Reinventing the Welfare State

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Abstract in English

The Dutch welfare state is under pressure. Future trends of ageing and globalisation render public finances unsustainable and worsen the position of low-skilled workers on the labour market. At the same time, welfare state institutions seem insufficiently adapted to changed socio-cultural circumstances. Moreover, they cause inactivity among elderly workers, women and social benefit recipients. To prepare for the future, the Dutch government aims to raise labour supply and improve human capital. This study explores how welfare state reform can contribute to these goals. Thereby, we take into account the key social and economic functions that the welfare state fulfils in our society. We analyse a number of reforms in Dutch institutions from a broad welfare perspective and quantify their effects on the labour market and the income distribution. The study also develops three comprehensive prototype welfare state reforms for the Netherlands in the future. We explore how robust these different prototypes are for immigration, economic integration and technological change.

Key words: Welfare state; Labour market; Inequality; the Netherlands; Policy simulations.

JEL codes: D3, D5, D6, H2, H53, I3, J2, J3, J6.

Abstract in Dutch

De Nederlandse verzorgingsstaat staat onder druk. Toekomstige trends als vergrijzing en globalisering dreigen de overheidsfinanciën onhoudbaar te maken en verslechteren de positie van laaggeschoolden. Tegelijkertijd lijkt de verzorgingsstaat onvoldoende aangepast aan veranderde sociale verhoudingen. Bovendien lokt ze langdurige inactiviteit uit bij onder meer uitkeringsgerechtigden, ouderen en vrouwen. Om in te spelen op toekomstige ontwikkelingen staat het vergroten van de arbeidsdeelname en het investeren in menselijk kapitaal hoog op de Nederlandse beleidsagenda. Deze studie onderzoekt hoe hervormingen in de verzorgingsstaat aan die doelstellingen kunnen bijdragen. Daarbij wordt rekening gehouden met de sociale en economische functies die de verzorgingsstaat in onze samenleving vervult. De studie analyseert diverse afzonderlijke hervormingsopties vanuit een breed welvaartsperspectief en kwantificeert de effecten op de arbeidsmarkt en de inkomensverdeling. We ontwikkelen tevens drie alomvattende toekomstbeelden voor de Nederlandse verzorgingsstaat en onderzoeken hoe robuust deze alternatieven zijn voor toekomstige internationale trends in immigratie, economische integratie en technologische ontwikkeling.

Steekwoorden: Verzorgingsstaat; Arbeidsmarkt; Ongelijkheid; Nederland; Beleidsimulaties.

Contents

List of figures

List of tables

List of boxes

Preface

Two long-term scenario studies of CPB, called *Four Futures of Europe* and *Four Futures for the Netherlands*, recently concluded that future trends will exert a growing pressure on the welfare states of Europe and that of the Netherlands in particular. The underlying study is a follow-up on these long-term scenario studies. In particular, it explores how, in light of future developments, the Dutch welfare state can be reformed so as to meet the challenges of the future. These challenges primarily refer to the labour market and social cohesion.

The study first does one step back and elaborates on the fundamentals of the welfare state, i.e. its key functions in our society. From this, it explores how a welfare state would look like if we were able to design it from scratch. What are fundamental trade-offs? How can current institutions be reformed so as to obtain better outcomes? By quantitatively exploring the implications of various concrete welfare state arrangements, the study aims to provide ample input for the policy debate on welfare state reform in the Netherlands and elsewhere in Europe. Moreover, it develops comprehensive reform directions in current Dutch institutions. The study also forms a follow-up on the CPB note of February 28 2005, which was prepared for the discussion in Dutch Parliament on the future of the Dutch welfare state.

The study has been written and coordinated by Ruud de Mooij, in close collaboration with a team of experts on various topics. In particular, Kees Folmer, André Nibbelink and Egbert Jongen contributed to the model simulations. Egbert Jongen also contributed to sections 4.2, 4.4 and 4.5. Further to this, Pierre Koning contributed to sections 4.3 and 4.4, Rob Euwals to sections 5.2, 5.5 and 8.2, Frans Suijker to chapter 7 and Annemiek van Vuren to section 8.2. The study also benefited from a large number of comments and discussions with people from inside and outside CPB. From inside CPB, contributions by Anja Deelen, Peter Dekker, Rob van der Noll, Sjoerd Ottens, Harry ter Rele, Gerbert Romijn, Hans Stegeman and Daniël van Vuuren are gratefully acknowledged. Furthermore, comments by Henk Don, Sjef Ederveen, George Gelauff, Peter Kooiman, Arjan Lejour, Marcel Lever, Mauro Mastrogiacomo and Rocus van Opstal improved the study. From outside CPB, we thank Tony Atkinson, Lans Bovenberg, Frank den Butter, Gosta Esping-Andersen, Sylvester Eijffinger, Kees Goudswaard, Bas Jacobs, Ronnie Schöb, Paul Tang and Coen Teulings for helpful comments and discussions. The study also benefited from discussions with representatives from the ministries of Economic Affairs, Finance, and Social Affairs and Employment and from the Social Economic Council (SER) of the Netherlands, the Social and Cultural Planning Bureau (SCP) and the Scientific Council for Government Policy (WRR). Also participants of seminars at CPB, the Social Economic Council, the Dutch ministries, the European Commission and Netspar have been valuable for this study.

Casper van Ewijk
Deputy director of CPB

Nederlandse samenvatting (Executive summary in Dutch)

Toekomstige ontwikkelingen zetten de Nederlandse verzorgingsstaat onder druk. Door vergrijzing nemen de collectieve uitgaven aan pensioenen en gezondheidszorg toe. Tegelijkertijd wordt het moeilijker deze uitgaven te financieren in een wereld waarin belastinggrondslagen internationaal mobieler worden. Er ontstaat daardoor een financieel probleem voor de overheid. Het leidt bovendien tot spanning in de samenleving tussen een groeiende oudere generatie die afhankelijk is van collectief gefinancierde regelingen, en een kleiner wordende jongere generatie die hiervoor betaalt via belastingen.

Voorts dreigen internationale economische integratie en technologische ontwikkeling de positie van laaggeschoolden op de arbeidsmarkt te verslechteren. Hierdoor ontstaat ook een groeiende spanning binnen de werkende generatie, namelijk tussen laaggeschoolde werknemers en de groep mensen met een goede opleiding die profiteert van internationalisering en technologische ontwikkeling.

De verzorgingsstaat lijkt bovendien nog onvoldoende aangepast aan recente ontwikkelingen in de Nederlandse samenleving, zoals de toegenomen heterogeniteit in samenlevingsvormen en levenslopen, een hoger opleidingsniveau en een gestegen arbeidsparticipatie van vrouwen. Dit ondermijnt de legitimiteit van de verzorgingsstaat.

Ten slotte werkt de verzorgingsstaat langdurige inactiviteit in de hand, onder meer bij uitkeringsgerechtigden, oudere werknemers, laagopgeleiden en vrouwen. In het licht van de toekomstige trends is zo'n hoge inactiviteit in combinatie met ruime overheidsvoorzieningen niet houdbaar op de lange termijn.

Door de druk op de verzorgingsstaat streeft de Nederlandse overheid naar een vergroting van de arbeidsdeelname en een verhoging van het kennisniveau van de beroepsbevolking. Dit moet ervoor zorgen dat het draagvlak voor collectieve voorzieningen wordt verbreed en dat sociale cohesie in de toekomst gewaarborgd kan blijven. De onderhavige studie onderzoekt hoe hervormingen in de verzorgingsstaat kunnen bijdragen aan deze doelstellingen. Daarbij wordt rekening gehouden met zowel de sociale als de economische functies die de instituties van de verzorgingsstaat in onze samenleving vervullen.

Ontwerp van een efficiënte verzorgingsstaat

Deel I van de studie bevat een analyse van de functies van de verzorgingsstaat. Deze functies hebben betrekking op drie thema's: herverdeling tussen mensen, verzekering van arbeidsmarktrisico's, en herverdeling over de levenscyclus. De analyse bespreekt welke toegevoegde waarde de overheid hierin biedt ten behoeve van de maatschappelijke welvaart en welke verstoringen het beleid teweeg brengt. Daarmee worden de fundamentele dilemma's geïllustreerd in het ontwerpen van de verzorgingsstaat. Het biedt tegelijk de mogelijkheid na te denken over hoe een verzorgingsstaat er idealiter uit zou zien en welke hervormingsopties in het huidige stelsel aantrekkelijk zijn.

Herverdeling

Mensen verschillen van elkaar. Niet iedereen heeft bijvoorbeeld hetzelfde talent of dezelfde mogelijkheden zich te ontplooien. Met degenen die kwetsbaar zijn en buiten de arbeidsmarkt vallen is de samenleving solidair. Herverdeling is dan ook een belangrijke functie van de verzorgingsstaat. Bij het verkleinen van de inkomensverschillen ontkomt de overheid evenwel niet aan het dilemma tussen gelijkheid en doelmatigheid. Immers, naarmate inkomensverschillen kleiner worden, loont het minder voor mensen zich in te spannen en daarmee een hoger inkomen te verwerven. Ze gaan daardoor minder uren werken, doen minder hun best om hogerop te komen, investeren minder in hun opleiding en vaardigheden, en kiezen vaker voor non-participatie. De vraag is hoe de overheid de gewenste herverdeling zo doelmatig mogelijk organiseert. In hoofdstuk 3 onderzoeken we verschillende instituties, zoals het stelsel van belastingen en uitkeringen, subsidies, toeslagen, publieke voorzieningen, en instituties die de loonverdeling gelijker maken. Uit de analyse komt een aantal conclusies naar voren.

Universele regelingen zoals een basisinkomen zijn geen doelmatige vorm van herverdeling. De reden is dat veel geld wordt gegeven aan mensen die eigenlijk geen inkomensondersteuning behoeven. De overheid moet daarom de belastingdruk hoog opschroeven, hetgeen met grote verstoringen gepaard gaat. Het richten van inkomenssteun aan kwetsbare groepen is goedkoper en daardoor doorgaans efficiënter. Echter, gerichte inkomenssteun creëert grote verstoringen aan de onderkant van het inkomensgebouw door de armoedeval. Dit verkleint de voordelen van het richten van inkomenssteun. Het ontwerpen van een stelsel van uitkeringen, belastingen, subsidies en toeslagen vergt dan ook een zorgvuldige analyse van verstoringen aan zowel de onderkant van de arbeidsmarkt als voor de midden- en hogere inkomens.

Werkbonussen kunnen de problematiek aan de onderkant van de arbeidsmarkt verzachten en de werkloosheid verlagen, zonder het inkomen van mensen buiten de arbeidsmarkt direct aan te tasten. Meer gerichte werkbonussen voor de lage inkomens zijn relatief effectief. Echter, door het afbouwen van deze bonussen met het inkomen verschuift de marginale wig naar de middeninkomens. Dit veroorzaakt verstoringen in het arbeidsaanbod.

Individualisering van belastingheffing is gunstig voor het arbeidsaanbod in vergelijking met een gezinsbelasting. Het individualiseren van sociale uitkeringen is minder aantrekkelijk, omdat hiermee een nieuwe participatieval zou worden gecreëerd die het arbeidsaanbod van partners ontmoedigt. Werkbonussen voor de minstverdienende partner in gezinnen kunnen wel aantrekkelijk zijn voor het arbeidsaanbod. Ook subsidies op activiteiten die complementair zijn met arbeid, zoals kinderopvang, zijn aantrekkelijk om de verstoringen in het arbeidsaanbod te verkleinen.

Het minimum loon en het beleid van vakbonden verkleinen de loonverschillen tussen werknemers. Dit veroorzaakt werkloosheid onder laaggeschoolden. Een alternatief voor het minimumloon of het egalitaire beleid van vakbonden is fiscale herverdeling of gerichte belastingverlaging voor werkgevers.

Hervormingen in het systeem van inkomensherverdeling stuiten doorgaans op dilemma's. Toch zijn er ook opties die het dilemma tussen gelijkheid en doelmatigheid verzachten. Te

denken valt aan verplichte activering in combinatie met sancties. Deze verkleinen de negatieve prikkels op de arbeidsparticipatie als gevolg van de armoedeval, zonder de inkomensbescherming voor werkwilligen aan te tasten. Een dergelijk activeringsbeleid heeft de laatste jaren aan populariteit gewonnen in veel landen en werpt zijn vruchten af.

Verzekering

Verzekeringen verminderen de onzekerheid in verband met arbeidsmarktrisico's, zoals werkloosheid en arbeidsongeschiktheid. Een probleem is echter dat ze nalatig gedrag (*moral hazard*) uitlokken. Zo kunnen mensen met een goede verzekering zich minder verantwoordelijk gaan gedragen of doen ze een te groot en langdurig beroep op de verzekering. Om nalatig gedrag te verminderen kan de overheid werknemers meer eigen risico laten dragen door lagere of kortere uitkeringen of door verzekeringen te vervangen door individuele spaarvoorzieningen. Dergelijke hervormingen gaan evenwel ook met welvaartskosten gepaard. In hoofdstuk 4 staat dit dilemma centraal. Bij grote risico's, zoals arbeidsongeschiktheid, zijn de baten van de verzekering aanzienlijk waardoor sparen minder aantrekkelijk is dan verzekeren. Kleine risico's kunnen ook door mensen zelf worden gedragen, zoals bij kortdurende werkloosheid of ziekte.

Gegeven een bepaald niveau van verzekering moet de overheid op zoek naar verzekeringsvoorwaarden die nalatig gedrag zo goed mogelijk bestrijden. Strenge toelatingseisen en voorwaarden ten aanzien van zoekactiviteiten of de acceptatie van werk blijken effectief te zijn. Uitvoerders van sociale verzekeringen moeten voldoende worden geprikkeld om nalatig gedrag te voorkomen, onder meer via de claimbeoordeling, het monitoren van cliënten, en de reïntegratie. Zowel publieke uitvoering met adequate prikkels voor decentrale uitvoerders, als private uitvoering met adequate regulering kan doelmatige zijn. Een gemengde verantwoordelijkheid kent potentiële nadelen. Een doelmatige uitvoering vereist in elk geval dat de verantwoordelijkheid voor de verzekering bij slechts één partij ligt, zodat verzekeringslasten niet kunnen worden afgewenteld.

Activeringsbeleid kan de combinatie van verzekering en arbeidsparticipatie verbeteren. Zo blijkt dat strenge plichten voor werklozen en sancties tot een significant hogere uitstroom uit de werkloosheid leiden. Over de effectiviteit van zachtere vormen actief arbeidsmarktbeleid zijn de empirische bevindingen gemengd. Zo blijkt uit evaluatiestudies dat banenplannen over het algemeen vooral andere banen verdringen en dat de effectiviteit van scholingsprogramma's vaak teleurstellend is. In veel langdurige programma's ontstaan significante *lock-in* effecten omdat mensen niet doorstromen naar regulier werk. Dit suggereert dat niet te veel verwacht mag worden van activerend beleid. Toch zijn er ook vormen van actief arbeidsmarktbeleid die gunstiger lijken uit te pakken voor de arbeidsmarkt, zoals hulp bij sollicitaties en loonkostensubsidies op maat voor langdurig werklozen. Bovendien kan actief arbeidsmarktbeleid worden ingezet als vorm van sociaal beleid gericht op het meedoen van kwetsbare groepen in de samenleving, en niet zozeer op de reïntegratie in de private arbeidsmarkt.

Ontslagbescherming of ontslagkosten kunnen de instroom in sociale verzekeringen verminderen en bedrijven stimuleren te investeren in menselijk kapitaal. Echter, ontslagbescherming leidt ook tot maatschappelijke kosten omdat het bedrijven ontmoedigt nieuwe werknemers aan te stellen. Daardoor verminderen de baanvindkansen voor werklozen en neemt de werkloosheidsduur toe. Voorts zullen structurele hervormingen in de economie minder snel tot de noodzakelijke aanpassingen leiden omdat werknemers minder snel van baan veranderen. Het zijn vooral mannen van middelbare leeftijd die baat hebben bij ontslagbescherming, terwijl jongeren, vrouwen en immigranten er juist nadeel van ondervinden. Een belasting op ontslag, bijvoorbeeld via premiedifferentiatie in de werkloosheidswet, lijkt aantrekkelijker om de instroom in de sociale zekerheid te beperken dan juridische ontslagbescherming.

Herverdeling over de levensloop

De overheid herverdeelt via de verzorgingsstaat inkomen over de levensloop. Zo zijn de meeste mensen netto ontvangers van de overheid tijdens hun jonge en oude levensfasen, terwijl ze netto betalers zijn in de periode daartussen. Schattingen suggereren dat tussen de 60 en 80% van alle uitgaven van de verzorgingsstaat bestaat uit herverdeling over de levensloop naar dezelfde personen. De toegevoegde waarde van deze overheidsbemoeienis vloeit voort uit kredietbeperkingen die mensen ondervinden op jongere leeftijd, begrensde rationaliteit om voor later te zorgen, en verstoringen in het spaar- en investeringsgedrag. De overheid kan naast collectief gefinancierde herverdeling over de levensloop ook op andere manieren met deze beperkingen omgaan, zoals het bieden van leningen of het opleggen van spaarplicht. In hoofdstuk 5 onderzoeken we hoe de overheid de keuzes over de levensloop kan beïnvloeden als het gaat om leven-lang-leren, arbeid en zorg en vervroegde uittreding.

Menselijk kapitaal is de kurk waarop de verzorgingsstaat drijft. Toch is de toegevoegde waarde van overheidsbemoeienis niet zo duidelijk als het gaat om training van werkenden. Enige vorm van subsidiëring kan leerkeuzes van werknemers doelmatiger maken, vooral als progressieve belastingen en genereuze sociale verzekeringen de leerbeslissing verstoren. Ook minder spaarsubsidies kunnen de leerbeslissing efficiënter maken.

Het faciliëren van de combinatie van arbeid en zorg lijkt van belang om een hoge arbeidsdeelname van vrouwen te kunnen combineren met een hoge vruchtbaarheid, hoewel niet duidelijk is of een hoge vruchtbaarheid maatschappelijk wel nastrevenswaardig is. Een hoge arbeidsparticipatie van jonge moeders vraagt vooral om flexibiliteit op de arbeidsmarkt en goede faciliteiten voor kinderopvang. Verlofsubsidies gaan ten koste van het aantal gewerkte uren.

De arbeidsdeelname van ouderen zal in de toekomst vermoedelijk stijgen door recente hervorming in VUT en prepensioen. Echter, werknemers kunnen nog altijd fiscaal gefacilieerd vermogen opbouwen voor hun oude dag en deze benutten voor vervroegde uittreding. Bovendien is de arbeidsmarkt voor ouderen rigide door relatief langdurige arbeidsgerelateerde uitkeringen en een strikte ontslagbescherming. Om de arbeidsdeelname van ouderen te vergroten kunnen fiscale faciliteiten voor de opbouw van pensioen worden versoberd, de duur

van de werkloosheidsverzekering worden beperkt, en ontslagbescherming voor ouderen worden versoepeld. Dit kan in de toekomst demotie vergemakkelijken, investeringen in kennis bevorderen, deeltijdpensioen stimuleren en de effectieve pensioenleeftijd verhogen.

Opties voor meer arbeidsparticipatie

Kwantitatieve modelanalyses van concrete beleidshervormingen worden gebruikt om kansrijke hervormingsopties te identificeren die de kwaliteit en de kwantiteit van de arbeidsdeelname vergroten. We gaan daarbij ook in op de maatschappelijke kosten en baten vanuit een breder welvaartsperspectief en presenteren de effecten op de inkomensverdeling. We vatten hieronder de kansrijke en minder kansrijke hervormingsopties samen in drie clusters: de arbeidsparticipatie van vrouwen, de werkgelegenheid onder laaggeschoolden, en de arbeidsdeelname van uitkeringsgerechtigden.

Arbeidsparticipatie vrouwen

Hoewel de arbeidsparticipatie van Nederlandse vrouwen (afgemeten in aantal personen) groter is dan in veel andere landen, werken Nederlandse vrouwen relatief vaak in deeltijd. Daardoor is de arbeidsdeelname gemeten in gewerkte uren relatief laag. Om het aantal gewerkte uren te vergroten kan een aantal maatregelen worden overwogen.

Kansrijk

- Het afschaffen van de heffingskorting voor niet-werkende partners vergroot het inkomensverschil tussen alleenverdieners en tweeverdieners. Dit is een impuls voor niet-werkende partners om de arbeidsmarkt te betreden.
- Subsidies die de ouderbijdrage voor kinderopvang verlagen zijn relatief doelmatig om de arbeidsdeelname van ouders met jonge kinderen te stimuleren, zowel in uren als in personen. De reikwijdte van dit instrument is evenwel beperkt.
- De aanvullende combinatiekorting (een belastingkorting voor tweeverdieners met kinderen) is gunstig voor de arbeidsparticipatie van minstverdienende partners. Het is minder effectief om het aantal gewerkte uren te vergroten dan een subsidie op kinderopvangkosten.
- Fiscalisering van de AOW-premie kan bijdragen aan een vergroting van het arbeidsaanbod voor zover reeds opgebouwde pensioenen zwaarder worden belast en de belastingdruk op jonge generaties wordt verminderd. Op lange termijn is het effect beperkt.
- Beperking van de hypotheekrenteaftrek leidt op lange termijn tot een lichte toename van de prikkels voor de arbeidsdeelname indien met de opbrengst de belastingtarieven worden verlaagd.
- Versoepeling van het ontslagrecht vergroot de kans op het vinden van werk en vergemakkelijkt de transitie tussen werk en zorg. Dit is gunstig voor de arbeidsmarktpositie van vrouwen en jongeren.

Minder kansrijk

- Een vlaktaks in Box 1 van de inkomstenbelasting zal de arbeidsdeelname van vrouwen ontmoedigen indien de marginale belastingdruk op deeltijdbanen stijgt. Alleen een vlaktaks met een voldoende laag tarief vergroot de arbeidsdeelname. Deze gaat wel gepaard met een denivellering van inkomens.
- Het inkomensafhankelijk maken van de kinderbijslag heeft geen gunstige effecten voor het arbeidsaanbod, ondanks dat de belastingtarieven omlaag gaan.
- Subsidies voor ouderschapsverlof kunnen de arbeidsparticipatie in personen vergroten, maar verlagen het aantal gewerkte uren.

Arbeidsdeelname laaggeschoolden

De werkloosheid aan de onderkant van de arbeidsmarkt is relatief hoog. Dit probleem kan in de toekomst verergeren als gevolg van globalisering en technologische verandering. Dit maakt het urgenter om iets aan deze problematiek te doen.

Kansrijk

- Een (inkomensafhankelijke) arbeidskorting (een belastingkorting die wordt verstrekt aan mensen met een baan) vergroot het verschil tussen loon en uitkering en vermindert de werkloosheid aan de onderkant. Het nadeel is dat het arbeidsaanbod van hoger opgeleiden afneemt en dat mensen minder bereid zijn zich te scholen.
- Loonkostensubsidies leiden tot meer banen aan de onderkant van de arbeidsmarkt, hoewel ze minder effectief zijn dan een arbeidskorting voor de werknemer.
- Verlaging van het wettelijk minimum loon vergroot de werkgelegenheid aan de onderkant van de arbeidsmarkt. Door tegelijk een inkomensafhankelijke arbeidskorting in te voeren, kan het netto loon voor mensen met het minimum loon op peil blijven.
- Subsidies voor bedrijven die langdurig werklozen aannemen zijn een gerichte manier om werkgelegenheid voor deze kwetsbare groep te vergroten. De reikwijdte van dit instrument is evenwel beperkt.

Minder kansrijk

- Een geïndividualiseerd basisinkomen is een dure vorm van herverdeling. Weliswaar wordt de armoedeval kleiner door het schrappen van inkomensafhankelijke regelingen, waardoor de werkloosheid daalt; maar er is een vlaktakstarief van 53½% nodig om een basisinkomen op het niveau van het huidige sociaal minimum te financieren. Modelsimulaties wijzen uit dat de werkgelegenheid hierdoor met bijna 4% daalt.
- Ervaringen met scholingsprogramma's van werkloze volwassenen suggereren een laag maatschappelijk rendement.

Activering van uitkeringsgerechtigden

Nederland kent een relatief hoog aantal mensen met een sociale uitkering. Dit kan worden bestreden door een aantal maatregelen.

Kansrijk

- Een groter eigen risico in sociale verzekeringen -- bijvoorbeeld via de introductie van wachtdagen of spaarelementen -- vergroot de prikkels ter voorkoming van misbruik en versnelt de uitstroom naar werk.
- Strenge plichten ten aanzien van zoekgedrag en reïntegratie versnellen de terugkeer van uitkering naar werk. Bovendien schrikt het werkenden af om in de sociale verzekering te stromen.
- Sancties en intensief monitoren dragen bij aan het verkleinen van misbruik en stimuleren de uitstroom uit sociale verzekeringen. Ze maken een goede verzekering beter combineerbaar met prikkels voor arbeidsdeelname.
- Adequate prikkels voor uitvoeringsorganisaties -- bijvoorbeeld door financiële verantwoordelijkheid, concurrentie en sturing op output indicatoren -- zijn essentieel.
- Versoepeling van ontslagbescherming vergroot de kans voor werklozen op het vinden van een nieuwe baan, maar leidt vaker tot werkloosheid. Een flexibelere arbeidsmarkt heeft een neutraal tot negatief effect op de omvang van de werkloosheid.

Minder kansrijk

- Sparen is minder efficiënt dan verzekeren als het gaat om grote risico's, zoals langdurige arbeidsongeschiktheid of werkloosheid.
- Het creëren van publieke banen voor laaggeschoolden leidt niet of nauwelijks tot meer werkgelegenheid, maar vooral tot substitutie van private naar publieke banen.
- De financiële verantwoordelijkheid voor sociale verzekeringen moet niet worden verdeeld over verschillende partijen, zoals bij het cappuccino model gebeurt (waarbij gedeelde verantwoordelijkheid geld voor de overheid, sociale partners en het individu).

De toekomst van de Nederlandse verzorgingsstaat

Deel II van de studie analyseert de toekomst van de Nederlandse verzorgingsstaat. Vanuit verschillende maatschappelijke voorkeuren ten aanzien van de belangrijkste dilemma's worden drie alomvattende toekomstrichtingen geschetst. Deze beogen de arbeidsmarktprestaties in Nederland te verbeteren. Ze dragen de namen: GERICHTE VERZORGINGSSTAAT, UNIVERSELE VERZORGINGSSTAAT en DECENTRALE VERZORGINGSSTAAT. Hoofdstuk 7 bespreekt de arbeidsmarkt- en inkomenseffecten van een concrete invulling van elk van deze drie prototype hervormingsrichtingen. Voor elke verzorgingsstaat analyseren we in hoofdstuk 8 ook de robuustheid voor schokken in immigratie, economische integratie en technologische ontwikkeling.

Gerichte verzorgingsstaat

De GERICHTE VERZORGINGSSTAAT kenmerkt zich door een flexibele arbeidsmarkt en meer individuele verantwoordelijkheden. De overheid treedt terug in de sociale zekerheid. Voorzieningen voor de middengroepen worden teruggeschroefd. Solidariteit met de zwakste in de samenleving blijft gehandhaafd door middel van een gegarandeerd sociaal minimum en gerichte inkomensondersteuning.

Een concreet hervormingspakket langs de lijn van de GERICHTE VERZORGINGSSTAAT omvat een beperkte verlaging van sociale uitkeringen en het wettelijk minimum loon. In het belastingstelsel worden generieke kortingen verlaagd en vervangt een vlaktaks van 27% de huidige oplopende tariefstructuur in Box 1. Inkomensondersteuning voor de laagste inkomens wordt snel afgebouwd met het inkomen. Ontslag wordt eenvoudiger. Er worden financiële prikkels in de werkloosheidswet geïntroduceerd in de vorm van premiedifferentiatie. De levensloopregeling is een kapstok voor institutionele hervormingen waarmee de overheid subsidies inruilt voor een individuele spaarfaciliteit, bijvoorbeeld voor verlof, kinderopvang, scholing, het (vroeg)pensioen en aanvullingen op de versoberde sociale verzekeringen.

De GERICHTE VERZORGINGSSTAAT gaat gepaard met betere arbeidsmarktprestaties. De prikkels voor arbeidsdeelname worden groter en de flexibele arbeidsmarkt integreert ouderen, jongeren, vrouwen en allochtonen gemakkelijker. De werkgelegenheid onder laaggeschoolden in de markt neemt toe en de werkloosheidsduur neemt af. Volgens modelsimulaties resulteert een groei van de werkgelegenheid op lange termijn met 6¼%. De participatiegraad van vrouwen neemt met 9% toe. Mensen worden geprikkeld tot scholing waardoor de kwaliteit van de beroepsbevolking stijgt. De werkloosheid onder laaggeschoolden daalt met 8¼%-punt ten opzichte van het basisscenario. De arbeidsmarktprestaties komen hiermee in de richting van Angelsaksisch georiënteerde landen. Toch is de inkomensongelijkheid geringer dan in die landen en blijft het aantal gewerkte uren per werknemer aanzienlijk lager.

De relatief kleine GERICHTE VERZORGINGSSTAAT past bij een geïndividualiseerde en heterogene samenleving. De instituties stellen eigen verantwoordelijkheid voorop en benadrukken het belang van keuzevrijheid. De ongelijkheid en onzekerheid nemen toe, maar voor de zwakkeren in de samenleving biedt de overheid een sociaal vangnet. De GERICHTE VERZORGINGSSTAAT is relatief robuust voor schokken in de internationale omgeving, zoals immigratie, economische integratie en technologische vernieuwing. Het grootste risico is dat er een groep permanente achterblijvers ontstaat die de armoedeval niet kan ontsnappen en langdurig afhankelijk blijft van sociale voorzieningen.

Universele verzorgingsstaat

Ook in de UNIVERSELE VERZORGINGSSTAAT is flexibilisering van de arbeidsmarkt belangrijk. Het wordt hier gecombineerd met publieke herverdeling en collectieve regelingen tegen arbeidsmarktrisico's en liquiditeitsrisico's. Om te voorkomen dat dit een verlammende uitwerking heeft op de arbeidsdeelname en om de relatief grote verzorgingsstaat betaalbaar te

houden, is een effectieve en strenge overheid nodig die investeert, stimuleert en slagvaardige uitvoeringsorganisaties heeft met de juiste prikkels om mensen te activeren.

Een pakket maatregelen dat de UNIVERSELE VERZORGINGSSTAAT karakteriseert omvat onder meer een verdere individualisering van belastingheffing. Voorzieningen voor kinderopvang en scholing worden extra publiek ondersteund. Voor inactieven zijn er strenge verplichtingen voor het ontvangen van een uitkering en forse sancties in geval van niet-naleving. Privileges voor ouderen, bijvoorbeeld ten aanzien van gesubsidieerd sparen voor vervroegde uittreding, worden versoberd en langdurige inactiviteit wordt actief bestreden. De verzorgingsstaat wordt eerder groter dan kleiner maar intensiveringen staan in het teken van participatie.

De UNIVERSELE VERZORGINGSSTAAT pakt gunstig uit voor de arbeidsmarkt. De participatiegraad van vrouwen stijgt met 14½% terwijl ook de arbeidsdeelname van ouderen toeneemt. Laaggeschoolden worden geïntegreerd via publieke werkgelegenheidsprojecten en subsidies. Simulaties laten zien dat in de UNIVERSELE VERZORGINGSSTAAT de totale werkgelegenheid in arbeidsjaren met circa 3% toeneemt, vooral door de groei in de arbeidsdeelname van vrouwen. De werkloosheid onder laaggeschoolden daalt met 4¼%-punt terwijl de gemiddelde werkloosheidsduur afneemt. De UNIVERSELE VERZORGINGSSTAAT brengt de arbeidsmarktprestaties meer in de richting van de Scandinavische landen. Het aantal gewerkte uren per werknemer blijft echter nog wat achter bij die landen.

De UNIVERSELE VERZORGINGSSTAAT past bij een relatief homogene samenleving met een goed opgeleide beroepsbevolking en een slagvaardige en strenge overheid. Emancipatie en participatie zijn belangrijke beleidsprioriteiten. Behoud van solidariteit wordt wel uitgeruild tegen privacy, minder keuzevrijheid en minder privileges voor ouderen en alleenverdieners; en behoud van een goede verzekering wordt uitgeruild tegen een meer flexibele arbeidsmarkt. De UNIVERSELE VERZORGINGSSTAAT is redelijk bestand tegen een toenemende economische integratie, maar kwetsbaar voor immigratie van laaggeschoolden.

Decentrale verzorgingsstaat

In de DECENTRALE VERZORGINGSSTAAT doet de overheid een stap terug als het gaat om inkomensherverdeling en sociale verzekering. Decentrale collectiviteiten nemen deze rol gedeeltelijk over. De collectiviteiten benutten schaalvoordelen en bieden collectieve bescherming voor hun leden. Er ontstaan groepen die verschillende voorzieningenniveaus kennen. De overheid waarborgt het bestaansminimum en bekommert zich om degenen die niet beschermd zijn door decentrale collectiviteiten.

Een hervormingspakket lans de lijn van de DECENTRALE VERZORGINGSSTAAT kenmerkt zich door een kleinere overheidsrol in herverdeling en verzekering. Uitkeringen gaan omlaag en het belastingstelsel wordt minder progressief. Collectiviteiten proberen dit te repareren door de loonverdeling gelijker te maken. Zij krijgen bovendien de exclusieve verantwoordelijkheid voor sociale verzekeringen. Dit biedt een prikkel om groepsleden te activeren en ouderen langer aan het werk te houden. De mobiliteit tussen collectiviteiten is beperkt en ontslagbescherming

stringent. De overheid probeert buitenstaanders te integreren in de arbeidsmarkt door middel van loonkostensubsidies.

De arbeidsmarktprestaties zullen door de DECENTRALE VERZORGINGSSTAAT verbeteren, vooral door de stijging in het arbeidsaanbod van mannen. De arbeidsmarktkansen voor laaggeschoolden verbeteren als gevolg van de loonkostensubsidies, hoewel looncompressie dit effect verkleint. Volgens simulaties groeit de werkgelegenheid met circa 2½%. De werkloosheid onder laaggeschoolden neemt af met 1¾%-punt. Hoewel de arbeidsmarktprestaties verbeteren, zijn de effecten kleiner dan bij de andere verzorgingsstaten. Sommige voordelen van de DECENTRALE VERZORGINGSSTAAT zijn evenwel niet gekwantificeerd, zoals de mogelijk efficiënte uitvoering van de sociale zekerheid in decentrale collectiviteiten (met exclusieve financiële verantwoordelijkheid) en de voordelen van lange termijn relaties op de arbeidsmarkt.

De DECENTRALE VERZORGINGSSTAAT past in een wereld waarin langdurige arbeidsrelaties tussen werknemers en werkgevers en een grote mate van interne flexibiliteit een goed klimaat scheppen voor investeringen in kennis en innovatie. Het biedt ruimte voor diversiteit tussen groepen werknemers. Een probleem met de DECENTRALE VERZORGINGSSTAAT is dat de beperkte mobiliteit tussen groepen het aanpassingsvermogen van de economie belemmert en dat de integratie van buitenstaanders in de arbeidsmarkt wordt bemoeilijkt. Dit is ongunstig voor werklozen, jongeren, immigranten en herintredende vrouwen. Het maakt de DECENTRALE VERZORGINGSSTAAT bovendien kwetsbaar voor schokken in immigratie, technologie en economische integratie.

Conclusie

Diverse hervormingen in de Nederlandse verzorgingsstaat kunnen de kwaliteit en de kwantiteit van de arbeidsdeelname vergroten. Prikkelen doet echter pijn. Telkens moeten er daarom keuzes worden gemaakt. Welk toekomstbeeld het meest wenselijk is voor Nederland is afhankelijk van toekomstige ontwikkelingen in onze samenleving en de maatschappelijke prioriteiten die worden gesteld. Deze studie beoogt die keuzes te verhelderen.

Executive summary

European welfare states are under pressure. First, public expenditures on pensions and health care will rise in light of ageing. At the same time, globalisation makes it more difficult to finance these extra public transfers due to increasing mobility of tax bases. This renders current welfare states financially unsustainable. Moreover, it causes tensions among a growing share of elderly people relying on public transfers and a shrinking share of workers paying for it via taxes.

Second, international economic integration and skill-biased technological change deteriorate the position of low skilled workers on European labour markets. This causes tensions within the working generation, namely between low skilled workers who suffer and high skilled workers who benefit from economic integration and technological change.

Third, welfare state institutions seem to have poorly adapted to recent changes in socio-cultural circumstances, such as individualisation, a growing heterogeneity in life courses, a better educated work force and rising female participation rates. This undermines the social legitimacy of current welfare state institutions.

Finally, the welfare state creates sustained inactivity among a number of groups, such as social benefit recipients, elderly workers, low-skilled people, and women. In light of future trends, countries can not afford these high rates of inactivity in combination with generous public welfare provisions.

European Union governments therefore think about ‘reinventing the welfare state’. For instance, a key policy objective of the Dutch government is to raise employment in both quantity and quality. It thus aims to broaden the tax base, which is necessary to maintain the basis for social cohesion in the future. This study explores how reforms in Dutch institutions can contribute to these objectives. Thereby, we take account of the functions that the welfare state fulfils in our society, e.g. with respect to social cohesion, security and commitment.

Design of an efficient welfare state

Part I of this study contains an analysis of the functions of the welfare state. They are referred to as the three R’s of the welfare state: Redistribution between people, Risk and insurance, and Reallocation over the life cycle. These analyses demonstrate the key trade-offs in welfare state design. It offers the opportunity to rethink current institutions from a welfare economic perspective.

Redistribution between people

People differ. The welfare state aims to reduce inequality between people by means of redistribution. It creates, however, several labour-market distortions, such as lower labour supply, less training and higher unemployment. We illustrate this trade-off between equity and efficiency in various appearances. In chapter 3, we look at the progressive tax-benefit system,

benefits in kind, indirect taxes, subsidies and wage compressing institutions. Also more subtle trade-offs appear when trying to reconcile the objectives of equity and efficiency. From our analysis, we arrive at a number of conclusions.

Universal income support, such as a basic income, does not seem an optimal form of redistribution. It is expensive and raises marginal tax rates across the board, thereby causing large distortions in labour supply. Targeting support to people earning low incomes would be more efficient. It creates, however, distortions at the bottom of the labour market due to the poverty trap. This reduces the gains from targeting. Designing an optimal redistributive system therefore requires careful consideration of the distortions at both the participation margin and the intensive margin of labour supply.

In-work benefits have the advantage of a lower benefit replacement rate, without hurting the income of benefit recipients. This leads to a lower rate of involuntary unemployment, especially for the unskilled. In-work benefits can also be targeted to the low skilled, which would enhance its effectiveness to reduce involuntary unemployment. However, by phasing out benefits among middle income groups, targeted relief is particularly distortionary for labour supply.

In-work tax relief can also be targeted on female workers who feature relatively large labour supply elasticities, e.g. compared to male breadwinners. Moreover, subsidies on complements of female labour, such as childcare expenditures, are typically desirable features of an optimal tax-benefit system as they mitigate distortions at the intensive margin of labour supply.

An individualised income tax system yields better labour market incentives than a system that takes the family as the tax unit. Individualising social benefits is less attractive since it will raise marginal tax rates at the participation margin of secondary partners.

Redistribution is also achieved through wage compressing institutions. However, this raises unemployment among the low-skilled. Lower minimum wages or less wage compression will relax this problem, but raise inequality. The government may alternatively shift towards fiscal redistribution or provide tax relief for employers hiring low-skilled employees.

Since reforms in the redistributive system have social costs, complementary instruments may be considered to escape trade-offs in redistribution. For instance, modern welfare states increasingly rely on the integration of vulnerable people in the labour market by combining the carrot of positive financial incentives with the stick of punitive work mandates. Yet, by requiring information from people, they impinge upon privacy.

Risk and insurance

Risk against disability or unemployment is dealt with by social insurance. In designing a social insurance contract, society aims to minimise the adverse implications for the labour market due to moral hazard. We find that less generous social insurance, e.g. through lower levels of unemployment and disability benefits, shorter unemployment benefit duration, or substitution towards individual saving accounts, can help reducing unemployment rates and raising labour-market participation by combating moral hazard. It yields, however, less insurance. This trade-off is analysed in chapter 4. We show that savings may be more appropriate than insurance in

the case of small risks and large moral hazard, e.g. for small unemployment spells. For larger risks, however, insurance is typically more efficient than savings.

For a given level of insurance, the key policy challenge is to minimise moral hazard. The government may use stringent job search requirements and mandatory obligations to raise the exit from social insurances. An efficient administration should engage in tight monitoring and claim assessment and invest in activation of benefit claimants. In delegating administrative tasks to decentralised units, the government should care about both the risk of selection by competing administrations, and proper incentives for administrators to fight moral hazard. Irrespective of the choice between a public monopoly and competing administrations, the exclusivity requirement should always be fulfilled.

Insurance can be supplemented by active labour-market policies in order to raise exit from the insurance. Yet, whereas harsh measures like sanctions and mandatory workfare tend to significantly increase outflows from the insurance, empirical evidence provides mixed evidence on the effectiveness of more lenient forms of active labour-market policies. Lock-in effects and reduced search activities seem to render some forms of active labour-market policies even counterproductive in raising employment in the market sector. Still, active labour-market policies may be a social imperative, rather than a way to increase employment in the open market. Moreover, some types of active labour-market policy, such as job-search assistance and vouchers for the long-term unemployed, yield more positive effects.

Employment protection and firing taxes may be efficient to reduce moral hazard in inflows into unemployment insurance. Moreover, it encourages commitment and thus stimulates employment durations and investment in firm-specific human capital. However, employment protection also creates a social cost by increasing unemployment duration and hampering innovation. It hurts especially the labour market position of youngsters, women and immigrants. Financial incentives, e.g. via experience rating in unemployment insurance, tend to be more efficient than administrative procedures to reduce excessive job separations.

Reallocation of the life cycle

The welfare state plays a role in consumption smoothing over the life cycle. Capital-market imperfections, impatience and distortions associated with redistribution and insurance may provide a rationale for this. European governments are indeed substantially involved in reallocating income over the life cycle: estimates suggest that between 60 and 80% of the welfare state actually concerns intrapersonal reallocation of income over the life cycle, rather than redistribution between rich and poor. An alternative for collective smoothing via the welfare state would be mandatory or subsidised individual saving schemes. While these schemes may reduce the overall tax burden compared to collective smoothing via transfers, they may bring along other distortions. Hence, the government faces a dilemma. We explore this dilemma in the area of life-long learning, work and care, and early retirement in chapter 5.

Life-long learning is a vital pillar for our welfare state. While investment in education by the government seems important in initial education, the value added of government intervention is

less clear in adult learning. Some subsidies may help to alleviate training distortions imposed by progressive taxes and generous social insurance provisions. Another option to improve the efficiency of learning decisions is a reduction in saving subsidies.

Facilities for the combination of work and care for children seems important for combining high female participation and high fertility, although it is not clear whether externalities from children are actually positive or negative. Female participation may benefit from increased labour-market flexibility and child-care facilities. Subsidies for parental leave may support fertility, but typically come at the expense of labour market participation in terms of hours worked.

