for the harmonisation of minimum income protection for the elderly in the European Union. As earlier contributions to the literature already outlined the practical and ethical arguments in favour of a European basic pension, we take the proposal of a European basic income for the elderly as our starting point and assume that a basic income is philosophically and ethically justified. In this chapter, we try to broaden the scope of the discussion to the options, difficulties and pitfalls associated with the practical design and implementation of a harmonised European minimum income scheme. For doing so, we start from the current situation in the European Union and argue that, to be equitable and successful, the design of a European minimum income scheme (or any proposal for further harmonisation) should take account of the existing situation with regard to the wide disparities in living standards, life expectancy, dependency ratios and minimum income schemes in the EU. Due to the wide divergence in income and living conditions in the EU, the harmonisation of minimum income schemes is much more complex than is sometimes assumed. Consequently, the choice for one option or another may seem a largely technical issue at first sight, yet it could have a very large impact on the population that would ultimately benefit from the basic pension scheme, the level of the benefit, the financial cost of the scheme and the most appropriate organisational structure. In other words, being in favour of a European basic pension is one thing, designing a realistic (and desirable) scenario for the harmonisation towards such a scheme is another. This is not to say that the idea of further harmonisation is completely undesirable or unrealistic. As we try to argue in Chapter 6, by combining the strengths of a European minimum income scheme and the creativity of national policy makers to adapt the general principles of the scheme to the local situation, further harmonisation could work, if implemented in various steps.

More generally, some cross-cutting conclusions can be drawn, which open perspectives for further research. In Chapter 7 I highlight four directions for further research, indicate their relevance as well as their main challenges.

The single most important discussion for moving the measurement of poverty and the measurement of the adequacy of minimum income protection forward is about the determination of the minimum level of economic resources that is needed for ‘buying’ the minimum acceptable living standard in society, that is, the poverty threshold. Without a good estimate of the poverty threshold, we have no idea about the level and evolution of poverty and about what an adequate income should look like. Given the definition of poverty, in all seriousness, we cannot say whether in Romania about 90 per cent of the population is poor or whether the correct figure is closer to 20 per cent (cf. poverty with an EU-wide or with a national poverty line, see

Chapter 3). Of course, the type of policy action(s) needed, depends strongly on the answer to this question. Similarly, we have no satisfactory yardstick for measuring the adequacy of minimum income benefits (we have some yardstick to measure the redistributive capacity of benefits, but this is not entirely the same). This does not only pose problems for cross-nationally comparable evaluations of the adequacy of minimum income schemes, but also for evaluating within countries whether benefit packages are as adequate for one household type as they are for another household type. In other words, 'adequate' poverty thresholds are needed for evaluating the implicit equivalence scales of benefit packages. As mentioned earlier, the development of cross-nationally comparable reference budgets offer a promising direction for further research.

A second direction for further research is related to the estimation of standard errors and confidence intervals of estimates based on EU-SILC. Given the context of the Europe 2020 poverty reduction target, this is not only an issue of scientific interest, but also an issue of clear policy relevance. An important priority for Eurostat should be to further improve the sample design variables of EU-SILC, and their availability to researchers. Even though Eurostat has taken several initiatives in this area, there is still substantial room for improvement (Goedemé, 2010, 2012; Eurostat, 2012). A second important priority should be to improve the documentation of imputations in EU-SILC and the implementation of a proper method for taking imputation into account when estimating standard errors. Few research has addressed this issue with a focus on EU-SILC and the EU social indicators. Nonetheless, imputation could have an important impact on the statistical reliability of estimates. In addition, for applied poverty researchers, it would be useful to gain more insight into the behaviour of standard errors when poverty defined by a 'random' poverty line is either a dependent or independent variable. Currently, the randomness of the poverty line is largely neglected in poverty research. If it is found that standard errors are broadly similar to those obtained when the poverty line is non-random, this would give some more confidence in this research. In the other case, user-friendly commands could and should be further developed to take the randomness of the poverty line into account. This could be a second fruitful direction for further research.

Even though the CSB-MIPI data provide useful and interesting insights into trends in benefit levels and the wide cross-national diversity of the level of minimum income protection, there is ample room for improving the representativeness, validity and reliability of the model family simulations. First of all, more background information on the housing situation in the European Union is needed in order to improve the validity of the housing assumptions. Second, the estimation of rent and housing costs should be refined, which would both be beneficial for the model family simulations included in CSB-MIPI and for the development of cross-nationally comparable reference budgets. Third, the range of simulations should be extended to include other household types and income situations that allow for gaining more insight into the functioning of means tests and implicit equivalence scales.

Finally, several other building blocks are still lacking to properly answer the question about the impact of minimum income schemes on old age poverty in Europe. Further

thinking about the relation between the level of minimum income protection as measured with CSB-MIPI model family types and poverty as measured in EU-SILC could be very fruitful, if combined with an extension of the range of model family simulations and micro-simulation techniques. This is an important direction for further research, not only because it clearly demonstrates the complexity of the relation between minimum income protection and poverty, but also because it could improve further insights into how to design effective and efficient minimum income schemes in Europe.

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Appendix: The CSB Minimum Income Protection Indicators Database (CSB-MIPI)

Natascha Van Mechelen, Sarah Marchal, Tim Goedemé, Ive Marx and Bea Cantillon

Given that the CSB-MIPI dataset is central to many of the analyses presented in this PhD thesis (especially Chapters 4 and 5, as well as part of Chapter 7), this appendix shortly discusses the main features of this dataset. More detailed information can be found in Van Mechelen et al. (2011).

1 Contents of CSB-MIPI

The primary purpose of CSB-MIPI is to present valid and detailed information on the level and composition of minimum income protection packages in Europe and the United States. The database contains information on minimum income protection provisions for workers, for people at working age not in work, and for the elderly. For workers, the focus is on the net income packages of minimum wage workers. For people not or no longer in work, the focus is on statutory social assistance entitlements or equivalent schemes. In all cases full account is taken of taxes, social security contributions, means-tested income supplements and child benefits by means of model family simulations. Furthermore, the database contains two reference cases, i.e. a one-earner and a double-earner family where the worker(s) earn(s) an average wage. While the primary focus is on net income levels, CSB-MIPI also contains time series of gross benefit amounts, gross average wages and gross minimum wages as well as information on conditionality requirements in social assistance, associated rights and in-kind benefits.

The following family types are covered by the model family simulations in CSB-MIPI:

- single person
- married couple without children
- married couple with children aged 7 and 14 (not in case of elderly persons)
- lone parent[120] with children aged 7 and 14 (not in case of elderly persons)
- lone parent with one child aged 2 (not in case of elderly persons).

[120] A lone parent: a mother or a father living without a spouse (and not cohabiting) with his or her dependent children.

Adults are assumed to be 35 years old, except for the minimum income guarantee for elderly. In the latter case, the beneficiary/beneficiaries is/are assumed to have the minimum age to be entitled to a full pension benefit in the main public pension scheme. Couples are assumed to be married and to be of different sex, the lone parent is divorced. All children are in full time education, except for the two-year old child, which is assumed to be in child care when the parent is working.

The range of income situations covered includes:

- two-earner family, both adults working full time, national average male earnings plus national average female earnings
- one-earner family, one adult working full time, national average male earnings
- one-earner family, one adult working full time, minimum wage
- family receiving social assistance for working age persons
- family receiving minimum income guarantee for elderly people.

In all cases, it has been assumed that there are no other sources of income, apart from those derived from the tax-benefit system as a result of their pre-defined income status.

2 Method

2.1 National experts

The dataset derives from data collection through a network of national experts, expanding on earlier data collection efforts by Jonathan Bradshaw of the University of York (Eardley et al., 1996; Bradshaw and Finch, 2002). Data were gathered in several waves (currently CSB-MIPI is being updated for the third time). The data are provided on the basis of detailed questionnaires with specific instructions for the model family simulations. The questionnaire and relevant assumptions are developed with a focus on the maximisation of cross-temporary and cross-national comparability. Whenever necessary, national experts are asked to provide additional data, corrections and clarifications.

In order to increase comparability, as much as possible the same teams of experts are chosen to provide data for all waves of data collection. National experts are selected taking into consideration their participation in earlier studies on social benefit packages (Bradshaw and Finch, 2002), their participation in the network of EUROMOD and/or their outstanding knowledge of social assistance and the tax system as witnessed by their record of scientific publications. A complete list of national experts can be found below.

Table 22: Overview of the three waves of data gathering

	Data	Countries
Wave 1 (2003)	▪ Time series gross amounts 1992-2001 ▪ Model family simulations (net incomes) May 1992 and June 2001 ▪ Questionnaire : Explanation and discussion of model family simulations	AT BE DE DK ES FR GR IE IT LU NL NO PT SE UK
Wave 2 (2009/2010)	▪ Time series gross amounts 1992-2009 ▪ Model family simulations (net incomes) June 2001 and June 2009 ▪ Questionnaire : Explanation and discussion of model family simulations ▪ Questionnaire on the impact of the crisis ▪ Questionnaire on conditionality	AT BE BG CZ DE DK EE ES FI FR GR HU IE IT LT LU LV NL NO PL PT RO SE SI SK UK US[1]
Wave 3 (2012)	▪ Time series gross amounts 2009-2012 ▪ Model family simulations (net incomes) January 2012 ▪ Questionnaire: explanation and discussion of model family simulations ▪ Questionnaire on the impact of the crisis ▪ Questionnaire on conditionality ▪ Additional model family simulations: transition from social assistance to minimum wage; participation in an employment programme	Same as wave 2.

[1] Three US states were included: Nebraska, New Jersey and Texas.