A number of distortions in retirement decisions have recently been removed in the Netherlands. Indeed, the system has been reformed towards an actuarially neutral system for early retirement. Still problematic for the participation of elderly is, however, the rigidity of the labour market. Indeed, the combination of fixed wage contracts with seniority wages, employment protection and mandatory retirement hampers the mobility of older workers and increases unemployment durations. Moving towards a more flexible labour market can increase employment, improve allocative efficiency and allow for more flexible retirement patterns. It calls, however, for a breakdown of the implicit contract.

Options for higher labour market participation

Model simulations help to identify promising policy options for raising labour market participation in the Netherlands. Below, we summarise our main findings. We focus in particular on employment of females, low-skilled workers and social benefit recipients.

Female labour supply

While female participation rates are high in the Netherlands, most women work part time. Labour supply in hours is therefore relatively low compared to other countries. To raise employment in hours, a number of policy reforms may be considered.

Promising

- Individualising the tax credit for non-participating partners reduces the marginal tax burden for secondary earners and is effective in encouraging female participation.
- Subsidies that reduce the parental price of childcare are relatively effective in stimulating female participation and hours worked. The scope for raising labour supply in this way is limited.
- A tax credit for two-earner couples with children encourages female participation. However, it is less effective to raise hours worked than childcare subsidies.
- Abolishing the reduced tax rate for elderly will encourage labour supply to the extent that it shifts the tax burden from working generations towards capital build up in pension funds. In the long term, the labour-market effects are modest.

- Reducing the interest deductibility of mortgage loans will stimulate labour supply of partners in two-earner couples if the revenues are used to cut tax rates across the board.
- Relaxing employment protection raises job-finding probabilities, which benefits people who feature relatively flexible work patterns over the life cycle, such as women and younger workers.

Less promising

- A flat tax tends to reduce female labour supply as long as part-time jobs are taxed at higher marginal rates. Only a flat tax rate that is sufficiently low will raise female labour supply and aggregate employment. However, the income distribution will become more unequal.
- Replacing general child support by targeted child support for low incomes will exert a negligible impact on female labour supply, despite a decline in income tax rates.
- Subsidies for parental leave may raise the participation rate, but will reduce the aggregate number of hours worked.

Low-skilled employment

The unemployment rate is particularly high among the low skilled. This problem may be reinforced in the future by globalisation and skill-biased technological change. This renders it increasingly important to tackle this problem.

Promising

- An (targeted) earned income tax credit reduces the replacement rate and causes a reduction in the low-skilled unemployment rate. It raises, however, marginal tax rates for higher incomes, thereby reducing the incentives for labour supply and training.
- Tax relief for employers hiring low-skilled workers raises employment among the low skilled, although it is less effective than the earned income tax credit.
- A lower minimum wage raises low-skilled employment. When combined with an earned income tax credit, the adverse income effects for low skilled workers can be mitigated.
- Subsidies for the long-term unemployed help integrating these groups in the private sector labour market. The scope of this instrument is limited.

Less promising

- An individualised basic income at the social minimum income level is an expensive form of redistribution. It reduces the problem associated with the poverty trap since targeted support can be reduced. Yet, a 53½% income tax rate is necessary to finance the basic income. Simulations suggest that aggregate employment then falls by almost 4%.
- There is little value added from more state intervention to encourage adult learning. Evaluations of training programs for the unemployed suggest disappointing rates of return to this type of investment.

Activating social benefit recipients

The share of social benefit recipients in the Netherlands is relatively high. A number of policy reforms could help reducing it.

Promising

- Small risks -- like short unemployment spells -- can be borne privately, e.g. in the form of individual saving accounts. This reduces moral hazard and raises outflows from social insurances.
- Monitoring and sanctions help identifying benefit cheaters and reduces non-compliance. It thus avoids excessive inflows and encourages outflows from social insurances.
- Tight eligibility criteria and workfare encourage exit from social insurances. Moreover, it has a deterrence effect so that inflows are reduced.
- An efficient administration in social insurance is vital to fight moral hazard in social insurance. It requires proper incentives for administrators, including financial responsibility, competition and steering on the basis of output indicators.
- Relaxed employment protection will raise job-finding probabilities and reduce unemployment durations. It yields a neutral to negative impact on aggregate unemployment.

Less promising

- Insurance is more efficient than saving to deal with large risks, like permanent disability or long unemployment spells.
- Creating jobs in the public sector for the low skilled does not significantly reduce low-skilled unemployment, but tends to crowd out private employment and raises labour costs.
- Administrations in social insurance should not share responsibilities, as is the case with the cappuccino model.

The future of the Dutch welfare state

Part II of the study develops comprehensive prototype reform packages for the future of the Dutch welfare state. Each welfare state aims to improve the performance of the labour market, but maintains the key functions of the welfare state. The reforms differ with respect to the assessment of trade-offs in welfare state design, which reflect different social preferences. The three prototype welfare states are called the RESIDUAL WELFARE STATE, the UNIVERSAL WELFARE state and the DIVERSIFIED WELFARE STATE. Chapter 7 discusses and quantifies the labour-market and income effects of these reform directions and elaborates on their welfare effects in a broader sense. For each prototype, chapter 8 explores the robustness with respect to shocks in globalisation and immigration.

Residual welfare state

The RESIDUAL WELFARE STATE is characterised by a more flexible labour market and more emphasis on private responsibility. The government retreats in provisions for people with middle and high incomes. They increasingly rely on individual responsibility. Solidarity with vulnerable groups is maintained via targeted income support measures.

Reforms in the RESIDUAL WELFARE STATE include lower social benefits, a lower minimum wage, the introduction of a flat tax of 27% and a replacement of employment protection by experience rating in unemployment insurance. The life cycle saving account partly replaces insurance and subsidy schemes, e.g. for unemployment risk, care, adult education and early retirement.

The RESIDUAL WELFARE STATE improves labour market performance by raising the incentives for labour supply, a better integration of entrants into the labour market, and reduced wage costs for low skilled workers. Model simulations suggest a rise in employment of 6¼%. The female participation rate increases by 9%. Low-skilled unemployment falls by 8¼%-point. This moves Dutch labour market performance closer to the Anglo-Saxon countries, although the difference in inequality and hours worked remain substantial.

The RESIDUAL WELFARE STATE fits best in an individualised, heterogeneous society. Institutions emphasise individual responsibility and the benefits from choice. Inequality and insecurity become more important, but a safety net is maintained for the most vulnerable groups. The RESIDUAL WELFARE STATE is relatively robust for shocks in immigration, economic integration and technological change. A potential problem is that sustained poverty occurs for a small group of low-skilled people that is unable to escape the poverty trap.

Universal welfare state

The UNIVERSAL WELFARE STATE is characterised by a combination of more flexibility on the labour market and generous social provisions with a uniform character. To avoid moral hazard and high rates of inactivity, it is combined with intensive and mandatory activation and public expenditures that are complementary to labour.

Reforms in the UNIVERSAL WELFARE STATE contain a further individualisation of the tax system, public childcare support, tight eligibility criteria in social insurance, an abolishment of privileges for elderly outside the labour market and intensified activation strategies with strict monitoring backed by sanctions. The welfare state tends to become bigger, but additional expenditures are geared towards labour participation.

We find that the UNIVERSAL WELFARE STATE improves labour market performance. The female participation rate increases by 14½% while elderly participation rises as well. The low skilled are better integrated due to subsidy schemes. Simulations suggest that employment rises by 3% in the long term, especially due to higher female labour supply. The unemployment rate among the low skilled falls by 4¼%. This moves Dutch performance closer to that of the Scandinavian countries, although hours worked remains relatively low.

The UNIVERSAL WELFARE STATE fits with a relatively homogeneous society with a well-educated labour force and a high priority to emancipation of women. Solidarity and security are maintained at a cost in terms of privacy, less choice, fewer privileges for elderly, and less commitment in labour relations. The welfare state remains vulnerable for the financial implications of ageing, however. Moreover, the UNIVERSAL WELFARE STATE is less robust for shocks in low-skilled immigration and skill-biased technical change.

Diversified welfare state

The DIVERSIFIED WELFARE STATE emphasises commitment, long-term relations and decentralised solidarity in small collective groups. This substitutes for state responsibilities in social insurance and redistribution. Collective groups reap the benefits from economies of scale and provide a variety of social provisions. These differ between clubs. The government ensures a safety net and aims to integrate low-skilled workers in the labour market via subsidies.

Reforms of the DIVERSIFIED WELFARE STATE include less tax progression, selective reductions in social insurance provisions and a government role to subsidise low-skilled employment. Wage compression in communities aims to mitigate rising inequality. Exclusive responsibility for social insurances at the decentralised level provides incentives for administrations to combat moral hazard through activation. This also applies to elderly, which increases the effective retirement age. Mobility is hampered between groups to reduce exit opportunities and to maintain social provisions within communities. Employment protection remains important.

We find that the DIVERSIFIED WELFARE STATE improves labour market performance, especially due to more labour supply of men. The low skilled face better job-finding probabilities due to subsidy schemes. Simulations suggest an overall rise in employment of 2½%. The unemployment rate of the low-skilled falls by 1¾%. These effects are smaller than for other welfare states while inequality increases. Some of the potential benefits are not quantified, however, such as a possible efficient administration of social insurances in decentralised clubs (with exclusive responsibility) and the benefits of commitment. Moreover, our DIVERSIFIED WELFARE STATE performs better than some continental European countries today. It thus comes closer to the better performing countries in this part of Europe.

The DIVERSIFIED WELFARE STATE fits in a world in which long-term relationships and internal flexibility within collective groups provide a good basis for investment in knowledge and innovation. A problem is that limited mobility and tight employment protection hamper adjustments in the economy, e.g. to global shocks. Moreover, it hampers the integration of immigrants, females and school leavers in the labour market. The DIVERSIFIED WELFARE STATE is therefore relatively vulnerable for shocks in globalisation and immigration.

Conclusions

Summing up, we find that several reforms in Dutch welfare state institutions may help raising the quantity and quality of labour supply. Yet, there is no gain without pain. Indeed, society needs to make choices. Which reform direction is most feasible or desirable for the Netherlands depends on social preferences and future developments in our society. This study aims to clarify these choices.

1 Introduction

European welfare states are under pressure. Developed during the post-war period and expanded in the 1960s and 1970s, welfare states have brought substantial achievements for European citizens: they improved income security, mitigated poverty and enabled a broad access of people to services like education and health care. In this way, welfare states have facilitated the development of European economies, *e.g.* by investment in human capital and by creating social and political stability. Indeed, it is widely believed that welfare states not only serve social objectives, but also have a productive function for the economy. However, European welfare states tend to become unsustainable in the future, both in financial terms and in terms of social legitimacy. Indeed, age-related public expenditures will rise in light of ageing while globalisation makes it more difficult to finance these public transfers due to increasing mobility of tax bases. Thus, future trends render current welfare states financially unsustainable. At the same time, welfare state institutions have poorly adapted to recent changes in socio-economic conditions, such as heterogeneous preferences, a better educated work force, and rising female participation rates. Moreover, welfare states create sustained inactivity among benefit recipients, elderly workers, low-skilled people and women. In light of future trends, countries can no longer afford these high rates of inactivity in combination with generous public welfare state provisions.

European Union governments are now thinking about 'reinventing the welfare state'. This study aims to contribute to this debate, with a special focus on the Netherlands. It starts from the aim of the Dutch government to raise labour supply, both in quantity and in quality. In particular, welfare state reform aims to better integrate the low-skilled, women, elderly and benefit claimants into the labour market (see Dutch Parliament, 2004). At the same time, we take account of the functions that the welfare state fulfils in our society, *e.g.* with respect to social cohesion, security and commitment. For instance, SCP (2004) shows that Dutch citizens assign a high value to solidarity and security. The study will therefore explore how the government can achieve a rise in employment while maintaining social cohesion.

The study contains two parts. Part I provides a policy maker's guide to the welfare economic analysis of the welfare state. The policy orientation is strengthened by empirical insights on the impact of institutions on the labour market. Moreover, we make a quantitative economic assessment of a variety of policy reforms by using an applied general equilibrium model for the Netherlands. The aim of part I is to identify institutional reforms that improve labour-market performance. By adopting a welfare-economic approach, we also stress the dilemmas that the government faces in achieving this objective. The analyses of part I form input for the second part of the study.

Part II explores the future of the Dutch welfare state in light of trends. The Netherlands has been reforming its welfare state ever since the mid 1980's with the aim to raise employment. This reform process has not yet come to an end. The question is where the system will be heading towards in the future. To structure this discussion, we design three comprehensive

prototype welfare state reforms, with each emphasising alternative social priorities. We quantify the labour-market implications of each reform direction and discuss their social costs and benefits from a broader welfare perspective. It gives policy makers a feeling for the margins of government intervention to improve labour-market performance in the future and of the dilemmas that are inevitable in reforming institutions. We also elaborate on the robustness of the three prototype welfare states for shocks in immigration, economic integration and technological change.

How to read this study

The study contains a broad range of issues on welfare state design. This might be of interest to various audiences of policy makers, representatives from social partners, political parties, economists, graduate students and other professionals and social scientists interested in the economic analysis of the welfare state. Those interested in the fundamentals of the welfare state are recommended to read part I. People interested only in certain components of the welfare state may also move directly to the relevant chapters or sections in part I. In each section, we aim to put the issue into the broader context of comprehensive welfare state design. Policy makers interested in the quantitative economic implications of concrete policy reforms in the Netherlands probably find much of their interest in chapters 3 - 5. Readers interested in comprehensive welfare state reform in the Netherlands in light of future trends are recommended to read part II. For a proper understanding of the comprehensive reforms and the reform packages analysed, the separate ingredients can all be traced back in part I. Readers especially interested in the structure of the our applied general equilibrium model, which is used for the policy simulations, are referred to Graafland et al. (2001). For more information about the trends that trigger the need for welfare state reform, we refer to De Mooij and Tang (2003) and Huizinga and Smid (2004). An analysis of sustainable public finances in light of ageing can be found in Van Ewijk et al. (2006).

Part I Economic analysis of the welfare state

Part I demonstrates the economic fundamentals of the welfare state. Chapter 2 starts with an introduction to the welfare-economic approach to analysing the welfare state. Chapters 3 to 5 deal with three key functions of the welfare state, all starting with an R: Redistribution, Risk and Reallocation over the life cycle. These chapters demonstrate key trade-offs in welfare state design and identify promising policy options for raising employment.

2 Introduction to the economic analysis of the welfare state

The welfare economic approach to analysing the welfare state boils down to a broad assessment of market and public failures. This chapter provides an introduction to this approach. We also demonstrate the features of our applied general equilibrium model that is used to quantitatively explore the impact of welfare state reforms. A discussion on the comprehensiveness of our analysis concludes this chapter.

2.1 Welfare economics of the state

In analysing the functions of the welfare state, we adopt a public economy approach that is based on the welfare theorems of economics. It provides a framework for thinking about the role of the state in our society. This section provides a brief sketch of its fundamentals.[1]

Welfare economics starts from two fundamental theorems. Essentially, they teach us that markets lead to an efficient outcome as long as some basic conditions are met, such as an appropriate definition of property rights, complete information and no transaction costs. Hence, private agents are able to yield the same allocation of resources by pursuing self interest as a benevolent, well-informed social planner could by directly maximising social welfare. To understand the virtues of the market mechanism, note that the market is a powerful institution in revealing information and in providing proper incentives. For instance, the confrontation between demand and supply yields prices which adequately reflect information about relative scarcities. This ensures exchange efficiency and product mix efficiency. Moreover, the right to exit from voluntary transactions in the market yields information about who performs good and bad. This ensures production efficiency. There is no government that could ever create these incentives or reveal such information. Indeed, a government would face substantial costs associated with information gathering about preferences and about good and bad performance of producers. Moreover, a government would face difficulties to organise efficient production and administration in which all agents act in the public interest.

The starting point of most public economic analyses is, therefore, the presumption that the market provides a desirable allocation mechanism. Only if there are persuasive arguments, there can be a justification for governments to intervene in these markets. However, the conditions for a market to be efficient are rarely met in practice. Indeed, markets are usually incomplete because there are costs involved in arranging, monitoring and enforcing contracts, i.e. transaction costs. Incomplete markets imply that only in exceptional circumstances the market delivers the efficient allocation mechanism. This provides a potential role for the government in almost any market.[2] The key difference with the market -- where agents have the right to exit

[1] The approach has become standard in the theory of public economics, see Atkinson and Stiglitz (1980), studies of CPB, see *e.g.* CPB (1997) and other economic policy analysis, see *e.g.* Teulings *et al.* (2003).

[2] The economic literature distinguishes different types of market failures. CPB (1997) divides them into four categories: market power, externalities (including public goods), specificity and incomplete contracts (the hold-up problem), and missing markets to deal with uncertainty (risk sharing). Hyperbolic discounting or bounded rationality may be another but paternalistic argument for government intervention in order to protect people against regret ex-post.

and transactions are voluntary -- is that membership of the state is universal and the state has the power of compulsion: it can proscribe or prohibit certain activities and raise taxes. In this way, public intervention can potentially improve efficiency. Apart from correcting market failures, the theory of public finance provides also a second role of the State, namely redistribution.[3] Indeed, the market yields a solution that is not necessarily viewed as equitable by society. Some voluntary redistribution via private charity may exist, but this is typically too small due to the so-called free rider problem. Consequently, compulsion of the state is necessary to effectuate a redistribution scheme.

When markets fail to deliver the appropriate prices to guide resource allocations, it does not always mean that the government can. Whether public intervention actually improves social welfare depends also on the importance of public failures. Public failures materialise in various forms (Innman (1987); Stiglitz (1989)). For instance, democracy is often believed to be an imperfect way in which voters reveal their preferences for public services. Accordingly, the government simply lacks the information to provide public(ly provided private) goods and services efficiently, even if it wishes to do so. Moreover, public bureaucracies are usually not subject to competitive forces. Governance structures in the public sector are characterised by principal-agent relations, in which the principal cannot perfectly monitor or judge the performance of the agent. Because of this asymmetric information, agents face fewer incentives to produce in the most efficient way and have room to pursue their self interest, rather than the public interest. This moral hazard creates organisational inefficiency, excessive public spending, and lack of innovation. Public allocation may also suffer from rent seeking behaviour. In that case, well-organised special interest groups may influence public decisions to their favour, *e.g.* through public expenditures that redistribute towards them. This comes at the costs of an unorganised majority. It usually does not match with the efficient allocation of resources. Another public failure is due to time inconsistency. A government may introduce a policy at a certain point in time, but may find it difficult to credibly commit to it. This uncertainty with respect to policy may discourage investment by private agents.

The government may try to reduce public failures. For instance, decentralisation of public tasks may produce more information about local preferences and needs and allows for experimentation and mutual learning. Moreover, competition between decentralised units can discipline public bureaucracies.[4] Accordingly, decentralisation may improve upon the efficiency of the public sector. The performance of public sector organisations can be improved also by designing proper checks and balances to monitor the performance of decentralised administrations or by organising mutual competition between public administrations or between

[3] Musgrave (1959) in his classical work distinguishes also the role of the state in stabilisation of the economy. We do not discuss it here as it has only a weak link with the welfare state.

[4] The Tiebout hypothesis suggests that competition between decentralised governments yields efficient policy for the same reasons as why the private market yields a Pareto efficient allocation. In the Tiebout (1956) model, people can vote by their feet, i.e. move to another jurisdiction at zero cost. Jurisdictional competition ensures an efficient government policy as agent mobility reveals information about preferences for local public goods. In fact, voting by feet implies that agents can voluntarily exit from transactions with their governments, thus creating the same institutional environment as applies to the private market.

public and private ones. To avoid time inconsistency, governments may transfer powers to independent units that are not subject to political opportunism and can build up a reputation as reliable partners.

Summing up: the public economy framework seeks the optimal combination between private and public responsibilities by minimising the sum of market and public failures.[5] It should guide us to the welfare optimising design of institutions in the welfare state. We take this approach in chapters 3, 4 and 5 as the starting point for analysing the welfare state in the Netherlands.

2.2 Economics of the welfare state

Part I of this study applies the public economic approach to the welfare state. Defining a welfare state is not an easy task, however (Barr (1992)). In general, it is used as a catchall for public institutions that are related to the income and expenditures of people over their life cycle. This includes programs for pensions, disability, survivor and unemployment insurance, medical expenditures and perhaps even education. Overall, social expenditures account for a substantial share of the public budget. For instance, according to the Eurostat definition of social expenditures,[6] around 28% of GDP in Europe is spent on the welfare state, which is more than half of the government budget. The Netherlands is an average European country in 2003, with a share of 28.1%.

In this study, we use the term 'welfare state' for the aggregate of public institutions that are somehow connected to the generation of income, the redistribution of income, the protection of income, and the smoothing of income and consumption over the life cycle. We structure the discussion along three functions of the welfare state, all starting with an R, namely redistribution, risk and insurance, and reallocation over the life cycle.

Redistribution

Chapter 3 starts with a discussion about interpersonal redistribution among people who differ in their abilities. Society assigns a positive value to equality, which the government tries to obtain via the tax-benefit system and benefits in kind. Moreover, institutions may cause compressed wage structures in order to redistribute incomes via prices. In redistributing income, however, society meets a fundamental trade-off between equity and efficiency. Chapter 3 explores this trade-off and discusses options for improving this combination.

[5] Society may also organise alternative coordination mechanisms that strike a balance between market exchange and public compulsion, *e.g.* through cooperative exchange by non-governmental organisations, see *e.g.* CPB (1997).

[6] Expenditures that comprise transfers, in cash or in kind, to households and individuals to relieve them of the burden of a defined set of risks.

Risk

Chapter 4 deals with risk and uncertainty. The welfare state protects individuals against idiosyncratic risks by providing social insurance. Thereby, it meets a fundamental trade-off with moral hazard. We elaborate on the optimal insurance contract and discuss complementary instruments to reduce moral hazard, such as activation policies and employment protection. Also the efficiency of the insurance administration is discussed as a way to combat moral hazard.

Reallocation

Chapter 5 focuses on the reallocation of income over the life cycle to facilitate efficient consumption smoothing. This is especially important in the context of life-long-learning, the combination of work and care for children, and saving for early retirement. Public intervention can be welfare improving because of hyperbolic discounting, capital market imperfections or pre-existing distortions induced by other public policies. The key question is how the government can best facilitate efficient smoothing, thereby taking account of the implications for the labour market.

A number of more specific institutions can also be regarded as part of the welfare state. This holds, for instance, for health care insurance, education policy, housing policy and pensions. This study puts these institutions in the broader perspective of the welfare state, but does not discuss them in detail, see other CPB studies for this.[7] Moreover, we focus primarily on the relationship between the welfare state and the labour market, and pay less attention to the issue of productivity, e.g. via innovation and technology adoption, although we do take account of endogenous human capital formation.

2.3 Quantifying welfare state reform

This study aims not only to conceptually explore the (optimal) design of the welfare state, but also to quantify the trade-offs regarding actual institutions in the Netherlands. To that end, we collect as much empirical evidence as possible from (micro) econometric studies for the Netherlands or other countries regarding the impact of institutions on performance. Moreover, we use an applied general equilibrium model for the Netherlands, called MIMIC, to quantify the impact of a number of reforms. To understand the outcomes of the MIMIC model, we briefly discuss its main structure, the calibration, and the methodology to explore policy reforms.[8]

[7] For more in depth analysis of the educational system see CPB (2002), of the pension system, see Westerhout *et al.* (2004) and of the health care system, see Bos *et al.* (2004).
[8] For more information, see Graafland *et al.* (2001).

The MIMIC model

MIMIC fits in the class of applied general equilibrium models that are used to explore the long-term influence of institutions on economic performance. It has been designed to explore the structural labour market implications of changes in the tax and social insurance system. Behavioural equations are explicitly derived from microeconomic principles such as utility maximisation and profit maximisation under constraints. Thereby, it adopts broadly accepted economic theories in the modelling of labour-market imperfections, labour supply behaviour and job matching. In particular, MIMIC employs a union bargaining framework, combined with a skill-specific model for job search and matching. In this way, the model describes equilibrium unemployment in terms of the structure of the tax-benefit system, minimum wages, and social insurance. The theoretical foundation facilitates easy interpretation of simulation results in terms of rational microeconomic behaviour. Moreover, it enables us to explore large reform packages, without being vulnerable to the Lucas-critique.[9]

A distinctive feature of MIMIC is a disaggregated household model aimed at adequately describing the impact of institutions on labour supply and the income distribution. In particular, the model accounts for heterogeneity in household composition by distinguishing 40 household types. It comprises a distinction with respect to single persons and couples, the presence of children in a household, the educational level of the primary and secondary earner, and whether household members participate or receive a certain type of social benefit. Moreover, the model distinguishes students and elderly people above 65 as separate groups. Within each of the 40 household types, we make a further distinction with respect to labour supply. In particular, individuals can choose between a limited set of discrete options of hours work per week. This enables the modelling of a high share of part-time work by secondary earners and single persons in the Netherlands. Within each option for a certain household type, we also employ an income distribution that is based on Dutch microdata. This allows us to precisely measure the number of people that would be affected by certain detailed policy measures. Indeed, the use of microdata enables us to simulate the macroeconomic impact of policy measures as a result of microeconomic responses by individual agents.

MIMIC has a firm empirical basis. Various crucial relationships in the model, including wage formation and the production functions, have been estimated from time series data. Furthermore, a meta analysis of micro econometric estimates on labour supply elasticities has been used to calibrate the labour supply model. This empirical base makes the model suitable for giving a quantitative assessment of policy reforms.

MIMIC pays close attention to the institutional details of the tax and social insurance systems. This makes the model especially relevant for policy analysis because actual policy proposals involve particular details of the Dutch tax and social-insurance systems.

[9] This critique applies to models relying on empirically estimated reduced-form equations. Such models are valid only for marginal policy changes since the reduced-form equations (which are based on historical evidence) may not provide a good description in a world where institutions have changed more than marginally.

Policy reforms in MIMIC

In using MIMIC, we start by defining a baseline scenario describing developments until 2040. It shows the development of demographic variables, skill composition, household composition, productivity growth, and the evolution of institutional variables (see chapter 6 for details of the baseline). When simulating institutional reforms, we compare equilibrium outcomes from the baseline scenario in 2040 with an equilibrium from a scenario where the reform is imposed. The difference is then interpreted as the long-term impact of the reform. Although we choose 2040 as the final year of our analysis to capture the impact of demographic trends, the economic implications of reform measures do not take 35 years to materialise. Indeed, if reforms are implemented it would take some 8 to 10 years for the effects to work out.

In principle, we explore balanced budget reforms. To that end, we adjust personal income tax rates proportionally in order to maintain the public budget balanced ex-ante, unless indicated otherwise. If public revenues rise ex-post due to a reform, *e.g.* because of behavioural responses, these residual funds are used to further reduce tax rates. This renders the ex-post effect on income tax rates different from the ex-ante effects.[10]

In discussing the effects of policy reforms, we concentrate on three types of variables. First, we present the ex ante effect on the incomes for various households. This gives insight in the distributional implications of the reforms. In particular, we present the average income effect for the following groups.

- *Working families*: comprising couples in which at least one spouse has a job in the formal labour market. The group of working families is further subdivided into three overlapping categories, each focusing on one particular characteristic.
  - *Division of labour*: single earner couples and couples in which both spouses participate in the formal labour market;
  - *Parenthood*: families with and without children below the age of 18. We do not distinguish the number of children but rather take the average number of children in a family with children;
  - *Skill level*: we distinguish between high skilled and low skilled people, where high skilled means more than lower secondary education. Couples can exist of two partners with the same skill level or with mixed skills;

- *Working singles*: comprising of singles with a job in the formal labour market and without children, distinguished with respect to their skill level.

[10] The ex-post impact on tax rates may also differ from the ex-ante impact because of exogenous developments in the baseline scenario. For instance, a policy reform that involves a budgetary cost of 1% of GDP in 2006 may costs more or less than 1% of GDP in 2040 because of demographic or economic changes that occur in the baseline. To maintain the government budget balanced in 2040, tax rates then need to be modified further. To avoid confusion about the interpretation of the ex post impact on income tax rates, we do not present them in part I of this study.

- *Social benefit recipients*: comprising three different types of social benefit recipients, namely the short-term unemployed receiving unemployment benefits, disabled people receiving disability insurance and long-term unemployed people receiving welfare benefits.
- *Retired*: comprising one group of elderly who receive a basic pension and supplementary pensions.

The average income effects for various groups may still hide income effects within various types. To gain insight in the degree of inequality within groups, we also present an aggregate inequality index, namely the Theil coefficient. It is an aggregate indicator for income inequality and is defined as the mean log deviation in income:

$$T = [\Sigma\, y_i \ln (y_i/\mu)] / N\mu$$

where y_i denotes the income of individual i, μ stands for the average income, and N is the total number of individuals. The larger the Theil coefficient, the more unequal is the distribution. In particular, the Theil coefficient equals 0 if all incomes are equally distributed among the population. It has a maximum of ln(N) if all income is earned by one individual. We compute the Theil coefficient for *individual incomes*. Hence, it may have little value in assessing the distributional impact on *household incomes*. For reforms where the effects on the Theil coefficient yields very different implications for household incomes than for individual incomes (*e.g.* because it redistributes between primary and secondary earners in couples), we only present the Theil coefficient for working singles.

A second category is institutional variables. In particular, we show the ex-ante impact of reforms on the following three variables:

- *Marginal tax burden*: computed as the weighted average of the marginal tax on working individuals, where gross incomes are used as weights.
- *Replacement ratio*: computed as the ratio of net income from social benefits and net wage income. It is measured as the weighted average for all individuals, where employment figures are used as weights.
- *Income tax rates*: personal income tax rates in box 1 of the Dutch income tax system.

A final set of variables are the long-term labour market implications of reforms. To understand these outcomes, one should understand the key relationships between the income distribution, institutional variables, and labour-market performance in MIMIC. Knowledge about a limited number of modelling blocks suffices to understand most simulation results of MIMIC. These are the models for labour demand, labour supply, wage formation, and search-matching (see also Bovenberg *et al.*, 2000 for a core version of MIMIC). The outcomes for various labour market variables can be understood as follows.

- *Labour supply*: we present the labour supply effects for primary earners, secondary earners and single persons. Labour supply responses are governed by the traditional income and substitution effects. If the marginal tax rate declines, labour supply increases. A lower average tax exerts an income effect on labour supply, which is opposite from the substitution effect. Income effects are, however, smaller than substitution effects. Based on a meta analysis, the uncompensated labour supply elasticities are set at 0.5 for secondary earners (mostly women), 0.1 for primary earners and 0.25 for singles. The participation decision of partners, mostly females, is endogenous so that we also present the impact on the female participation rate.
- *Share of high skilled labour supply*: people choose the amount of education endogenously so that the skill composition of the labour force is endogenous. In particular, after-tax wage differentials determine the incentive for agents to learn. Larger wage dispersion therefore encourages education and training and raises the share of skilled workers in the labour force. Based on empirical studies, the elasticity of the skill premium is calibrated at 0.5. The costs of training are modelled as an effort cost, not in terms of foregone production.
- *Producer wages* are determined by two components: contractual wages and top up wage costs per skill type. Contractual wages are obtained from a right-to-manage model in which firms and trade unions bargain over wages and where firms determine employment. Taxes and social benefits affect the wage bargaining process and determine the equilibrium rate of unemployment. In particular, based on time-series estimations the following reduced form elasticities apply in the wage equation in the initial equilibrium (see section 3.2 for the intuition): average tax (+ 0.6), marginal tax (– 0.1), replacement rate (+ 0.3), consumer price (+ 0.5). These elasticities are not constant as the wage equation is non-linear. In particular, the elasticity for the replacement rate is higher if the unemployment rate is high. As unemployment among the low skilled is relatively high, reductions in the replacement rate at the bottom of the labour market yield larger effects on wages than reductions in the replacement rate for high skilled workers.
- The *skill specific top up wage* costs are determined in the search-matching model where the unemployed are matched with vacancies. Vacancies arise due to job quits in every period. Labour-market tightness, high reservation wages and minimum wage floors raise the search costs for new employees and thus increase unemployment.
- *Employment* usually denotes private sector employment. It is determined by labour demand for skilled and unskilled workers and is governed by wage costs for the respective types of labour. These wage costs depend on contractual wages and top up wages associated with skill specific search costs. Frictions due to minimum wages and high reservation wages are particularly important for the low skilled. The government can raise employment by absorbing low-skilled unemployed in public sector jobs. We then also present separate effects on public sector employment and total employment.
- *Unemployment* is determined by the difference between supply and demand for labour. It does not include people that occupy active labour market programs, unless indicated otherwise.

- *Unemployment duration* is sometimes reported. It is defined as the average stock of unemployment during a year divided by the average number of job matches. It is closely related to the *share of long-term unemployment* in total unemployment, which is also sometimes reported. Long-term unemployment refers to unemployment that exceeds 12 months duration.
- *Production* measures the volume of private production by Dutch firms.

2.4 Comprehensiveness of our approach

The welfare-economic approach provides a rich theoretical framework for analysing the functions of the welfare state. While the economic focus mainly emphasises efficiency concerns, it clearly has an eye for social objectives. For instance, we assign a social value to equality between people, social inclusion and the alleviation of poverty. Similarly, we value income security and commitment that mitigates problems of bounded rationality and myopia. Although we do not provide an in-depth analysis of these issues, they are taken as a starting point for the analysis of the welfare state. Our goal is then to look for institutions that achieve these objectives in the most efficient way.[11] A complete social cost-benefit analysis is beyond the scope of this study, however, since it would require the specification of the social welfare function in which different social objects are valued. As this is a matter of preferences, we leave it to politicians to assign these values and limit ourselves to providing the analysis.

Empirical evidence from econometric studies and model simulations complement our welfare-economic approach. This makes our analysis particularly geared towards policy analysis. It provides a quantitative feeling for the distributional and labour-market consequences of reforms in Dutch welfare state arrangements. The simulations inevitably are more narrow, however, than the theoretically comprehensive welfare analysis. In particular, our model simulations do not capture all issues that matter for social welfare. For instance, the model pays no attention to intertemporal behavioural responses like saving behaviour. Moreover, MIMIC has nothing to say about early retirement decisions or the efficiency of public administrations. The model also tells us nothing about the welfare effects from changes in uncertainty, privacy, education or fertility. The quantitative model outcomes should therefore be seen as one piece of information in a broader welfare assessment of reforms. To facilitate a broader welfare assessment, we complement the quantitative analysis with a qualitative one.

A more general qualification to our analysis is that we only consider the structural implications of reforms. This long-term perspective ignores transitional issues that can be important for their implementation. Indeed, changing the rules of the game can meet fierce opposition and can threaten the credibility of government, especially if changes are not announced timely and implemented gradually. If reforms do not produce Pareto improvements (i.e. make nobody worse off and at least one agent better off), it may be difficult to agree upon

[11] Still, our analysis does not consider the relationship between government policies and social norms, cultures, family structures and social preferences, which is more in the domain of sociology. These issues are increasingly explored by economists, see *e.g.* Lindbeck (2005).

them. Moreover, irreversibilities in the welfare state may occur because abolishing benefits hurts people more and causes more political resistance than not introducing benefits in the first place. The opportunities for reform thus depend crucially on the distribution of political powers and the opportunities to design reform packages that are politically feasible. This study pays little attention to this political dimension of welfare state reform.

3 Welfare state (1): Redistribution between individuals

Society aims to reduce inequality between individuals who differ in ability. Interpersonal redistribution is achieved primarily via the tax-benefit system and benefits in kind. Moreover, some institutions affect the pre-tax wage distribution. This chapter discusses the labour-market distortions induced by redistributive policies and elaborates on the design of an optimal redistributive system. We illustrate this quantitatively by means of model simulations for the Netherlands.

3.1 Introduction

People differ in their talent, socio-economic background, opportunities and other circumstances. Market exchange then results in different levels of income. Governments have the aim to reduce this inequality. In doing so, they use taxation, cash benefits and benefits in kind. Table 3.1 shows the amount of redistribution via the tax-benefit system in a selection of countries. The figures measure the so-called Gini coefficient for both pre-tax yearly individual incomes and post-tax disposable incomes, i.e. after taxes and cash benefits have been applied.[12] Benefits in kind are not included in these figures.

Table 3.1 Fiscal redistribution in a selection of countries[a]

	Inequality in income[b]		Fiscal redistribution effect in %[c]		
	Pre-tax income	Disposable income	Total effect	From taxes	From transfers
Sweden	0.44	0.22	49	8	41
Belgium	0.46	0.24	48	13	35
Finland	0.42	0.22	47	13	34
The Netherlands	0.46	0.26	44	11	33
Denmark	0.41	0.24	40	9	31
Germany	0.42	0.25	39	11	28
France	0.48	0.29	39	4	35
UK	0.49	0.33	32	7	25
US	0.46	0.35	23	10	13

[a] Fiscal redistribution involves redistribution via taxes and cash benefits; benefits in kind are not included.
[b] Gini coefficient for individual yearly incomes, corrected for household size. Figures refer to an average of different years between 1980 and 2000 for which income data were available in the LIS.
[c] Difference between Gini for pre-tax income and disposable income, divided by Gini for pre-tax income.
Source: Mahler and Jesuit (2005) based on the Luxembourg Income Survey (LIS)

The first column in Table 3.1 reveals that pre-tax income inequality is rather similar among countries. Indeed, the Gini index ranges between 0.41 for Denmark to 0.49 for the United Kingdom. The second column of Table 3.1 shows that inequality in disposable income is smaller than in pre-tax income in all countries. This is because of redistribution via the tax-benefit system. The difference in inequality between countries is larger than for pre-tax

[12] The Gini index is a commonly used measure for inequality and ranges from 0 (when all incomes are equal) to 1 (when one individual receives all income).

incomes. Indeed, while the Gini coefficient in Sweden is reduced to 0.22, it remains as high as 0.35 for the United States. The third column in Table 3.1 shows the reduction in the Gini index as percentage of the index for pre-tax inequality. It can be interpreted as the impact of fiscal redistribution via the tax-benefit system, i.e. via progressive taxes and cash benefits and subsidies, on the inequality index. We see that the Scandinavian countries, Belgium and the Netherlands reduce pre-tax inequality by more than 40% through the tax-benefit system. The United Kingdom and the United States stand out for much smaller redistribution of only 32% and 23%, respectively. The last two columns also show the contribution of, respectively, taxes and transfers to the total amount of fiscal redistribution. We see that transfers exert the largest impact on fiscal redistribution in all countries. Redistribution via progressive tax systems is relatively important in Germany, Belgium, Finland, the Netherlands and the United States. It is relatively unimportant in France.

This chapter concentrates on redistribution between individuals who differ in their ex-ante earnings capacity.[13] In achieving its redistributive goals, the Netherlands adopts a progressive tax structure in the personal income tax (see Table 3.2). In 2006, it contains a general tax credit of 1 990 euro, a labour tax credit of 1 357 euro. These credits imply that people do not pay tax for the first 10 000 euro. Then, tax rates apply which range from 34.15% to 52%. The highest rate is paid on incomes above 53 000 euro. The Dutch government also provides a variety of social benefits. Table 3.2 shows a selection of transfers/allowances. Some are geared towards people with low incomes, such as welfare benefits, rent allowances and allowances for health insurance. For non-working couples, welfare benefits are equal to the minimum wage (equal to 13 800 euro per year net of tax), which is slightly less than half the median wage in the Netherlands. Singles receive 70%; lone parents with young children receive 90%. Housing rent allowances depend on the rental rate and are rapidly phased out with family income. For households receiving an income above 130% of the minimum wage, no rent allowances are provided. The allowance for health insurance is provided to the majority of the population and is phased out with household income up to 40 000 euro for a couple. There exists a variety of child allowances, some of which are generic and some targeted at low incomes. The same applies to study grants. Basic pensions are provided across the board for people above 65. We see from Table 3.2 that more than 40 billion euro is provided through these schemes, which is 7.9% of GDP.

The rest of this chapter is organised as follows. We first discuss the equity-efficiency trade-off in section 3.2, starting from an optimal tax framework. Section 3.3 extents the analysis with administrative and compliance issues and discusses proposals for a flat tax and a basic income. Section 3.4 elaborates on family taxation and redistribution towards parents with young children. Section 3.5 discusses the role of benefits in kind and indirect taxation. Section 3.6 elaborates on redistribution through wage compressing institutions, such as minimum wages and egalitarian wage policies adopted by trade unions. Finally, section 3.7 concludes.

[13] Other forms of redistribution, such as ex-post redistribution due to social insurance or redistribution of income over the life cycle, will be discussed in chapters 4 and 5, respectively.

Table 3.2 Income taxation and a selection of social benefits aimed at redistribution in the Netherlands in 2006 (excluding employee insurances)[a]

	Bracket length	Tax rate[c]	Tax payers	Taxable income
	euro	%	1 000 persons	bln euro
Personal income tax (Box1)[b]				
First bracket	17 046	34.15	5 174	158.5
Second bracket	13 586	41.45	4 069	62.4
Third bracket	21 598	42.00	2 171	24.8
Open bracket		52.00	425	8.7

	Take up	Budget	Budget
	1 000 persons	bln euro	% GDP
Social benefits - allowances			
Welfare benefit[d]	365	4.7	0.9
Rent allowance	1 000	1.5	0.3
Health care allowance	6 000	2.6	0.5
Child allowances			
child benefit (generic)	1 900	3.3	0.6
child care subsidy (specific)	200	0.8	0.2
child tax credits (mixed) [e]	n.a.	1.9	0.4
Study grant [f]			
base grant	600	0.8	0.2
supplementary grant	300	0.5	0.1
State old-age pension	2 400	24.1	4.7

[a] Projection, *CPB Macro Economic Outlook 2006*, September 2005.
[b] Box 1 contains income from labour and housing. Income from capital is taxed separately.
[c] The tax rates of the first two brackets comprise social security contributions at a rate of 31.70% for state old-age pension (aow: 17.90%), exceptional medical expenses (awbz: 12.55%) and survivor benefits (anw: 1.25%). Taxpayers over the age of 65 are not required to pay aow contributions and face a tax rate in the first two brackets of 16.25 % and 23.55 % respectively.
[d] The welfare benefit includes income support arrangements for the elderly and partially disabled (self-) unemployed (loaw/z).
[e] The child tax credit is specific. The combination and the single parent credits are generic.
[f] Excluding credits, figures for 2002, IPO.

3.2 An efficient tax-benefit system

Welfare gains from redistribution

There are several reasons for reducing income inequality among people (see *e.g.* Sen (1979); Boadway and Keen (2000)). First, redistribution is considered as a matter of social justice as an ethical imperative: it avoids poverty and social exclusion and preserves individual dignity and economic security. Second, redistribution may be in the self-interest of the rich to the extent that it supports mutual trust and reduces crime. A third argument for redistribution is that it contributes to the public support for a dynamic market economy in which creative destruction causes structural changes and imposes risks for individuals. Public support is necessary to reap efficiency gains from competition. Indeed, cross-country evidence suggests that high inequality harms economic growth (see Alessina and Rodrik (1994); Aghion *et al.* (1999)).