2.2 Model family simulations

The CSB-MIPI data on net disposable income and its income components are based on the model family approach. This approach basically involves calculating the net disposable income for a set of hypothetical families, given existing welfare state arrangements. More in particular, the technique starts with defining specific family types, making assumptions about the number of persons in the household, their age,

their marital status, their status on the labour market, their gross earnings, their housing situation, etc. For these family types the amount of taxes and social contributions is calculated, as well as the amount of fiscal and social benefits. In doing so, the net disposable income for each family type can be determined.

Net disposable income is defined largely in line with the definition used by the OECD (2002) as the sum of the principal income component (gross average wage, minimum wage, social assistance benefit or income guarantee for elderly) plus child cash benefits and housing allowances minus income taxes, social contributions and local taxes. Unlike the OECD, housing allowances are only taken into account insofar they are not discretionary awarded. For a lone parent with one child, child care costs are estimated. Where applicable, negative income taxes (which lead to an increase in the net disposable income) are taken into account. If additional assumptions are necessary, national experts are asked to focus on assumptions which ensure best comparability with previous waves and assumptions which best depict *minimum* income situations. The model family simulations refer to May 1992, June 2001, June 2009 and January 2012.

Table 23: List of national experts – Wave 2

Country	Name	First name	Research Centre
Austria	FUCHS	Michael	European Centre for Social Welfare Policy and Research, Wien
	STANZL	Peter	City of Vienna
Belgium	VAN MECHELEN	Natascha	Herman Deleeck Centre for Social Policy (CSB), University of Antwerp
	VOGELS	Jonas	
	MARCHAL	Sarah	
Bulgaria	BOSHNAKOV	Venelin	University of National and World Economy, Sofia
	DRAGANOV	Dragomir	Senior Expert Policies and Strategies (Directorate), Ministry of Labour and Social Policy
Czech Republic	MUNICH	Daniel	Center for Economic Research and Graduate Education - Economic Institute (CERGE-EI), Prague
	PAVEL	Jan	
Denmark	ABRAHAMSON	Peter	University of Copenhagen
Estonia	VÕRK	Andres	University of Tartu / Praxis Center for Policy Studies
Finland	KANGAS	Olli	Kela, Helsinki
	HAATAJA	Anita	
France	MATH	Antoine	Institut de Recherches Economiques et Sociales (IRES), Paris
Germany	BAHLE	Thomas	Mannheimer Zentrum für Europäische Sozialforschung (MZES)
	HUBL	Vanessa	Mannheimer Zentrum für Europäische Sozialforschung (MZES)

Country	Name	First name	Research Centre
Greece	MATSAGANIS	Manos	Athens University of Economics and Business
Hungary	SZIVÓS	Péter	Tárki, Budapest
Italy	KAZEPOV	Yuri	University of Urbino
	SABATINELLI	Stefania	University of Milan-Bicocca
	ARLOTTI	Marco	University of Brescia
Ireland	MAITRE	Bertrand	The Economic and Social Research Institute (ESRI), Dublin
Latvia	VANAGS	Alf	Baltic International Center for Economic Policy Studies (BICEPS), Riga
	VASILJEVA	Kristine	Baltic International Center for Economic Policy Studies (BICEPS), Riga
Lithuania	SALANAUSKAITE	Lina	Maastricht University / Herman Deleeck Centre for Social Policy (CSB), University of Antwerp
	LAZUTKA	Romas	Vilnius University
Luxembourg	BERGER	Frédéric	Centre d'Etudes de Populations, de Pauvreté et de Politiques Socio-Economiques (CEPS), Differdange
	BORSENBERGER	Monique	
Netherlands	GOUDSWAARD	Kees	Leiden University
	VAN VLIET	Olaf	
Norway	WEST PEDERSEN	Axel	NOVA, Oslo
	KOREN	Charlotte	NOVA, Oslo
Poland	PIETKA-KOSINSKA	Katarzyna	Center for Social and Economic Research (CASE), Warsaw
Portugal	BAPTISTA	Isabel	Centro de Estudos para a Intervenção Social (CESIS), Lisboa
	BRÁZIA	Ana	Centro de Estudos para a Intervenção Social (CESIS), Lisboa
Romania	RAT	Cristina	Sociology Department, "Babes-Bolyai" University Cluj-Napoca
Slovakia	GERBERY	Daniel	Institute for Labour and Familiy Research, Bratislava
Slovenia	KUMP	Natasa	Institute for Economic Research (IER), Ljubljana
Spain	AIGUABELLA	Joaquim	Gabinet d'Estudis Socials SCCL, Barcelona
	LEOTTI	Paolo	
Sweden	NELSON	Kenneth	Institute For Future Studies / Swedish Institute for Social Research (SOFI), Stockholm
UK	BRADSHAW	Jonathan	Social Policy Research Unit (SPRU) / University of York
US	STOKER	Robert	Trachtenberg school of public policy and public administration

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