Economists have formalised the welfare gains from income redistribution via the social aversion against inequality (see the Box "*Welfare gains from redistribution*"). We may

understand this by considering redistribution as the result of ex-ante insurance against human capital risk. Before being born, people do not know their ability. The unborn would be better off if they could buy insurance against the bad luck of receiving low ability at birth. However, the unborn cannot write an insurance contract. Once they can, information about their ability is available, i.e. the veil of ignorance has been lifted. In these circumstances, the private sector cannot provide insurance ex-post. Only the government can. From an ex-ante point of view, however, this ex-post redistribution is a form of insurance provided by an implicit social contract. This is welfare improving as long as people are risk averse. As Vickerey (1945) states: ex-ante risk aversion implies ex-post inequality aversion and, therefore, calls for ex-post redistribution. People are therefore better off with a system of redistribution that effectively insures them against the risk of being born with low ability.

Welfare gains from redistribution

The aversion against inequality shows up in the formulation of the social welfare function (*SW*) in the Bergson-Samuelson tradition. In general, it reads as:

$$SW = \int \Psi [U(n)] \, dF(n) \qquad n \sim [n_0, n_1]$$

where $U(n)$ denotes the (indirect) utility of an agent with skill type n and skills are distributed continuously between the lowest skill level n_0 and the highest skill level n_1. $F(n)$ reflects the density of skill type n in the population. Alternatively, we can write $dF(n) = f(n)\, dn$, where $f(n)$ is the political density of type n in social decision making. Thus, the social welfare function can be used also for positive analyses of redistribution in light of political-economy considerations.
The function $\Psi(.)$ reflects the aversion against inequality. At one extreme, the utilitarian social welfare function contains the sum of all individual utilities, without putting a larger weight on the utility of the low skilled. Hence, $\Psi_U = 1$ (where the subscript reflects the first derivative). As was already stressed by Pigou (1947), even under this utilitarian social welfare function there is a case for redistribution. In particular, the social optimum is obtained when the marginal utility of income is equalised across households. Since the (social) marginal utility of income decreases with income in case of a concave utility function (i.e. when people are risk averse), Pigou argues that a transfer from rich to poor that does not decrease aggregate output is always socially desirable. At the other extreme, the Rawlsian social welfare function puts all weight on the household with the lowest income, so that $\Psi_U = 0$ but for n_0. Hence, only redistribution towards the lowest skill type matters for social welfare. Between the two extremes of the utilitarian and the Rawlsian social welfare function, society may put a variety of weights on the utility of different households. This is determined by social preferences and revealed by the political process. The higher is the aversion against inequality, the larger is the weight of lower skill types reflected by a relatively high value of Ψ_U for that household. From the social welfare function, we can then determine the optimal degree of redistribution.

Distortions in labour supply

The seminal contribution on optimal redistributive income taxation is Mirrlees (1971). He develops a model with households that differ in their ability to (l)earn. Society aims at reducing inequality between low ability and high ability households. In Mirrlees' model, the optimal scheme is achieved if redistribution is directly based on ability (i.e. Tinbergen's talent tax): high-ability agents will pay an individualised lump-sum tax based on their earnings capacity while low-ability households will receive an individualised lump-sum transfer. As ability is exogenous, this redistribution is not distortionary: people cannot avoid paying the tax.

Individualised lump-sum taxes and benefits based on ability are typically not available, however. The reason is that ability cannot be directly observed by the government. Indeed, the government has to rely on endogenous factors like observed income or consumption as a basis for redistributive taxation. Instead of *ability to earn*, governments therefore adopt the principle of *ability to pay* as the basis for taxation. In using endogenous factors, however, the tax-benefit system distorts economic decisions as people can modify their behaviour so as to avoid paying the tax. The government thus faces a trade-off between equity and efficiency.

The key distortion associated with redistributive taxation is that in labour supply. Income taxes reduce the price of leisure and household production relative to consumption, thus inducing substitution away from labour supply towards untaxed activities. This effect is mitigated by the income effect of the tax, which induces households to increase labour supply so as to compensate for the income loss. Empirical evidence suggests, however, that substitution effects typically dominate income effects, at least for women. Hence, income taxes tend to reduce the number of hours worked in the formal labour market. A meta analysis of this literature by Evers *et al.* (2005) suggests a consensus estimate for the uncompensated elasticity of labour supply of 0.5 for women and a value of 0.1 for men.

Distortions in labour supply reduce welfare. This effect is more subtle than is sometimes believed. Indeed, increases in labour supply not only raise income -- which shows up in national accounts data -- but also involve a loss in utility due to foregone leisure and household production. Therefore, a proper assessment of the welfare effect of additional labour supply requires a careful assessment of the costs and benefits. As the Box "*Welfare gains from more labour supply*" shows, in the presence of an income tax, the extra production from additional labour is more valuable than the social costs from foregone leisure. Therefore, it is desirable to raise labour supply, ceteris paribus. The tax distortion implies that the government faces a trade off between the benefits of redistributive taxes (equity) and the welfare costs due to lower labour supply (efficiency). This trade-off is central in the debate on optimal income taxation.

Following the Mirrlees framework, a number of economists have derived the optimal non-linear tax-benefit structure in the presence of both equity concerns and labour-supply distortions. It reveals that redistribution from rich to poor calls for an average tax rate that rises with the level of income. It implies that the marginal tax, being the derivative of the average tax to income, is positive at all income levels. But marginal tax rates cause distortions in hours worked. How then do we minimise these distortions given the aim of redistribution? According to the Mirrlees framework, the optimal marginal tax schedule depends on four factors: (i) pre-tax income inequality; (ii) the degree of inequality aversion; (iii) the elasticity of labour supply; (iv) the population density at various income levels. The first two indicators measure the benefits from redistribution. The latter two indicators determine the distortionary impact of marginal taxes. In particular, if elasticities are large or if density is high, marginal taxes are relatively distortionary in terms of aggregate labour supply distortions.

Welfare gains from more labour supply

Policy makers often favour increases in labour supply. More employment would increase national welfare, as measured by income per capita, while the government budget would improve due to additional tax receipts. Yet, there is also a cost of additional labour supply in the form of foregone leisure. Hence, the rise in income per capita does not measure the proper welfare gains of extra labour supply. To explore the correct welfare implications in the presence of distortionary taxes, consider the following simple model.

Let utility $U(C,L)$ depend on consumption (C) and leisure (L), where the function $U(.)$ has the usual properties. Households maximise their utility subject to a budget constraint $C = (1-t)WY + S$, where t is a (*average*) tax on labour income, W is the before-tax wage, S is non-labour income, and Y denotes labour supply, which is the complement of leisure (i.e. $Y = 1 - L$), where time endowment is normalised to unity. We assume that the government spends all money that it receives via the labour tax on transfers to households, i.e. $tWY = S$. This compensates for income effects. Now, what is the welfare effect of an additional unit of labour supply in this model? To explore this, take the total differential of utility and eliminate partial derivatives by using the first-order conditions from household utility maximisation. This yields:

$$dU/\lambda = dC - (1-\theta)WdY$$

where λ denotes Lagrange multiplier from the household budget constraint, which equals the marginal utility of income for the household, and θ stands for the *marginal* tax rate on labour. Substituting the derivative of the household budget constraint and the government budget constraint to eliminate dC and dS, we can rewrite the first equation as:

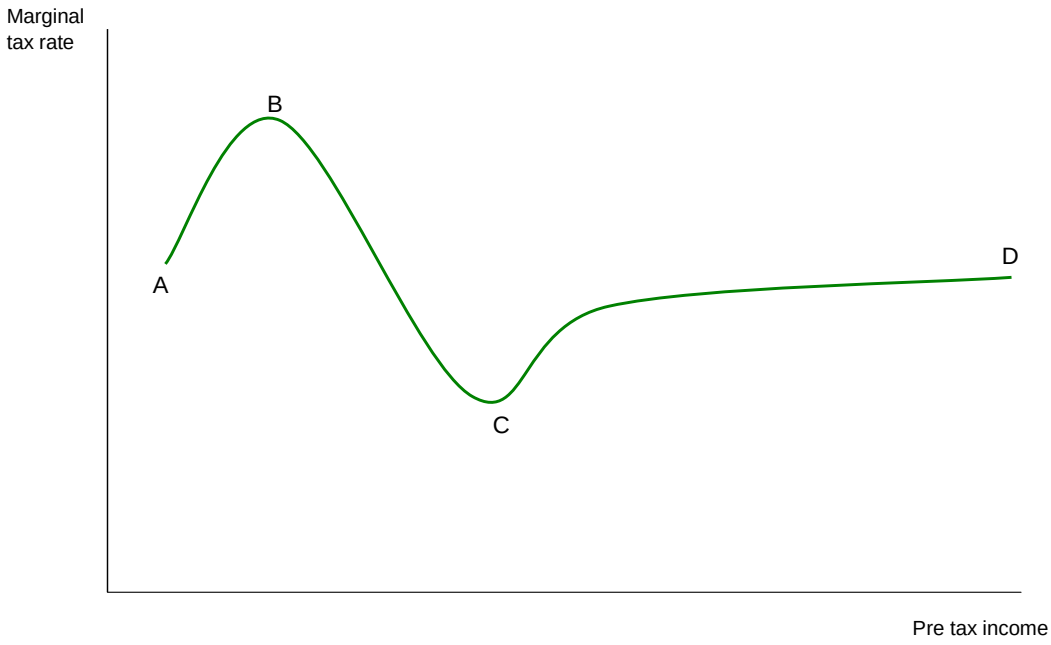
$$dU/(\lambda WY) = \hat{W} + \theta\hat{Y}$$

where $\hat{W}$ and $\hat{Y}$ denote the relative change in wages and labour supply, respectively. The second expression reveals that welfare rises with the before-tax wage rate ($\hat{W}$) which, in this economy, matches the exogenous productivity of labour. Moreover, an increase in labour supply ($\hat{Y} > 0$) boosts welfare as long as θ is positive. Intuitively, the marginal tax drives a wedge between, on the one hand, the social benefits from an extra unit of labour which are determined by extra production (and which is measured by the before-tax wage) and, on the other hand, the social cost of foregone leisure (which is measured by the after-tax wage). Additional labour supply therefore yields a net welfare gain. This welfare gain is exactly measured by the marginal tax rate. Indeed, the extra labour does not only compensate the worker for giving up his leisure, but also raises tax revenue. The individual household does not internalise this impact of its labour supply on the public budget and thus on social welfare. Pre-existing labour tax distortions therefore justify the strive for increasing labour supply as a welfare promoting policy.

The welfare cost of taxation can be measured by the so-called excess burden (or: deadweight loss). It reflects the burden on private agents in excess of the revenue raised by the government. Intuitively, raising an additional euro of public funds does not only involve a transfer of money from the private to the public sector (which is not a welfare loss for society), but also causes a burden on top of that because of the behavioural distortions in labour supply. Estimates with calibrated CGE models suggest that a value of the excess burden of around 25 cents may be seen as a reasonable estimate to be used as rule of thumb (see *e.g.* Snow and Warren (1996)). It implies that raising an extra euro of public funds costs the private sector 25 cents more in terms of utility than just this one euro. These welfare costs should be weighed against the welfare gains associated with more equality. Note that the excess burden from taxation rises quadratically in the tax rate. Intuitively, distortions induced by a tax increase become more costly for the government in terms of revenue if the tax base erodes at high pre-existing rates. Accordingly, redistribution through the tax-benefit system becomes increasingly costly for society at the margin. Tax distortions therefore impose a natural limitation on the amount of redistribution that a government can undertake.

Using actual pre-tax income distributions for the United States, a uniform positive labour supply elasticity and different values for inequality aversion, Diamond (1998) and Saez (2001) show that the optimal income tax structure typically features a U-shaped pattern (see the BCD part in Figure 3.1).[14] Hence, for low incomes (i.e. at point B in Figure 3.1), the optimal marginal tax rate is high (although it will never exceed 100%). This is because benefits to the poor should be phased out with income in a range where population density is not so high, which is at the bottom. Beyond the minimum income level, the optimal marginal tax rate should be reduced for the densely populated middle groups (see point C in Figure 3.1). This avoids large aggregate labour supply distortions. For higher income levels, the marginal tax rises again if society features sufficient aversion against inequality (see point D in Figure 3.1).[15] Interestingly, actual marginal tax schedules feature a pattern as predicted by the optimal tax model. For instance, marginal tax rates for low-skilled people are high in many countries (see Table 3.3).

Figure 3.1 The optimal marginal tax schedule according to optimal tax literature



While the optimal tax schedule in Figure 3.1 assumes a uniform elasticity of labour supply, empirical evidence suggests that the elasticity for women exceeds that of men. As women in the Netherlands often work part-time, they tend to earn relatively low incomes. This feature would reduce the optimal marginal tax rate on lower incomes in the Netherlands as it applies to female workers. At the same time, it raises the optimal marginal tax rate on higher incomes, which applies more to male workers. In the rest of this chapter, we will quantitatively illustrate the

[14] The earlier contributions conclude that the optimal marginal income tax is equal to zero at the very bottom and top of the income distribution (Seade (1977)). Tuomala (1990) shows, however, that these results are very local and of little practical relevance.

[15] This increasing part of the optimal tax schedule disappears, however, if high income taxpayers are more responsive to taxation than are low income taxpayers, as is for instance found by Gruber and Saez (2002). In that case, the shape of the optimal marginal income tax features a flat or declining marginal tax for higher income levels.

impact of policy reforms that shift the marginal tax burden between groups. It yields insight in the overall distortionary impact of the tax benefits system under alternative marginal tax schedules for labour supply. Yet, our analysis not only considers labour supply distortions, but also other behavioural responses to which we turn next.

Table 3.3 Marginal tax burden on low incomes in a selection of countries[a]

Sweden	100
Finland	100
Denmark	100
The Netherlands	81
France	76
Germany	71
United Kingdom	75
United States	53

[a] Tax burden at the margin of earnings for a one-earner couple with two children and a wage at two-third of an average worker.
Source: Eurostat http://epp.eurostat.cec.eu.int/

Human capital distortions

The Mirrlees model assumes that human capital is exogenously determined by the ability that agents receive at birth. In practice, however, people can endogenously affect their human capital by investing in education, on-the-job training and learning-by-doing. The income tax may distort the decision to invest in human capital, thereby exacerbating tax distortions on labour supply (Jacobs (2005)).

The distortionary impact of income taxes on human capital investment decisions is subtle. In particular, if the cost of investment is fully tax deductible (*e.g.* if they only concern foregone wages) and taxes are proportional, the income tax does not distort the decision to learn. This is because the tax reduces the costs of the investment (the foregone wage) and the benefits (a higher future wage) by the same amount. Accordingly, the income tax is neutral with respect to human capital formation. However, this neutrality of taxation does not hold in more realistic settings. First, to the extent that taxes reduce the incentives to supply labour, they also reduce the expected return on education because the utilisation of knowledge (i.e. the number of hours worked) declines. In this way, endogenous human capital exacerbates the distortionary impact of taxes on labour supply. Second, in practice not all investment costs are deductible from the income tax. For instance, direct expenditures such as books and tuition fees are not always deductible, while effort costs are not even observable by the government. The non-deductibility of these costs implies that the income tax reduces the benefits of education by more than the costs. As a result, even a proportional income tax will discourage human capital formation. A third reason for distortions in human capital formation is due to increasing marginal tax rates. It implies that the costs of human capital investment are deductible at a lower rate than the benefits are taxed. Consequently, people are discouraged to invest in education and training.[16]

[16] Similar arguments apply to the incentives for investment in entrepreneurial activity, see *e.g.* Gentry and Hubbard (2004).

Hence, human capital distortions reinforce the impact of progressive tax systems on labour supply.

Although empirical evidence for tax distortions on human capital formation is scarcer than for labour supply distortions, estimates by Dupor *et al.* (1996) suggests that they are significant for the United States. In particular, their results suggest that tax progression in the United States is responsible for a 5% reduction in investments in on-the-job training compared to a proportional tax. Simulations with a structurally estimated general equilibrium model by Heckman *et al.* (1998) also reveal that taxes are important for human capital formation. Other studies have estimated the skill-premium elasticity, i.e. the impact of an increase in the wage of the high skilled relative to the low skilled on the share of high-skilled workers. Freeman (1986) suggests a value between 1 and 2, while Kuhry (1998) reports values between 0.5 and 2. Hence, a 1% larger after-tax income differential will raise the share of skilled workers by between 0.5 and 2%. Overall, it seems plausible that income taxation not only discourages the quantity but also the quality of labour supply. Thus, it reinforces the distortionary impact of marginal tax rates on welfare.

Participation distortions

The stylised version of the Mirrlees model ignores distortions at the extensive margin. Yet, many people do not have the opportunity to freely choose the number of hours they would like to work. Rather, they choose between either participation in a job or no participation at all. This holds, for example, for partners in couples who choose between a (part-time) job or household production (including childcare). Similarly, people between the age of 55 and 64 face a choice between participation or leaving the labour market through early retirement. Also the unemployed face a choice between relying on social benefits and actively searching for work to try to participate in the labour market. In each of these cases, it is the average income tax on the job that determines the distortionary impact on the participation margin. Empirical studies suggest that participation distortions are indeed important for aggregate labour supply (Eissa and Liebman (1996); Blundell (2001); Meyer (2002)). In fact, the elasticity at the extensive margin tends to be higher than at the intensive margin of labour supply.

Saez (2002) and Boone and Bovenberg (2004) show that participation distortions modify the optimal schedule. This is illustrated by the initial upward slope of the curve in Figure 3.1 (i.e. the AB part of the curve). In particular, participation distortions are particularly large for people with low earnings capacity. The Box "*Poverty trap: a fundamental problem?*" discusses this in more detail. To motivate these people to work, it would be desirable to reduce the marginal tax rate on the lowest labour incomes, *e.g.* through phasing in an earned income tax credit. This would help to alleviate distortions at the participation margin for unskilled workers. However, the phasing out of these transfers causes a higher marginal tax rate on somewhat higher incomes. This exacerbates distortions in hours worked and human capital formation by skilled workers. Hence, the government still faces a trade-off between, on the one hand, reducing

participation distortions for low incomes and, on the other hand, reducing the hours worked/human capital distortion for higher incomes.[17]

Poverty trap: a fundamental problem?

Targeting income support implies a phasing out of social benefits for middle and high incomes. This creates a high marginal tax rate for low incomes, which is reflected in point B in Figure 3.1. It is of great concern to policy makers in Europe. In particular, individuals with low skills face little incentive to escape their position by means of accepting a job, working longer hours, education or training. Thus, they get trapped in poverty and can remain inactive for a long duration. Indeed, low participation among the low skilled in many European countries is partly a problem of disincentives. For instance, empirical evidence suggests that high replacement rates for the unskilled is one of the key determinants of the equilibrium rate of unemployment in European countries (Broer *et al.* (2000); Van der Horst (2003)). There are two direct ways to remove these disincentives. First, one may reduce social benefit levels. This, however, is not optimal in a society that features aversion against inequality. Second, one can remove the phasing-out of social benefits by making them independent of income. Yet, this is not optimal either as the U-shaped part of the optimal marginal tax rate suggests. Intuitively, generic social benefits are expensive. They require a high marginal tax burden as a source of finance, which is relatively costly in terms of efficiency because of large disincentives for the densely populated middle groups (see also the discussion on the basic income below). It is therefore more efficient to target income support to low incomes as this avoids such distortions. The associated high marginal tax rate at the bottom of the income distribution is thus an inevitable by-product of an efficient redistributive scheme. The problem associated with the poverty trap thus seems of a fundamental nature. Complementary measures may help relaxing this problem though (see below).

Tax distortions and labour market imperfections

Apart from imposing distortions, a redistributive tax-benefit system may also alleviate pre-existing distortions. The theory of second-best emphasises this, in particular in a world with labour-market imperfections.[18] Models of imperfect labour markets -- such as trade-union models or efficiency wage models -- are characterised by wages that are above the market clearing level. This leads to involuntary unemployment in equilibrium. Progressive income taxes can mitigate these pre-existing labour-market imperfections and thus improve upon the efficient allocation. For instance, in trade-union models tax progression makes it less attractive for unions to bid for high wages. The reason is that a larger share of wage claims is transferred to the government instead of the workers. Therefore, trade unions will reduce wage claims, thereby reducing involuntary unemployment. In efficiency wage models, tax progression makes high wages a blunter instrument for firms to discipline workers. Again, tax progression then moderates wages and reduces involuntary unemployment. These effects are not just theoretical peculiarities. Indeed, empirical evidence supports this effect of tax progression on wages for a number of countries and in particular for the Netherlands (Tyrvainen (1995); Graafland and

[17] In addition to the distortions in hours worked and human capital formation, two other behavioural responses may exacerbate the distortionary impact of marginal tax rates on the consumption/leisure choice (see also Bovenberg (2003)). The first is substitution of labour towards the informal economy. The second is tax-induced migration. Both channels render the elasticity of labour supply larger than if it were solely based on the decision of formal hours worked.

[18] Further efficiency gains from progressive taxes can be obtained if insurance markets and capital markets are imperfect, see Van Ewijk *et al.* (2003). However, other instruments are typically more efficient to deal with these market imperfections, such as social insurance and liquidity provision.

Huizinga (1999); Van Ewijk and Tang (2000)). Hence, while progressive taxes hurt welfare by reducing labour supply, participation and human capital, it can improve welfare by reducing equilibrium unemployment. Some degree of tax progression can therefore be efficient in an imperfect labour market.

Quantifying the equity-efficiency trade-off

The MIMIC model captures all the behavioural implications from redistributive taxes and benefits discussed above, i.e. the impact on labour supply, human capital and participation. Moreover, it accounts for different elasticities for men and women and captures general equilibrium effects on wages and unemployment. In that sense, MIMIC contains a richer framework to analyse the trade-off between equity and efficiency than the simplified optimal tax models. However, MIMIC is unable to perform an explicit welfare analysis. We therefore discuss separately the distributional and labour-market effects of a variety of reforms in the tax benefit system. Together, this provides the ingredients for a quantitative welfare assessment of reforms.[19]

We start our analysis by illustrating the equity-efficiency trade off. Tables 3.4 and 3.5 show the simulation results of a reduction in Dutch gross welfare benefits by 10%. Benefits that are

Table 3.4 Ex-ante effects of 10% lower welfare benefits on the income distribution and institutions[a]

Real after-tax incomes	
Working families	0.1
skill level	
both partners low skilled	0.1
mixed partner skills	0.1
both partners high skilled	0.1
Working singles (no children)	0.1
low skilled	0.1
high skilled	0.1
inequality index for singles (Theil coefficient)	0.1
Social benefit recipients	
Unemployed	0.1
Disabled	0.1
welfare recipients	– 4.6
Retired	0.2
Aggregate inequality index (Theil coefficient)	0.4
Institutions	
Marginal tax burden (absolute change)	– 0.1
Replacement rate (absolute change)	– 1.0
Income tax rates (absolute change)	– 0.1

[a] Reduction in gross welfare benefits by 10%. Basic pensions and minimum wages are maintained at their original level. The government budget is balanced by a change in income tax rates. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

[19] For more information about the model and the variables reported in the tables, see chapter 2

indexed to the minimum wage, such as basic pensions, are not affected. The lower welfare benefits save 0.3 billion euro for the government. To keep the government budget balanced ex-ante, income tax rates are reduced by 0.1% point. Table 3.4 reports the ex-ante effects on incomes and institutional variables. It reveals that the lower welfare benefits reduce the real after-tax income of welfare benefit recipients by 4.6% on average.[20] The incomes of other groups slightly increase due to the lower tax burden. The marginal tax burden falls by 0.1%-point. The replacement rate falls by 1%-point on average.

Table 3.5 shows that labour supply in hours increases by 0.1%. This is because the lower marginal tax encourages workers to supply more labour. Also training incentives improve so that the share of high-skilled labour supply increases by 0.1%. The reduction in the average replacement rate reduces unemployment through two channels. First, it improves the incentives for the unemployed to search for work and to accept job offers. Accordingly, the mismatch on the labour-market becomes smaller while lower search costs for employers raise the number of vacancies. Second, the lower replacement rate moderates wages and thus reduces equilibrium unemployment. We find that the unemployment rate falls by 0.2%-point. Together with the increase in labour supply, employment expands by 0.4%.

Quantifying the trade-off between the intensive and extensive margins

Studies emphasising participation distortions suggest that an optimal tax-benefit system should provide relief for people earning low labour incomes. By phasing out such targeted tax relief, however, these measures exacerbate distortions at the intensive margin. We illustrate this trade

Table 3.5 Long-term effects of 10% lower welfare benefits on the labour market[a]

Producer wage	– 0.6
low skilled	– 0.6
high skilled	– 0.6
Labour supply in hours	0.1
primary earners	0.1
secondary earners	0.2
single persons	0.1
Female participation rate	0.2
Share of high-skilled labour supply	0.1
Employment	0.4
low skilled	0.5
high skilled	0.4
Unemployment rate (absolute change)	– 0.2
low skilled	– 0.5
high skilled	– 0.1
Production	0.4

[a] See Table 3.4 for simulation details. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

[20] Net welfare benefits fall by less than gross benefits. Moreover, other components of the income of welfare benefit recipients, such as rent subsidies or health care allowances are not modified so that total income falls by less than the welfare benefits.

off numerically with two simulations of the earned income tax credit. First, we simulate a credit with a maximum of 800 euro. It is phased in between an annual gross income of 8 000 and 16 000 euro (i.e. the gross minimum wage) at a rate of 10%. The credit remains flat between 16 000 euro and 24 000 euro. It is then phased out between 24 000 euro and 32 000 euro at a rate of 10%. This first version is called the targeted credit. It costs 2.5 billion euro for the government. We assume that income tax rates are increased by 1% point to maintain the government budget balanced ex-ante. The simulation results are presented in column 1 of Tables 3.6 and 3.7. The second columns of these tables show the impact of a fixed credit of 400 euro per worker. This so-called across-the-board credit has the same cost and is financed by a 1%-point higher income tax rate.

Table 3.6 reveals that both proposals reduce the replacement rate. This is because only workers with earned income receive the credit while all households face a proportional increase in tax rates. With the targeted credit, especially low-skilled workers and people with part-time

Table 3.6 Ex-ante effects of two earned income tax credits on the income distribution and institutions[a]

	Targeted	Across the board
Real after-tax incomes		
Working families	0.4	0.4
division of labour		
single earner couples	0.0	0.2
two earner couples	0.4	0.4
parenthood		
with young children	0.4	0.4
without young children	0.3	0.4
skill level		
both partners low skilled	1.7	0.8
mixed partner skills	0.4	0.4
both partners high skilled	0.0	0.3
Working singles (no children)	0.8	0.5
low skilled	1.9	0.8
high skilled	0.3	0.4
inequality index for singles (Theil coefficient)	– 7.8	– 2.8
Social benefit recipients		
unemployed	– 1.0	– 1.0
Disabled	– 0.9	– 0.9
welfare recipients	– 0.8	– 0.8
Retired	– 0.9	– 0.9
Aggregate inequality index (Theil coefficient)	– 1.5	– 0.4
Institutions		
Marginal tax burden (absolute change)	1.8	0.5
Replacement rate (absolute change)	– 0.5	– 0.8
Income tax rates (absolute change)	1.0	1.0

[a] The targeted credit has a maximum of 800 euro. It is phased in between 8 000 and 16 000 euro and linearly phased out between 24 000 and 32 000 euro. The across the board credit has a maximum of 400 euro and is flat for all workers. The public budget is balanced by changing income tax rates. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

jobs benefit. Hence, the inequality index falls by 1.5% for the aggregate distribution, while it falls by 7.8% within the group of working singles. To a lesser extent, this also holds for the general credit where the inequality indices fall by, respectively, 0.4% and 2.8%. Non-workers face a decline in income due to a higher tax rate. The marginal tax rate rises because of the higher tax rates. With the targeted credit, this is reinforced by the higher marginal tax burden in the phase-out range of the credit.

Table 3.7 Long-term effects of two earned income tax credits on the labour market[a]

	Targeted	Across the board
Producer wage	0.0	– 0.2
low skilled	– 1.9	– 0.8
high skilled	1.0	0.1
Labour supply in hours	– 0.4	– 0.3
primary earners	– 0.5	– 0.2
secondary earners	0.1	0.5
single persons	– 0.4	– 0.5
Female participation rate	1.0	1.6
Share of high-skilled labour supply	– 0.7	– 0.1
Employment	0.0	0.1
low skilled	3.2	1.0
high skilled	– 1.2	– 0.3
Unemployment rate (absolute change)	– 0.4	– 0.3
low skilled	– 0.7	– 0.6
high skilled	– 0.3	– 0.2
Production	– 0.3	0.0

[a] See Table 3.6 for simulation details. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

Table 3.7 reveals that the credits for workers reduce unemployment by 0.3% for both the targeted and general credit. This is because the lower replacement rate encourages the unemployed to search for work and to accept jobs. Moreover, the lower replacement rate and the higher marginal tax moderate wages. The decline in unemployment is concentrated among the low skilled since the credit is more valuable for low-skilled workers than for high-skilled workers. The credits also stimulate partners to participate since the lower average tax on (part-time) jobs increases the after-tax income differential between single-earner couples and two-earner couples. The female participation rate thus increases by 1% in case of the targeted credit and by 1.6% under the across-the-board credit (where partners in small part-time jobs receive the full credit amount). Overall, the simulations suggest that the earned income tax credit is able to mitigate the distortion at the extensive margin and reduce unemployment, especially if it is targeted on people earning low incomes. At the same time, the credits exert adverse effects on hours worked and training due to the rise in marginal tax rates. Labour supply in hours declines by 0.4% in case of the targeted credit and by 0.3% under the across-the-board credit. The share of high-skilled labour supply drops by 0.7% and 0.1%, respectively. The targeted credit is

relatively distortionary for labour supply as it raises the marginal tax in the densely populated phase out range.[21] Hence, whereas targeting of the earned income tax credit is more effective to reduce unemployment (the extensive margin), it is more distortionary for labour supply and training (the intensive margin).

Improving redistributive systems

There are two ways to relax the trade-offs associated with redistribution, i.e. the equity-efficiency trade off and the trade off between the intensive and extensive margins. The first is tagging (Akerlof (1978)). It means that the redistributive system not only uses income as an indicator for redistribution, but also other characteristics of people that reflect their neediness (i.e. tags) such as age or the presence of children. Tagging permits higher welfare payments to certain groups, without inducing high marginal tax rates upon them. For instance, the Dutch government adopts tags in providing income support to people with children and to the elderly. The disadvantage of tagging is, however, that the tag may be poorly correlated with neediness. Indeed, support is provided also to parents with a high family income or to elderly people with high pension wealth.

The other way out of the dilemma between targeting and the adverse incentive effects for the low skilled is by supplementing redistribution with activating measures. In particular, next to carrots (i.e. financial work incentives), sticks (punitive mandates) may help to mitigate the adverse incentives for participation. Such mandates require welfare recipients to participate in mandatory work programs in exchange for income transfers. Evidence from welfare-to-work programs in the United States suggests that positive work incentives and mandatory work requirements backed by sanctions has indeed led more people into work (Blank (2002)). In a number of European countries, compulsory workfare has also been introduced to complement welfare schemes. The evidence suggests that this has raised employment and increased earnings after participation (Lodemel (2002)). Hence, mandatory work requirements backed by sanctions tend to relax the distortions at the extensive margin. They come, however, at a cost in terms of privacy for those relying on welfare. Indeed, punitive mandates require tough monitoring of benefit recipients which impinges on their privacy. Still, most welfare states have recently shifted to such policies with the aim to activate people who are currently outside the labour market.

3.3 Efficient administration

When applying the optimal non-linear income tax structure from the Mirrlees-type framework, the government would need to observe individual incomes (and other information if tags are used for redistribution) in order to determine specific tax-benefit combinations for each income level. This would impose a heavy burden on public administrations and reduces transparency of

[21] Note that labour supply responses are sensitive to the choice of the phase in range and the phase out range of the credit.

the system. To mitigate the complexity of the tax-benefit system and make it more transparent to the public, governments usually adopt simpler structures. For instance, tax systems are usually characterised by piecewise linear structures with a limited number of tax brackets of successively increasing marginal tax rates. Moreover, tax systems contain tax deductions or tax credits that are usually independent of income. Still, administrative costs are substantial. To illustrate, Allers (1994) has estimated that the overall administrative and compliance costs of the Dutch income tax system in the early 1990s was around 6% of the revenue raised. How much simpler can it be made?

Flat tax

Some people have argued that the simplest and most transparent system contains a flat tax. This system contains two instruments: (i) a fixed tax credit (or tax deduction) that does not depend on income and (ii) a proportional income tax rate.[22] Note that this system is still progressive in the sense that average tax rates increase with income. Yet, the flat tax no longer features different marginal tax rates for individuals. This has a number of advantages. First, the government requires only information about aggregate labour income to determine the tax liability. Indeed, there is no need for an individualised tax rate so that the tax can be levied simply as a payroll tax on employers. This saves on administrative and compliance costs.[23] A second possible advantage is that the flat tax reduces opportunities for tax arbitrage. For instance, the flat tax is neutral with respect to the division of lifetime income across years and thus reduces intertemporal tax arbitrage. This would then require that the flat tax also applies to the elderly (see the Box "*Special tax treatment of retirees in the Netherlands*").[24] Moreover, if the flat tax would be set equal to the tax rates on other forms of income, such as corporate income, it avoids the opportunities of tax arbitrage between different income sources. Finally, in contrast to a system with rising marginal tax rates, the flat tax is neutral with respect to the choice of cohabitation. At the same time, it does not influence the division of tasks between partners in couples.

Despite these potential advantages of a flat tax, it may not yield the most efficient combinations of equity and efficiency. The reason is that restricting the instrument set to a linear structure allows for less freedom to optimise the combination between equity and efficiency. This is illustrated by simulating three versions of the flat tax with MIMIC. They are all designed so as to leave the government budget unchanged. The three versions differ with

[22] A number of countries have recently introduced a flat tax. In particular, Estonia and Lithuania introduced it in 1994 with rates of 26% and 33%, respectively. In 1995, Latvia followed with a flat rate of 25%. Nowadays, Georgia (12%), Russia and Ukraine (13%), Serbia (14%), Romania (16%) and Slovakia (19%) have all introduced a flat tax.

[23] Conditional tax credits would maintain the complexities in the system under a flat tax. Moreover, it is often argued that the complexity of the current system lies mainly in the determination of taxable income. Once determined, the computation of a person's tax liability is a fairly simple exercise. As long as a flat tax does not change the determination of taxable income, and conditional credits, the administrative gains will probably be small.

[24] Proposals for a flat tax are often combined with base broadening to obtain a lower flat rate. In the Netherlands, for instance, it is often proposed to abolish the reduced rate for elderly and reduce the deductibility of interest payments on mortgage loans (see section 5.2). In principle, however, the analysis of the impact of these proposals can better be separated from the proposal for a single flat rate since they are in fact two different types of reform.

respect to the change in the general tax credit. In the first version, we leave this credit unchanged. It thus comes down to an increase in the tax rate of the first bracket and a simultaneous reduction in the tax rates of the other three brackets. We then arrive at a rate of 37.5%, which keeps the government budget balanced ex ante. In the other two versions, we increase the general tax credit in order to restore the progression of the tax system.[25] In the second flat tax, the tax credit is raised by 1 100 euro.[26] It requires a rate of 42% to keep the government budget balanced. In the last flat tax, we raise the general tax credit by 1 400 euro and simultaneously increase in the rate to 43.5%.[27] The impact of the flat tax proposals on incomes and the labour market are presented in Tables 3.8 and 3.9.

Special tax treatment of retirees in the Netherlands

In the Netherlands, people above 65 do not pay the pay-as-you-go pension premium that has become an integral part of the tax rate in the first two brackets of the income tax. Hence, their tax rate is 17.9% lower in the first two brackets than the rate for people below 65. It is sometimes suggested to gradually abolish this special tax treatment for the elderly (see *e.g.* Social Economic Council (2005) or Council of Economic Advisors (2005)). Since net basic pensions are indexed to the Net social minimum income, this would not reduce the Net basic pension level. Supplementary pensions from funded schemes, however, would be taxed at a higher rate. Hence, this reform would reduce the income of elderly with supplementary pensions.

To the extent that pensions wealth has already been accumulated, a higher tax rate on elderly can encourage labour supply. Indeed, the extra revenues raised from these build-up pension rights can be used to cut marginal tax rates for younger people in the labour market. This will stimulate hours worked by people below 65. In the long term, however, the effects on the labour market will probably be modest and depend on the response by younger generations to the higher tax on pensions. In particular, people will recognise that the higher tax on supplementary pensions is actually a tax on postponed labour income. The marginal tax on lifetime labour income will thus not fall and labour supply incentives remain unaffected. Yet, people are expected to increase savings (perhaps in the collective agreements) to make up for the higher tax on their supplementary pensions. The rise in savings will probably not make up for the entire decline in pensions, however. The reason is that the abolishment of the reduced tax rate on pensions removes a distortion in saving decisions, i.e. a tax-induced incentive for people to postpone consumption to an older age. Lower tax-induced savings broaden the tax base and thus allow for a second-order effect on the lifetime tax wedge. This lower tax burden will encourage labour supply over the life cycle.

The first column of Table 3.8 shows that the simple flat tax of 37.5% raises inequality due to less tax progression. Low-skilled workers suffer from lower after-tax incomes, while families with high-skilled partners typically gain. The inequality index for the entire income distribution rises by 6.4%. Within the group of working singles, the inequality index increases by 10.9%. Benefit recipients typically collect lower incomes than workers (except for elderly people) so that they experience a decline in real after-tax income. The replacement rate falls by 1.7%. The overall marginal tax rate falls by 2.9%. In the second and third columns of Table 3.8, a higher

[25] We increase the tax credit only for people with a positive income, not for non-participating partners. This avoids overcompensation of single earner couples.

[26] In the simulations, we assume that there is no problem associated with take up of the credit, *e.g.* because the tax bill becomes negative. Hence, the credit can be interpreted as a payable transfer.

[27] In all cases, we maintain the reduced rate in the first two brackets for the elderly above 65 (see the Box "*Special tax treatment of retirees in the Netherlands*"). Hence, the tax structure for the elderly is not flat.

tax credit compensates for the reduced tax progression. The second flat tax (with an increase in the credit of 1 100 euro) exerts no effect on the inequality among working singles. Yet, it raises aggregate inequality as measured by the aggregate Theil coefficient. Moreover, the replacement rate still falls by 0.4% while the mean marginal tax rate on employees falls by 0.4%. The third flat tax (with an increase in the credit of 1 400 euro) exerts no impact on the aggregate inequality index and leaves the average replacement rate virtually unchanged. The income effects are now very modest on average.

Table 3.8 Ex-ante effects of three flat tax proposals on the income distribution and institutions[a]

	Flat tax 37.5%	Flat tax 42%	Flat tax 43.5%
Real after-tax incomes			
Working families	0.1	0.1	0.1
division of labour			
single earner couples	0.6	0.3	0.2
two earner couples	0.0	0.1	0.1
parenthood			
with young children	0.1	0.1	0.1
without young children	0.2	0.2	0.2
skill level			
both partners low skilled	– 1.4	0.0	0.4
mixed partner skills	0.0	0.2	0.2
both partners high skilled	0.6	0.2	0.1
Working singles (no children)	– 0.5	– 0.1	0.0
low skilled	– 1.5	– 0.3	0.1
high skilled	0.0	0.0	0.0
inequality index for singles (Theil coefficient)	10.9	0.0	– 3.2
Social benefit recipients			
unemployed	– 2.0	– 0.1	0.7
disabled	– 1.8	0.0	0.7
welfare recipients	– 2.2	– 0.5	0.1
Retired	0.4	– 0.6	– 0.9
Aggregate inequality index (Theil coefficient)	6.4	1.4	0.0
Institutions			
Marginal tax burden (absolute change)	– 2.9	– 0.4	0.3
Replacement rate (absolute change)	– 1.7	– 0.4	0.1

[a] The 37.5% flat tax involves a revenue-neutral replacement of the existing tax structure by a single rate; The 42% flat tax is accompanied by an increase in the general tax credit by 1 100 euro. The 43.5% flat tax is accompanied by a rise in the general tax credit of 1 400 euro. The rate for elderly people is 17.9% lower in the current first two tax brackets. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

Table 3.9 shows the labour market effects of the three flat tax proposals. With the flat tax of 37.5%, the lower marginal tax rate for the majority of workers increases aggregate labour supply by 1% and raises the share of high-skilled labour supply by 0.8%. Note, however, that the increase in hours worked does not apply to all individuals. Indeed, while primary earners and single persons face lower marginal tax rates in the higher tax brackets, many secondary earners in couples with a part-time job are confronted with a higher tax rate in the first bracket.

Hence, whereas primary earners and single persons raise hours worked, labour supply by secondary does not increase. In fact, the female participation rate drops by 1.7% since it becomes less attractive for non-participating partners to occupy small part-time jobs. This mitigates the overall increase in hours worked. The unemployment rate remains virtually unchanged. On the one hand, the lower replacement rate increases job search, reduces the reservation wage and moderates wage claims. On the other hand, the lower marginal tax exerts an upward effect on wages, thus mitigating the effect on unemployment. Overall, we conclude that the 37.5% flat tax causes more inequality but reduces aggregate distortions in labour supply.

Table 3.9 Long-term effects of three flat tax proposals on the labour market[a]

	Flat tax 37.5%	Flat tax 42%	Flat tax 43.5%
Producer wage	– 1.8	– 0.2	0.4
low skilled	0.2	0.4	0.4
high skilled	– 2.9	– 0.5	0.3
Labour supply in hours	1.0	0.0	– 0.3
primary earners	1.2	0.4	0.1
secondary earners	0.0	– 0.1	– 0.2
single persons	1.0	– 0.7	– 1.2
Female participation rate	– 1.7	0.8	1.5
Share of high-skilled labour supply	0.8	0.3	0.0
Employment	1.4	0.1	– 0.3
low skilled	– 1.9	– 0.8	– 0.4
high skilled	2.7	0.4	– 0.3
Unemployment rate (absolute change)	– 0.1	– 0.1	– 0.1
low skilled	– 0.4	– 0.2	– 0.1
high skilled	0.1	0.0	0.0
Production	1.6	0.2	– 0.3

[a] See Table 3.8 for simulation details. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

Compensation via the general tax credit under the 42% and the 43.5% flat tax proposals removes not only the impact on tax progression but also the positive labour market implications of the flat tax. In fact, labour market distortions actually become larger. The reason is that the marginal tax burden is shifted between individuals. Indeed, whereas the marginal tax on people featuring a relatively large elasticity (i.e. secondary earners and single persons) is increased, the marginal tax on people featuring a low elasticity (i.e. primary earners) is reduced.[28] On balance, this reshuffling of the marginal tax causes a negligible effect on labour supply in the second column and a reduction of 0.3% in the third column. Hence, flat tax proposals that yield the same results for the overall degree of income inequality as the current system, yield bigger distortions in hours worked. Intuitively, a flat tax is a less efficient way to organise

[28] An exception is the marginal tax on very small jobs. It is reduced due to the higher tax credit since it does not apply to non-participating partners. As a result, we observe an increase in the female participation rate. In terms of hours, however, this effect is more than offset by the discouraging impact on female labour supply.

redistribution than is a non-linear system with increasing marginal tax rates, which keeps marginal tax rates low for high elasticity groups.

Basic income

The general tax credit can be paid out in case of a negative tax liability. In that case, we speak of a negative income tax, sometimes referred to as a basic income. If the tax-benefit system would be fully individualised and the tax credit were set at the individualised social minimum income level, the basic income would remove the need for other income transfers, such as welfare benefits, child allowances, basic pensions, etc. Thus, it avoids the complexities and administrative difficulties of the current system. For instance, public agencies would no longer have to make substantial administrative costs in collecting information about who is eligible for welfare benefits and subsidy schemes. Moreover, non-compliance and moral hazard with these schemes would disappear as do the inconsistencies between different agencies responsible for supplying different benefits. A basic income also better respects privacy of individuals. In short, it is the simplest system of income redistribution, with the lowest possible administrative and compliance cost and the best performance regarding privacy.

Despite its appeal, a basic income is not efficient as a redistributive system. The reason is that it fails to comply with the targeting principle. Intuitively, a basic income is expensive and requires high marginal tax rates across the board. This causes large tax distortions on labour supply and human capital formation, which reduce welfare. To illustrate the magnitude of these distortions, we have simulated with MIMIC the effects of a basic income proposal in the Netherlands. In particular, we simulate the following set of measures:

- Introduce an individualised basic income equal to 50% of the current social minimum, i.e. around 550 euro per month. It applies only to individuals above the age of 18.
- Abolish the general tax credit and the across-the-board earned income tax credit;
- Adjust public pensions to keep the average income of retired people unchanged;
- Adjust student grants to maintain their pre-reform level of income;
- Reduce current welfare benefits by the amount of the basic income. Single persons and single parents maintain supplementary benefits;
- Reduce the level of employee insurance benefits -- i.e. unemployment benefits and disability benefits -- with the basic income. Hence, there remains only a top-up insurance for unemployment and disability. Replace the current progressive tax system by a flat tax to finance the basic income. Corrected for all other measures, the Net costs of the basic income are 45 billion euro. This requires a flat tax rate of 53.5% on all income to keep the budget of the government balanced ex-ante.

Table 3.10 Ex-ante effects of a basic income proposal on the income distribution and institutions[a]	
Real after-tax incomes	
Working families	4.0
division of labour	
single earner couples	13.9
two earner couples	1.5
parenthood	
with young children	4.3
without young children	3.4
skill level	
both partners low skilled	11.9
mixed partner skills	5.5
both partners high skilled	1.7
Working singles and people above 55 (no children)	– 2.4
low skilled	3.5
high skilled	– 4.1
inequality index for singles (Theil coefficient)	– 33.7
Single parents	– 3.0
Social benefit recipients	
unemployed	0.6
disabled	0.8
welfare recipients	– 0.2
Retired	– 0.5
Institutions	
Marginal tax burden (absolute change)	7.8
Replacement rate (absolute change)	– 2.6
Flat income tax rate	53.5%

[a] See main text for specification of the proposal. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

The simulation results are presented in Tables 3.10 and 3.11.[29] Table 3.10 shows that the basic income proposal benefits people with low incomes while it hurts the high-skilled singles and elderly workers above 55. Especially single earner couples gain from the basic income as they receive two basic incomes. The replacement rate drops by 2.6% because the basic income is not phased out for people with higher incomes. Indeed, conditional social benefits are replaced by the unconditional basic income. The flip side of the coin is, however, a higher marginal tax burden. Indeed, a 53.5% tax rate is necessary to finance the basic income. On average, this increases the marginal tax burden by 7.8%.

Table 3.11 shows the labour market implications of the basic income. We see that the unemployment rate falls by 1.9% point. This is because the lower replacement rate and the higher marginal tax burden induce wage moderation, which reduces the equilibrium rate of unemployment. However, the higher marginal tax burden also reduces labour supply. The high marginal tax burden across the board hurts incentives for labour supply of primary earners,

[29] We do not present the impact on the Theil coefficient since providing a basic income to partners exerts a substantial effect on income inequality on an individual basis. On a family basis, however, the effects are much more moderate. The Theil coefficient can therefore be misleading as an indicator for redistribution on a household basis.

singles and especially secondary earners. Overall, labour supply falls by 5.3%. The female participation rate drops by 10%. On balance, the reduction in labour supply and the lower level of unemployment result in a decline in employment of 3.8%.

The simulations reveal that the basic income causes a high welfare cost in terms of labour supply distortions. In terms of equilibrium unemployment, however, the basic income produces favourable outcomes. This illustrates again the trade-off between cutting unemployment and encouraging labour supply. The costs in terms of lower overall employment should be weighed against the benefits in terms of reduced costs of administration and compliance and improved transparency and privacy. It is unlikely that this cost-benefit analysis would be in favour of the basic income. Still, the basic income proposal teaches us that high transaction costs may render the targeting principle sometimes suboptimal, *e.g.* when designing complex tax instruments to steer certain behaviour. Therefore, it is important to extend the trade-off between equity and efficiency with simplicity. Indeed, the challenge is to achieve the best combination between the goals of, on the one hand, equity and efficiency and, on the other hand, administrative feasibility, transparency and simplicity of the system.

Table 3.11 Long-term effects of a basic income proposal on the labour market[a]

Producer wage	8.6
low skilled	5.9
high skilled	9.8
Labour supply in hours	– 5.3
primary earners	– 1.4
secondary earners	– 8.8
single persons	– 7.4
Female participation rate	– 10.0
Share of high-skilled labour supply	0.0
Employment	– 3.8
low skilled	– 0.3
high skilled	– 5.2
Unemployment rate (absolute change)	– 1.9
low skilled	– 4.0
high skilled	– 1.1
Production	– 4.0

[a] See main text for specification of the proposal. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

3.4 Family taxation and child benefits

What constitutes the right concept of income to comply with ability to pay? One of the controversies on this question is the choice between household income and individual income. Using household income as the basis for the tax-benefit system takes account of economies of scale that couples achieve by living together and the implicit insurance that partners can provide to each other. Household income is adopted as a tax unit in for instance Germany, France, Portugal and Spain. In the Netherlands, household income applies to most benefit schemes,

such as social assistance benefits, housing rent allowances and health insurance allowances, which are means tested on household income and/or wealth. However, redistribution on the basis of household income has the disadvantage of distorting the choice of cohabitation. For instance, the progressive tax-benefit structure can make it beneficial for couples to split up. Moreover, it discourages labour participation of partners as primary and secondary earners face that same high marginal tax rate of the progressive structure.

Taking individual income as the basis for the progressive tax-benefit system is more neutral with respect to these decisions and yields better incentives for labour supply in two-earner couples. It is applied to most parts of the Dutch income tax system. Also Demark, Sweden, Finland, United Kingdom, Belgium and Austria adopt individual income as the tax unit. A fully individualised tax-benefit system, however, would also individualise subsidies and benefits. It would then come closer to a negative income tax that was explored in the previous section since many partners do not earn an individual income. For instance, subsidies would also be granted to partners with a high-income breadwinner. This would cause strong disincentives at the participation margin due to a newly created poverty trap for partners. Redistribution on an individualised basis also distorts the division of responsibilities between partners within the household. On the one hand, dividing official labour supply equally across two partners would save tax in a progressive system as compared to a concentration of labour supply with one partner. On the other hand, an unequal division of income could make one partner eligible for benefits that are targeted on low individual income. To avoid such effects, benefits, subsidies and allowances are usually either of a general nature or targeted on the basis of household income, rather than family income. Taxes, however, can be either individualised or based on household income.

Allowance for non-participating partners

The Dutch tax system is largely individualised. Yet, a special provision is the general tax credit for non-participating partners in couples. These partners are granted a credit as long as their breadwinner receives sufficient income. From an individual point of view, however, this comes down to a negative income tax. If the credit would be individualised and not granted as a negative income tax, non-participating partners would no longer receive the credit. It would then be conditional on a positive income of the partner. Accordingly, it reduces the marginal tax at the participation margin for secondary earners. With MIMIC, we have simulated this individualisation of the general tax credit in couples.[30] The individualisation raises tax revenue by 2.5 billion euro. Income tax rates can be reduced by 1%-point to keep the public budget balanced ex-ante. Tables 3.12 and 3.13 show the simulation outcomes.[31]

[30] In the simulation, changes in the Net social minimum income level induced by this abolishment are compensated by a higher gross-up of benefits and the minimum wage.

[31] Again, we do not present effects for the overall inequality index since the assignment of incomes to either of the partners is an arbitrary issue, but with big implications for our inequality index that is based on individual incomes.

Table 3.12 Ex-ante effects of an individualisation of the tax credit on incomes and institutions[a]

Real after-tax incomes	
Working families	– 0.1
division of labour	
single earner couples	– 4.5
two earner couples	1.0
parenthood	
with young children	– 0.2
without young children	0.2
skill level	
both partners low skilled	– 1.5
mixed partner skills	– 0.4
both partners high skilled	0.3
Working singles (no children)	1.0
low skilled	0.9
high skilled	1.0
inequality index for singles (Theil coefficient)	0.8
Social benefit recipients	
unemployed	– 0.2
Disabled	– 2.1
welfare recipients	0.8
Retired	1.0
Institutions	
Marginal tax burden (absolute change)	– 0.6
Replacement rate (absolute change)	– 0.1
Income tax rates (absolute change)	– 1.0

[a] Abolishment of the tax credit for non-participating partners in couples; welfare benefits are grossed up to maintain the after-tax social minimum income; tax rates are modified to maintain the government budget balanced. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

Table 3.12 reveals that single earner families experience a loss in income of 4.5% on average. This also shows up in the averages for families with young children, the low skilled and some benefit recipients. Other household types gain. Two-earner couples and singles, for instance, experience a 1% increase in income. Table 3.13 shows that the female participation rate increases by 9.5% on account of this reform. This is because partners find it more attractive to enter the labour market as the after-tax income difference between one and two-earner couples rises. The extra participation raises aggregate hours worked of partners by 4.8%. Hence, partners who enter the labour market occupy in particular small part-time jobs. The reduction in tax rates made possible by the abolishment of the credit further encourages labour supply in hours across the board. As a result, aggregate employment increases by 1.2%.

Allowances for children

An issue related to the tax unit is the treatment of families with young children. The advantage of using the presence of young children as a tag for income redistribution, rather than income itself, is that it avoids problems associated with high marginal tax rates for low incomes. Yet, a

Table 3.13 Long-term effects of an individualisation of the tax credit on the labour market[a]

Producer wage	– 1.6
low skilled	– 1.2
high skilled	– 1.7
Labour supply in hours	1.0
primary earners	0.1
secondary earners	4.8
single persons	0.4
Female participation rate	9.5
Share of high-skilled labour supply	0.1
Employment	1.2
low skilled	0.7
high skilled	1.3
Unemployment rate (absolute change)	0.1
low skilled	0.1
high skilled	0.0
Production	1.1

[a] See Table 3.12 for specification of the proposal. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

tag is usually an imperfect indicator for neediness. For instance, a number of families with young children collect high incomes. To avoid costly public income support towards these people, it may be attractive to target child support to households with a low income. Moreover, child support can be used also to provide incentives for secondary earners to enter the labour market if it is made conditional on participation.

To analyse the labour market effects of different types of parental support, we simulate three forms of child allowances with MIMIC.[32] The first policy is an increase in the unconditional transfer for all households with children below the age of 18. The transfer is 1 300 euro per household per year. It costs 2.5 billion euro, which is financed by an increase in income tax rates by 1%-point. The second experiment is an individualised targeted child credit for parents with a low income. The credit equals 650 euro per parent and is not granted as a negative income tax, but rather as a tax credit. Hence, parents receive the credit only if they have a positive income. The maximum credit for a family is 1 300 euro. For an individual income below 20 000 euro, the credit is at its maximum of 650 euro. Between 20 000 euro and 32 000 euro, the credit is linearly phased out at a rate of 5.5%. The targeted credit is cheaper for the government than the general child transfer: it costs 1.5 billion euro and requires an increase in the tax burden of 0.6%-point as a source of finance. Finally, we explore a child credit granted to families where both partners participate on the labour market. The credit is granted to the secondary earner. It is phased in between 0 and 24 000 euro and is maximal 1 300 euro. It remains fixed beyond 24 000 euro. This credits costs 1 billion euro, which is financed by a 0.4%-point increase in tax rates.

[32] Recall that MIMIC does not distinguish between the number of children under 18 within families. We therefore take the average number of children to determine the budgetary cost of child allowances.

Table 3.14 Ex-ante effects of reforms in child allowances on the income distribution and institutions[a]

	General child allowance	Child credit for low incomes	Child credit for working couples
Real after-tax incomes			
Working families	0.8	0.2	0.6
division of labour			
single earner couples	1.6	0.0	– 0.3
two earner couples	0.6	0.3	0.8
parenthood			
with young children	1.8	0.7	1.1
without young children	– 0.9	– 0.6	– 0.4
skill level			
both partners low skilled	1.9	1.4	0.7
mixed partner skills	1.0	0.3	0.6
both partners high skilled	0.5	– 0.1	0.6
Working singles (no children)	– 0.9	– 0.5	– 0.3
low skilled	– 0.8	– 0.5	– 0.3
high skilled	– 0.9	– 0.5	– 0.4
inequality index for singles (Theil coefficient)	– 0.8	– 0.5	– 0.3
Social benefit recipients			
unemployed	0.7	1.0	– 0.4
disabled	0.5	0.8	– 0.4
welfare recipients	– 0.1	0.2	– 0.3
Retired	– 0.9	– 0.6	– 0.4
Institutions			
Marginal tax burden (absolute change)	0.6	0.9	0.1
Replacement rate (absolute change)	0.5	0.7	0.0
Income tax rates (absolute change)	1.0	0.6	0.4

[a] In the first column, we raise the general child allowance by on average 1 300 per family with children. In the second column, we raise the child credit by 650 euro per parent. The credit is phased out linearly with an individual income between 20 000 euro and 32 000 euro on a yearly basis. In the third column, a child allowance is introduced with a maximum of 1 300 euro for secondary earners in two-earner couples. It is linearly phased in with the income of the secondary earner between 0 and 24 000 euro and flat afterwards. Income tax rates are modified to maintain the public budget balanced. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

Table 3.14 shows the income effects of the three forms of child support. We see that families with children gain, while families without children and single persons lose in all cases. Within the group of families with children, there are substantial differences. The first column in Table 3.14 reveals that the general allowance benefits especially low-skilled families and social benefit recipients. Thus, it raises the replacement rate and the marginal tax burden. The targeted child credit for low incomes shown in the second column of Table 3.14 reveals even more positive effects for the low skilled and social benefit recipients compared to the high skilled. The increase in the replacement rate and the marginal tax burden is therefore larger. The third column in Table 3.14 suggests that the credit for working couples benefits the relatively rich two-earner couples. It hurts the income of social benefit recipients in particular since they are not eligible for this type of support. Moreover, single earner couples lose 0.3%. The marginal tax burden increases for most workers due to the higher tax rate, but it falls for secondary

earners who earn less than 24 000 euro per year. Overall, the marginal tax burden increases by 0.1%-point.

Table 3.15 shows the labour market effects of the three experiments. The first column shows that the general transfer to parents reduces labour supply by 0.4%. Training is discouraged so that the share of skilled workers falls by 0.1%. This is caused by the higher marginal tax. There is little effect on the rate of unemployment since the impact of a higher replacement rate on wages is offset by the effect of a higher marginal tax burden.

Table 3.15 Long-term effects of reforms in child allowances on the labour market[a]

	General child allowance	Child credit for low incomes	Child credit for working couples
Producer wage	0.8	0.7	– 0.2
low skilled	0.4	0.0	– 0.2
high skilled	0.9	1.0	– 0.2
Labour supply in hours	– 0.4	– 0.4	0.1
primary earners	– 0.3	– 0.4	– 0.1
secondary earners	– 0.6	0.0	1.0
single persons	– 0.4	– 0.3	– 0.1
Female participation rate	– 0.5	1.2	1.2
Share of high-skilled labour supply	– 0.1	– 0.3	0.0
Employment	– 0.4	– 0.5	0.2
low skilled	0.1	0.5	0.3
high skilled	– 0.7	– 0.9	0.1
Unemployment rate (absolute change)	– 0.1	0.0	– 0.1
low skilled	– 0.1	0.0	– 0.1
high skilled	0.0	– 0.0	0.0
Production	– 0.5	– 0.6	0.1

[a] See Table 3.14 for specification of the proposal. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

The second column of Table 3.15 shows that the child credit for low-income families causes a similar reduction in labour supply and training as the general credit. Hence, despite that targeting is cheaper for the government and allows for a lower income tax rate, it does not produce more favourable labour market outcomes. The reason is that the credit is phased out among the densely populated middle income groups and among the highly elastic secondary earners. This causes relatively large distortions in labour supply. It offsets the gains associated with a lower tax rate on income. The positive effect on female labour supply in the targeted credit is because only partners with a positive individual income are eligible for the credit.

The credit for working couples shown in the third column of Table 3.15 exerts a 1.2% increase in the participation rate of women. The lower marginal tax on secondary earners in part time jobs further raises the number of hours worked by many partners. Labour supply of secondary earners thus increases by 1%. Hours worked by primary earners and singles drops, however, on account of the higher marginal tax. On balance, aggregate labour supply expands by 0.2%. The unemployment rate falls somewhat because the credit is conditional on both

partners working. This encourages the unemployed to search for work and to accept jobs in order to make the secondary earner eligible for the credit. Hence, shifting the tax burden away from secondary earners with children tends to improve labour market performance by both raising labour supply and reducing unemployment. It does, however, increase inequality between *e.g.* single earner and two earner couples as it redistributes income from low skilled single earner couples towards high-skilled two-earner couples with children.

Overall, the impact of cash transfers to parents depends on the conditions that apply to these benefits. Targeted benefits are better focussed on people earning low incomes, but the phasing out of these benefits among the densely populated middle income groups and elastic partners is particularly distortionary for labour supply. Hence, targeting does not necessarily improve the efficiency of child transfers as a means of income support to families with children. If child support is made conditional on participation, the labour market effects are positive. This type of support cannot, however, be motivated on equity grounds since parents with the lowest incomes do not receive this type of support.

3.5 Benefits in kind and indirect taxation

If the government faces restrictions in using the tax-benefit system, it can adopt alternative instruments for redistribution such as benefits in kind or indirect taxes and subsidies. These are discussed in this section.

Benefits in kind

A number of private goods are provided publicly. Examples are housing, medical care, education and public transport. In principle, it would be efficient when the government applies the benefit principle by charging a marketable price for these services, i.e. a price that reflects the cost of production. This ensures an efficient allocation and avoids overconsumption. However, many publicly provided private goods and services are supplied at an artificially low or even zero price. They thus involve benefits in kind. Benefits in kind are important instruments for public redistribution in most European welfare states (see *e.g.* Sandmo (1983); Besley (1988); Besley and Coate (1991); and Mulligan and Philipson (2000)).

Benefits in kind are especially redistributive if low incomes consume a relatively large share of these services. Moreover, if rich households substitute away towards similar services of higher quality provided by private suppliers (*e.g.* private schools or private healthcare), transfers in-kind become more redistributive. The more benefits in kind flow to higher incomes, however, the more blunt they become as instruments for redistribution. Indeed, benefits in kind are non-individualised and thus of general nature. In that sense, benefits in kind have the same properties as across-the-board cash transfers: they are expensive and call for high taxes, but they avoid the poverty trap on low incomes. The major difference with cash transfers is, however, that benefits in kind distort price signals, thereby potentially creating a deadweight

loss due to inefficient resource allocations. In that sense, general cash transfers tend to be more efficient as they leave price signals unchanged.

Yet, there can be other reasons for providing benefits in kind. In particular, charging a low price for publicly provided private services is often motivated by merit-good arguments (or: paternalism).[33] Indeed, outside restrictions on individuals' choices can make these individuals better off as they buy too few services if they were free to spend their income. For instance, they may not adequately value the education of their children, which would cause underinvestment in human capital of children. The government can prevent people from making these mistakes by providing (compulsory) education.[34] Similar arguments may apply to healthcare insurance or pension savings. As it usually refers to necessary goods, the distortion in the consumption allocation may be relatively small. Indeed, rational people would have bought these services anyway since there are no close substitutes. To the extent that different households feature a greater variety of preferences for these services, however, distortions become larger (see the Box "*Benefits of choice*").

Benefits of choice

Economists usually emphasise the welfare gains from choice. Indeed, consumers who feature heterogeneous preferences are best off when they are free to choose the products and services that best fit with their individual desires. Moreover, by revealing their preferences, market exchange yields information about relative scarcities for various products and services demanded by consumers. This yields an efficient allocation. The exit option of consumers also disciplines suppliers to produce in the most efficient way. Yet, freedom of choice has a cost as well. Indeed, consumers and producers make costs of gathering information, arranging contracts and monitoring transactions. These transaction costs may render freedom of choice inefficient in particular cases. This can provide a role for the government or other collective action. For instance, the government can set product standards and regulate markets to reduce transaction costs. Moreover, the government can supply services publicly. It can thus reap the benefits from economies of scale, control quality standards, and ensure equal access to these services. Also social partners can organise services collectively for their members, *e.g.* in pensions or saving schemes, thus reducing transaction costs and reaping the benefits from scale economies. These gains should then be weighed against the welfare costs of reduced consumer sovereignty. Another reason to restrict choice is that people are myopic, *e.g.* as they discount the future hyperbolically. People then show time inconsistent behaviour, which leads to undersaving and underinvestment. The government can improve welfare by forcing people to save or invest. Again, the gains from this commitment should be weighed against the welfare costs of forcing people to behave in a possibly suboptimal way.

With benefits in kind, not only the size of public spending (and thus the amount of private contributions), but also the organisation of the supply of these services is an important issue. For instance, should the government be neutral or partisan toward to the provision of subsidised services, like health care, education and child care? If the public sector supplies them, it can

[33] These arguments originate from behavioural (public) economics, which suggests that governments should sometimes intervene in consumer sovereignty, see *e.g.* Rabin (2002) for a discussion on behavioural economics and Kanbur *et al.* (2004) on behavioural public economics and optimal taxation.

[34] As emphasised by *e.g.* Esping-Andersen (2005), investment in the quality of children can reap positive social gains by preventing future reliance on welfare state provisions. Especially at a young age, investment in children seems to pays off with a high social rate of return.

ensure a uniform quality and avoid segregation in terms of parents' education, profession and income. Moreover, the government can exploit economies of scale and avoid selection by households seeking for the best service. Yet, public provision leaves little room for freedom of choice, free entry of suppliers and competition. Incentives for efficient production are usually a great concern in public production. If the government would instead provide vouchers that could be used for buying services from either public or private suppliers, this would allow for more individual choice, competition and diversity.

Indirect taxes

In principle, indirect taxes are less effective instruments for income redistribution than direct taxes because the government cannot observe individual purchases. Hence, indirect taxes cannot be individualised. However, indirect taxes can take distributional goals into account on the basis of aggregate information about expenditure patterns. The reduced value-added tax rate on necessary goods may serve as an example: the poor are believed to spend a larger fraction of their income on necessities. In practice, however, the value added tax appears to bear almost proportionally on all income, despite the reduced rate for necessities (Cnossen (2001)). Therefore, shifting between direct and indirect taxes makes little sense for the income distribution or for the labour market distortions of taxation. Indeed, a tax on consumption distorts the consumption/leisure choice in the same way as does the tax on income. Moreover, the producer wage is affected by direct and indirect taxes (through consumer prices) alike since both are part of the overall tax wedge. The main difference between income taxes and consumption taxes is that the former generally apply to both labour and capital income while the latter leave the return to capital income untaxed. Thus, unlike consumption taxes, income taxes distort the intertemporal allocation of consumption. In the Netherlands, however, the tax on capital income is separated from the tax on labour. Indeed, the income tax in box 1 does not apply to capital income but rather is a wage tax. Shifting from this wage tax towards a value added tax will not affect the taxation of capital income.

With MIMIC, we have explored the labour market implications of a shift from the income tax in box 1 of the income tax towards a value added tax. We simulate a 1.5%-point increase in the Dutch value-added tax from 19 to 20.5%. This raises 2.5 billion euro, which is used to cut income tax rates in box 1. Thereby, we analyse two alternatives. In the first alternative, we reduce income tax rates in all four brackets by 1%-point. This reform slightly reduces the overall degree of tax progression due to the presence of tax credits. Accordingly, Table 3.16 reveals that this reform raises labour supply by 0.1%. Unemployment remains unchanged since the effects of the replacement rate, the income tax rates and the consumer price on the producer wage cancel out. In the second experiment, we reduce the income tax rates by ¾%-point and at the same time increase the general tax credit by 50 euro. This alternative yields roughly the same degree of tax progression as the current system. Table 3.16 reports that the labour market effects are now negligible. Hence, a shift from direct to indirect taxes exerts no effect on the labour market in the long term if it does not change tax progression.

Table 3.16 Long-term effects of a shift from direct to indirect taxation on the labour market and institutions[a]

	Cut in income tax rates	Lower rates and higher credit
Marginal tax burden of direct taxes (absolute change)	– 0.6	– 0.5
Replacement ratio (absolute change)	0.0	0.1
Producer price	– 0.1	0.0
Consumer price index (including indirect taxes)	0.6	0.7
Aggregate inequality index (Theil coefficient)	0.3	0.1
Producer wage	– 0.4	– 0.3
low skilled	– 0.3	– 0.3
high skilled	– 0.5	– 0.3
Labour supply in hours	0.1	0.0
primary earners	0.1	0.0
secondary earners	0.1	0.0
single persons	0.1	0.0
Female participation rate	0.1	0.0
Share of high-skilled labour supply	0.0	0.0
Employment	0.1	0.0
low skilled	0.0	0.0
high skilled	0.1	0.0
Unemployment rate (absolute change)	0.0	0.0
low skilled	0.1	0.1
high skilled	0.0	0.0
Production	0.0	– 0.1
Income tax rates (absolute change)	– 1.0	– 0.75

[a] Increase in the normal rate of the value added tax from 19% to 20.5%. In the first column, income tax rates are adjusted to keep the government budget balanced. In the second column, one quarter of the revenue of the VAT is used to raise the general tax credit by 50 euro per person per year. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

Subsidies to labour complements

Some indirect taxes and subsidies can mitigate income tax distortions. As discussed before, income taxes induce people to substitute from consumption to leisure or household production. The government could remove this distortion if it were able to impose a tax on leisure. Yet, it cannot observe leisure directly. Indirect taxes may serve as a second-best instrument to reduce the income tax distortion by either taxing goods more heavily that are complementary to leisure and household production, or by subsidising goods that are relative substitutes for it (Corlett and Hague (1953)).[35] Intuitively, taxes on complements for leisure and home production effectively impose an implicit tax on these time allocations themselves. This mitigates the distortionary impact of the income tax on the labour-supply choice. The same applies to a subsidy on services that are substitutes for leisure and home production. It provides an argument for, for instance, subsidies on consumer services such as cleaning, repair, gardening, and cooking. Indeed, these services directly compete with untaxed household production.

[35] If leisure is complementary to savings, this also provides a rationale for a tax on capital income. Savings for early retirement may indeed be complementary to leisure.

To numerically illustrate this application of the Corlett-Hague rule, Sorensen (1996) has explored the effects of a price subsidy on consumer services with a calibrated CGE model for Denmark. He finds that a 30% subsidy is optimal to maximise a utilitarian welfare function. In the simulations, the subsidy is financed by an increase in the marginal income tax rate by 2.5% points. The simulations show that the subsidy induces substitution from untaxed home production towards marketable consumer services. Home production thus drops by almost 40%. The time saved by households is used for increasing labour supply on the official labour market. This effect dominates the discouraging effect of the higher marginal tax burden on labour supply. Accordingly, official employment expands by 1.8%.[36]

The Corlett-Hague rule also applies to child care. Indeed, formal childcare supplied on the market is a close substitute for self care by parents. Hence, the choice between formal child care demand (combined with formal labour-market participation) and self care by parents is distorted by the income tax. Households choose too much informal self care because the income tax reduces the return to labour supply when combined with outsourced child care. The Corlett-Hague rule suggests that a subsidy for formal childcare is then optimal. Table 3.17 illustrates this using MIMIC simulations. It shows the impact of a subsidy for childcare that reduces the parental price for childcare by two-third of the current price.[37] We assume that the subsidy does not raise childcare demand unrelated to work because the government is able to distinguish between work-related and non-work related childcare. Only work-related childcare is subsidised. Childcare contributions by employers remain unchanged in our simulation. The subsidy scheme costs 0.5 billion euro for the government, which is financed by a 0.2%-point increase in tax rates. Table 3.17 shows that childcare subsidies are effective in raising labour supply, despite that it needs to be financed by higher tax rates. The reduced price of child care encourages in particular secondary partners in families with children to raise hours worked: labour supply by secondary earners rises by 0.3%. Also primary earners increase their hours worked by 0.2% in light of the lower price of childcare. Single persons without children reduce their labour supply, however, since they only feature a higher marginal tax burden. Overall, we find that child-care subsidies raise the level of employment by 0.1%.[38] If we compare this policy with the targeted child credit for working couples in Tables 3.14 and 3.15 (with a budget that is twice as large), we see that childcare subsidies tend to be relatively effective in

[36] As argued in CPB (2005), the government may alternatively leave labour-intensive services go untaxed by permitting a black market to exist. In economic terms, this yields the same allocation as long as consumer prices for these services remain the same. The advantage of allowing a black market is that it does not require expensive administration from the government. The possible disadvantage is that some services may be provided more efficiently when provided by the formal market, *e.g.* due to a better organisation.

[37] Note that a zero price for childcare is unlikely to be optimal. Indeed, an extra subsidy at the margin will not only encourage parents to work longer hours (a social benefit in the presence of taxes), but also raises the subsidy for all parents already participating on the labour market (a windfall gain). Moreover, there can be demand for childcare by non-working partners if the government would not be able to distinguish between childcare that facilitates labour supply and childcare for leisure purposes.

[38] These results are consistent with micro-econometric studies on child-care subsidies. In particular, Jaumotte (2004) suggests that an elasticity of 0.05 is a plausible estimate for the impact of childcare costs on female labour supply. Our reduced-form elasticity comes close to this value.

encouraging hours worked. The reason is that they reduce tax distortions at the margin of labour supply while the tax credit reduces only the average tax on participation for partners earning more than 24 000 euro. The scope for improving labour market performance via childcare subsidies is limited.

Table 3.17 Ex-ante effects on institutions and long-term labour market effects of a lower parental price for childcare[a]

Ex-ante effects on institutions	
Income tax rate (absolute change)	0.2
Marginal tax burden (absolute change)	0.0
Replacement rate (absolute change)	– 0.1
Long-term labour market effects	
Producer wage	– 0.5
low skilled	– 0.5
high skilled	– 0.5
Labour supply in hours	0.2
primary earners	0.2
secondary earners	0.3
single persons	– 0.1
Female participation rate	0.2
Employment	0.1
low skilled	0.1
high skilled	0.1
Unemployment rate (absolute change)	0.0
low skilled	0.1
high skilled	0.0
Production	0.1

[a] The parental price for childcare is reduced by two-third of the current price. We assume that the government is able to target childcare only to working parents, so that there is no deadweight loss associated with childcare for non-labour purposes. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

3.6 Redistribution via wage compression

So far, we have explored instruments that redistribute incomes ex-post via the tax-benefit system. An alternative way to redistribute income, at least among workers, is via less dispersion in before-tax wages. One institution that aims to achieve this is the minimum wage. Minimum wages also compress the wage distribution above the minimum. Indeed, Teulings *et al.* (1998) report that the minimum wage in the Netherlands substantially reduces the dispersion in the Dutch wage distribution by affecting wages in the range above the official minimum. The minimum wage, however, causes lower employment among the low skilled because workers with too low a productivity will not be hired by employers (see the Box "*Minimum wages*"). In a sense, the minimum wage regulation acts as a virtual tax on employers hiring low-skilled workers. It thus raises the equilibrium unemployment rate among the low skilled.

Minimum wages

Classical textbook economics suggests that minimum wages will reduce employment among the low skilled. Yet, models of monopsony reveal that minimum wages can be an efficient way to reduce the market power of employers and to avoid exploitation. This has caused ample discussions among economists about the labour-market impact of minimum wages. The empirical literature on minimum wages should guide us here. A large part of this literature refers to the United States and applies to teenage employment (see *e.g.* Brown (1999)). Until the 1990s, the main conclusion from empirical studies was that minimum wages indeed negatively affect the level of employment. In particular, the reported elasticity of teenage employment to the minimum wage was found to be in the range of – 0.1 to – 0.3. In the early 1990s, Card and Krueger (1994; 1995) challenged these results. They did not find a negative impact of higher minimum wages on employment in the services sector in a number of US states and suggested that the minimum wage literature is due to substantial publication bias. Yet, more recent studies again report negative effects of minimum wages on employment. For instance, Burkhauser *et al.* (2000) find a negative elasticity of teenage employment with respect to the minimum wage in the US between – 0.2 and – 0.6. Kramarz and Philippon (2001) report similar effects for France. For the Netherlands, Van Soest and Kapteyn (1988) find an elasticity of – 0.2.

Another source of wage compression is the egalitarian wage policy adopted by trade unions. Indeed, the empirical literature on trade unions consistently reports a positive relationship between trade union density or coverage (as a measure for trade union power) and the degree of wage compression (see *e.g.* Flanagan (1999); Aidt and Tzannatos, (2002)). By driving up the relative wage for the low skilled, this also raises unemployment among this group. Indeed, cross-country studies suggest that higher union density or coverage is positively correlated with unemployment rates (Nickell (1997); De Groot *et al.* (2004)).[39]

To explore how wage compression affects the Dutch labour-market, we have simulated three experiments with MIMIC, the results of which are presented in Table 3.18. First, we consider a reduction in the official minimum wage by 10%. Thereby, we first keep the level of welfare benefits fixed in order to separate the impact of the minimum wage from the impact of lower benefit levels that are indexed to the minimum wage. It makes this first simulation somewhat artificial though, as it implies that welfare benefits for couples would now exceed the minimum wage rate.[40] Minimum wage scales agreed upon in sectoral wage negotiations are assumed to be partially indexed to the minimum wage and fall by 3%. In the second simulation, we explore a reduction in the minimum wage when indexed social benefits fall as well. This includes welfare benefits and basic pensions. The revenues saved from lower public transfers are used to cut income tax rates. A final simulation explores the impact of less trade-union power. In particular, we reduce the bargaining power of the trade union by 10%. This can, for

[39] Another instrument to affect the before-tax wage distribution is education subsidies (Dur and Teulings (2001)). In particular, to the extent that these subsidies encourage people to learn, they raise the supply of high skilled labour relative to low skilled labour. Less scarcity of high-skilled labour reduces the skill premium, thus causing less wage dispersion and more equality. Yet, education subsidies are provided to high-skilled people as well, including those who would engage in education also without the subsidies. This mitigates the redistributive impact of the subsidies. For realistic parameter values, Dur and Teulings find that the direct regressive impact of educational subsidies broadly offsets this general equilibrium effect. As the impact of education subsidies not only affects wages, but also productivity levels, we do not discuss this form of wage compressing policies further here.

[40] Still, it allows for a lower wage for singles and partners. Moreover, the reduction in the minimum wage can be supplemented with an earned income tax credit to compensate workers with a low wage (see Table 3.7 for the effects).

instance, be achieved if the government abolishes (or more selectively applies) the extension mechanism of collective wage agreements. Alternatively, it may reflect a less egalitarian wage policy adopted by trade unions.[41] As we cannot assess exactly how government policies affect the parameters for union bargaining power, the last column of Table 3.18 only serves as an illustration.

Table 3.18 Long-term labour market effects of less wage compression[a]

	Cut minimum wage	Cut minimum wage & social benefits	Lower union bargaining power
Producer wage	0.0	– 1.2	– 1.3
low skilled	– 0.2	– 1.0	– 1.5
high skilled	0.1	– 1.2	– 1.2
Labour supply in hours	0.0	0.4	0.2
primary earners	0.0	0.3	0.1
secondary earners	0.0	0.9	0.4
single persons	0.0	0.1	0.1
Female participation rate	0.0	0.9	0.3
Share of high-skilled labour supply	0.1	0.3	0.1
Employment	0.1	0.8	0.8
low skilled	0.3	0.6	1.1
high skilled	0.0	0.9	0.7
Unemployment rate (absolute change)	– 0.1	– 0.3	– 0.5
low skilled	– 0.4	– 1.0	– 1.1
high skilled	0.1	0.0	– 0.2
Production	0.0	0.7	0.8

[a] The first column shows a cut in the minimum wage by 10% and minimum wage scales by 3%. Thereby, we keep the level of welfare benefits and basic pensions, which are indexed to the minimum wage, fixed at their original level. The second column shows the impact of a reduction in the minimum wage by 10% if benefits are reduced as well. The savings on social benefits are used to cut income tax rates. The third column shows the effect of a reduction in the relative union bargaining power in the wage model by 10% or, equivalently, a reduction in the value of unions for employment relative to wages by 3.75%. All figures are expressed in relative changes unless indicated otherwise.

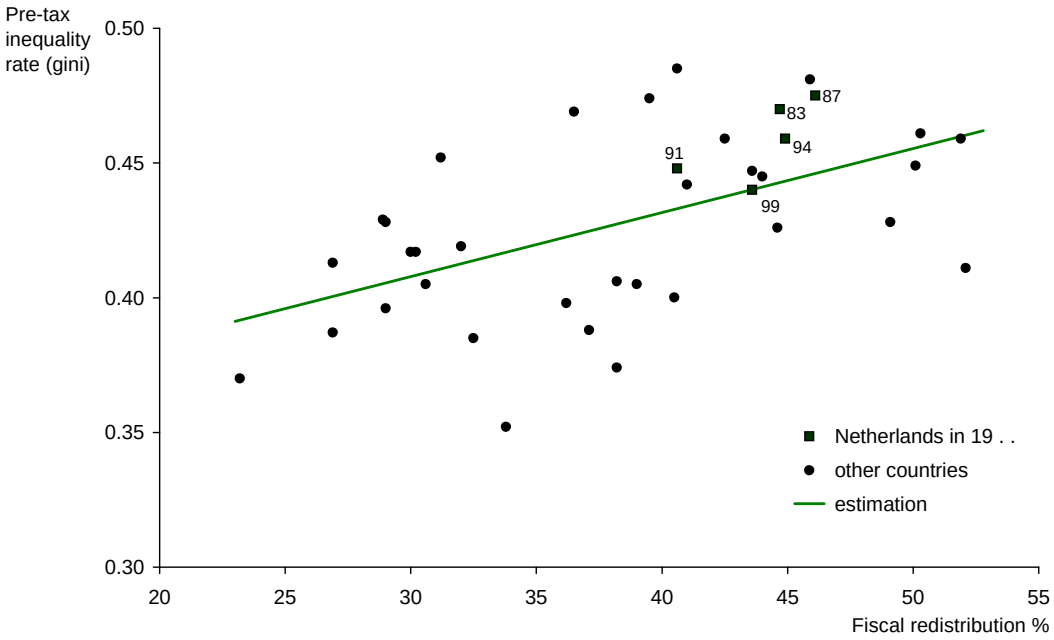
Source: MIMIC simulations.

Table 3.18 reveals that a lower minimum wage reduces the wage of low skilled workers relative to high skilled workers. Larger wage differentials increase the incentives to learn and thus raise the share of high-skilled labour supply. This somewhat mitigates the impact on wage compression in equilibrium. The lower wage for low skilled workers makes firms less reluctant to hire them as a larger number of applicants meet the minimum required productivity level. Thus, employment among the low skilled expands. On aggregate, we find that the unemployment rate among the low skilled falls by 0.4% due to the lower minimum wage. The effects of lower union bargaining power in the third column of Table 3.18 are qualitatively the same. Indeed, this experiment reduces wages and thus equilibrium unemployment, especially among the low skilled. The second column shows the impact of a lower minimum wage if

[41] A higher value that unions assign to employment relative to wages by 3.75% would yield the same results. Indeed, these parameters jointly determine the elasticities in the wage equation of the right-to-manage framework.

welfare benefits and basic pensions fall as well. This saves substantially on public expenditures, which reduces the income tax rate. As a result, the impact on unemployment and labour supply are substantially larger.

Figure 3.2 Correlation between pre-tax inequality and fiscal redistribution



The disadvantage of wage compressing institutions is that they reduce employment among the low skilled. There are two possible remedies to this, without changing the amount of redistribution: (i) move away from wage compression towards fiscal redistribution or (ii) introduce complementary policies. Regarding the first remedy, cross-country evidence suggests that wage compression indeed tends to substitute for fiscal redistribution. In particular, Figure 3.2 plots the correlation between the Gini coefficient of the pre-tax income distribution for 9 OECD countries in various years and the corresponding amount of fiscal redistribution. The positive correlation suggests that more pre-tax income inequality is accompanied by more fiscal redistribution.[42]

The first remedy raises the question whether redistribution towards low skilled workers via the tax-benefit system (*e.g.* an earned income tax credit) is more or less efficient than redistribution via egalitarian wage policies. On the one hand, the earned income tax credit creates a budgetary cost for the government. Financing this (or phasing it out with income) hurts labour-supply incentives due to a higher marginal tax rate (see section 3.2). On the other hand, wage compressing institutions avoid these adverse labour supply effects since they

[42] Data are obtained from the Luxembourg Income Survey (see table 3.1). They refer to Australia, Belgium, Canada, Denmark, France, Germany, the Netherlands, Norway and Sweden for a selection of years in the period between 1980 and 2000. For the regression, we find: FR = 0.34 + 0.0024 GINI, where FR stands for the amount of fiscal redistribution. The p-value for the coefficient of the GINI equals 0.04, i.e. the coefficient is statistically significant at the 4% confidence interval. The result is not robust for the inclusion of the United States and the United Kingdom, however, which both feature a relatively dispersed wage distribution and a relatively limited amount of fiscal redistribution.

redistribute on the basis of hourly wages, rather than total income. Hence, they come closer to redistribution on the basis of ability to earn. However, wage compressing institutions reduce employment among the low skilled. On balance, we should therefore trade off the adverse incentive effects of fiscal redistribution on labour supply against the upward effects of wage compressing institutions on low skilled unemployment.

Tax relief for firms or employees: does it matter?

In principle, it is immaterial in general equilibrium whether tax relief is provided to the employer or to the employee. Indeed, tax incidence theory teaches us that the incidence of taxation does not depend on who pays the tax, but rather on the elasticities of demand and supply. Nevertheless, there are two important differences between the earned income tax credit explored section 3.2 and the tax relief for employers discussed here. First, targeted tax relief for employers is conditional on the hourly wage, while the earned income tax credit is conditional on annual wage income. This makes the relief for firms better targeted to workers with low skill. Moreover, unlike the tax relief for firms, the earned income tax credit will also hurt the incentives for labour supply due to the higher marginal tax rate in the phase out range. Targeting tax relief at low wage earners is, however, more demanding in terms of enforcement. Moreover, both proposals exert a negative effect on training incentives, which depend on the tax at the margin of the hourly wage.

The second difference has to do with the indexation of social benefits. In particular, indexation matters for the effects of the tax relief via the replacement ratio. In general equilibrium, producer wages and consumer wages are affected by the tax relief in a similar fashion through the working of the labour market. However, this does not hold for the gross wage. Indeed, the gross wage falls due to the earned income tax credit so that employers benefit from a lower producer wage. Gross wages rise, however, due to the tax relief for employers so that employees benefit from a higher consumer wage. Since social benefits in the Netherlands are indexed to the gross wage, it is not immaterial for benefit recipients whether tax relief is provided to the firm or to the employee. Indeed, providing it to the employee via an earned income tax credit tends to reduce the replacement ratio, thus causing a larger decline in the equilibrium unemployment rate. Providing tax relief to the firm leaves the replacement rate unchanged as social benefits rise along with the wages.

On balance, we conclude that tax relief for employers is more effective in avoiding adverse incentive effects on hours worked. The overall unemployment rate drops more under the earned income tax credit, however, because this policy reduces the replacement rate (compare Tables 3.7 and 3.19).

The second remedy against poor job opportunities for the low skilled takes for granted the presence of wage compression through minimum wages and trade unions. The government may then introduce complementary policies to relax the adverse implications on low-skilled unemployment. For instance, subsidies or tax relief for employers who hire low-skilled workers may help to reduce wage costs for the low skilled and increase the number of low skilled jobs.[43]

Table 3.19 shows how such a policy would impact labour-market performance according to MIMIC. We simulate a social security contribution credit for firms with a maximum of 1 400 euro. This credit is provided for each full-time employee with an income between the minimum

[43] During the late 1990s, the Netherlands had a special tax relief to companies employing workers with a low hourly wage. This policy aimed to stimulate employment among the low skilled. This scheme has recently been abolished. In Germany, Schöb and Weimann (2005) have recently proposed a subsidy scheme at the margin of new employment. The scheme aims to prevent displacement and substitution and involves no budgetary cost in the short run. In the long term, however, the scheme comes down to a subsidy to all low skilled jobs as one cannot distinguish between old and newly created jobs. Thus, it is similar to the subsidy scheme analysed in Table 3.19.

Table 3.19 Long-term effects of tax relief for low-wage earners on the labour market and institutions[a]

Replacement rate (absolute change)	0.0
Marginal tax rate (absolute change)	1.2
Producer wage	– 0.0
low skilled	– 1.2
high skilled	0.6
Labour supply in hours	– 0.1
primary earners	– 0.1
secondary earners	– 0.1
single persons	– 0.1
Female participation rate	0.0
Share of high-skilled labour supply	– 0.4
Employment	0.0
low skilled	1.9
high skilled	– 0.7
Unemployment rate (absolute change)	– 0.1
low skilled	– 0.4
high skilled	0.0
Production	– 0.2
Income tax rates (absolute change)	0.9

[a] Firms receive a credit of 1 400 euro for employees with a low hourly wage. For workers with an income between 150% and 200% of the minimum wage, the credit is linearly phased out. Part-timers receive a proportional credit with their working time; the government budget is balanced by income taxes. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

wage and 150% of that (i.e. between 16 000 and 24 000 euros for a full time worker). For part-time workers, the credit is proportional to their working time and conditional on the hourly wage. For wages between 150% and 200% of the minimum, the credit is gradually phased out (i.e. between 24 000 and 32 000 euros for a full time worker). The credit costs 2.5 billion euro which is financed by an increase in income tax rates by 1%-point. We see from Table 3.19 that the credit reduces the producer wage for low skilled workers. This reduces unemployment among the low skilled by 0.4%, while it raises low skilled employment by 1.9%. The difference between the additional jobs created and the reduction in unemployment is due to a change in the composition of labour supply. In particular, this policy shifts the tax burden from low skilled labour towards high-skilled labour, which reduces training incentives. This causes a decline in the share of high-skilled labour supply relative to low-skilled labour supply. Moreover, aggregate labour supply in hours falls due to higher tax rates necessary to finance the tax relief. Overall, aggregate employment remains unchanged.

3.7 Policy options for efficient redistribution

This chapter analyses redistribution between people and the labour-market distortions that it creates. We illustrate the trade-off between equity and efficiency, as well as more subtle trade-offs that appear when trying to reconcile these objectives. Table 3.20 summarises the key dilemmas in designing an efficient redistributive system and refers to the policy reforms analysed in this chapter.

Table 3.20 A summary of the main trade-offs in redistribution

Equity	↔	***Efficiency***
	Policy issues	
Equitable distribution	**Tax benefit system** Welfare benefits Tax progression – Flat tax Child support	**Quantity & quality of labour**
Unemployment of low skilled	**Targeting support** Earned income tax credit Negative income tax - Basic income Employer tax relief	**Hours worked/training**
Household ability to pay	**Tax unit** Tax credit non-participating partners Credit for couples with children	**Female participation**
Merit goods	**Benefits in kind**	**Choice**
Equitable distribution	**Subsidies on labour complements** Child care subsidies	**Labour supply**
Equitable distribution	**Wage compression** Minimum wage Trade-union power	**Unemployment of low-skilled**

We find that more labour supply and lower unemployment can be obtained if we reduce welfare benefits and tax rates. Alternatively, we can reduce the progression of the tax system by introducing a simple flat tax. These reforms, however, come at the cost of more inequality in the income distribution. More challenging are reforms that improve the efficiency of redistributive institutions without reducing equality itself. This chapter uses optimal tax theory to guide us to the optimal tax-benefit structure that achieves the best combination of equity and efficiency. Moreover, we use an applied general equilibrium model for the Netherlands that contains a variety of distortions induced by taxation, social benefits and other institutions aimed at redistribution such as minimum wages. From these analyses, we arrive at the following conclusions.

Universal income support, such as a basic income, is expensive and raises marginal tax rates across the board. Indeed, we find that a 53.5% tax rate would be necessary to finance an

individualised basic income at 50% of the social minimum. This causes large distortions in labour supply. It does not seem an optimal form of redistribution. Indeed, targeting support to people earning low incomes would be more efficient than universal support. Targeting, however, creates distortions at the bottom of the labour market. Designing an optimal redistributive system therefore requires careful consideration of the distortions at both the participation margin and the intensive margin of labour supply.

The model simulations reveal that targeting is not always beneficial for employment. For instance, we find that phasing out child support for middle incomes does not create lower distortions in labour supply compared to general child support. Indeed, the distortionary impact of the phasing out of benefits among the densely populated middle incomes and highly elastic partners is relatively large and offsets the gains from a lower tax burden.

In-work benefits have the advantage of a lower benefit replacement rate, without hurting the income of benefit recipients. This leads to a lower rate of involuntary unemployment. The reduction in unemployment is especially large for the unskilled. In-work benefits can also be targeted to the low skilled, which would enhance its effectiveness to reduce involuntary unemployment. However, by phasing out benefits among middle income groups, targeted relief is particularly distortionary for labour supply.

Tax relief can also be targeted on female workers who feature relatively large labour supply elasticities, *e.g.* compared to male breadwinners. In-work credits for females or childcare subsidies are thus found to encourage labour supply as they reduce the tax for the most elastic group. Also the individualisation of tax credits for non-participating partners would support the labour supply of partners.

Redistribution is also achieved through wage compression. This hurts the employment among the low-skilled, however. If a lower minimum wage or less wage compression is infeasible, the government may provide tax relief for employers hiring low-skilled employees. The advantage is that this relief is targeted at people earning low hourly wages. The phasing out of the relief then exerts no adverse effect on labour supply. However, benefit recipients gain as well since their income is indexed to gross wages. This mitigates the impact of this form of tax relief on employment.

Since all reforms in the redistributive system have some kind of social cost, complementary instruments may be considered to escape the trade-offs in redistribution. For instance, mandatory welfare-to-work programs combined with sanctions mitigate the adverse implications of redistribution on the participation margin. Modern welfare states therefore increasingly rely on the integration and inclusion of vulnerable people in the labour market by combining the carrot of positive financial incentives with the stick of punitive work mandates. Yet, by requiring information from people, they impinge upon privacy. Hence, even this policy does not go without a social cost.

4 Welfare state (2): Risk and insurance

During working life, individuals face risks of unemployment and disability. As people can affect the incidence and persistence of these risks, insurance is incomplete. This introduces a dilemma between insurance and moral hazard. We explore how Dutch institutions can be designed to obtain an optimal balance between insurance and incentives. Specifically, we discuss the terms of the social insurance contract, the efficiency of administration, active labour-market policy and employment protection.

4.1 Introduction

Idiosyncratic shocks put the labour market in an incessant flux. Shifts in demand, embodied technological change, accidents etc. cause individuals to move between states of employment and non-employment. These movements are typically associated with substantial changes in income. Insurance then improves welfare by smoothing consumption between employed and non-employed periods. Table 4.1 gives information about insurance of labour market risk in a number of countries. It shows that the replacement rate for unemployment insurance in the Netherlands is not exceptional compared to other countries. The maximum duration of unemployment insurance is rather high, although recent proposals reduce it. The disability benefit replacement rate is relatively high. Since 1997, sickness insurance is privatised while disability insurance has now been reformed (see the Box "*Social insurance in the Netherlands in 2006*").

Table 4.1 Insurance against labour market risks in various countries

	Initial unemployment insurance replacement rate (2002)[a]	Maximum unemployment insurance duration (months, 2002)[a]	Replacement rate in disability insurance[b]	Overall EPL indicator in 2003[c]	Spending on ALMP in % GDP in 2002[d]
The Netherlands	70	60	71	2.3	0.9
Austria	56	10	68	2.1	0.4
Belgium	60	No limit	n.a.	2.4	0.9
Denmark	90	60	75	1.8	1.7
Finland	90	25	63	2.2	0.7
France	75	60	n.a.	2.6	0.8
Germany	60	12	61	2.0	0.9
Ireland	Flat rate	15	n.a.	1.1	0.6
Spain	70	24	n.a.	2.8	0.6
Sweden	80	15	62	2.0	1.4
United Kingdom	Flat rate	6	29	0.8	0.1
United States	50	6	n.a.	0.2	n.a.

[a] Source: OECD, 2002.
[b] Source: Hansen (2000). Numbers refer to 'fully disabled' single persons. Collective agreements may increase the replacement rate in disability.
[c] Source: OECD (2004)
[d] Source: Eurostat online database.

Social insurance in the Netherlands in 2006

In 2006, the government replaces the current occupational disability scheme (WAO) by the new Act on Work and Income according to Labour Capacity (WIA). Just like the WAO, the WIA offers insurance for occupational diseases and employment injuries (risque professionnel) and for other risks (risque social). People can apply for WIA after a period of two years of sick leave, which are covered by employers. The WIA consists of two schemes: one for the fully and long-term disabled (IVA), and one for the partially disabled (WGA). Fully and long-term disabled means that someone will never be able to earn more than 20% of his previous salary. The IVA equals 75% of the final wage until retirement. It is financed by uniform national premiums paid by employers. The WGA applies to people who are less than fully disabled, but who have lost more than 35% of their previous work capacity. During the first period, the WGA entitles a partially disabled worker to a benefit based on his last earned wage. If he/she still works, the benefit equals 70% of the difference between his last salary and his new (lower) wage. If he does not work, the benefit is 70% of the last wage. The duration of the benefits is in accordance with the rules of the Unemployment Insurance Act (see below). When this duration expires, a WGA claimant is entitled to a follow-up benefit. This benefit is lower if the WGA claimant does not work, which gives an incentive to maintain in the labour market. Partially disabled workers who incur less than 35% drop in wages are not entitled to WGA benefits. From 2007 onwards, the WGA will be partly privatised. In particular, employers will have the opportunity to opt out of the public system and switch to private insurance companies. The premium in the WGA will be experience rated. This gives employers an incentive to prevent disability.

In 2006, the Dutch government will introduce a new Unemployment Insurance Act. Compared to the old scheme, a number of changes are implemented. First, the new act will reduce the maximum duration of unemployment benefits from 60 to 38 months. The maximum period will only apply to people with an employment record of 38 years. Second, the benefit level will be raised from 70% to 75% of the last wage during the first two months of unemployment. After this initial period, benefits will be reduced to 70% which is equal to the current level. Third, the new act will have more stringent entitlement conditions. In particular, entitlement will require that someone has worked 26 out of 36 weeks prior to the application (the '26/36 criterion'). At present, the criterion is 26 out of 39 weeks. In the new act, an applicant is still required to meet to the so-called '4-of-5-criterion', which says that he/she should have received a wage (at a minimum of 52 days) during at least 4 out of 5 years prior to the application. People who meet these conditions will be entitled to unemployment benefits for the duration in months that is equals to the employment record in years prior to the application. Hence, if an applicant has worked 7 years, he/she receives 7 months benefits. People who meet the 26/36 criterion but not the 4-of-5-criterion will only be granted benefits for a period of 3 months. This differs from the old scheme in which this group receives a lower benefit of 70% of the minimum wage during a maximum of 6 months.

Employee insurance schemes in the Netherlands in 2004

	Take up 1 000 persons	Budget bln euro	Budget % GDP
Disability insurance	968	11.4	2.5
Unemployment insurance	310	3.8	0.8

Source: CBS Statline

With the previous Welfare Act, local governments could claim expenditures on welfare benefits from the central government. The new Welfare Act introduced in 2004 changes this. It makes local authorities financially responsible for the welfare benefits they provide. In particular, local governments receive a fixed budget for welfare benefits and activation. If they succeed in getting welfare recipients back to work, saved funds can be used for other local spending. This encourages local governments to invest in efficient administration, tight monitoring and tough activation programs. While no evaluation of the new Act has been carried out yet, it seems that indeed fewer people receive welfare benefits.

Insurance against labour market risk can be complemented by employment protection legislation and active labour-market policies. The OECD has constructed popular summary measures of employment protection legislation. The indicator is given in the fourth column of Table 4.1. It suggests that the Netherlands is somewhat above the average. Closer inspection of the index learns that hiding behind the average is a relatively strict protection for regular employment in the Netherlands, and relatively lenient protection for temporary employment. Moreover, employment protection in the Netherlands consists largely of administrative procedures, while other countries rely relatively more on severance pay and notice periods. The last column of Table 4.1 shows that the Netherlands does not stand out in terms of aggregate spending on active labour-market policy. The Netherlands spends relatively little on labour market training and employment subsidies in the private sector and (until recently) relatively much on direct job creation in the public sector and 'shielded employment' for disabled.

The rest of this chapter explores the role of the welfare state in dealing with labour market risk. Section 4.2 considers the social benefits and costs from insurance against labour market risk and elaborates on the optimal insurance contract. Section 4.3 discusses the division of responsibilities in social insurance. Sections 4.4 and 4.5 consider how employment protection and active labour-market policy may improve the performance of the insurance contract, either by substituting or complementing the insurance. Section 4.6 concludes.

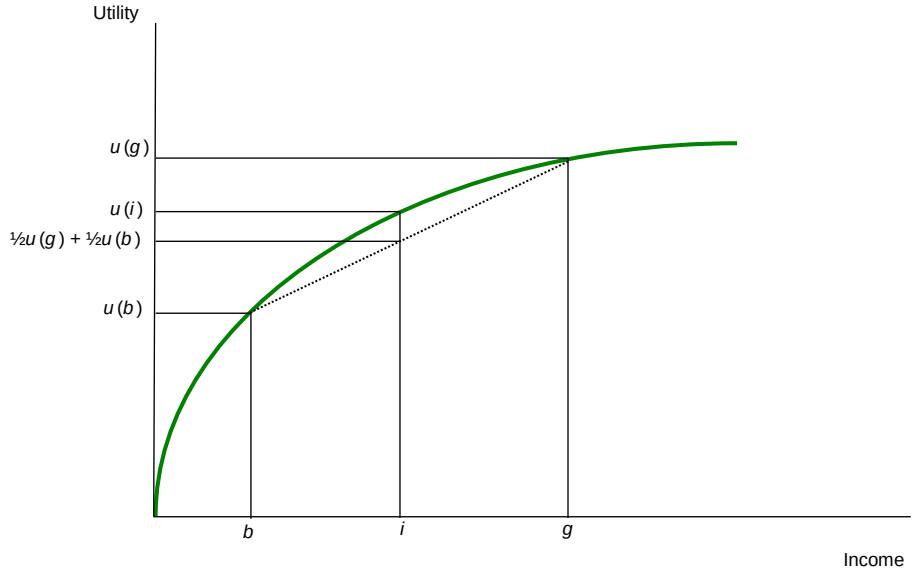
4.2 An efficient insurance contract

Welfare gains from insurance

Risk averse individuals dislike uncertainty. Figure 4.1 illustrates this. Suppose an individual can in each period be in either a good or a bad state, each with a probability of one half. Denote income in the good state by *g*, income in the bad state by *b*, and expected income by *i*. Let $u(x)$ denote the utility at income x. Risk aversion implies a declining marginal utility of income. Hence, the utility function in Figure 4.1 has a concave shape. A risk averse individual prefers a certain expected income *i* over an uncertain combination of income in the good and the bad state. Figure 4.1 reveals that in the former case, the individual enjoys utility $u(i)$. When the individual can not smooth his income across good and bad states, he or she enjoys $0.5 * u(b) + 0.5 * u(g)$, which is less than $u(i)$. The difference is the risk premium, which measures the welfare cost of uncertainty. Without insurance, individuals may reduce uncertainty through risk diversification. Labour-market risk is difficult to diversify, however, because jobs are usually indivisible and require specialisation in skills. Job diversification is therefore a costly way to deal with uncertainty. An alternative is to smooth consumption by borrowing and lending on the capital market or via family members. If the lending and borrowing rate would be equal to the

rate of time preference, saving and borrowing via the capital market would be efficient to deal with temporary shocks like unemployment or temporary disability (Imrohoroglu (1989)).[44]

Figure 4.1 Welfare cost of uncertainty



However, capital markets appear to be imperfect in real life. Indeed, there is ample evidence that individuals face liquidity constraints, especially those who are unemployed (Gruber (1997)). Therefore, lending rates exceed borrowing rates (Crook and Hochguertel (2005)). This reduces the opportunity of using the capital market for consumption smoothing in case of unemployment risk or the risk of temporary disability. Insurance is therefore more efficient to deal with uncertainty than saving and borrowing. Insurance exploits the benefits from risk pooling by providing benefits to the unlucky in case of an insured event, and by financing it through premiums on the lucky employed to cover the overall expected claims. Pooling ensures smooth consumption between periods of low and high income. This is welfare improving for risk averse individuals. The Box "*Welfare gains from insurance*" gives some back-of-the-envelope calculations for this welfare improvement.

Some authors have stressed that there may be productivity gains from insurance as well (see *e.g.* Sinn (1996)). For instance, risk averse agents may accept less productive jobs in the absence of insurance, see *e.g.* Acemoglu and Shimer (1999). Reduced uncertainty due to unemployment benefits thus improves the quality of job matching by giving the unemployed more time to search for a better job-worker match and thereby encourage firms to create productive jobs. Empirical evidence provides mixed results regarding this claim. One strand of the empirical literature explores the impact of unemployment insurance on individual post-unemployment earnings. These studies are typically inconclusive. Indeed, some find a small but

[44] For permanent disability risk, the capital market is not a serious alternative for insurance. With these risks, individuals do not expect to return to the labour market. If shocks are permanent, individuals have no opportunity to borrow against future good times. In the absence of insurance, they will thus be forced to hold costly precautionary savings.

Welfare gains from insurance

To illustrate the welfare cost of uncertainty, we use a simple model where instantaneous utility is given by $u(x) = x^{1-\theta}/(1-\theta)$, where x denotes consumption and θ is the coefficient of relative risk aversion. Individuals move between good and bad states. Discounted lifetime utilities in the good and bad state, *G* and *B* respectively, satisfy the Bellman equations: $\delta G=u(g)+\sigma(B-G)$ and $\delta B=u(b)+\pi(G-B)$, where δ is the subjective discount rate (set at 0.06), and *g* and *b* denote consumption in the good (normalised to 1) and the bad state. The parameter σ stands for the transition rate from the good to the bad state and π denotes the reverse. These rates are set equal to the average annual flow rates out of employment and out of unemployment or disability for the period 1991-1997 in the Netherlands (CPB (2005b), Kock (2002)). The average transition rate from employment into unemployment and disability is 0.09 and 0.014, respectively. The average transition rate back to employment is 1.34 for unemployment and 0.11 for disability. Hence, employed individuals are more likely to become unemployed than disabled, but the state of disability is more persistent than unemployment. For the parameter of relative risk aversion we consider two alternative values: $\theta=0.5$ (less risk averse) and $\theta=2.0$ (more risk averse) (see *e.g.* Gollier (2001)). To assess the welfare cost of uncertainty, we consider three indicators: (i) the difference in instantaneous utility between the good and the bad state, denoted by *d*; (ii) the difference in discounted lifetime utility between the good and the bad state, denoted by *D;* and (iii) the risk premium (*R*), which is defined as the difference between the certainty equivalent income (c^*) and the expected income, *E(c)*, expressed as a percentage of expected income. The table below shows the results for replacement ratios of $b=0.75$ and $b=0.50$, i.e. there is an instantaneous shock of 25 and 50% in consumption, respectively. We find for unemployment risk (which is relatively transient) that *d* is a close approximation for *D*. For disability, the difference in *d* and *D* is much larger. For the lower value of risk aversion ($\Theta=0.5$), the risk premium lies between 0.5% and 0.9% for a replacement ratio of 0.5. For the higher value of risk aversion ($\Theta=2.0$), this indicator shows effects up to 4.77%.

Values for costs of unemployment and disability risk

Unemployment risk	Θ = 0.5			Θ = 2.0		
	d	*D*	*R*	*d*	*D*	*R*
b = 0.75	0.27	0.18	0.11%	0.33	0.22	0.49%
b = 0.50	0.59	0.39	0.52%	1.00	0.67	2.86%
Disability risk	Θ = 0.5			Θ = 2.0		
	d	*D*	*R*	*d*	*D*	*R*
b = 0.75	0.27	1.46	0.18%	0.33	1.81	0.83%
b = 0.50	0.59	3.18	0.91%	1.00	5.43	4.77%

$d = u(g) - u(b)$; $D = G - B$; $R = (E(c) - c^*) / E(c)$, $c^* = (\pi/(\pi+\sigma) + \sigma/(\pi+\sigma)\, b^{1-\theta})^{1/(1-\theta)}$

Four remarks are worth noting to these results. First, subgroups in the population may have different transition rates and shock sizes and hence costs of these risks. Second, an equiproportionate increase in the flow rates does not affect the 'risk premium', *ceteris paribus*. However, when higher flows make it easier for individuals to smooth their consumption over periods of employment and non-employment, the risk premium may fall. Third, we use actual data on flow rates. In case there is no insurance, these rates can be different. Finally, insurance has an ambiguous effect on the risk premium. The difference in utility (d) falls, but the employment rate falls as well (π falls, σ rises).

positive impact, while others report statistically insignificant results (see the reviews in Burtless (1990); and Cox and Oaxaca (1990)). Moreover, it is impossible in these studies to distinguish between the impact of unemployment insurance on match quality and the reservation wage. Another strand of the literature is slightly more supportive to the positive impact of unemployment insurance for match quality. These studies consider the impact of insurance on post-unemployment job duration as a measure of match quality. Belzil (2001) reports a weak but positive impact of the maximum benefit duration on subsequent job duration for young Canadian male workers. Centeno (2002) finds that post-unemployment job tenure in Portugal is longer if unemployment insurance is more generous. This may be an indication of efficiency gains from generous unemployment benefits. Furthermore, in a simulation study of American youths, Acemoglu and Shimer (2000) find that, for young workers in the United States, the efficiency gains from unemployment insurance are comparable to the losses on moral hazard at current levels of unemployment insurance.

Moral hazard

Insurance provides an income transfer to a person in case of a pre-specified event, such as disability or unemployment. Ideally, the occurrence of this event is exogenous. In that case, the probability of occurrence and the size of the claim cannot be influenced by the claimant. Yet, risks are usually partly endogenous. Once insured, people change their behaviour, thus affecting the probability of occurrence or the size of the claim. This is referred to as moral hazard.

As long as the behaviour of the insured can be perfectly monitored by the insurer and verified by a third party, the insurer can still enforce an efficient insurance contract. However, most actions cannot be verified or transaction costs are prohibitively large to conclude a complete contract. This makes more hazard important. It renders risks less insurable (see the Box "*How insurable is risk?*"). The optimal insurance contract then strikes a balance between the gains from insurance and the costs from moral hazard. This section discusses moral hazard effects. It distinguishes between two forms: ex-ante moral hazard that causes excessive inflows, and ex-post moral hazard that causes insufficient outflow from the insurance. On both types of moral hazard, there exists ample empirical evidence (see De Mooij (2004), for a review).

In the presence of unemployment insurance, sickness insurance and disability insurance, individuals undertake too little action to prevent risk and are more willing to enter the insurance. This ex-ante moral hazard can be characterised as an externality. In particular, the effort by the insured to prevent risk is too low because the benefits of his efforts accrue to the insurer instead of himself (Pauly (1974)). Workers can, for instance, behave less careful in the work place, shirk on the job, or be unwilling to invest in skills to remain employable.[45] Another form of ex-ante moral hazard is due to benefit cheating. If the insurer cannot verify claims because excessive monitoring costs and privacy rules render information asymmetric, erroneous

[45] Productivity levels may fluctuate across time, *e.g.* due to temporary or permanent shocks in the output of the firm. By means of fixed wage contracts, firms insure workers against these shocks. Guiso *et al.* (2005) show that is this way, firms are an important vehicle of the insurance provision for the worker.

How insurable is risk?

Two properties of a risk determine how insurable it is or, in other words, how complete an insurance contract can be: verification and exogeneity. If risks are fully exogenous and claims can be perfectly verified by the insurer, a complete contract can be concluded. Full insurance would then be efficient so that people do not have to engage in costly risk diversification strategies or precautionary savings. Yet, the combination of endogenous risk and non-verifiability makes insurance vulnerable to moral hazard. In the extreme case of risks that are fully endogenous (i.e. that are the result of individual choice), or if ex-post verification is impossible, moral hazard is extremely large so that insurance becomes impossible. In that case, saving is more efficient.

Unemployment and disability risks are partly exogenous and partly endogenous. This renders a combination of insurance and saving optimal to deal with these risks. Indeed, full insurance with a 100% replacement rate does not exist in practice. The more endogenous or less verifiable these risks become, the less insurable they get as the cost of moral hazard increase. Especially for small risks, such as short-term unemployment or temporary sickness, endogeneity and non-verifiability render savings probably more efficient than insurance. This is because the benefits from insurance are only small, while the costs due to moral hazard can be large. Saving then outperforms insurance.

There are indications that disability risk is becoming increasingly difficult to verify across time. In particular, the share of non-verifiable mental causes of disability tends to be increasing over time (Aarts *et al.* (2000)). This makes it more difficult to insure those forms of disability. Therefore, the Netherlands has now reformed its system of disability insurance to distinguish between verifiable full disability and non-verifiable partial or temporary disability risk.

In light of the limited insurability of unemployment risk due to endogeneity and verification problems, it is sometimes suggested to substitute unemployment insurance by Individual saving accounts for unemployment (Feldstein and Altman (1998); Orszag and Snower (1997); Bovenberg and Sorensen (2004)). With individual saving accounts, part of the insurance premium is replaced by a mandatory contribution that is credited to an individual public account on which a person receives interest. During a period of unemployment, individuals are allowed to draw money from their account. If a person is short of funds during unemployment, he/she can borrow from the government at the same interest rate. Individuals who end up with a positive account at the end of their working life are allowed to increase their pensions or transfer it to relatives. Individuals will be bailed out if they end up with a negative account at their pension age or when they die. This latter involves insurance against the risk of low lifetime income. This insurance is more targeted than under social insurance as the government no longer smoothes the lifetime consumption among individuals with high lifetime incomes. An individual saving account provides better incentives to avoid moral hazard than unemployment insurance. Indeed, the unemployed will internalise the cost of unemployment benefits and have no incentive to increase in an inefficient way the frequency or duration of unemployment spells. In that sense, they provide liquidity insurance more efficiently. These efficiency gains, however, originate from lower insurance. Still, the bail out of those with a negative balance maintains the moral hazard problem with the group that relies on public support. Indeed, individuals with a negative account face little incentive to find work as additional unemployment has no personal cost. To combat moral hazard with the public bail out, savings should be mandatory. Mandatory savings, however, imply that people need to accumulate an inefficiently large stock of capital to cover the potential future risk in their human capital. This is typically less efficient than insurance. For small risks, however, savings can be more efficient than insurance. In particular, the benefits of less moral hazard may then dominate the cost of less insurance (including the effects on match efficiency). This suggests that individual saving accounts are a poor substitute for large risks, such as long unemployment spells, but a good substitute for small risks, such as short unemployment duration. Indeed, saving accounts may be introduced to cover the income loss in unemployment during a short period of waiting days. Indeed, Stiglitz and Yun (2002) find that a combination of contribution-funded individual savings and tax-funded social insurance is optimal. The tax-funded share is found to decline with the moral hazard effects and to increase with the magnitude of the risk and the degree of risk aversion.

admissions occur. Indeed, people who voluntarily quit their job may opt for unemployment insurance by pretending they meet the eligible requirements. Likewise, people may pretend they are sick or disabled in order to claim sickness/disability benefits.

What do we know about these ex-ante forms of moral hazard empirically? On the basis of a literature review Krueger and Meyer (2002) conclude that, conditional on unemployment or a job separation, an increase of 1% in unemployment benefits raises the frequency of unemployment insurance claims by 0.5%. Regarding disability insurance, empirical research for the Netherlands suggests that during the 1980's and 1990's, about half of the people assigned a disability benefit were actually able to work (Aarts and De Jong (1990); Westerhout (1995)). Van Vuren and Van Vuuren (2005) find an elasticity of 2.5 for the inflow in disability with respect to the benefit level. These findings are somewhat larger than the elasticity of 1.6 reported by Gruber (2000) for Canada.[46] Also for sickness insurance, there is indirect evidence on moral hazard. For instance, sickness absenteeism tends to rise with labour-market tightness, i.e. when the risk of job lay-off is small (Stegeman (2005)). Moreover, it is higher for people with permanent job contracts than for people with temporary contracts (Askildsen et al (2002)).

Ex-post moral hazard implies that individuals remain in the insurance too long. Specifically, insured agents do not take into account the external gains from exit when determining their individual exit decisions, *e.g.* via job search and job acceptance. These external gains may take the form of an expansion of the tax base or a reduction in insurance expenditures. Labour economists typically conclude that unemployment insurance and disability insurance thus reduce the search intensity to inefficiently low levels and raise the reservation wage of the insured to inefficiently high levels.[47] Empirical evidence supports the importance of ex-post moral hazard in unemployment insurance. For instance, it suggests that overall unemployment durations increase with the level of benefits. For example, Layard *et al.* (1991) report that an increase in the benefit level by 1% raises unemployment duration by between 0.2 and 0.9%. Atkinson and Micklewright (1991) report a range between 0.1 and 1.0%. In a more recent survey, Krueger and Meyer (2002) conclude that an elasticity of unemployment duration with respect to the benefit level of 0.5% represents a reasonable summary estimate of the literature.

Another strand of empirical literature explores the impact of insurance duration on exit rates from unemployment. Katz and Meyer (1990), for example, estimate for the United States that one week increased benefit duration raises the average duration in unemployment insurance by 1 day. Card and Levine (2000) report a disincentive effect of 0.5 days while recently Lalive and Zweimuller (2004) find an effect of about 0.4 days for Austria. The literature reveals further that unemployment benefit duration affects the pattern of the exit rate out of unemployment. Indeed, many studies report sharp increases in the exit rate just before benefits expire (see Van

[46] Van Sonsbeek and Gradus (2006) argue that the strictness of entry conditions is important for the size of this elasticity. As entry criteria have become substantially tighter due to recent reforms in the Netherlands, they assume that an elasticity of 0.75 is a plausible value under the current Dutch institutions.

[47] Note, however, that for individuals that are not insured yet, or are close to insurance exhaustion, unemployment insurance and disability insurance may increase the search effort and lower the reservation wage via the so-called 'entitlement effect' (Mortenson, 1977).

Ours and Vodopivec, 2006 and the references therein). Also cross-country evidence suggests that benefit duration raises the rate of unemployment (Layard *et al.*(1991); Nickel and Layard (1999); De Groot *et al.*(2004)).

Table 4.2 Ex-ante effects of a reduction in social benefits on the income distribution and institutions [a]

	Unemployment	Disability
Real after-tax incomes		
Working families	0.1	0.3
division of labour		
single earner couples	0.1	0.2
two earner couples	0.1	0.3
parenthood		
with young children	0.1	0.2
without young children	0.1	0.3
skill level		
both partners low skilled	0.1	0.2
mixed partner skills	0.1	0.2
both partners high skilled	0.1	0.3
Working singles (no children)	0.1	0.3
low skilled	0.1	0.2
high skilled	0.1	0.3
inequality index for singles (Theil coefficient)	0.1	0.3
Social benefit recipients		
unemployed	– 6.1	0.3
disabled	0.1	– 5.2
welfare recipients	0.1	0.2
Retired	0.1	0.3
Aggregate inequality index (Theil coefficient)	0.3	0.7
Institutions		
Marginal tax burden (absolute change)	– 0.1	– 0.2
Replacement rate (absolute change)	– 2.3	– 1.2
Income tax rates (absolute change)	– 0.2	– 0.4

[a] The first column shows the effect of a reduction in unemployment benefits across-the-board by 10%. The second column shows the effects of a reduction in disability benefits across the board by 10%. Savings on benefit payments do not reduce premium rates, but are transferred to the government to reduce income tax rates. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

Quantifying moral hazard effects

To illustrate the long-term labour market effects of social insurances, Tables 4.2 and 4.3 show simulation results with MIMIC of a reduction in unemployment benefits and disability benefits. In particular, we reduce the average benefit level by 10% for, respectively, unemployment insurance and disability insurance.[48] The reduction in unemployment benefits saves on public expenditures, which allows for a 0.2%-point reduction in income tax rates. The 10% reduction

[48] Instead of lower benefit levels, this policy may also be interpreted as a reduction in unemployment benefit duration, a reduction in the maximum daily benefit rate, or a move from insurance towards individual savings. Each of these policies reduces the average replacement rate. The reduction may reflect also lower supplementary benefits agreed upon in sectoral negotiations between employers and employees. In our simulations, we do not explicitly take these supplementary benefits into account.

in disability benefits allows for a 0.4%-point reduction in tax rates.[49] This effect is larger than for unemployment benefits because expenditures on disability insurance in the Netherlands is higher than those for unemployment insurance.

Table 4.2 shows that the reduction in benefit levels reduces the income of, respectively, the unemployed and the disabled, while it benefits the income of all other groups. The reduction in social benefits reduces the average replacement rate. This average is determined partly by the replacement rate of unemployed people and partly of those who are partially disabled. For this latter group, the benefit replacement rate matters for our aggregate replacement rate measure because these people are expected to work for their residual earnings capacity. Those who are permanently disabled are not included in the aggregate measure for our replacement rate since they are unable to work. As a result, lower disability benefits exert a smaller impact on the overall replacement rate than lower unemployment benefits.

Table 4.3 Long-term effects of a reduction in social benefits on the labour market[a]

	Unemployment	Disability
Producer wage	– 1.1	– 0.6
low skilled	– 1.1	– 0.6
high skilled	– 1.1	– 0.6
Labour supply in hours	0.2	0.2
primary earners	0.1	0.1
secondary earners	0.3	0.3
single persons	0.1	0.2
Female participation rate	0.3	0.3
Share of high-skilled labour supply	0.1	0.1
Employment	0.7	0.5
low skilled	0.8	0.5
high skilled	0.7	0.5
Unemployment rate (absolute change)	– 0.4	– 0.1
low skilled	– 0.7	– 0.3
high skilled	– 0.3	– 0.1
Production	0.6	0.5

[a] See Table 4.2 for simulation details. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

Table 4.3 shows that the lower replacement rates help to reduce unemployment. This operates through three channels. First, it raises the outflow from unemployment due to a higher search intensity of the unemployed and a lower reservation wage (a moral hazard effect). This makes job matching easier so that unemployment falls. Second, lower unemployment benefits directly reduce the fallback position of workers in the wage bargaining process. This moderates wages

[49] Lower social benefits would normally lead to a reduction in social security premiums rather than taxes. To make the simulations comparable with other simulations in this study, we assume that the premium rates remain unchanged and that the budgetary savings are transferred to the public budget. This allows the government to cut tax rates.

and reduces equilibrium unemployment (a general equilibrium effect).[50] Finally, lower unemployment benefits allow for a lower tax burden. This stimulates wage moderation and reduces equilibrium unemployment (a tax burden effect). Table 4.3 shows that lower unemployment benefits reduce the unemployment rate by 0.3% while lower disability benefits reduce it by 0.1%. We see that labour supply expands by 0.2% in both experiments due to a lower marginal tax burden induced by lower tax rates. Overall, Table 4.3 reports a 0.5% and 0.7% rise in employment if disability and unemployment benefits are reduced, respectively.

Optimal unemployment insurance on the back of an envelope

Bailey (1978) derives an elegant expression for optimal unemployment insurance where the loss due to moral hazard equals the smoothing gains from insurance. Let g and b denote consumption in employment and unemployment, and θ the coefficient of relative risk aversion (see also the Box "*Welfare gains from insurance*"). Furthermore, we introduce ε as the elasticity of unemployment duration with respect to the unemployment benefit level, which captures the moral hazard effect. Maximising social welfare for a given individual incentive compatibility constraint yields the following implicit function for the optimal unemployment insurance as a percentage of the wage (rr^*): $(g(rr^*)-b(rr^*))/g(rr^*) \times \theta = \varepsilon$. At the optimal level of unemployment benefits, the smoothing gain on the left-hand side of the equation equals the cost of moral hazard on the right-hand side. The quotient term falls in rr^*. Hence, a rise in ε or a fall in θ has to be balanced by a drop in rr^* to restore optimality. We consider $\theta = 0.5$ and 2.0. The empirical literature suggests that ε is around 0.5 for unemployment insurance. That leaves us with the expression for the term on the left-hand side of the equation. Gruber (1997) finds the following empirical relation for $(g(rr)-b(rr))/g(rr) \approx 0.24 - 0.28\ rr$. One interpretation of this relation, which requires substantial extrapolation though, is that in the absence of unemployment insurance consumption would be 24% lower in unemployment than in employment. Due to the displacement of other smoothing mechanisms the 'consumption replacement rate' rises less than the 'income replacement rate'. Indeed, as individuals are able to smooth consumption via *e.g.* the capital market or a working spouse, differences in consumption between employed and unemployed workers will be smaller than differences in income. Superimposing the empirical Gruber relation for the Netherlands, we find an optimal replacement rate of 0 for both $\theta = 0.5$ and $\theta = 2.0$. Only if $\theta = 5$ or if the shock in consumption is 39% (combined with $\theta = 2$), the formula reveals an optimal (income) replacement rate of 50%.
Do these results imply that the level of unemployment insurance in the Netherlands is higher than the optimum? Not necessarily. Gruber (1997) notes five reasons why the Bailey formula may understate the benefits of unemployment insurance. In particular, the optimal insurance level may be higher when (i) unemployment duration is stochastic; (ii) the insurance makes non-insured better off; (iii) the insurance redistributes income to individuals with low lifetime income; (iv) there are negative net search externalities; and (v) the insurance stimulates the accumulation of specialised skills. To this we can add the potential productivity gains due to more risk taking on the part of workers (see section 4.2) and the observation of Chetty (2004) that risk aversion is higher for unemployed workers (*e.g.* due to liquidity constraints). Yet, there are also reasons why we may expect the optimal unemployment insurance to be lower. For instance, Bailey does not consider differences in leisure nor does he capture moral hazard on the inflow into unemployment insurance. Still, the contribution of Bailey is to capture the trade-off between insurance gains and moral hazard in a simple formula, where we have some empirical knowledge of the relevant parameters.

[50] Empirical evidence confirms this (Van der Horst (2003); Graafland and Huizinga (1999)). Recent estimates by Kranendonk (2004) suggest an elasticity of the replacement rate of 0.28 for the Netherlands.

An efficient insurance contract: sequencing, entitlement and eligibility

The optimal insurance contract strikes a balance between the benefits from insurance and the costs of moral hazard. Some simple calculations on the optimal level of unemployment insurance are given in the Box "*Optimal unemployment insurance on the back of an envelope*". It illustrates the key parameters in the design of an optimal insurance contract. Yet, life is too complicated to be summarised on the back of an envelope. Therefore, we consider some additional issues in the design of the insurance contract below. In particular, we focus on optimal sequencing, entitlement restrictions and eligibility requirements.

The literature on optimal unemployment insurance gives some guidance on the pattern of benefits over the non-employment spell. Specifically, Shavell and Weiss (1979) show that with moral hazard in outflows, the benefits should decline over the non-employment spell to motivate workers for job search. Many authors have found similar results in slightly modified settings (Fredrikson and Holmlund (2003)). It is consistent with the idea that becoming unemployed is more or less exogenous for the worker, but that remaining unemployed is more endogenous (i.e. ex-post moral hazard is more important than ex-ante moral hazard). Yet, some issues qualify this optimal time pattern of benefits, such as moral hazard on inflows and if only the benefit level of the short term unemployed is relevant for wage pressure. Moreover, the welfare gains from insurance become larger at longer unemployment durations when credit constraints become more relevant. Longer durations also provide better protection of specific human capital, although wage insurance might provide an alternative insurance against the loss of specific skills (see the Box "*Wage insurance*"). Indeed, a short unemployment spell involves a small risk for which saving might be more attractive than insurance. Whether or not it is optimal, declining unemployment benefits are reflected in most unemployment insurance schemes in OECD countries. In particular, unemployment benefits are usually of limited duration, after which the unemployed have to rely on welfare benefits.

Wage insurance

Exit from unemployment insurance may be discouraged if benefits depend on the last-earned wage. In particular, unemployment benefits can actually be higher than the wage that workers can earn in a new job if they previously had a high wage due to job-specific skills. These skills cannot be rewarded by a new employer due to their job-specific character. A way to overcome this problem is wage insurance. It implies that the worker receives supplementary insurance payment from the insurance if he/she accepts a new but lower paid job (for the prolonged entitlement period for unemployment benefits). This makes exit from the insurance financially attractive, even if the initial wage in a new job is low. Especially for elderly workers who have acquired substantial specific human capital, wage insurance may remove a barrier to exit unemployment. Forms of wage insurance exists in the United States, Canada and Switzerland.

Entitlement conditions restrict the inflow of workers into social insurance schemes, usually by requiring a sufficient record of contributions from work. Workers with a long employment history are usually entitled to longer benefit duration than workers with a short employment history. Hence, the former receive better insurance for the same premium than the latter group. Entitlement conditions will prevents individuals from working briefly only to claim benefits.

This benefit cheating can be prevented also by introducing a waiting period during which no benefits are provided.

Once insured, there are several behavioural obligations for benefit recipients to be eligible for support. Its primary aim is to encourage exit by increasing the search intensity and reducing reservation wage of the unemployed. Most empirical studies -- primarily for the United States and the United Kingdom -- find a significant positive effect of more stringent job search requirements on search activities and exit rates (Fredriksson and Holmlund (2003)). Eligibility conditions thus reduce moral hazard in outflows, without hurting the insurance of those actively searching for work. Also mandatory work requirements in exchange for benefits ('workfare') is found to support exit from unemployment. Compliance with the eligibility conditions calls for a proper system of monitoring and sanctions. Monitoring is necessary to prevent voluntary job quitters to collect unemployment benefits. Surveys in the Netherlands, for instance, suggest that non-compliance is important: 25% of the unemployed in the Netherlands undertake too few job applications while 15% fails to accept suitable job offers (Verkoren *et al.* (2002)). Sanctions have become an increasingly popular tool in many OECD countries (Grubb (2000)). They seem effective in increasing the transition from unemployment into employment. For instance, Abbring *et al.* (2005) find that a reduction in unemployment benefits due to sanctions substantially raises the exit rate out of unemployment in the Netherlands. The elasticity of the benefit level is estimated at 3, i.e. a 1% reduction in the benefit due to a punitive sanction raises the re-employment rate by 3%.

Menu of contracts

Instead of uniform insurance contracts, the government can also offer a menu of contracts from which workers can choose (see Rothshild and Stiglitz (1976)). This is what we usually observe in private insurances. In the menu, some contracts will combine high insurance premiums with generous benefit provisions, while other contracts will combine a lower insurance premium with less insurance. The lower insurance could take different forms, such as lower benefits, shorter duration or a waiting period. People can then voluntarily choose the contract that best suits their preferences. The menu provides better incentives to combat moral hazard for individuals who choose for the cheaper contracts. Yet, it also introduces self-selection which reduces the possibility to maintain the implicit cross-subsidies from low-risk to high-risk agents. Accordingly, introducing self selection meets the trade-off between equity and efficiency.

In the Netherlands, sanctions usually run between 5 and 20% of the unemployment benefits in case someone gets caught. Moreover, they are of limited duration. It implies that there is still room for intensifying sanctions, *e.g.* by increasing benefit cuts in case of non-compliance or by making sanctions permanent rather than temporary (Van Ours (2003)). This would provide stronger incentives to comply with the eligibility requirements and would increase exit from unemployment. With MIMIC, we have simulated the impact of intensified sanctions. In particular, we impose an additional sanction equivalent to a 20% benefit cut during 3 months if someone is caught for non-compliance. In the model, we implemented this via two inputs. First, the sanction reduces the unemployment benefit for those people who get caught. Based on recent surveys, we assume that 3% of the unemployed is indeed confronted with this reduction

in their benefit. Second, the sanctions cause a deterrence effect since all unemployed face a higher expected benefit cut in case of non-compliance. Accordingly, the unemployed have less freedom to enjoy their leisure during unemployment but instead face strict job-search requirement and perhaps other reintegration efforts. We model this deterrence effect via a lower value of leisure during unemployment. The reduction in this value is calibrated so that our simulations reproduce the elasticity reported by Abbring *et al.* (2005). The result of our simulation is presented in Table 4.4. We only present aggregate variables as the distinction between skills is irrelevant for this policy. Table 4.4 shows that the sanction reduces the overall unemployment rate by 0.1%. It comes down to a decline by 7 000 people. The corresponding reduction in the average unemployment benefit is fairly small since the benefit reduction applies only to a small share of unemployed. Hence, sanctions are an effective instrument to fight moral hazard in unemployment insurance, without causing a reduction in benefits for most benefit claimants.[51]

Table 4.4 Long-term effects of sanctions on the labour market[a]

Producer wage	0.1
Labour supply in hours	0.0
Female participation rate	0.0
Share of high-skilled labour supply	0.0
Employment	0.1
Unemployment rate (absolute change)	– 0.1
Production	0.0

[a] A sanction of 20% benefit reduction during 3 months is imposed to 3% of the unemployed who do not comply with the eligibility criteria. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations.

4.3 Efficient administration

The trade-off between insurance and incentives suggests that for a given level of insurance, it is optimal to minimise moral hazard. This calls for an administration that effectively fights dismal behaviour of the insured. The question is: what is an efficient administration? Is it a public monopoly or would it be competing private companies? The assessment depends on the balance between market and public failures.

Market versus public failures

In principle, insurance contracts can be efficiently supplied by the market if complete contracts can be designed. This requires that at least two conditions are met.[52] First, risks should be independent across the insured. This does not apply, however, to unemployment risk which is

[51] Note, however, that we take no account of the transaction costs associated with monitoring and enforcement. Moreover, tighter job-search requirements and monitoring impose a cost in terms of privacy of benefit claimants.
[52] Other conditions are that the probability of occurrence should be smaller than unity and that the probability distribution of the insured event is estimable (Barr, 1992).

correlated with the business cycle. With correlated shocks, insurance cannot benefit from the pooling of idiosyncratic risks. The insurer therefore bears a substantial risk as the ex-ante premiums paid by the insured will not always cover the benefit obligations of the insurer, *e.g.* during a recession. To meet its obligations, the insurer would need to accumulate substantial buffers. Still, it may not be able to guarantee their commitments regarding benefit payments as it can go bankrupt in case of a deep recession. The public sector is better able to deal with unemployment risk because it can force people to finance public deficits, *e.g.* by raising taxes, and it can engage in intertemporal risk sharing.[53]

The second condition for private insurance to be complete is that information about risk profiles is symmetric and verifiable. This condition is violated if people have private information about their risk profile, i.e. information that the insurer cannot verify. High transaction costs and legal barriers (*e.g.* to protect privacy) usually put limitations on the amount of screening that insurers can undertake. This renders asymmetric information important. It can cause a breakdown of the private insurance market due to adverse selection (Akerlof (1970)).[54] This underinsurance problem may provide a case for social insurance. Indeed, compulsion by the state can prevent underinsurance by forcing agents to participate in a pooling contract.[55]

While social insurance – i.e. insurance that is compulsory and that does not allow for exit -- is desirable in case of unemployment insurance and disability insurance, it can suffer from government failures. This holds in particular for the public administration. Administrative tasks include the assessment of claims, the provision of insurance benefits, the monitoring of eligibility requirements, the organisation of welfare-to-work services, and the imposition of sanctions in case of non-compliance. For disability insurance, a substantial part of the administrative efforts deal with the assessment of claims. For unemployment insurance, providing welfare-to-work services and monitoring are more important.

When discussing the design of an efficient administration, the key trade-off is that between adverse selection and moral hazard. Organising insurance as a public monopoly would rule out

[53] Note that governments use social insurance also as a redistributive instrument by enforcing a compulsory pooling equilibrium, thus providing ex-ante redistribution from low-risk individuals towards high-risk individuals. As with redistributive taxes, also redistributive social insurance hurts the incentives to supply labour. The distortionary impact of social insurance premiums differs from that of taxation, however. In particular, an additional hour of work yields a lower net payment if the marginal tax or insurance premium increases. With taxes, there is no individual benefit associated with this increased tax since the revenue is spent publicly. A higher social premium, however, may increase individual insurance rights due to an actuarial component of the insurance. This part of the insurance premium works like a non-distortionary benefit tax. The labour-supply distortion originates only in the cross-subsidies from low-risk to high-risk individuals. Indeed, the tax component raises the social premium for the low-risk agents without yielding additional insurance rights. The distortionary impact of social premiums on labour supply is thus expected to be smaller than that of taxes (Disney, 2004)

[54] Since the late 1990s, Dutch firms can opt out of the public scheme and shift towards either private insurance or self insurance of disability risk of their employees. Deelen (2005) finds that selection by these companies has been important as low-risk firms have indeed opted out of the public scheme.

[55] See also Teulings *et al.*, 2003. This underinsurance problem can be reinforced by other behavioural characteristics of people. For instance, people may underestimate the risk due to bounded rationality. Moreover, a public minimum income guarantee via welfare benefits may induce people to buy too little insurance on the market. The latter is a form of moral hazard associated with the welfare scheme.

adverse selection. Yet, it may not effectively fight moral hazard. In particular, a public monopoly is likely to minimise exclusion because it has weak incentives to limit the use of insurance. Conversely, competing private administrations have better incentives to combat moral hazard problems, thereby minimising erroneous admissions. Yet, under private insurance adverse selection problems and erroneous denials are likely to become more important (see also CPB (1997)).

There are three ways to deal with the dilemma between moral hazard and adverse selection: (i) public provision of social insurance, while creating (quasi-)incentives for public offices; (ii) private provision of social insurance, with the government acting as a (strict) regulator; and (iii) public and private provision of social insurance. We discuss these three designs below.

Public provision using (quasi-)incentives

When looking at the administration of public social insurance, the relation of the government vis-à-vis administrative offices can be described in a principal-agent context. Public administration offices ('the agents') often have considerable discretion in fulfilling their tasks. Eligibility is formalised in a number of rules, but there remains room for discretion. For the administration of welfare-to-work services, decisions are even harder to capture in rules, and is therefore largely handed over to case managers. Thus, if the government – the principal – wants to judge public insurance offices on their performance it cannot rely on rules only. The government has to steer on outcomes as well and provide (quasi-)incentives. In the Netherlands, experience with the administration of disability insurance has shown that the consequences of leniency in the assessment of claims can be substantial. In particular, in the eighties the inflow of hidden unemployed in the disability insurance scheme was extremely high.

Steering on the basis of outcomes implies a new role for the government in various respects. Indeed, the government first needs to develop reference indicators for the evaluation of administration offices. This information then can be used to compare offices in benchmark studies. Subsequently, the government must judge offices on the basis of output indicators. It can then either rely upon naming and shaming when performance is below par, or invoke some sort of penalty (monetary of non-monetary) on its management.[56]

Creating incentives for public administrators is a relatively new phenomenon so that evidence on their effects is scarce. Burgess *et al.* (2004) evaluate a pilot program with team-based financial incentives for the administration of unemployment insurance in the United Kingdom (Jobcentre Plus). They show that the use of performance pay had a significant effect on the number of job placements, especially for smaller administrative offices, without an impact on the quality of services.[57]

[56] See Koning and Deelen (2003) for a more extensive discussion on this new role of the government, in particular with respect to the organisation of unemployment and disability insurance in the Netherlands.

[57] Other studies have analysed the side effects of these incentives. For instance, Heckman *et al.* (1996) investigate the incentive of welfare-to-work offices to cream-skim the best training candidates after being exposed to monetary rewards for the performance of program participants. The authors find that the size of cream skimming is limited.

Private provision

Moral hazard problems are the major argument to have private provision of social insurance. This, however, does not mean that this renders the role of the government trivial: in practice, the government often sets the basic eligibility criteria and benefit levels of insurances, acts as a supervisor, and imposes acceptance obligations to private insurance companies. Thus, the government uses its force of compulsion to avert adverse selection, while maintaining sufficient competition between private insurance companies.

In the Netherlands, sickness insurance has been privatised in 1993. It has led to a substantial reduction in the incidence of sickness absenteeism (Lindeboom and de Jong (2004)). For the United States, evidence is available from the Workers Compensation scheme for disabled workers (see Van Vuren (2005), for a survey).[58] These studies find public offices to have lower administrative costs than private insurance companies, suggesting that scale advantages are important.[59] At the same time, private insurance companies show a lower incidence of disability, indicating that they better reduce moral hazard problems.

Public and private provision

The administration of social insurance can be a mixed responsibility. In designing mixed schemes, one should be careful not to violate the exclusivity requirement of efficient insurance (see the Box "*Inefficiency of the cappuccino model*"). A proper combination of public and private provision may combat both moral hazard and adverse selection, *e.g.* if a public monopoly is responsible for activities where adverse selection is likely to occur and private market incentives are directed to activities where moral hazard is important. The assumption underlying such a design is, however, that administrative tasks can be divided without costs. This is doubtful in practice. For instance, the assessment of claims and the organisation of welfare-to-work activities are related activities. Thus, handing over tasks to private insurance companies can result in substantial administrative costs (Koning and Onderstal, 2004).[60]

Private and public insurers may also compete. Within such a setting, public offices act as 'insurers of last resort', ensuring insurance for all clients. An advantage is that, as one of the players in this market, the public provider is better informed about the practice of private insurance companies, thereby strengthening their role as supervisor of the market. However, it is uncertain whether a mixed market will persist or that either the public office, or the private insurance companies will be driven out of the market. Moreover, creating a level playing field when one of the players is a supervisor is a non-trivial task.

[58] Studies comparing the performance of public and private insurance systems are scarce. They require systems to be similar in several relevant aspects – in particular regarding the composition of the insured population. In practice, private and public systems may differ along various institutional dimensions, which complicate the interpretation of such a comparison.

[59] Next to scale advantages, lower administrative costs may arise as public offices do not have to make financial reservations, do not have to pay taxes and profit margins to shareholders, and do not have to make acquisition costs (Aarts en de Jong, 1999).

[60] Since the late nineties, various countries (among which Australia and the Netherlands) have privatised the market for welfare-to-work services of unemployment insurance arrangements and social assistance, while maintaining a public (monopoly) administration of claims assessment. Until now, evidence on the efficiency of these mixed systems is absent.

Inefficiency of the cappuccino model

If private insurance companies or social partners supplement public (statutory) insurance benefits, we talk about the 'cappuccino model'. In particular, it makes different parties (layers) responsible for insurance of the same risk. The cappuccino model applies to, for instance, the structure of pension schemes in the Netherlands. This consists of a publicly financed basic pension, a supplementary defined benefit scheme that is agreed upon by social partners, and a voluntary defined contribution scheme that is supplied by private insurance companies.

The economic literature reveals that the cappuccino model is inefficient as a way to provide social insurance when moral hazard is present. In particular, the model violates the so-called exclusivity condition (Pauly (1974)). This condition states that exclusivity is necessary to provide proper incentives for the insurer to prevent moral hazard. Indeed, if the responsibility would be divided among different agents, each of the responsible agents would face a limited incentive to combat moral hazard as part of the efforts would benefit the other insurers. These externalities lead to too lax enforcement. For this reason, private insurance contracts usually do not permit insurance of own risk with another insurance company. In the Netherlands, where both disability and unemployment insurance arrangements are supplemented by social partners, violation of the exclusivity requirement seems to have triggered particularly older workers to use these arrangements as (substitute) pathways into early retirement (Lindeboom (1996)). That the cappuccino model is feasible for pensions is because moral hazard is absent here.

A single insurer for different risks may also be attractive if these risks are correlated. For instance, if the unemployment risk is insured by a public agent and disability risk by a private company, there are opportunities for private insurance companies to transfer disability risks to the public sector. Putting these insurances in one hand prevents shifting of risks.

4.4 Active labour-market policies

Active labour-market policies may reduce ex-post moral hazard by increasing the outflow from social insurance. Thus, it can be part of an optimal insurance contract. Activation consists of training, job search assistance and relief jobs, but monitoring and sanctioning may be considered as activation policies as well. This section discusses the theoretical and empirical findings from the literature on active labour-market policy.

The economics of active labour-market policy

The theoretical literature provides three key arguments for government involvement in active labour-market policy: moral hazard, incomplete information, and redistribution.[61] Moral hazard may occur in decisions to engage in schooling, job training or job counselling. Indeed, unemployment benefits can reduce the incentives for unemployed individuals because part of the gains from their effort accrues to the insurer. The government may thus provide incentives for people to increase effort so as to raise exit out of unemployment. Incentives can be improved through monitoring and sanctions, and through the obligation to participate in an activation program.

The second reason for active labour-market policy is due to incomplete information. First, workers and firms may not be fully informed about job opportunities and workers seeking for jobs. This creates frictional unemployment. Second, firms may be hesitant to hire workers as they cannot observe their productivity. Similarly, workers may underestimate the value of jobs

[61] For an overview of the diverse effects of active labour-market policies in theory see Calmfors (1994).

by focusing on wage offers only. Job training facilities may then help to alleviate these information problems. The mere existence of information problems is, however, not an argument *per se* for government intervention. It is only efficient if the government were better informed on job and worker characteristics than workers and employers themselves. If not, public intervention is likely to lead to government failures of similar proportion as the market failures that it tries to alleviate (Petrongola and Pissarides (2000)).

The third reason for active labour-market policy is redistribution. Redistributive effects can be substantial, especially when unemployed workers are offered relief jobs. This form of redistribution can be attractive, even if relief jobs are economically inefficient. The reason is that it provides a targeted form of redistribution to low productivity workers. Moreover, employing people that would otherwise feature long-term unemployment may have an intrinsic value associated with social inclusion, a value that goes beyond the mere value of production. Yet, relief jobs may not lead to substantial savings on insurance costs – *e.g.* as a result of substitution or displacement of other workers. Thus, they may come at the expense of employment among workers with a higher productivity. The question is thus whether relief jobs are the most efficient instrument to achieve redistributive objectives.

Empirical evidence on active labour-market policy

With some exceptions, empirical micro studies provide a rather dismal picture of the effects of active labour-market policy (see *e.g.* Calmfors *et al.* (2004); Friedlander *et al.* (1997); Heckman *et al.* (1999); Martin and Grubb (2001)).[62] First, while (public) job training programs reduce the rate of registered unemployment during the training period, the effect on the likelihood of finding a regular job afterwards is generally found to be insignificant. This holds in particular for youth programs. In some cases, unemployment durations may even rise as the unemployed have less time to search for a regular job. For women, more positive results of training programs are reported. Second, relief jobs in the public sector and selective employment subsidies for low-skilled workers aim to encourage employment among the low-skilled. These programmes indeed create jobs and help to integrate the low-skilled unemployed in the labour market. Yet, these programs are found to be ineffective in helping the unemployed to re-enter in the regular, open labour market. Indeed, individuals typically get locked in these programs, while substitution and displacement effects are considerable. For instance, Swedish public work programs are found to crowd out regular jobs for more than one half. As a result, the effect of these relatively expensive programs on aggregate employment is very modest at best. Finally, job search assistance via government operated labour-market exchange and placement services is found to be the most cost-effective form of active labour-market policy. This relatively cheap

[62] Most evidence on active labour-market policy effectiveness relates to the United States and Canada, where there is a long-standing tradition of labour market program evaluation. Rigorous econometric evaluations for the Netherlands are scarce (De Koning (2004), Koning (2005) and IBO (2001) present recent surveys of the literature on active labour-market policy effectiveness in the Netherlands). Only CPB (2000) and Heyma (2002, 2005) take full account of various selection biases and conclude that the findings for Dutch active labour-market policies are no exception to the international literature: job training is found to be ineffective, whereas there is some evidence that job search activities are effective.

policy is found to mitigate unemployment persistence, in particular when combined with sufficient monitoring activities. Moreover, job counseling is found to exert a significant effect on the quality of job matching as measured by a lower incidence of recurrence one year after employment (Crepon, et al (2005)). Many studies find, however, that the compulsory character of the programs, combined with the threat of losing one's benefits in case of non-compliance, explains the major part of the results (Black *et al.* (2003)).

Macro studies on active labour-market policy typically generate more favourable results, see *e.g.* Nickell and Layard (1999). However, these studies are plagued by econometric problems.[63] Computable general equilibrium models are an alternative way to go from micro to macro effects (Heckman et al (1999)). MIMIC fits into this type of analysis of active labour-market policy (Jongen *et al.* (2003)). We illustrate the effects of two types of active labour-market policy in Table 4.5: relief jobs in the public sector and employment subsidies for employers who hire long-term unemployed.[64] The relief jobs comprise around 10 000 low skilled public sector jobs, with a budget of 0.25 billion euro. The subsidies are modelled as a voucher that a long-term unemployed individual can provide to an employer. It comprises a subsidy of 25% of the social minimum income per job, which comes down to 4 000 euro per year for a two-year period. It has the same budget of 0.25 billion euro. The government budget is balanced in both cases by a 0.1% increase in income tax rates.

The simulations suggest that general equilibrium mechanisms through 'fiscal substitution' and wage bargaining substantially reduce the gains from subsidised employment. Table 4.5 reveals that the expansion of public sector jobs comes at the expense of an equally large reduction in private sector employment. This crowding out occurs for a number of reasons. First, the public sector jobs reduce search efforts by the unemployed. This raises search costs for private firms. Second, the reservation wage increases because the wage in the relief job exceeds the unemployment benefit. Third, tax rates increase, which hurts the incentives for labour supply and reduces employment. Overall, aggregate employment remains unchanged while the rate of unemployment does not fall. While relief jobs thus can be attractive as a tool for integrating vulnerable unemployed in society, it appears to be ineffective to improve overall labour market performance. The second column shows the impact of subsidies for private employers who hire long-term unemployed. This policy raises private sector employment by 0.1% as the subsidy makes it more attractive for firms to hire unemployed people. Especially employment among the low skilled rises by 0.5%. Vouchers are thus well targeted at creating low-skilled employment in the private sector, without inducing adverse effects on labour supply

[63] Time series are short, studies may suffer from reverse causality, ignore other endogeneity issues, ignore time lags, and only consider the effect on open unemployment.

[64] See Jongen *et al.* (2003) for an analysis with an extended version of MIMIC. They also explore the impact of training programs aimed to the regaining of human capital by the long-term unemployed. Training programs raise unemployment if one counts people in the training program as unemployed. This is because of the higher replacement rate and lower search of those available for the labour market. Training programs do, however, increase the job-finding probabilities of the unemployed.

Table 4.5 Long-term effects of active labour-market policy on the labour market[a]

	Public relief jobs	Subsidies for low skilled long-term unemployed
Producer wage	0.1	0.0
low skilled	0.1	– 0.2
high skilled	0.0	0.1
Labour supply in hours	0.0	0.0
Female participation rate	0.0	0.0
Share of high-skilled labour supply	0.0	0.0
Total employment	0.0	0.1
Public sector employment	0.4	0.0
Private sector employment	– 0.1	0.1
low skilled	– 0.1	0.5
high skilled	0.0	– 0.1
Unemployment rate (absolute change)	0.0	– 0.1
low skilled	0.0	– 0.4
high skilled	0.0	0.1
Private production	– 0.1	0.0
Income tax rates (absolute change)	0.1	0.1

[a] The first column shows the effect of the creation of 10 000 public relief jobs for the low skilled. The second column shows the effect of a wage subsidy for long-term unemployed workers of 25% of the social minimum income per long-term unemployed. All figures are expressed in relative changes unless indicated otherwise.

Source: MIMIC simulations.

due to a phasing out of the subsidies. This policy is thus relatively effective. The scope for raising employment in this way is limited, though.

Based on the evidence from evaluation studies and model simulations, we may conclude that the government should probably not expect too much from active labour-market policies in terms of increasing the inflow into regular work. Apparently, participants often have weak incentives to complete programs or to return to the regular labour market or feature a productivity which does not rise sufficiently to find a job in the open market. Moreover, public administrators may not have sufficient incentives to combat moral hazard. More harsh measures, such as mandates and sanctions, complement lenient active labour-market programs to combat moral hazard in social insurance and welfare schemes (see Abbring *et al.* (2005), Van den Berg and Van der Klaauw (2001) and CPB (2000)). Moreover, subsidising employment in the private sector appears to be more effective than creating public jobs.

4.5 Employment protection

Employment protection may either complement or substitute for unemployment insurance. It comprises notice periods, dismissal procedures, severance pay and firing taxes. We consider these policies in this section.[65]

The economics of employment protection

The economic rationale for employment protection is twofold. First, it can serve as an insurance against the income loss from a job separation. For instance, severance pay and/or notice periods oblige firms to insure workers against income loss from a layoff. Thus, severance pay or notice periods substitute for unemployment benefits (see *e.g.* Bertola (2004); Pissarides (2001)). Figure 4.2 illustrates this by means of a scatter of the OECD index for employment protection legislation and the Net unemployment benefit replacement rate for 20 European countries in 2003. The figure suggests that employment protection and unemployment insurance are indeed substitutes, at least within the European Union.[66] It raises the question whether insurance could better be organised by compulsory notice periods, severance pay and perhaps administrative procedures or through explicit unemployment insurance. On the one hand, unemployment insurance is more efficient. Insurance can better exploit the gains from risk pooling among a large group of agents than individual employers can. Public insurance thus insures firms or sectors against sector-specific or macroeconomic shocks. Moreover, it makes workers less dependent on employers for receiving an income. On the other hand, there is a potential productive role for employment protection, dealing with firm-specific investment in the human capital. In particular, if the duration of employment increases due to employment protection, workers and firms will be more inclined to invest in match specific skills. Without employment protection, incomplete contracts may result in bargaining over the rents after specific investments are sunk, a phenomenon known as the hold-up problem. The advantage of employment protection as compared to social insurance is therefore the positive impact on specific investments and a stimulus of long-term relations.

A second role of employment protection emphasises the complementarity with unemployment insurance (rather than the substitutability). Indeed, Blanchard and Tirole (2004a, 2004b) show that unemployment (or disability) insurance and a firing tax are two sides of the same optimal insurance policy. The argument deals with the internalisation of externalities. Without a firing tax, labour turnover and inflow into unemployment insurance would be excessive since individual agents do not take account the fiscal impact of their separation decision. Thus, separations may be inefficiently high in the presence of social insurance. A firing tax provides incentives to reduce separations, *e.g.* by means of preventive measures

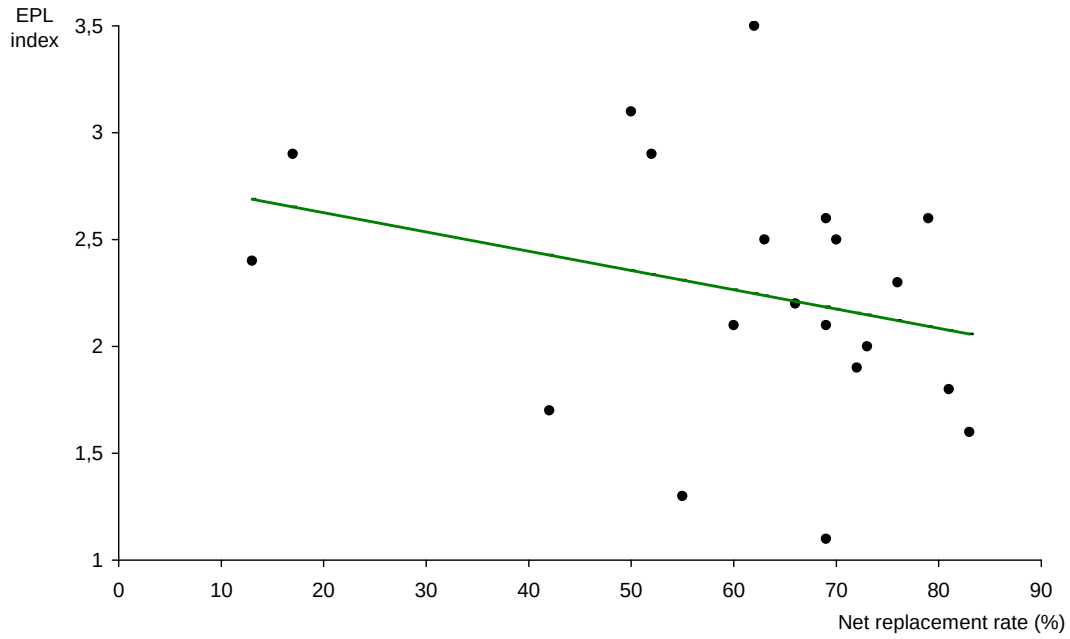
[65] For a more elaborate exploration, see Deelen *et al.* (2006).

[66] However, this negative relation is not robust to the inclusion of the United States and Canada which have both limited employment protection and unemployment insurance.

undertaken by employers. For instance, it can stimulate firms to invest in the employability of workers.

While employment protection and firing costs may serve productive goals, they also exert negative side effects. First, employment protection tends to reduce hiring. This occurs if workers do not reduce wages to compensate firms for the additional compensation in prolonged employment due to notice periods or severance pay. Reduced hiring will increase the cost of becoming unemployed due to longer unemployment duration. Thus employment protection

Figure 4.2 Correlation between employment protection and unemployment benefit generosity in Europe



increases inequality between insiders and outsiders.[67] Moreover, by reducing the job finding probability for outsiders, employment protection can discourage job search and labour supply. Second, employment protection may also reduce work effort, a form of moral hazard induced by the insurance (see *e.g.* Galdon-Sanchez en Guell (2003)). To remedy this, one would like to exclude workers that were found shirking from employment protection. However, this information is typically not readily (if at all) available to a third party. Since firms would always claim that workers that are to be fired when shirking, and workers will always claim the opposite, the distinction between firing for economic reasons and because of shirking will be hard to make. A third drawback of employment protection is that it reduces outflows from and into employment. Insofar as technological change (broadly defined) is embodied in job-worker matches, this reduces the level and perhaps the growth of technological development in the economy. If reallocation is becoming increasingly important, a negative effect of employment protection on technological development becomes more pressing than in the past.

[67] This makes it less attractive to introduce individual saving accounts in the presence of tight employment protection since a relatively large fraction of the unemployed would have to rely on the public bail out.

When considering employment protection, one cannot ignore distributional considerations (see *e.g.* Saint-Paul (2002)). Indeed, employment protection appears to have a different impact for different types of workers in the labour market. Specifically, employment protection tends to benefit the 'prime-age male worker' and hurts the relatively young and old, and women of all ages (Young (2003)). Older male workers are likely to block reforms in employment protection that protects them against competition from outsiders.

Summing up: in theory, the impact of employment protection on productivity, employment and welfare seem ambiguous. Employment durations may increase, but so may unemployment durations. Specific investments may be stimulated, but at the expense of technology adoption. Older male workers (the insiders) usually benefit at the cost of young people, women and immigrants (the outsiders). This raises the question: what do we know empirically?

Simulating lower employment protection with MIMIC

The job matching model of MIMIC describes the process of job lay-offs and vacancy creation by firms. This part of the model is calibrated using Dutch data. For instance, the participant inflow into unemployment compensation is 5.5% on average per year. We can modify the calibration of the lay-off rate to capture the impact of higher job flows associated with lower employment protection. To do this, we first regress the yearly inflow into unemployment insurance for a group of 17 OECD countries on the EPL index of the OECD. Data on inflows are obtained from the OECD employment outlook 2005, where we take the average inflow rate for the period 2002 - 2004 if available. The EPL index refers to 2003. The regression yields the follow relationship: INFLOW = 13.9 – 2.8 EPL, where the standard error for the EPL index equals 1.8. It suggests that a reduction in the EPL index by 1.0 raises the participant inflow into unemployment compensation by 2.8% of the labour force. Using this regression, we predict that a reduction in the EPL index from 2.3 to 1.8 in the Netherlands would raise the inflow rate into unemployment insurance from 5.5% to 6.9%.

If we increase the rate of job lay-offs in MIMIC by 1.4% of the labour force, we find that the rate of unemployment rises. At the same time, the number of vacancies increases so that the unemployed face a higher job-finding probability. Accordingly, the average unemployment duration (i.e. the ratio of unemployment and job matches) falls. The rise in unemployment is not consistent, however, with the empirical evidence reported in Deelen *et al.* (2006). Hence, only increasing the lay-off rate in MIMIC is probably an inadequate reflection of how employment protection affects the process of job matching. To capture the impact on hiring behaviour of firms, we also modify the mismatch parameter in the model (we could alternatively modify other parameters, such as the bargaining position of workers, with the same result). Thus, firms become less reluctant to hire new employees when employment protection is relaxed. We modify the mismatch parameter so as to arrive at the same overall outcome for unemployment as is reported in Deelen *et al.* (2006). Table 4.6 in the main text reports the overall effect of less EPL, i.e. a higher lay-off rate and a lower mismatch.

Empirical evidence on employment protection

A robust finding from the empirical literature seems to be that flows in and out employment fall with the strictness of employment protection (OECD (2004); Young (2003)). Moreover, it appears that employment protection favours insiders compared to outsiders. Accordingly, it is harmful for women and younger workers while it benefits prime-aged male workers. Regarding the impact of employment protection on the level of employment, the rate of unemployment and the level of productivity, the results less clear. Deelen *et al.* (2006) review the empirical literature and find that, if anything, the overall impact of employment protection on labour-supply and aggregate employment is neutral to negative. The impact on the level of

unemployment is neutral to positive. Based on nine empirical studies, Deelen *et al.* (2006) find an average elasticity of the employment protection index on the unemployment rate of 0.18. It suggests that, for instance, a reduction in the Dutch EPL index presented by the OECD from 2.3 to 1.8 (which equals a 21% reduction), would reduce the unemployment rate by approximately 0.2%-points (evaluated at an unemployment rate of 5%). An EPL index of 1.8 corresponds to the index of *e.g.* Denmark.

We can use this information in our model simulations. It is true that MIMIC does not explicitly describe institutions for employment protection legislation. Hence, we cannot directly explore such reforms with the model. Yet, we can simulate the impact of employment protection indirectly by using the results of Deelen *et al.* (2006), together with information on employment flows. The Box "*Simulating lower employment protection with MIMIC*" discusses this procedure. Table 4.6 shows the simulation results of a reduction in the EPL index of the OECD in the Netherlands from 2.3 to 1.8. The effect on the unemployment rate is calibrated to be consistent with the findings of Deelen *et al.* (2006). Hence, unemployment falls by 0.2%-point. We find, further, that the average unemployment duration declines by 19.5%, which is more than 2 months. Aggregate employment increases by 0.3% since the reduction in employment protection also encourages labour supply. The latter effect is caused by the lower tax rate made possible by the savings on unemployment benefits. Overall, we find that a reduction in employment protection exerts small but positive effects on the labour market.[68]

Table 4.6 Long-term effects of lower employment protection on the labour market[a]

Producer wage	0.2
low skilled	0.1
high skilled	0.2
Labour supply in hours	0.1
primary earners	0.0
secondary earners	0.1
single persons	0.1
Female participation rate	0.1
Share of high-skilled labour supply	0.0
Employment	0.3
low skilled	0.3
high skilled	0.4
Unemployment rate (absolute change)	– 0.2
low skilled	– 0.3
high skilled	– 0.1
Average unemployment duration	– 20.0
Share of long-term unemployment (absolute change)	– 2.6
Production	0.5

[a] Reduction in the EPL index by 0.5, i.e. from 2.3 to 1.8. All figures are expressed in relative changes unless indicated otherwise.
Source: MIMIC simulations

[68] Note that the simulations ignore the impact on relation-specific investment in human capital.

What type of employment protection?

When it comes to the role of employment protection as an insurance device, much of the controversy over the types of employment protection is on whether notice periods and severance pay are sufficient or whether this should be supplemented with administrative procedures. The Netherlands seems to favour administrative procedures over notice periods and severance pay, although the balance seems to be shifting in recent years towards the latter. Thinking about the productive role of employment protection as a way to give job security and income security, it is hard to see what advantage administrative procedures have over notice periods and severance pay. Indeed, apart from less resources spend on information reiteration, notice periods and severance pay presumably reduce the uncertainty in the outcome for the worker and the firm of the separation process. Hence, even those researchers who are at least in part sympathetic towards some forms of employment protection see only a marginal role for lengthy administrative and court procedures (see *e.g.* Barendrecht (2004); Blanchard and Tirole (2004a); and Pissarides (2001)). Yet, part of the optimal mix may be procedures against unfair dismissal. Clearly, firing is never random but may be unfair. In particular, leaving full discretion of the firing decision to the firm may undermine socially desirable policies directed at *e.g.* pregnant women.

Another concern is the division between the protection of regular employment versus temporary employment. Since the late 1980s, overall strictness of employment protection has fallen, but this appears to be mainly the result of less strict protection for temporary jobs.[69] It can be questioned whether this is a good thing or not. In particular, by relaxing employment protection for a small group of workers, we reintroduce some of the problems employment protection is supposed to alleviate (see *e.g.* Blanchard and Landier (2002); Booth *et al.* (2002)). Furthermore, less strict employment protection for temporary jobs may actually exacerbate initial distortions by further insulating 'insiders' from the risk of being fired (see *e.g.* Bentolila and Dolado (1994)).

The role of employment protection to internalise fiscal externalities is best served by firing taxes.[70] A firing tax may be introduced by means of experience rating. Under experience rating, the insurance premium paid by employers is firm-specific and depends on the unemployment benefits claimed by laid off employees of the firm. Compared to uniform premiums, experience rating confronts employers with the financial consequences of their layoff decisions which will thus be internalised. Another advantage of experience rating is that it removes cross subsidies from sectors that cause large inflows into social insurances towards sectors that cause small inflows. For instance, current systems tend to subsidise construction sectors and penalise service sectors. A number of simulation studies find favourable labour-market implications of

[69] This has probably raised temporary employment in the Netherlands. Indeed, temporary jobs have been on the rise from 7.1% of the total number of jobs in 1987 to 10.1% in 2001.

[70] Severance pay serves as an insurance device for the worker. It does not, however, serve to internalise the external effects from a job separation. This is because severance pay has no impact on the overall surplus from the job, but only redistributes income from the firm to the laid off worker. In contrast, a separation cost like a firing tax increases the surplus of the match. Thus, they make parties less eager to separate.

experience rating in unemployment insurance (see *e.g.* Albrecht and Vroman (1999) for the US; Alessi and Bloemen (2004); Cahuc and Malherbet (2004) and Fath and Fuest (2005) for Europe). Empirical studies for the United States confirm this. For instance, Anderson and Meyer (1994; 2000) find that experience rating increases overall employment in American states.

In European countries, experience rating in unemployment insurance is largely imperfect or absent.[71] Some degree of experience rating at the firm level exists in Denmark (for the first two days), Norway (for the first three days), France (depending on age for up to 12 months benefits), Germany (for workers above 57), and Italy (up to six times the monthly benefit). In Finland, Spain, Sweden and the Netherlands, experience rating has been introduced on the sectoral level. While sectoral experience rating does not bring the same incentive effects as experience rating at the firm level, it does remove cross-subsidies between sectors. Moreover, Holmlund and Lundborg (1988) show that sectoral funding reduces wages and raises employment because trade unions take account that premiums of their members depend on the number of unemployed fund members.

Yet, there are still some potential drawbacks of introducing experience rating in European economies. First, risk sharing across firms or between sectors can be desirable. In the presence of sector-specific shocks, experience rating would place the entire burden on firms operating in the shrinking sector. This may reinforce the magnitude of such shocks by speeding up bankruptcies, and perhaps even exacerbate swings in the business cycle (Holmlund (2001); Blanchard and Tirole (2004b)). Second, experience rating may strengthen the bargaining power of workers relative to employers, potentially resulting in higher wage claims. This would be particularly relevant in the European context that is characterised by strong insider power. Third, insofar as experience rating results in lower hiring, we have to take into account negative effects arising from longer unemployment durations. Finally, European countries already limit inflows into unemployment via employment protection. The benefits of additional incentives to limit inflows via experience rating are thus less likely to exceed the costs in terms of less flexibility in firing decisions. Yet, as firing costs are probably more efficient to limit job turnover than administrative procedures and court cases, experience rating might be a better alternative than current employment protection practices in most European countries.

[71] The Netherlands has introduced experience rating in disability insurance in the late 1990s. The premiums paid by employers for disability insurance depend on disability inflow in previous years. This provides an incentive for firms to invest in prevention of disability risk in order to reduce the cost of disability insurance. Indeed, Koning (2004) finds support for reduced inflow rates into disability for firms that face this financial incentive from experience rating.

4.6 Policy options for efficient insurance

This chapter discusses the design of social insurance to minimise the adverse implications for the labour market. Table 4.7 summarises the main trade-off in designing a system that aims to combine the benefits from insurance and good incentives for labour market participation.

This chapter finds that less generous social insurance, *e.g.* through lower levels of unemployment and disability benefits, shorter unemployment benefit duration, or substitution towards individual saving accounts, can help to reduce unemployment rates and raise labour-market participation by combating moral hazard. It yields, however, less insurance. This induces a social cost. Hence, there is a trade-off between good insurance and incentives to fight

Table 4.7 A summary of the main trade-offs in social insurance

Insurance	↔	***Incentives***
	Policy issues	
Insurance benefits	**Terms of the insurance contract**	**High employment**
	Benefit level & duration	
	Entitlement conditions	
	Eligibility, monitoring, sanctions	
	Individual saving accounts	
	Complementary policies	
Avoid averse selection	Administration	Combat moral hazard
Encourage exit	Active labour-market policy	Scarce public funds
Insurance	Employment protection	Flexibility
Lower inflows	Firing tax	Smaller outflows

moral hazard. We show that savings may be more appropriate than insurance in the case of small risks and large moral hazard, *e.g.* for small unemployment spells. For larger risks, however, insurance is typically more efficient than savings.

For a given level of insurance, the key policy challenge is to minimise moral hazard. Thereby, the government may use stringent job search requirements, mandatory obligations, and sanctions, although such policies impinge upon the privacy of benefit recipients. Moreover, reducing moral hazard calls for an efficient administration that engages in tight monitoring and claim assessment and that invests in activation of benefit claimants. In delegating administrative tasks to decentralised units, the government should care about both the risk of selection by competing administrations and proper incentives for administrators to fight moral hazard. Irrespective of the choice between a public monopoly or competing administrations, the exclusivity requirement should always be fulfilled to obtain efficient administration.

Insurance can be supplemented by active labour-market policies in order to raise exit from the insurance. Yet, whereas harsh measures like sanctions and mandatory workfare tend to significantly increase outflows from the insurance, empirical evidence provides mixed evidence on the effectiveness of more lenient forms of active labour-market policies. Lock-in effects and

reduced search activities seem to render some forms of active labour-market policies even counterproductive in raising employment in the market sector. Still, active labour-market policies may be a social imperative, rather than a way to increase employment in the open market. Moreover, some types of active labour-market policy, such as job-search assistance and vouchers for the long-term unemployed, yield more positive effects. Yet, the Netherlands has in the past mainly invested in public relief jobs, rather than employment subsidies.

Employment protection and firing taxes may be efficient to reduce moral hazard in inflows into unemployment insurance. Moreover, it encourages commitment and thus stimulates employment durations and investment in firm-specific human capital. However, employment protection also creates a social cost by increasing unemployment duration and hampering innovation. Empirical evidence suggests that stricter employment protection exerts a neutral to positive impact on the unemployment rate and a neutral to negative impact on labour supply and employment. It hurts especially the labour market position of youngsters, women and immigrants. Financial incentives, *e.g.* via experience rating in unemployment insurance, tend to be more efficient than administrative procedures in internalising the negative external effects from job separations.

5 Welfare state (3): Reallocation over the life cycle

During the course of life, people experience various shocks in income that can be foreseen or that are the result of choice. The capital market provides an opportunity to smooth consumption in the presence of these endogenous income fluctuations. However, capital market imperfections, myopic behaviour and pre-existing distorting institutions may justify public intervention in consumption smoothing, for instance via collective smoothing, mandatory savings and saving facilities. This chapter discusses in particular the role of government in three choices with an intertemporal nature: life-long learning, the combination of work and care, and early retirement.

5.1 Introduction

During the life cycle of an individual income shocks occur regularly, even without uncertain exogenous events like unemployment or disability. Indeed, many changes in labour income occur that can be either foreseen or that are the result of choice. For example, young people often spend their time on education during which they collect low or zero labour income; during working life labour income increases with experience and tenure; and there may be changes in disposable income due to marriage, because children are born, or at old age. Because of these fluctuations, consumption needs are not likely to match labour income in every phase of life. Insurance is impossible in these circumstances due to the endogenous and/or predictable character of the events. People therefore rely on saving and borrowing on the capital market to prevent large fluctuations in consumption, i.e. to smooth consumption over the life cycle.

Yet, capital markets may not function properly. In particular, people may be restricted in borrowing on the capital market. This leads to liquidity constraints. Moreover, people might not foresee their future circumstances or can be myopic, thus saving too few funds for their old age. This can provide a role for government intervention. Indeed, welfare states play an important role in consumption smoothing. For instance, the Dutch government provides substantial transfers to students, parents and the elderly, which are not primarily meant for redistribution from high ability to low ability agents,[72] but rather involve intrapersonal reallocation of funds from one phase of life towards another, i.e. they act as a smoothing device.[73]

This chapter elaborates on the role of government in consumption smoothing. Apart from organising public smoothing schemes, the government can rely on (mandatory or voluntary) private smoothing principles. We discuss how these alternative policies affect labour market performance. Thereby, we concentrate on what is sometimes referred to as ‘new risks’. These are not risks in the sense of exogenous events. Rather, they are deliberate choices of individuals.

[72] In fact, because high-skilled people die older than low-skilled people on average, pension schemes tend to redistribute from the poor to the rich.

[73] Consumption smoothing via collective arrangements causes substantial intergenerational equity issues, especially in the presence of fluctuations in the size of the different generations, *e.g.* due to a change in fertility rates. This study does not discuss these intergenerational equity issues. They are dealt with more extensively in the complementary study of Van Ewijk *et al.* (2006).

For instance, they refer to life-long learning, the combination of work and care for children, and early retirement. Because of the endogenous character of these 'risks', insurance is infeasible and other institutions should deal with them.

The rest of this chapter is organised as follows. Section 5.2 starts by exploring the fundamental reasons for government intervention for consumption smoothing purposes. Section 5.3 illustrates the role of government in the presence of capital market imperfections, when people discount the future hyperbolically and if the government distorts smoothing through pre-existing interventions. Subsequently, we discuss three phases in life in more detail: life-long learning (section 5.4), the combination of work and care (section 5.5) and early retirement (section 5.6). Section 5.7 concludes.

5.2 Efficient intertemporal smoothing

The most widely used framework for studying intertemporal decision making is the life cycle model. In this framework, people maximise their lifetime utility subject to a lifetime budget constraint (see Box "*The life cycle model*"). The model predicts that rational individuals keep their marginal utility of consumption constant over their life. Hence, whenever an individual is located at his optimal consumption path, an additional unit of consumption gives the same increase in life-time utility. If an individual would have the same utility function over his life cycle and he/she is risk averse, the optimal consumption level is constant over time. Fluctuations in income then ask for consumption smoothing through saving and borrowing. If preferences change, *e.g.* due to increased consumption needs during the phase of parenthood or reduced needs at old age, the marginal utility of consumption will fluctuate across periods if consumption is kept constant. In that case, a constant marginal utility requires different consumption levels across periods.

The capital market facilitates the process of consumption smoothing. Individual saving and borrowing allow for optimal individual choices in the sense that the marginal utility of consumption can indeed be equalised across periods. As long as the capital market functions properly and no pre-existing distorting institutions exist, there is no reason for governments to intervene in life cycle saving behaviour. These conditions, however, are typically not met in practice. Indeed, capital markets may fail, people can suffer from myopia, and distorting institutions exist. For these reasons, there can be a role for government intervention in consumption smoothing via the welfare state.

Liquidity constraints

A properly functioning capital markets means that agents can borrow and lend as much as they wish at a single interest rate. This is not a good reflection of reality though. For instance, borrowing rates typically exceed lending rates, which implies that there is no single interest rate that determines intertemporal smoothing decisions. Moreover, people that demand credit are sometimes refused so that they suffer from liquidity constraints. The underlying reason for these

The life-cycle model

The life-cycle model (Modigliani and Brumberg (1954)) is the most widely used model for intertemporal behaviour regarding work effort and consumption. In a simple version of the model, households face the following optimisation problem over the life cycle between period 1 and T:

$$\text{Max } \Sigma_{t=1,\ldots,T} (1+\delta)^{-t} U(c_t)$$

$$w.r.t \quad \Sigma_{t=1,\ldots,T} (1+r)^{-t} c_t = A_0 + \Sigma_{t=1,\ldots,T} (1+r)^{-t} y_t$$

with utility U, consumption c_t and income y_t at time t, and initial wealth A_0. The first equation suggests that individuals add up utility over the life cycle, thereby using discount rate δ. The second equation says that the discounted value of consumption is equal to the discounted value of income plus initial wealth, whereby parameter r represents the interest rate. The simple version of the model assumes life time T to be known and work effort and income to be given to the individual. Individuals optimise their life-time utility by choosing an optimal consumption path. The Euler equation, which can be derived by taking the first-order derivatives with respect to consumption, shows:

$$U'(c_t) = (1+\delta)(1+r)^{-1} U'(c_{t-1})$$

The Euler equation says that individuals smooth consumption so as to keep their marginal utility of consumption constant over the life cycle, whereby individuals discount over time. Most empirical studies find a time discount rate δ that is larger than the interest rate r, implying that individuals prefer current consumption over future consumption. Hence, people tend to be impatient.

The standard life-cycle model is subject to ample criticism. Many empirical studies find that the model's predictions contradict with real life consumption and saving behaviour. Examples are the excess sensitivity of consumption to *expected* income changes or the non-take up of tax-favoured savings plans. An increasing number of economists are therefore moving away from the standard lifecycle model, *e.g.* by dropping assumptions on rational behaviour and time-consistent planning behaviour. Behavioural aspects like the lack of self-control and *hyperbolic discounting* may be important for describing real-life behaviour. Others have extended the life-cycle model in a variety of ways. For example, the utility function is extended by including leisure and household production. In that case, the Euler equation reveals that the marginal utility of *full* consumption, comprising the value of consumption, leisure and household production, is equalised across periods. Also capital market imperfections have been introduced, leading to liquidity constraints. In the first equation above, it would imply that wealth cannot be negative so that the Euler equation does not hold and the optimal consumption path will depend on initial wealth A_0. This may explain why consumption is excessively sensitive to current income flows.

market imperfections is that banks lack information about borrowers and their risk profiles as they cannot foresee the intentions of people or their future creditworthiness. This asymmetric information leads to adverse selection, moral hazard and ex-post verification problems (Canoy *et al.*, (2001)). Adverse selection means that only the households who most likely will not pay back their loan will go to the bank for a given interest rate. A process of self selection will thus successively raise interest rates and reduce the quality of creditors. Moral hazard means that the bank is subject to the hazard that the household has incentives to spend the credit in such a way that makes it less likely that the loan will be paid back. Ex-post verification means that households ex post have an incentive to claim that they cannot pay back the loan. The three problems cause households to be unable to raise capital from banks, even when the consumption smoothing gains are large.

Especially for people at a young age, borrowing can be problematic. Young people usually have abundant illiquid human capital but little financial capital and collaterals (the opposite holds for older people). Human capital usually does not qualify as collateral to receive credit from a bank. Indeed, borrowing against future income may be particularly vulnerable to moral hazard: after borrowing and spending the money, individuals may not be willing to earn enough to pay back the loan. The non-tradability of human capital thus imposes restrictions on income smoothing towards the earlier phase of life. This causes a direct welfare cost. Moreover, in light of liquidity constraints, young people may underinvest in human capital by shortening their education or by underinvesting in children (see sections 5.4 and 5.5).

A question is how important capital-market imperfections are in practice. A first answer to this question comes from the mere observation that borrowing rates exceed lending rates. The difference can be interpreted as a measure for the imperfection on the capital market. A second answer is obtained from studies that explore life cycle consumption behaviour (Deaton (1991); Carroll (1997)). The relatively low consumption levels early in life may be caused by liquidity constraints. There is a problem, however, in differentiating between liquidity constraints and precautionary savings: households may be restraint in spending money because of uncertainty in future incomes and expenditure needs. Thirdly, Alessi *et al.* (1997) assess the importance of liquidity constraints by using expenditures on consumer durables in the presence of borrowing constraints. They report significant shadow prices for these constraints for young people, suggesting that indeed these constraints are binding. A final way to assess the importance of capital market imperfections is by exploring survey data.[74] On the basis of 2 000 respondents from the DNB Household Survey, Euwals (2005) reports that 73% report a non-negative saving rate. For the age group between 25̃34 and the group of two-parent families, this share is even larger. These figures suggest that most households are not credit constrained. Moreover, 4.2% of all households are currently making debts. Another 7.4% experience restrictions in getting a loan. Among them, older people face most difficulties. This is consistent with their low life expectancy and the high risk of non-compliance.[75]

Commitment problems

In both economic and psychological research, more and more evidence is becoming available that individuals have problems in resisting the temptation of immediate consumption. Such behaviour is consistent with recent insights from behavioural economics (Rabin, (2002)). In particular, lack of self-control and hyperbolic discounting are key aspects in this literature, aspects which are not considered in the traditional neoclassical framework of rational agents with perfect foresight (see *e.g.* Thaler and Shefrin (1981); Liabson (1998)). Hyperbolic discounting means that households discount consumption between today and tomorrow at a

[74] Credit constraints cannot be observed directly which renders these surveys somewhat problematic. Moreover, current welfare states already remove liquidity constraints to a large extent so that we cannot infer the importance of the imperfections per se.

[75] While the difficulty in getting a loan may suggest that individuals face liquidity constraints, it may also be caused by a low lifetime income (and thus a correct assessment of a bank of insufficient creditworthiness).

higher rate than consumption between two subsequent days in the future. Households therefore postpone savings, possibly leading to low wealth levels when grown old and regret for this behaviour ex-post. Accordingly, people would gain if they were able to commit to a saving scheme that reduces consumer sovereignty. Indeed, hyperbolic discounting provides a rationale for government intervention to restrict individual choices.

The importance of hyperbolic discounting cannot be assessed directly from consumption patterns. Liabson (1998) shows that hyperbolic discounting is observationally equivalent to normal discounting behaviour with a high discount rate. Many pieces of indirect evidence are consistent with hyperbolic discounting, though. One piece is provided by Bernheim (1994). He explores the gap between self-reported target savings and actual savings and finds a gap of around 10%. Carroll (1997) and Gourinchas and Parker (2002) show that saving behaviour changes with age: while young individuals save only to maintain a buffer stock, older individuals from age 40 save more for retirement. This may suggest that impatience at a young age is important.

Survey data on self-reported consumption, saving and self control for Dutch households is also consistent with commitment problems. NIBUD (2005) reports that 4% of Dutch households believes that they borrow too much; another 13% believes that they should borrow less. Especially young respondents are not satisfied with their borrowing behaviour and many admit to have problem with their financial management. Euwals (2005) reports that 69% of Dutch households is not willing to refrain from current consumption in order to save. About 27% of the individuals aged 25 to 34 answers they find it difficult to control expenditures. There are also indications that Dutch people are seeking for commitment devices to impose external restrictions on their consumption behaviour. For instance, NIBUD (2005) observes that 24% of the individuals ask for their tax rebate at the end of the year, instead of a provisional monthly rebate during the year. In this way, they force themselves to save. Van Rooij *et al.* (2004) show that many individuals are in favour of compulsory saving for retirement. The reason is that they consider themselves as financially unsophisticated, not eager to control their individual retirement savings, and unable to resist the temptation of early consumption.

Summing up, while it is difficult to determine its importance, hyperbolic discounting and lack of self control provide a reasonable explanation for many observations in individual consumption and saving behaviour. It may provide a justification for government intervention to the extent that a commitment can make individuals better off ex-post by avoiding regret due to undersavings.[76]

[76] Note that a proper welfare analysis is difficult to perform in the presence of hyperbolic discounting since welfare might not increase ex-ante. Indeed, hyperbolic discounting renders welfare analysis an ambiguous exercise. Hence, government intervention here is based on paternalistic arguments.

Institutional distortions

A third problem with respect to consumption smoothing is due to existing institutions that distort intertemporal behaviour. For instance, the capital income tax is distortionary as it increases the price of consumption tomorrow relative to consumption today. This induces substitution of consumption between periods, thereby reducing savings.[77] Economists therefore often favour a zero tax on capital income, thus moving the income tax into a consumption-based tax. Yet, governments typically do tax capital income, either for equity reasons or because they want to avoid tax arbitrage opportunities between capital income and labour income.[78] Complementary instruments may relax the distortionary impact of the capital income tax on savings. Institutional distortions arise also in human capital formation, the combination of work and care for children and early retirement decisions. These issues are addressed in more detail in sections 5.4 - 5.6.

5.3 Forms of government intervention

We discuss three alternative forms of government intervention in light of efficient consumption smoothing over the life cycle: collective smoothing, mandatory savings and saving facilities.

Collective smoothing

The welfare state contains all kind of transfers to households that involve intrapersonal redistribution, i.e. reallocation of income from one phase of life towards another. Indeed, a number of benefits are not primarily meant for redistribution between different people but for smoothing. The smoothing impact of social transfers can be illustrated by generational accounts. Ter Rele (1997) shows that Dutch individuals provide a net payment to the public sector during their working life, while they receive a net benefit from the government when young or retired. Hence, on a lifetime basis the government redistributes less than on a yearly basis. Some authors have assessed the overall lifetime intrapersonal redistribution via the welfare state. For instance, Nelissen (1998) adopts a microsimulation approach to measure annual and lifetime income inequality in the Netherlands by means of the Theil coefficient. He finds that the Dutch system of taxes and social security, which is largely based on annual income, reduces income inequality on a lifetime basis by around 15% for some cohorts. At the same time, annual income inequality is reduced by 45%. Hence, two-third of redistribution via the welfare state does not contribute to redistribution of income from the rich to the poor on a lifetime basis, but involves intrapersonal reallocation. Recently, Ter Rele (2006) took a broader perspective than Nelissen by including the entire system of taxes, public transfers and benefits in kind. He, however, considers only singles. By comparing his effects on the Gini-coefficient

[77] Although the income effect has an opposite effect, empirical estimates indeed suggest that capital income taxes reduce the level of savings (Boadway and Wildasin, 1994).

[78] The capital income tax is also criticised as it violates the condition of horizontal equity. By taxing the return to savings, two people with the same lifetime income will face different lifetime tax burdens if they feature a different intertemporal allocation of their consumption. Indeed, the tax discriminates against prudent people who save relatively much for future consumption.

for the lifetime income distribution with the effects on the Gini-coefficient for the annual income distribution on the basis of SCP (2003), Ter Rele finds that the redistributive effect of government policy in terms of annual income is about 2.5 times larger than for lifetime income. Studies for other countries find even larger differences. For instance, Fölster (1997) indicates that as little as 20 to 25% of all social transfers in Sweden actually redistribute between individuals on a lifetime basis. The remaining 75 to 80% merely smoothes income over the individual's life cycle. Only a small part of welfare state spending thus contributes to the redistribution from high to low lifetime incomes.

Public consumption smoothing through the welfare state involves a direct way to deal with capital market imperfections and hyperbolic discounting. Indeed, social transfers remove the need for people to get a loan during a period of low income, *e.g.* during education, sickness or parenthood. Moreover, it ensures that people collect sufficient income at old age. As long as public smoothing schemes were designed in an actuarially fair way, i.e. the contributions paid during one period exactly match the benefits received during another period in net present value terms, public smoothing does not affect the marginal lifetime tax burden. For a person with perfect foresight and rational expectations, the scheme thus leaves the incentives for labour supply and human capital accumulation unaffected. It is the case with, for instance, a notional defined contribution scheme for pensions.

Yet, public smoothing schemes are usually not actuarially fair. For instance, the government usually provides transfers to people unconditional on their contributions, i.e. also to people who have never or will never contribute to the public budget. In the Netherlands, this is the case with general child support and with basic pensions for the elderly.[79] The break in the link between contributions paid and benefits received causes distortions in labour supply and human capital formation. These distortions can be reinforced by eligibility conditions that are sometimes imposed on benefits. For instance, some early retirement benefits and paid parental leave schemes have been made conditional on non-participation. This exacerbates the labour supply distortion. Moreover, some public transfers depend on accumulated wealth. This causes a distortion in savings behaviour as reduced wealth can make people eligible for support.[80] Hence, there are usually several distortions associated with public transfer schemes that organise consumption smoothing.

[79] Basic pensions are conditional on years of residence in the Netherlands, marital status and income of a younger spouse. The latter distorts the participation decision of secondary earners.

[80] This is the so-called Samaritan dilemma: people who know that they will receive no public support when they do collect enough wealth will stop accumulating wealth. This applies also to human capital. Indeed, people face little incentive to invest in their own skills if people with abundant human capital receive less income support from the government than others.

Mandatory savings

An alternative way to deal with the undersaving problem is to make savings mandatory. Such schemes are well-established for pension savings in the Netherlands.[81] Such mandatory saving accounts may be used also for other purposes as well, being an alternative for public smoothing (see *e.g.* Orszag and Snower (1997); Fölster, *et al.* (2002)). Under saving accounts, individuals make mandatory contributions in some periods of life in an account. They might top up these accounts with voluntary contributions. In other periods, individuals draw from their accounts. This may apply to income during sickness, short-term unemployment, partial disability, parental leave, maternal leave, care for sick persons, raising children, and (early) retirement. The government thus no longer needs to provide funds for these purposes publicly. In a sense, the mandatory saving accounts are very much like ordinary savings, except that they are mandatory. Yet, there are a few other differences as well. First, the government can permit a negative balance during working life. In this way, it can use the saving accounts to mitigate capital market imperfections by providing credit. This, however, creates a moral hazard problem as is the case with private borrowing. To avoid moral hazard, the government should impose restrictions on withdrawals, i.e. only allow this for pre-specified purposes. Moreover, moral hazard strengthens the case for a mandatory character of the savings. Second, saving account may contain a redistributive/insurance component. In particular, people with a negative account balance at the end of their working life, i.e. when they retire, can be made eligible for public support by means of a public bail out. Thus, these schemes contain both redistribution and insurance for people suffering from low life-time incomes. This, however, exacerbates the moral hazard problem. In a sense, individual saving accounts remove distortions for the majority of the population in middle and high incomes, but it exacerbates the lifetime poverty trap, thus running the risk of sustained poverty among a small group.

Fölster *et al.* (2002) present simulations for Sweden of replacing collective smoothing in the current Swedish welfare state by a system of mandatory saving accounts. They apply the saving scheme to all provisions for parents, the unemployed, and retired people. Their simulations show that the saving system reduces the tax rate by almost 14% points because of the reduced public expenditure needs. These taxes are replaced by contributions to the individual saving account. Public transfers are replaced by withdrawals from the individual accounts. By reducing the implicit redistribution via public smoothing, the saving scheme reduces the life-time marginal tax burden on individuals, thereby improving labour-market incentives. Indeed, Fölster *et al.* (2002) claim that the saving scheme would substantially reduce labour-market distortions. Yet, as noted the bail out creates a new moral hazard problem and reduces the incentives to work and save for people with a low expected life-time income. Another possible disadvantage of mandatory savings is that they can result in excessive wealth accumulation.

[81] The lion share of these pensions is based on a defined benefit scheme, i.e. where pension benefits are a fixed proportion of the wage. This defined benefit scheme involves redistribution of income and risk between generations and between people with different career patterns. This implicit redistributive component of saving contributions causes distortions in labour supply. Indeed Westerhout *et al.* (2004) find that a shift from the current Dutch defined benefit system towards an actuarially fair defined contribution scheme would raise employment in the medium term by 0.7 to 1.1 %.

This will be especially true if the mandatory level is high and preferences are heterogeneous. Indeed, while commitment may reduce self-control problems and reduce the temptation of people to over-consume, eliminating all ex-post saving choices is unlikely to be optimal either. Empirical evidence suggests that there is substantial variation in life cycle saving behaviour, which may reflect different preferences among households (Hurst, (2003)). Under mandatory savings, some individuals may be forced to save too much. Some flexibility is therefore desirable. Hence, there is a trade-off between commitment to avoid over-consumption and flexibility to avoid over-saving (Amador *et al.*, (2003)).

Under the saving system, the income distribution changes as compared to collective smoothing scheme. Especially people who receive public support in the collective scheme and who make little contributions to their own account, such as non-participating partners, experience a loss. Moreover, the saving scheme no longer redistributes funds towards people who choose for parenthood, education or early retirement. Whether encouraging these choices through income redistribution is socially desirable is discussed in the next sections.

Fiscal treatment of owner-occupied housing

In the Netherlands, interest on mortgage loans associated with owner-occupied housing is tax deductible at the marginal tax rate of the primary earner in box 1 of the income tax. In 2006, 27 billion euro of interest is thus deducted from the income tax. At the same time, the imputed rent from owner occupied housing is taxed only lightly: it expands the tax base by around 5 billion euro. On net, owner-occupied housing in the Netherlands reduces the tax base by 22 billion euro. Evaluated at an average tax of 42%, it reduces tax revenue by 9 billion euro per year. Income tax rates could be reduced by 4%-points if this tax facility would not exist. The tax deductibility of mortgage interest benefits especially people earning high incomes. Recently, the tax facility has been heavily debated among fiscal scientists, economists and political parties. Many suggest a reduction of the tax facility in exchange for lower income tax rates. What would such a reform imply for the labour market? It is not evidently true that labour supply will structurally increase due to lower marginal tax rates. The reason is that not only taxes but also the tax facility rises with income. Indeed, the Net gains from the tax facility rise more or less proportionally with income. Accordingly, the tax facility comes down to a proportional reduction in tax. A swab of the tax facility for a lower tax rate will therefore leave labour-market incentives virtually unchanged. Yet, things are a bit more subtle than this. In particular, the reform would actually shift the tax burden away from secondary earners towards primary earners in couples. Indeed, primary earners currently benefit from the tax facility as they are the ones who deduct it against their income. Primary earners will thus be confronted with a higher marginal tax burden if the tax facility is abolished. Secondary earners only experience a lower marginal tax rate as they do not benefit themselves from the tax facility. Since secondary earners are more responsive to fiscal incentives than primary earners, this shift is likely to encourage aggregate labour supply incentives. Simulations with MIMIC suggest that, indeed, the abolishment of tax facility for owner-occupied housing in exchange for a proportional reduction in income tax rates will raise labour supply by ½% in the long term. To compare, a reduction in the general tax credit of similar magnitude in exchange for lower tax rates would raise labour supply by 1%. Apart from increasing labour supply incentives, there can be other arguments in favour of adjusting the tax facility for owner occupied housing. For instance, the current regime distorts the choice between renting and owning a house, between financing the house with debt or equity, and between investing in physical or human capital. More efficiency in these markets reduces tax arbitrage and broadens the tax base. Through these indirect effects, a lower overall tax wedge can further improve labour supply.

Saving facilities

An alternative policy to reduce the undersaving problem of households is to subsidise private savings. The advantage is that this maintains consumer sovereignty and still can reduce problems due to hyperbolic discounting, although the latter is not guaranteed. Saving facilities may, however, suffer from other drawbacks. First, governments usually restrict subsidies to certain types of savings, such as owner-occupied housing or pension savings. Bovenberg and Ter Rele (1998) show that the Net subsidy on savings in mandatory pensions in the Netherlands is equal to 30%. Saving via owner-occupied housing receives a net subsidy of 55% in the 2001 tax system. This distorts the allocation between different forms of savings and between different assets. Moreover, it can distort the labour market (see the Box "*Fiscal treatment of owner-occupied housing*"). Second, the share of capital income is usually larger for people collecting high life-time incomes. Hence, an unconditional subsidy on savings will benefit especially the rich. This may justify a more targeted application of saving subsidies, *e.g.* by imposing limits on the amount of subsidised savings. Finally, a subsidy on capital income may distort the choice between investments in financial capital versus investments in human capital.

Savings may also be deductible from the income tax. In that case, capital income goes effectively untaxed. The deduction thus transforms the income tax into a consumption tax. In the Dutch system, compulsory pension premiums – the lion share of household saving – are indeed tax deductible while pensions are taxed. In 2006, the Dutch government introduced a life-cycle saving arrangement, which allows for another a saving deduction. It strengthens the consumption-based character of the Dutch tax system.[82] In principle, the consumption tax outperforms the income tax in that it complies with horizontal equity and it does not distort saving decisions.

5.4 Life long learning

Investment in human capital is closely related to savings, i.e. investment in financial capital. Indeed, both learning and saving require a cost in terms of foregone current consumption in exchange for a higher future consumption. Households may therefore substitute between investment in human and financial capital. For instance, young people can choose between investing in human capital to raise future incomes, or invest current labour income in financial assets and thus save for early retirement.

Human capital receives ample attention these days. It is considered not only as an important engine of economic growth, but also as part of social policy. Indeed, human capital accumulation can reduce income inequality, either by upgrading skills among disadvantaged

[82] It is a tax facility for individual savings to provide liquidity during pre-specified events, such as parental leave, a period with care obligations, or when people invest in human capital. Workers can use funds also for early retirement. In the life-cycle account, workers can set aside a maximum of 12% of their gross yearly labour income. The maximum savings balance is 210% of the gross yearly labour income. The yearly deposit can be deducted from income. The withdrawals are taxed. In case of leave, a worker gets an extra tax credit of € 183 per year. In case of parental leave, this is 50% of the official minimum wage.

groups or by reducing wage differentials through general equilibrium mechanisms, i.e. by making skills less scarce. Moreover, investment in human capital can prevent reliance on the welfare state to the extent that it reduces unemployment among the low skilled in light of compressed wage structures (see section 3.5).

Many discussions about human capital formation today refer to so-called life-long learning. It refers to both initial education and learning during working life. The lion share of human capital of individuals is accumulated at a young age by learning from parents and during education. A proper child raising and a good education system are therefore a vital pillar under the welfare state. In education, the government plays a key role because of a combination of paternalism, distributional concerns, credit constraints and perhaps external effects from investment in human capital of young people (CPB, (2002)). This section does not focus on the education system, however, but rather on the role of adult learning through on-the-job training. After the phase of initial education, employability of people requires a continuous process of learning and adapting to new technologies. With creative destruction, skills depreciate which makes life-long learning important.

The importance of life-long learning does not immediately justify a role for the (welfare) state. In principle, private training decisions might well be efficient. Training yields substantial private benefits in the form of higher wages, better job-finding opportunities, and lower risk of unemployment. There is no a priori reason to believe that private agents make socially inefficient decisions regarding training, especially since the empirical literature does not provide support for external effects from training (Acemoglu and Angrist (2000); Krueger and Lindahl (2002)). Hence, as long as private agents invest in training until the return equals the marginal costs – *e.g.* in the form of foregone current production (or income), direct training costs and the cost of effort – there is no need for state intervention. Yet, there can be four reasons why individual training decisions are not efficient: institutional distortions, myopia, capital-market imperfections, and commitment problems. We now discuss these distortions and some remedies.

First, pre-existing institutions can distort learning decisions as previous chapters have shown. In particular, chapter 3 demonstrates the distortionary impact of progressive tax systems, non-deductible training costs, and wage compressing institutions on the incentives to learn. These distortions may justify training subsidies, especially if countries engage in substantial redistribution. Indeed, Bovenberg and Jacobs (2005) show that education subsidies are higher in countries with more progressive tax systems. Chapter 4 stresses distortions in human capital formation caused by unemployment insurance. Moral hazard can take the form of reduced investment in training because the insurance makes it less costly for workers to be laid off. Another distortion on human capital formation is due to substitution between financial capital and human capital. Both forms of capital provide alternative ways to secure future income. If institutions affect the returns to these two forms of investment, investment decisions may be distorted. For instance, if the return to financial capital is subsidised, people may find it more attractive to work at a young age and save funds in subsidised accounts to retire early,

rather than invest in human capital to obtain a higher future wage.[83] This may even hold even if the investment in human capital yields a higher gross rate of return than the investment in financial capital. Subsidised saving plans (including tax favoured savings in owner-occupied housing and tax subsidies for mandatory pension savings) thus distort the choice in human capital (Jacobs and De Mooij (2002)). Efficient investment calls for an abolishment of these saving subsidies and in fact provides a rationale for a tax on capital income (Jacobs and Bovenberg (2005)).

The second reason for government intervention is due to impatience. Some people might not fully take account of the return to their investment or cannot resist the temptation of early consumption. The government can then proscribe mandatory education as it does for young people. Yet, proscribing mandatory training for adults can be inefficient as the government typically has less information about the return to such investments than individuals and the firms they work at. Hence, the public failure of mandatory training is likely to be even larger than the possible underinvestment induced by impatience.

Capital market imperfections provide a third potential argument for government intervention. To deal with these imperfections, the government may introduce a loan scheme. This is typically more efficient than subsidies, which require distortionary taxation as a source of finance.[84] Another instrument is a guarantee repayment by the government if someone is unable to repay a private loan. This mitigates the reluctance of banks to provide credit for training purposes. Such provisions have been introduced in the United States, the United Kingdom and New Zealand. Also individual learning accounts may help to solve underinvestment in training due to credit constraints. Such accounts are, for instance, found in Sweden. Still, empirical evidence suggests credit constraints do not matter much for on-the-job training (Cameron and Taber (2000); and Carneiro and Heckman (2004)). One reason is that firms often pay for training of their employees. This holds even though we expect their benefits to be slim because human capital is embodied in the worker who can expropriate the return elsewhere in the labour market. One explanation for firms paying for general training of employees is that training is part of the remuneration to work. Another explanation is that training usually involves a firm-specific component (see below). In any case, capital market imperfections provide little ground for public intervention in on-the-job training.

A final reason for underinvestment in training occurs with specific human capital, i.e. skills that have no value outside the specific firm-worker relationship. With firm-specific training, the gains of investment cannot fully be captured by either the firm or the worker, since they are specific to the current contract. Therefore, an efficient level of investment can only be reached if the costs are being shared according to how the benefits are divided. A problem is the renegotiation possibilities and strengthened bargaining power of either party after the

[83] Bovenberg and Ter Rele (1998) show that the Net subsidy on savings in mandatory pensions in the Netherlands is equal to 30%. Saving via owner-occupied housing receives a net subsidy of 55% in the 2001 tax system.

[84] These loan schemes may be contingent on income in which case people pay back principal and interest if their income after finishing the training is high enough. This could apply in particular to the financing of higher education (Jacobs and Van der Ploeg (2005)).

investment has taken place. Anticipating this, both parties may invest too little. The market may deal with this by means of pay-back clauses. Moreover, centralised bargaining by unions and fixed wage contracts may reduce the opportunities for individuals to renegotiate, thereby acting as a commitment device for workers and firms. More generally, there is a productive role of labour-market institutions that strengthen the commitment between workers and firms as it encourages investment in firm-specific human capital.

Summing up, possible underinvestment in on-the-job training originates primarily from the distortions that the welfare state creates in the first place, *e.g.* due to redistribution, social insurance or saving subsidies. Training subsidies can be desirable to mitigate these distortions, but alleviating tax privileges for savings would be desirable as well. Other reasons for underinvestment in training, such as capital-market imperfections and impatience provide little ground for public intervention. Institutions that stimulate commitment between employers and employees support investment in specific human capital.

5.5 Combining work and care

Consumption needs are generally higher during the phase of parenthood. In terms of the life-cycle model, it implies a high marginal utility of consumption during this period relative to other periods. In principle, smoothing can be organised via the capital market to obtain an efficient intertemporal allocation of consumption, i.e. by moving funds towards the time of raising young children. Still, capital-market imperfections may reduce the amount of smoothing opportunities via the capital market. For instance, parents may find it difficult to borrow against future income to cover the costs of raising children. This can provide a rationale for child allowances as a public smoothing device.

Children also require time from their parents in the form of care. Hence, not only the marginal utility of consumption, but also the marginal utility of time is high during the phase of parenthood as compared to other periods. However, time cannot be smoothed across periods like consumption can (a day has 24 hours!). Hence, the marginal utility of leisure – and thus the shadow costs of work – increase during the phase of parenthood. Therefore, either of the two parents often reduces hours worked after child birth. Especially the participation rate of women drops after birth of the first child. In principle, this choice can be efficient as long as it is based on individual preferences. Yet, we have already seen that taxes distort the choice regarding labour-market participation, and this holds especially for women. Moreover, there are concerns about reverse causality between fertility and labour-market participation. For instance, Bloemen and Kalwij (2001) find that Dutch women schedule child birth in order to suit their desired participation patterns. Thus, educated women in the Netherlands postpone child birth to a relatively high age. Also in other OECD countries, rising female participation rates have come along with a decline in fertility rates. This is of great concern for European governments that want to raise fertility rates in light of ageing, although this aim is not undisputed (see the Box

"*Externalities from children*"). Hence, there seems to be a trade-off between encouraging female participation and raising fertility rates.

The government may aim to relax this trade-off between fertility and labour-market participation. The Box "*Fertility and employmen*t" suggests that labour-market flexibility, opportunities for part-time employment, and child-care facilities have a moderating impact on the negative correlation between labour-market participation and fertility (see also OECD (2005b)). This also explains why fertility rates vary between countries. In particular, Germany, Italy and Spain feature low fertility rates of about 1.2 in 2002, i.e. a woman raises 1.2 children on average. The United States and the United Kingdom have relatively high fertility rates as flexible labour markets allow educated women to hire cheap low-skilled labour for child care and consumer services. In the Nordic countries, fertility rates have hardly dropped during the last decades and stabilised at a level of 1.7 in 2002. This can be explained by generous child-care facilities and relatively flexible labour markets. In the Netherlands, the availability of part-time jobs seems responsible for a combination of high fertility and high female participation.

Externalities from children

Economists have put forward different arguments why fertility rates might be too low or too high from a social point of view. First, Jones (2004) argues that there are increasing returns to scale with respect to the population size, i.e. a doubling of the population yields a more than doubling of GDP. The reason is that a larger population increases the development of new ideas and technologies. As these ideas are non-rival, they benefit all people. Technological improvements thus run into increasing returns to scale, implying positive externalities from a faster growing society. Evidence on long historic episodes tends to support this claim. However, evidence for more recent episodes is not consistent with it. Moreover, if economies become more integrated, the size of an individual country matters less for the world population which determines the importance of these externalities. A second positive externality of children has been emphasised by Sinn (2005). He argues that the individual decision about getting a child is distorted because people do not take account the positive financial impact of their child on the financial basis of publicly financed pensions. Indeed, people for long had children as an insurance device for their old age. Now that insurance is organised publicly, people can free-ride on the children of others. This induces too low fertility rates. In assessing the fiscal impact of children, however, one needs to account for all public contributions and all costs of an additional child, rather than only pensions. Calculations for the Netherlands suggest that this balance would in fact be negative (Van Ewijk *et al.*(2000)). The reason is that a newly born in the Netherlands enjoys a positive net benefit from the government. Intuitively, a newly born would share in the inherited public wealth and thus reduces the per capita claim on this wealth by existing individuals. Accordingly, the external effect of an extra child on others can actually be negative rather than positive. Note that this result is sensitive for the assumptions regarding the assignment of individual costs and benefits to various generations, *e.g.* whether they are assigned to parents or to the children. There may also be negative externalities of children. These arise from *e.g.* congestion effects associated with a high population density. Indeed, the Netherlands is a densely populated country. This causes tensions in traffic, environmental quality and spatial issues. The claim that the fertility rate in the Netherlands is too low is therefore not undisputed. In the rest of this study, we take a neutral stance in the assessment of the impact of policy reforms on fertility, i.e. we do not consider a rise in fertility as a welfare improving or a welfare deteriorating impact.

Simulations with a special version of MIMIC are consistent with these findings. Jongen *et al.* (2002) and Jongen and Van Vuuren (2004) explore the labour-market implications of a rise

Fertility and employment

Fertility rates differ among countries. The table below shows this for a selection of OECD countries. The differences in fertility rates turn out to be related to institutions on the labour market.

Fertility rates (number of children per woman) in a selection of countries, 2002

United States	2.1
France	1.9
Denmark	1.7
The Netherlands	1.7
United Kingdom	1.7
Sweden	1.6
Belgium	1.6
Germany	1.2
Greece	1.3
Spain	1.3
Italy	1.2

Source: World development indicators 2004

We test the relationship between employment and fertility by means of a cross-section of 18 OECD countries. Thereby, we explore the importance of part-time employment, labour-market flexibility and child-care facilities. In interpreting the regression outcomes, we refrain from conclusions on causality as labour market institutions, employment and fertility are at least partly jointly determined by choices that different societies have made in the past. Define Δy_i as the change in total fertility from 1975–1980 to 1995–2000 (UN 2000 Revision) and Δx_i as the change in the employment rate of women age 25–54 from 1979 to 1999 (OECD Employment Outlook (2005)) for country *i*.

$$\Delta y_i = \beta_0 + \beta_1 \ \Delta x_i + \varepsilon_i$$

$$\beta_1 = \beta_{10} + \beta_{11}\, CC_i + \beta_{12}\, LMF_i + \beta_{13}\, PT_i$$

where CC_i is a measure for child care facilities (OECD Employment Outlook 2001), LMF_i a measure for labour market flexibility (Blanchard and Wolfers (2000)) and PT_i a the part-time employment rate of 2000 (OECD employment Outlook 2003). The underlying idea is that a change in the employment rate of women aged 24–54 correlates with the total fertility rate, but that this correlation may be weaker due to child care facilities, labour market flexibility or part-time employment opportunities. The table below shows the regression results.

Estimation results for 18 OECD countries on the relationship between female employment and fertility

	β_0	β_{10}	β_{11}	β_{12}	β_{13}
Parameter	0.164	– 0.037	0.009	0.016	0.002
P-value	0.283	0.001	0.016	0.088	0.003

We find an overall correlation between fertility and female employment of –0.40, which is significant at a 10%-significance level (p-value 0.096). Estimating the model with OLS, we find that child care facilities significantly weaken the relationship between fertility and female employment (at the 2% level). The same holds for labour market flexibility, although the impact is significant at the 9%-significance level only. Part-time employment has a significant impact as well at the 3% level: the opportunity to work part-time weakens the relation between female employment and fertility (see also Adsera (2005)).

in subsidies for child care and different forms of leave, such as parental leave and leave for care obligations. Similar to the results in Table 3.17, they find that child care subsidies encourage labour supply. Research by the OECD (2005b) suggests further that an increase in formal childcare has the potential to substantially raise fertility in the Netherlands. Hence, childcare subsidies are expected to relax the trade-off between fertility and female labour-market participation.

Subsidies for parental leave and leave for other care obligations also facilitate parenthood by allowing parents to take care for their own children with a smaller loss in earned income. Model simulations by Jongen *et al.* (2002) show, however, that this policy exerts a negative impact on labour supply. This is the result of three effects. First, since the opportunity to receive subsidies for parental leave is linked to having a job, there is a positive entitlement effect on labour-market participation. This effect, which is emphasised by *e.g.* OECD (2005b) increases labour supply. Second, since parental leave is conditional on non-participation, parents are encouraged to reduce their hours worked during paid parental leave. This reduces the number of hours worked. This effect is opposite from child-care subsidies. Whereas formal childcare is complementary to labour supply while parental leave substitutes for labour supply. Third, subsidies for parental leave need to be financed by higher taxes elsewhere, which reduce the overall incentives to work. Adding up the three effects, Jongen *et al.* (2002) find that employment and hours worked drop. It suggests that paid parental leave does not escape the trade-off between facilitating parenthood and stimulating labour supply.[85]

5.6 Early retirement

If capital markets are perfect, the life span is known, and people are forward looking, then an actuarially fair pension scheme will lead to efficient retirement decisions (Kotlikof (1979)). In particular, people will then decide about retirement on the basis of their individual preferences, i.e. by assessing the private costs and benefits. Actuarial fairness will imply that this choice will match the socially efficient outcome. In many European countries, however, early retirement schemes are not actuarially fair but impose disincentives on participation beyond the age of first eligibility for early retirement benefits. In particular, older workers who continue working will receive less social benefits over their life span than if they quit work at the first year of eligibility. The Net present value of this accrual of benefits in terms of the Net wage is the so-called implicit tax on work. In many countries, this implicit tax amounts to 80% or more in the first year of benefit eligibility (Gruber and Wise (1999)). In the Netherlands during the mid 1990s, it even exceeded 100% for many workers (Kapteyn and De Vos (1999)). These high implicit tax rates on work largely explain the low labour participation rate of elderly workers in

[85] It is sometimes argued that parental care is important for the development of a child's human capital, especially during the first year after birth. After the first year, it appears that childcare can have positive effects on this development, especially for children from disadvantaged families (see *e.g.* Esping Andersen (2005)). Our simulations do not capture this effect of parental care or childcare on human skills.

many European countries (Gruber and Wise (2004); Mastrogiacomo *et al.*(2002) for the Netherlands). Reforms in the institutions would therefore have a large potential impact on the participation rate of the elderly. De Vos and Kapteyn (2004), for instance, find that a 3-year increase in the first year of eligibility for social benefits would raise the effective retirement age in the Netherlands by between 1.6 and 2.3 years. Since the late 1990s, the sectoral early retirement schemes in the Netherlands have been transformed into more actuarially fair schemes. This substantially reduces the disincentives to work for elderly workers in the Netherlands. Euwals *et al.* (2005) evaluate the impact of this shift towards an actuarially fair scheme for Dutch civil servants. Their results suggest an increase in the effective retirement age by nine months as compared to the old system.[86]

Now that the main distortions in retirement decisions have been removed in the Netherlands by moving towards actuarially fair pension schemes, the question is whether there is still a role for collective intervention. On the one hand, there are two arguments in favour of collective saving schemes. First, hyperbolic discounting may cause undersaving for retirement. This can justify mandatory savings to obtain a more efficient ex-post allocation of lifetime resources. Second, collective saving schemes may reduce transaction costs since people do not have to engage in costly information gathering while collective administrations may benefit from economies of scale. On the other hand, capital-market imperfections work in the opposite direction. They imply that mandatory savings lead to an over-accumulation of capital for people who are constrained on the credit market earlier in life. Thus, they cause retirement at an inefficiently early age. On balance, it is difficult to determine whether mandatory savings are socially desirable by correcting for impatient behaviour and more efficient administration, or that they are socially costly by exacerbating capital-market imperfections.

Irrespective of the answer to this question, it is important to understand what would happen if mandatory savings for early retirement were abolished. In particular, this may have two effects: one on voluntary savings and one on the retirement decision. The impact on voluntary savings has been explored by Van Boekel *et al.* (2006) for the Netherlands. They find that an abolishment of mandatory saving for early retirement would induce substitution into voluntary savings of about 50%. Accordingly, individuals would end up with a considerably lower level of wealth at old age when mandatory savings would be abolished altogether. The impact of accumulated wealth on participation has been explored quite extensively in the literature. Most studies report that wealth has a significant impact on retirement decisions, but that the magnitude of this effect is small. It suggests that wealth is of relatively minor importance for the retirement decisions as compared to, for instance, actuarial fairness.[87]

[86] Saving for early retirement is still subsidised in the Netherlands. In particular, part of subsidised pension wealth can be used for early retirement, but only in an actuarially fair manner. Hence, these subsidies only affect the retirement decision via effects on wealth.

[87] An alternative exit route is via disability insurance or unemployment insurance. To the extent that these schemes are indeed used as early retirement routes, this is a form of moral hazard. The costs of this moral hazard are borne publicly via increased social insurance premiums. Mandatory savings for early retirement can relax this moral hazard problem by allowing people to use individually accumulated early retirement wealth, rather than public funds from social insurance schemes.

While incentives for elderly participation are one thing, employment opportunities for the elderly are another. This can be problematic to the extent that human capital depreciates at old age – leading to a lower productivity of older workers – while the corresponding wages do not decline. Indeed, whereas wages would normally fall in a competitive labour market in line with productivity, fixed wage contracts provide insurance for the loss of human capital at old age. To escape these implicit insurance payments to older workers, firms may try to lay-off older workers and replace them by more productive younger workers. This is prevented, however, by employment protection. Indeed, especially older workers are well protected against dismissal. It implies that firms are forced to maintain older workers in the firm and bear the burden of the implicit wage insurance. Only the mandatory retirement age provides some relief for companies because they can lay-off workers at the age of 65 at zero cost. The combination of fixed wage contracts, employment protection rules, and mandatory retirement forms a coherent combination that may actually be efficient (Lazaer (1979)). Intuitively, it leads to a wage profile which pays workers less than their marginal productivity when they are young and more than their marginal productivity when they are old. The latter induces workers to perform a higher level of effort at a young age, which results in a more efficient contract than when workers are always paid according to their marginal product.

Yet, the efficiency of Lazear's implicit contract depends on the assumptions regarding the lifetime worker-firm relationship. In a modern economy with fewer lifetime contracts, the combination of fixed wages, employment protection and mandatory retirement is probably less efficient. For instance, it renders it difficult for unemployed older workers to find re-employment. Thus, it hampers the mobility of older workers so that they do not work where they are most productive. Moreover, once dismissed elderly workers have little chance to find new employment. An alternative way to maintain high employment among the elderly is by allowing more flexibility. A combination of relaxed employment protection and flexible wages would raise the job opportunities for elderly workers. It allows for more mobility into jobs where elderly workers are most productive, such as service jobs, the care sector or in education. This also includes part-time jobs.[88] Moreover, flexibility would remove the need for mandatory retirement, which allows for more diversity in retirement patterns, *e.g.* between different professions or sectors. The flexible alternative, however, involves a fundamental break with the implicit contract that characterises current institutions.

[88] Social insurance benefits are usually based on the last-earned wage. This provides a disincentive for workers to accept a reduction in their wage at old age as this would imply a lower pension or insurance benefit. Reforming pensions into a scheme that depends on the average-wage will make older workers less opposed against wage reductions. Dutch pensions schemes have indeed been largely transformed from final-pay to average-pay schemes.

5.7 Policy options for efficient smoothing

This chapter discusses the role of government in the design of efficient consumption smoothing over the life cycle. Capital-market imperfections, impatience and distortions associated with redistribution and insurance may provide a rationale for government intervention in consumption smoothing. European governments are indeed substantially involved in reallocating income over the life cycle: estimates suggest that between 60 and 80% of the welfare state actually concerns intrapersonal reallocation of income over the life cycle, rather than redistribution between rich and poor. An alternative for collective smoothing via the welfare state would be mandatory or subsidised individual saving schemes. While these schemes may reduce the overall tax burden compared to collective smoothing via transfers, they may bring along other distortions. Hence, the government faces a dilemma. This chapter explores this dilemma in the area of life-long learning, work and care, and early retirement.

Life-long learning is a vital pillar for our welfare state. While the role of government in initial education is undisputed, its role is less clear in adult learning. A number of possible distortions in training , *e.g.* due to capital-market imperfections or impatience, provide little ground for public intervention. Yet, underinvestment in on-the-job training may occur due to distortions induced by redistribution, social insurance and saving subsidies. It can make training subsidies desirable, but also raises doubts on saving facilities.

Rising female participation rates in many OECD countries have come along with a decline in fertility. This suggests a trade-off between encouraging female participation and raising fertility rates. Facilitating this combination is of great concern to European governments, although it is not clear whether externalities from children are actually positive or negative. We find that the government can relax the trade-off by increasing labour-market flexibility, extending the opportunities for part-time employment, and providing child-care facilities. Subsidies for parental leave may support fertility, but typically come at the expense of labour market participation in terms of hours worked.

A number of distortions in retirement decisions have recently been removed in the Netherlands. Indeed, the system has been reformed towards an actuarially neutral system for early retirement. Still problematic for the participation of elderly is, however, the rigidity of the labour market. Indeed, the combination of fixed wage contracts with seniority wages, employment protection and mandatory retirement hampers the mobility of older workers and increases unemployment durations. Moving towards a more flexible labour market can increase employment, improve allocative efficiency and allow for more flexible retirement patterns. It calls, however, for a breakdown of the implicit contract.

Part II Future of the Dutch welfare state

Part II explores the future of the welfare state in the Netherlands. Chapter 6 discusses trends in the socio-economic environment in which the welfare state will have to evolve during the coming decades. Chapter 7 develops comprehensive designs of the future welfare state. For each alternative welfare state, we discuss the labour market implications, the consequences for the income distribution and other indicators of social welfare. Chapter 8 elaborates on the room for manoeuvre for national Dutch policy in light of globalisation, immigration and policy competition.

6 Introduction to the future of the Dutch welfare state

The welfare state evolves across time under the influence of changes in social structures, demographic developments, technological change and international trends. This section discusses how these developments have affected the Dutch welfare state in the past and how they might affect its future.

6.1 History of the Dutch welfare state

The evolution of the Dutch welfare state has been driven by various forces. These include changing circumstances, new insights in how institutions affect society, changing social preferences regarding trade-offs, and the ability of governments to implement reforms under the influence of the democratic process. Below, we present an eye-ball view of this evolutionary process during the last four decades.

The current Dutch welfare state has been largely founded in the post-war period when many social expenditure programs were introduced. During the sixties and seventies of the twentieth century, welfare state expenditures expanded rapidly. When the Dutch economy was hit by severe shocks in the seventies, generous benefits in combination with lax administrative controls caused an inflow of redundant workers in social security schemes with open-ended benefits, such as the disability scheme. When the second oil crisis hit the economy at the end of the seventies, the Dutch economy was caught in a vicious circle of declining employment and rising claims on the welfare state.

In the beginning of the eighties, the Dutch economy was in dire straights: taxation and social security contributions accounted for about half of GDP and for every ten employed persons there were more than eight persons on social benefits. The need for drastic measures became increasingly apparent. The government then took decisive steps. It broke the link between wages in the public sector and social benefits to wages in the private sector. Thus, public sector wages and benefits lagged behind wage growth in the private sector. Moreover, statutory social benefits were cut from 80% to 70% of gross wages and the minimum wage, to which the minimum social benefits are linked, was frozen in nominal terms. This reduced the minimum wage from 61% of the median wage in 1980 to 47% in 2000. It took some time before cuts in social expenditures reversed the vicious circle of rising inactivity. The ratio of social security claimants to those employed stayed roughly constant between the mid eighties and the mid nineties. Only by then could the number of social security recipients be stabilised and started the ratio of social benefits to employment to fall. Cutting benefits had not been sufficient to reduce the number of recipients, in part because supplementary arrangements negotiated in collective labour agreements did offset some of the cuts in disability and sickness benefits. Moreover, social partners had introduced generous early retirement schemes which reduced the effective retirement age of elderly workers.

In the nineties, the cuts in social benefits were complemented by institutional reforms. For instance, eligibility criteria for social benefits were tightened. In 1993, the legal definition of the

appropriate job was widened in the disability scheme. At the same time, the government reduced the discretion of decentralised administrations by issuing specific criteria for determining disability and residual earning power. For existing claimants, a program of reassessment was started in 1994. The focus in the nineties was more on microeconomic incentives and screening to avoid moral hazard, rather than on cutting benefit levels.

Since the beginning of the nineties, the government also started to reduce the tax burden. In 1990, it reformed the income tax, thereby cutting marginal tax rates and broadening the tax base. During the nineties, the tax burden was reduced to support the process of wage moderation. Moreover, by targeting tax cuts at low labour incomes, the government aimed at reducing the replacement rate at the bottom of the wage scale, thereby stimulating low-skilled employment.

In the late nineties, social security was reformed even more fundamentally. Sickness insurance was privatised and competition in disability insurance was introduced to achieve efficiency gains in the implementation and administration of the insurance. Competition also meant that employers can no longer shift the costs of their behaviour unto a collective pool.

During the eighties and nineties, the Netherlands experienced a considerable employment growth and a substantial decline in the unemployment rate. Most of the growth came from part-time work. Also flexible contracts through temporary work agencies rose substantially in the 1990s. Employers increasingly used flexible contracts to avoid employment protection, to screen new employees, and to meet their need for flexibility.

Where did all this bring the Netherlands? Table 6.1 shows the performance of the Dutch labour market in 2004 for a number of indicators. It compares it with the averages in the old 15 members of the European Union and the United States. We see that, compared to the average in the European Union, the Netherlands performs well in terms of participation and unemployment. For these indicators, performance is similar to that in the United States, except for the participation of people between 55 and 64, and for the share of long-term unemployment. For these indicators, the Netherlands is more European than American. Priority in the Netherlands is therefore given to raising the participation rate of elderly and improving the position of low-skilled workers on the labour-market.

Table 6.1 shows that the Netherlands performs relatively poor on the number of hours worked compared to both the United States and the rest of the European Union. This is especially due to the high share of part-time employment, i.e. jobs of less than 30 hours per week. For women, this share is 60% which is twice as large as in the European Union and more than three times that in the United States. Hence, there seems ample scope for raising female labour supply in the Netherlands in terms of hours worked. The bottom row of Table 6.1 shows occupancy in social benefit schemes as a percentage of the working age population. It includes occupancy in unemployment insurance, social assistance, sickness benefits and disability insurance. We observe that the number of benefit recipients is higher than in the United States and also higher than elsewhere in Europe. Especially coverage in disability insurance is relatively high in the Netherlands.

Table 6.1 Labour-market performance of the Netherlands compared to EU-15 and the US, figures for 2004

	The Netherlands	EU-15	US
Employment rate in % population 15-64	73	65	71
men	80	73	77
women	66	57	65
age 55-64	45	42	60
lower than secondary education	59	57	58
Share of part-time employment	35	13	17
men	15	7	8
women	60	31	19
Annual hours worked per employee	1357	1578	1824
Unemployment rate	4.6	8.0	5.5
share long-term unemployed	33	42	13
Benefit recipient rate[a]	16	14	11

[a] Figures for benefit recipient rate refer to 1999 and contain only 10 countries for the EU (excluding Finland, Luxembourg, Italy, Greece and Portugal).
Source, OECD 2003 and OECD Employment Outlook 2005

Recently, a number of welfare state arrangements have been reformed further. In 2001, the income tax structure was reformed by cutting marginal tax rates, broadening the tax base, replacing tax deductions by tax credits, a more neutral taxation of capital income and a shift towards value added taxes and green taxes. The current administration reformed the systems of disability and unemployment insurance (see the Box "*Social insurance in the Netherlands in 2006*" in section 4.1), decentralised the responsibilities for welfare benefits, transformed early retirement into an actuarially fair scheme (see section 5.7), reformed the system of health care insurance and introduced a life cycle saving account. Table 6.2 summarises current welfare state arrangements in the Netherlands. Still, the discussion on future welfare state reform remains on the policy agenda for the future. The reason is that trends in demography, globalisation and socio-cultural structures trigger a need for further reform.

6.2 Trends and the future of the Dutch welfare state

Future trends

De Mooij and Tang (2003) argue that a number of social and economic developments put pressure on the welfare state. First, ageing imposes a threat on the financial viability of European welfare states. Recent projections by the European Commission suggest that age-related public expenditures, such as public pensions and health care spending, will rise by 4% of GDP on average for the European Union in about 45 years from now (see *e.g.* EPC (2006)). Also Dutch institutions will require a growing need for public funds in light of ageing.

Table 6.2 The Dutch welfare state in 2006	
Redistribution	
Welfare benefits	Social minimum equals 14 400 euro per year for a couple. Single persons receive 70%, single parents 90%. It is indexed to the market wage
Tax system	General tax credit of 1990 euro; Labour credit of 1359 euro; Various specific credits. Four tax brackets with rates of respectively 34.15%, 41.45%, 42% and 52%
Targeting of benefits	Targeted: welfare benefits, housing subsidies, health care provisions, child care subsidies General: child allowance, basic pension, benefits in kind
Tax Unit	Individualised tax system; general tax credit applies to non-participating partners; phasing out of benefits is usually based on household income
Minimum wage	Equal to social minimum for couples
Wage formation	Strong position of trade unions; Compressed wage structure
Social insurance	
Unemployment insurance	75% of last-earned wage in first two months, 70% thereafter; max of 38 months; strict entitlement rules; a special provision of non-means-tested benefits applies to elderly
Sickness/Partial disability	2 years sickness benefits of maximal 170% of the previous wage over both years; partial disability is linked to unemployment insurance
Full disability	75% of the last wage
Administration	Mixture between public and private
Activation policy	Average expenditure for Europe, mainly public sector jobs; Increased monitoring and sanctioning in recent years
Employment protection	Tough protection of regular workers, especially males and elderly; emphasis on procedures rather than notice periods and severance pay; little role for firing tax
Smoothing	
Saving	Mandatory collective pension saving; premiums deductible up to a pension of 100% of the wage at age 65; retirement wealth can be used in an actuarially fair way for early retirement; there is a small tax-favoured saving scheme and a newly created life-course saving account
Life-long learning	Sectoral funds for training; tax deductibility of training costs above a certain ceiling
Parental support	General child allowance; Subsidised child care; Paid parental leave in the public sector; Tax credit for working parents with young children and supplementary credit for secondary earners

For instance, Van Ewijk et al (2006) show that public expenditures will rise by 7.4% of GDP in 2040 compared to 2006 if current expenditure schemes are maintained.[89] Preparing public finances for these future trends is a formidable task for European countries. Ageing imposes not only a financial, but also a distributional problem. The growing need for public funds for elderly generations is to be financed by a shrinking share of working individuals. Indeed, people not only grow older but also fertility rates have dropped. This causes tensions in the intergenerational contract, i.e. the tacit contract that ensures that people of old-age are taken care of by the young. Reforms in the welfare state should focus on relaxing the tensions in the intergenerational contract, *e.g.* by raising labour supply and the effective retirement age.

A second trend is internationalisation. It means that capital and high-skilled labour become more mobile. This makes it more difficult for governments to raise revenue from these mobile sources, *e.g.* via corporate income taxation or progressive personal income taxes. In fact, governments competing for mobile tax bases tend to undercut each others' tax rates, thereby eroding tax revenue. Lower revenue is incompatible with a large welfare state. Another consequence of globalisation is the worsening position of low-skilled workers. Skill-biased technological change, immigration of low-skilled workers and outsourcing of labour-intensive production towards Eastern Europe and Asia reduce the demand for low-skilled native workers in the old European Union countries. These demand shocks worsen their position on European labour markets. With high reservation wages and high minimum wage floors induced by current welfare state institutions, this will materialise in increasing unemployment among the low skilled. Preventing this requires reforms that increase wage flexibility and that encourage human capital formation. Indeed, integrating the low-skilled in the labour market is a vital challenge for the future welfare state.

A final reason to reconsider the welfare state is the change in socio-economic conditions since current welfare states were built up. For instance, society has become more heterogeneous. On the demand side, the growing service sector is characterised by a greater variety of skills, increasingly flexible work patterns, and better opportunities for part-time work. On the supply side, individuals have become better educated, which induced more demand for individual choice and more differentiated demand for social services. Women have massively entered the labour market, which has changed life courses. This calls for a different institutional framework than that required by the traditional life course of a full-time breadwinner with a lifetime employer. Again, this imposes a big challenge for governments.

Summing up: future trends challenge the welfare state. To maintain sustainable public finances and ensure the financial and social basis for solidarity in the future, reforms should raise the quantity and quality of employment, especially among elderly workers, women and benefit recipients. Also the labour market position of the low skilled is of growing concern.

[89] The Dutch problem is mitigated by a large share of funded pensions. As the government has a latent tax claim on these funds, tax revenue will increase by 3.9% of GDP. The extra public expenditures can thus be partly covered by these additional tax receipts.

The baseline scenario

The next chapter will make a quantitative assessment of welfare state reforms in the Netherlands with MIMIC. In doing so, we first specify a baseline scenario until 2040. The baseline makes assumptions about various trends in demography, participation, technology, institutions and so on. We consider only one set of baseline assumptions. This approach deviates from the scenario methodology adopted in previous long-term studies of CPB. Indeed, the focus in this study is not on future developments themselves, but on the impact of government policy on future performance (see the Box "*CPB scenarios and welfare state reform*").[90]

CPB scenarios and welfare state reform

De Mooij and Tang (2003) and Huizinga and Smid (2004) have assessed future developments in the form of scenarios. These scenarios are build around two key uncertainties. One is whether the future is characterised by increasing international cooperation or strong preferences for national sovereignty. The other is whether social preferences will be characterised by solidarity or by incentives and individual freedom. The combination of these two key uncertainties gives rise to four future scenarios. These contain also four different reform directions of the welfare state. This is an important driving force for alternative developments in labour-market variables, such as the participation rate and labour supply. However, the welfare state reforms are not discussed in detail. Moreover, the impact of welfare state reform is not separated from the impact of other trends on labour market developments. This makes it difficult to understand how welfare state reform in these scenarios exactly affects labour market developments or other components of social welfare.

This study starts from one single baseline scenario that is characterised by the absence of institutional reform after 2006. It makes specific assumptions regarding ageing, individualisation, internationalisation and technological change. We then explore the structural implications of comprehensive, detailed reform packages, relative to this baseline. This yields insight in the margins of public intervention to affect labour market outcomes and the income distribution in the future. The analysis is therefore complementary to the long-term scenarios in earlier CPB studies.

Still, the study needs to deal with future uncertainties. We do this in two ways. First, uncertainty in social preferences and socio-cultural developments that lie behind this is analysed in chapter 7. Here, we develop three prototype welfare state reforms, which differ with respect to the division of responsibilities between the state, individuals and decentralised clubs. Second, uncertainty in the international environment is analysed in chapter 8. It elaborates on the room for manoeuvre for the Dutch government in designing the welfare state in the presence of international spillovers. This yields insight in the robustness of various welfare state prototypes for external developments.

With respect to our baseline, we first make assumptions about institutional developments. In particular, we assume that all reforms in the Netherlands up to 2006 are implemented, including recent reforms in early retirement schemes, the health care system and the schemes for disability and unemployment insurance (see Table 6.2). After 2006, no further changes are assumed. Table 6.3 shows the value of some institutional variables on the baseline. Nominal

[90] The year 2040 is consistent with the time frame used in the analysis of Huizinga and Smid (2004). It thus accounts for the peak in ageing between 2030 and 2040. Moreover, this far horizon allows us to ignore transitional issues associated with implementation. For the interpretation of our simulation outcomes, one may consider them as long-term structural impacts. These might not take 34 years to materialise, but a new equilibrium is typically achieved after 8 to 10 years.

variables like social benefit levels, tax credits, income ceilings and so on are all indexed to the wage rate.[91]

With respect to public finances on the baseline, we assume that the budget deficit is adjusted if public expenditures rise or tax revenues fall endogenously in light of future developments. Our baseline is characterised by unsustainable public finances in the sense that public debt increases substantially till 2040. It illustrates the consequences of especially the ageing of the population if policies are not reformed. In MIMIC, this has no repercussions for the labour market since there are no feedback mechanisms from public debt onto other variables.[92]

Table 6.3 Baseline values in 2040 for some institutional and labour-market variables in MIMIC

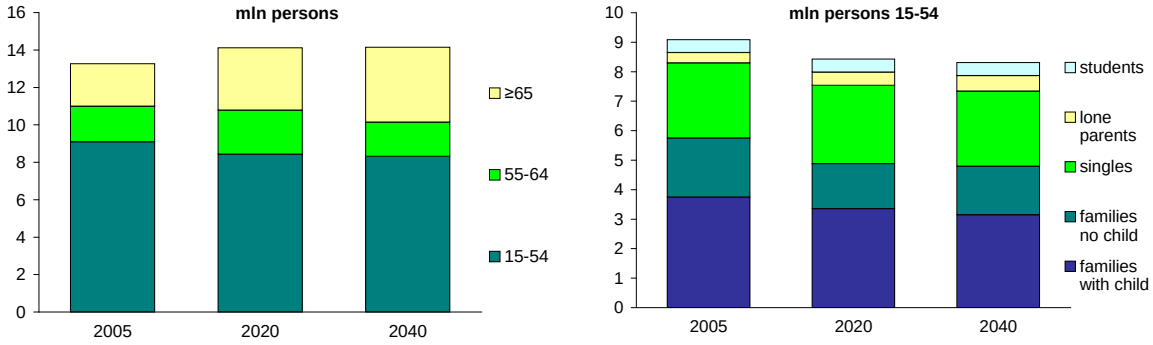
Institutional variables				
Marginal tax burden				62%
Replacement rate				61%
Average tax burden				51%
Theil coefficient				0.19
Income tax rates (four brackets)	34.15	41.45	42.0	52.0
Labour market variables				
Participation rate				71%
Female participation rate				64%
Share of high-skilled labour supply				67%
Unemployment rate				6%
low skilled				13%
high skilled				3½%
Unemployment duration				12 months
Share of long-term unemployment (> 12 months)				32%

The household sector in MIMIC contains a variety of types. Regarding age, the model distinguishes between three groups of people above the age of 15, namely those between 15 and 54, those between 55 and 65, and those older than 65. The left panel in Figure 6.1 shows the projections for three subsequent years on the baseline, namely 2005, 2020 and 2040. We see that the overall size of the population over the age 15 slightly increases to around 14 million people. The share of retired people expands, however, from 17% in 2005 to 28% in 2040. This reflects the ageing of the population. At the same time, the share of people in the age group 15-54 declines from 69 to 59%. The share in the age group 55-64 shows a temporary increase between 2005 and 2020 from 14 to 17%; it then falls again in 2040 to 13%.

[91] This implies that the credit for health care insurance that is introduced in 2006 will remain constant in relative terms, even though we may expect rising insurance premiums in the future due to rising health care expenditures.

[92] For a more in-depth analysis of sustainable public finances in light of future developments, we refer to the complementary study by Van Ewijk *et al.* (2006).

Figure 6.1 Baseline for population until 2040: age groups (left panel) and types (right panel)



For the age group 15-54, we distinguish between five household types, namely families with and without children, singles, lone parents and students. The right panel of Figure 6.1 shows how this composition develops over time. We see that the total number of persons falls from 9.1 to 8.3 million. The shares of lone parents and singles gradually increase from, respectively, 4 to 6% and 28 to 31%. This illustrates the continuing process of individualisation in the Netherlands. It comes at the expense of a lower share of families in this age group. Indeed, the share of families with children declines from 41 to 38%; that of families without children drops from 22 to 20%.[93]

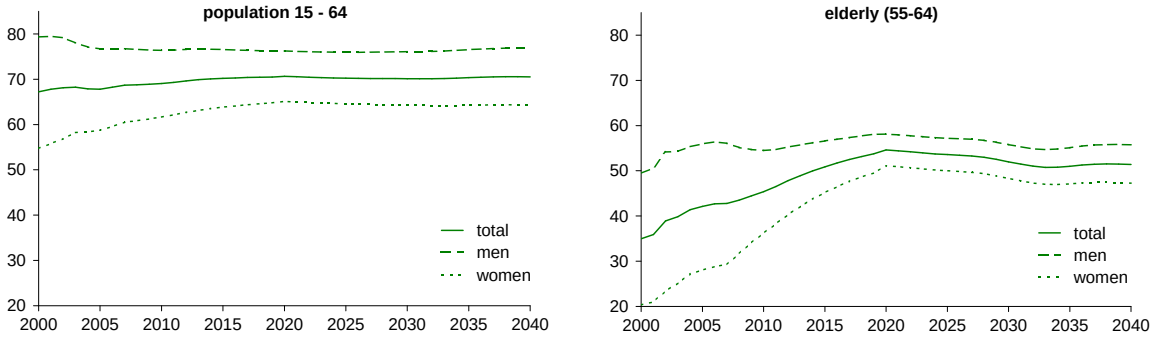
MIMIC distinguishes between two types of skill, namely high-skilled and low-skilled people. The division between these skills is determined on the basis of educational background. In particular, low-skilled refers to individuals with less than lower secondary education. In 2005, 63% of the people between 15 and 64 qualify as high skilled. The residual 37% is qualified as low skilled. In the baseline, we assume that the share of high-skilled workers increases gradually in line with projections of CPB (2002). In particular, the aggregate share of skilled workers in the working population rises to 67% in 2022. We assume that this share remains stable thereafter.

Projections for labour supply of people between 15 and 64 are obtained from Euwals and Van Vuuren (2005). They provide estimates for the development in participation rates for men and women, aggregate labour supply in persons, and aggregate labour supply in hours for the coming decades in the Netherlands under a no-reform scenario. Three important driving forces determine these projections. The first is demographic developments. In particular, the participation of people in the 15 to 54 age-group exceeds that of the 55 to 64 age-group (due to early retirement). The growing share of people in the latter age group will therefore put downward pressure on the overall participation rate. Second, female participation rates will increase over time. During the last decades, participation of young female cohorts has increased substantially. In the future, this will gradually increase the overall participation rate of women. Finally, policy reforms that were implemented in recent years tend to raise participation rates.

[93] The model does not contain endogenous fertility, endogenous immigration or endogenous family formation. Hence, welfare state reforms do not change the size of the population, its age structure or the division of people across the five household types.

This holds for instance for reforms in disability insurance (Dekker and Suijker (2005)) and the move towards actuarially fair early retirement schemes (Euwals *et al.* (2005)). The left panel of Figure 6.2 shows how the participation rate will evolve during the next decades under these assumptions, both for men, women and total participation. It suggests an increase in the overall participation rate in the age group between 15 and 64 from 68% in 2005 to 71% in 2040. This is especially due to a higher female participation rate, which rises from 59% to 64%. Also the participation rate of workers in the 55 and 64 age-group will rise from 42% in 2005 to 51% in 2040 (see the right panel of Figure 6.2). Again, this is primarily because of the rise in the participation rate of women. Despite these higher participation rates, the decline in the working population will reduce aggregate labour supply in the future. Indeed, overall labour supply in persons will fall from 7.2 million in 2005 to 6.9 million in 2040. In terms of labour years, this decline is slightly larger. This is because the rising share of women in employment depresses the number of hours per worker as a relatively large fraction of women works part time. In the projections, we assume that the average number of hours per female worker will remain stable after 2006.

Figure 6.2 Projection for labour-market participation rates 2000 - 2040



On the baseline, we take account of a rising skill premium in the future. In particular, international trade, outsourcing, and skill-biased technical change tend to raise the demand for high-skilled workers in the Netherlands relative to low-skilled workers (see *e.g.* Jacobs (2004); Nahuis and De Groot (2004)). As the growth in the supply of high-skilled workers will flatten during the coming decades, the skill premium is likely to rise. In our baseline, we capture this in the form of a differential productivity growth of high-skilled and low-skilled workers. Following Jacobs (2004), we assume that the difference in productivity growth between skilled and unskilled workers is 3% per year.[94] Due to labour-market rigidities, this skill-bias exerts an upward effect on the unemployment rate of low skilled workers. The equilibrium unemployment rate for low-skilled workers rises from 7¼% in 2006 to 13% in 2040. For the high skilled, it falls from 4¼% to 3½%. The aggregate equilibrium rate rises from 5¼% to 6% during this period. This emphasises that the trends in globalisation and skill-biased

[94] Note that our definition of high-skilled and low-skilled employment differs from some studies in the literature, which take a more narrow definition of high-skilled labour.

technological change adversely affect labour market performance if no further policy reforms are implemented.

Analysing welfare state reform

The baseline suggests that future developments render public finances unsustainable and threaten the labour-market position of the low skilled. Moreover, the current welfare state seems unable to sufficiently integrate certain groups in the labour market, such as women with children, elderly workers and benefit claimants. Reforms aim at improving this. They should make welfare states compatible with modern socio-economic conditions, raise labour-market participation and improve financial sustainability. The next chapter explores comprehensive reform directions to meet these challenges. Thereby, the focus is primarily on the implications for the income distribution and labour market performance as obtained from simulations with MIMIC. In addition, we discuss qualitative indicators. Together, these scores provide a broad picture of the welfare implications of comprehensive welfare state reforms. Moreover, they reveal trade-offs that are an inherent part of welfare state design. To rightly interpret the scores on the various quantitative and qualitative indicators from a welfare point of view, we now give a brief guidance in how to read the tables of the next chapter.

- *Real after-tax incomes*: The tables in the next chapter show the ex-post average impact on real disposable incomes for a limited number of household types. The ex-post results capture also the dynamic implications of changes in labour supply and the wage distribution on incomes. Ceteris paribus, higher incomes reflect higher welfare.
- *Inequality indicators*: Hiding behind the average income effects for various groups can be diverse effects for individuals. To capture this variance with respect to individual income levels, we present the Theil coefficient for the group of working singles. We do not show the Theil coefficient for the entire population since it mixes up the distributional effects between partners within a household and those between households. Another indicator for inequality is the replacement rate, which measures the average effect on the income of benefit recipients relative to workers. A more unequal distribution of incomes ceteris paribus reduces social welfare, especially if society features a strong aversion against inequality (see section 3.2).
- *Labour-market performance*: An increase in labour supply is socially desirable. This may apply in particular to female labour supply, which captures also an emancipation effect. A rise in training, reflected in a higher share of skilled labour supply, is viewed as welfare improving due to initial training distortions associated with taxation and social insurance. Note that there are also costs involved with more labour supply and training in the form of foregone leisure. Still, the social benefits of labour supply and training typically exceed the social costs (see section 3.2). A reduction in unemployment is assumed to be welfare improving as labour market imperfections are responsible for involuntary unemployment initially. A reduction in unemployment duration and a lower share of long-term unemployment also raise social welfare since they contribute to social inclusion and reduce the magnitude of the unemployment risk.

- *Income tax rates*: We present the ex-post impact on income tax rates. These rates are used to balance the government budget ex-post. The effect on income tax rates may also give an indication of the implications of reforms for public finances. In particular, instead of reducing income tax rates, the government might temporarily use funds for reducing public debt, thereby contributing to the achievement of sustainable public finances.
- *Commitment* in labour relations: This raises employment duration and encourages investment in specific human capital (see section 4.5). In principle, this is desirable from a welfare perspective. However, commitment in labour relations also involves a cost in terms of less flexibility, *e.g.* reflected in longer unemployment duration and less investment in general skills and innovation. Hence, the effect on commitment should not be interpreted as an unambiguous welfare improvement. Commitment would be valuable in an environment where skill-specific human capital is important but is less valuable if general skills and flexibility become increasingly important.
- *Privacy*: Respecting the privacy of individuals is a social value on its own. Yet, the government requires information from agents to avoid moral hazard and to enforce government policies. The welfare assessment of changes in privacy is therefore ambiguous and depends on social preferences.
- *Fertility*: There are potential positive and negative externalities from children (see section 5.5). Depending on the assessment of these externalities, a rise in fertility may be desirable or not. The impact on fertility therefore does not reflect a positive or negative effect on welfare. Again, we take a neutral stance, but report the likely impact of reforms on the fertility rate.
- *Choice and diversity*: These are valued positively (see section 3.5). Yet, economies of scale may call for uniformity, *e.g.* due to high transaction costs. Moreover, myopia can call for restricting individual choice. The welfare assessment therefore depends on preferences for either choice or commitment. In a more heterogeneous society, choice and diversity seem more important while its value is smaller in a more homogeneous society.
- *Elderly participation*: What holds for labour supply in general, also applies to elderly participation. In particular, labour supply has a benefit in terms of production, but involves a cost in terms of foregone leisure. As the participation decision is distorted by taxation and other welfare state institutions, we assign a positive value to increased elderly participation.

7 Comprehensive welfare state reform in the Netherlands

Welfare state arrangements are closely interrelated. This renders the design of a comprehensive welfare system a complex issue. This chapter develops three consistent prototype models for the welfare state. We elaborate on the income and labour market implications of reforms in Dutch institutions along the lines of these prototypes. This gives an idea of the margins of policy in affecting future labour-market performance. The outcomes are compared with the current performance of other countries relative to the Netherlands.

7.1 Introduction

The three functions (R's) of the welfare state discussed in chapters 3 -5 cannot be considered in isolation. Indeed, some institutions fulfil more than one function. For instance, unemployment insurance not only deals with uncertainty regarding the labour market (Risk), but also contains implicit subsidies from low-risk to high-risk workers (Redistribution). Moreover, the same function of the welfare state can be fulfilled by alternative institutional designs: labour market risk can be dealt with by unemployment insurance or employment protection. Due to the interplay between the functions, welfare systems are often complex frameworks where institutions are closely interrelated.

This chapter focuses on these interactions. It has three aims. First, we structure the debate on *comprehensive* welfare state design. To that end, we develop three consistent packages of welfare state reforms. In designing these so-called comprehensive reform directions, our starting point is that the Dutch society aims to maintain social cohesion. At the same time, it wants to improve the functioning of the labour market by raising labour supply and reducing unemployment. The three comprehensive prototypes each tackle this challenge in a different way, corresponding to different social preferences regarding trade-offs. A second aim of this chapter is that, for each reform direction, we design a concrete reform package for typical Dutch institutions. We then assess the labour market implications of these packages, using MIMIC. The quantitative assessment illustrates the margins of policy in affecting future labour market outcomes. Finally, we make an international comparison of performance indicators. By confronting this international dimension with the model simulations, we can discuss to what extent institutional reforms are able to bring Dutch performance closer to the performance of other countries or whether other variables are more likely determinants of the differences.

The rest of this chapter is organised as follows. Section 7.2 classifies our three different welfare state prototypes. It links this to other approaches used in the literature. Sections 7.3 - 7.5 discuss each of the three comprehensive welfare state prototypes in more detail and simulate the labour market implications of illustrative reform packages. Section 7.6 compares the performance of the three directions for reform. Section 7.7 deals with the international comparison. Section 7.8 concludes.

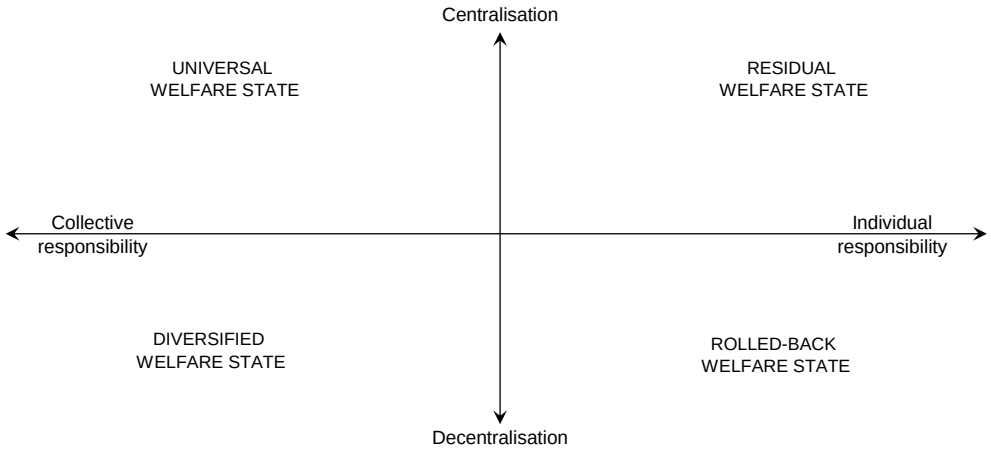
7.2 Comprehensive welfare state design

The goal of comprehensive welfare state design is to develop a coherent set of institutions that comply with social preferences and circumstances. In analytical terms, it boils down to a proper assessment of the trade-offs discussed in previous chapters and a design of institutions that correspond with that. There is potentially a large number of alternative welfare state designs as trade-offs appear in multiple dimensions and different institutions can yield similar outcomes. It is impossible to explore them all. This section therefore aims to structure the debate on comprehensive welfare state design by distinguishing between two key dimensions along which welfare states can be characterised. From this, we develop prototype welfare states that guide us to three alternative directions for welfare state reform in the Netherlands. In this chapter, differences in social preferences drive the design of various prototypes. The next chapter elaborates in more detail on how international circumstances affect the desirability and sustainability of a certain welfare state.

Welfare states along two key dimensions

Social preferences for redistribution, insurance and commitment are not independent. Indeed, societies that assign a high value to redistribution usually also assign a high value to insurance.[95] Also the preferences for commitment in saving behaviour may be correlated with risk aversion, i.e. aversion against undersaving. We therefore merge the fundamental trade-offs regarding the three R's of the welfare state and obtain a broadly defined trade-off on a one-dimensional scale. We refer to this trade off as collective versus individual responsibility. It is illustrated by the horizontal axis in Figure 7.1. The left-hand side of the figure reflects a society that features strong preferences for solidarity and collective responsibilities. The right hand side reflects a society that features a strong preference for individual responsibility.

Figure 7.1 Design of the welfare state



[95] In fact, these preferences ultimately both depend on the degree of risk aversion in society.

Given the preferences for collective versus individual responsibility, the key challenge of the welfare state is to design institutions that organise the three functions efficiently. This institutional design can be organised at different levels, namely at more centralised or more decentralised levels. The vertical axis in Figure 7.1 illustrates this second trade-off between *centralisation* and *decentralisation* of responsibilities.[96] Decentralisation means that a number of smaller collective groups obtain discretion to organise solidarity, insurance and smoothing in decentralised groups. It can, for instance, be organised by local governments or by cooperative clubs like sectoral trade unions, professional interest groups, or companies. This distinction does not so much refer to the *administration* of welfare state functions – which should in any case be delegated to the most efficient level of organisation, independent of preferences – but rather to the division of *powers* between centralised and decentralised units. For instance, either central or decentralised organisations can be made responsible for setting rules and regulations, contract design, premium rates and the like. Hence, even if decision making (i.e. the principal) is centralised, administrative tasks (i.e. the agents) can still be delegated to decentralised units if this turns out to be more efficient.

There are advantages and disadvantages of decentralisation. On the one hand, decentralisation of powers is attractive to the extent that it can do better justice to differences in preferences and circumstances between people or clubs. For instance, workers and firms in one region may have stronger preferences for commitment in labour contracts than elsewhere; or workers in one professional group may prefer to retire earlier than those in another group. Decentralisation is also desirable if people prefer solidarity within their club, rather than nationwide. Moreover, decentralised decision making may yield more efficient policies due to competition induced by either exit opportunities of group members or benchmarking (leading to yardstick competition). The bottom of Figure 7.1 reflects a welfare state that emphasises the decentralisation of powers. On the other hand, centralisation has potential advantages as well. It can reap scale economies, for instance, in the presence of high fixed costs or information sharing gains (*e.g.* in tax collection or social insurance administration). Centralisation also reduces exit opportunities, thus avoiding adverse selection and reducing spillover effects of decentralised policies. Moreover, centralisation is desirable if people prefer nation-wide solidarity. The upper side of Figure 7.1 reflects welfare states characterised by a large degree of centralisation.

Three comprehensive welfare-state designs

By combining the two key dimensions of Figure 7.1, we obtain four possible models for the welfare state. First, the upper-left quadrant in Figure 7.1 reflects a welfare state that assigns a high value to collective responsibility and that organises decision making on a centralised level. It is dubbed the UNIVERSAL WELFARE STATE. Second, the lower-left quadrant represents a welfare state that also assigns a high value to collective responsibility, but decision making is

[96] The principle of subsidiarity endorsed by the European Union suggests that decentralisation is preferable, unless centralisation has clear benefits. It is used to divide responsibilities between the member states and the union.

organised on a decentralised level, either regionally or by profession or industry. The welfare state thus allows for more differentiation among clubs and is dubbed the DIVERSIFIED WELFARE STATE. The two quadrants on the right of Figure 7.1 represent less generous welfare states with more focus on individual responsibility. In the RESIDUAL WELFARE STATE at the upper-right part of Figure 7.1, solidarity with the most vulnerable groups is organised on the state level. The lower-right quadrant reflects a ROLLED-BACK WELFARE STATE in which the state has retreated. In this world, solidarity is organised in small communities and via private charity (as societies did before welfare states were founded). In our analysis, we do not consider this rolled-back welfare state in more detail as we consider it unlikely for the traditionally egalitarian Dutch society to move to this type of institutional framework. Indeed, the surveys discussed by Becker (2004) suggest that the Dutch population assigns a high value to collective solidarity organised via the welfare state.

Our approach in Figure 7.1 is related to other analytical frameworks that have been used in the literature to structure the debate on comprehensive welfare state design. For instance, by adopting an empirical approach, Esping Andersen (1990) distinguishes between three typologies of European welfare states: the social-democratic, the liberal and the corporatist welfare states. The first type puts emphasis on universal benefits, the second on selective benefits to the poor, and third on occupational benefits tied to production sectors (see the Box "*Esping-Andersen typologies*"). The Esping-Andersen typologies have been useful in discussing comprehensive welfare state design in Europe. The typologies show similarities to our welfare states (social-democratic ↔ UNIVERSAL; corporatist ↔ DIVERSIFIED; liberal ↔ RESIDUAL).[97] For our purpose of designing prototypes for the Netherlands, however, they suffer from a number of drawbacks. First, each typology reflects a group of welfare states that show substantial within-variation: the Danish welfare state differs in many respects from that in Sweden or Finland, while all three are considered as social-democratic. What then would be the institutional design in the Netherlands to reflect a particular model? In this respect, the corporatist welfare state is generally viewed as an inferior model as compared to the social-democratic and liberal models. Hence, there seems little to gain from moving towards institutions in a more decentralised system. However, the variation between the corporatist countries is large, both in terms of institutions and performance. Indeed, there are decentralised systems that perform rather well such as Switzerland and Austria in some respects. In designing our version of the DIVERSIFIED WELFARE STATE, we seek for institutions that indeed obtain efficient outcomes and that improve labour market performance, given that preferences are characterised by a high desire for decentralisation. A second drawback from the international comparative approach is that it takes no account of country-specific circumstances. For

[97] Note that the Scandinavian countries are decentralised in some respects. For instance, the share of sub-national taxes in total tax revenue exceeds 30% in Sweden and Denmark, which is similar to the shares of Germany or Belgium (see Jourmard and Kongsrud, 2003). Yet, the discretion of local governments in raising the local tax is much smaller as the central government decides about rates and expenditures. Thus, local governments may be considered primarily as the administrative agents of the principal government.

instance, would copying institutions in the Netherlands from another country be feasible?[98] By starting from trade-offs, our approach more directly links welfare state design to social preferences and to the economic literature on efficient institution design. Thereby, we start from the current institutional structure in the Netherlands and emphasises reform of that system, rather than the design of a new system. A third drawback of using the Esping-Andersen typologies is that people might be tempted to derive causal links between institutions and labour market performance in different countries. While institutions certainly matter for economic performance, these simple cross-country comparisons can be highly misleading. Indeed, causality is a delicate issue that requires careful systematic analysis.[99] We adopt a more systematic approach to analysing welfare state design by using a comprehensive model for the

Esping-Andersen typologies

Using cluster analysis, Esping-Andersen (1990) distinguishes three typologies of European welfare states, labelled as the liberal, social-democratic and corporatist welfare states (see also Dekker *et al.* (2003)). The *liberal* welfare state covers the United Kingdom and Ireland. In Esping-Andersen's typology, these countries offer fairly limited collective provisions and the target group of those provisions is limited to those who cannot meet their own needs in any other way. The middle and high income groups have to cover their own risks through private arrangements or employee benefits provided by their company. The government often facilitates such schemes through the tax system. The *social-democratic* welfare states mainly represent the Scandinavian countries (Denmark, Norway, Sweden and Finland). Reducing income differentials is a prime objective in these countries, and their social security systems are largely universal in that all people are entitled to collective provisions for a large number of social risks. The conditions for access to the system are generous and benefits are generally high. Policy is strongly geared to encouraging people into work, since high employment is necessary to finance the welfare state. An active integration policy is in place to help the unemployed and disabled back into employment. There are good leave arrangements for women. The *corporatist* welfare states comprise Germany, Austria, France and Belgium. According to Esping-Andersen, these countries are characterised by schemes specifically aimed at different occupational groups. Civil servants are privileged because of their links with the state. Because of these separate programmes for different occupational groups, the various schemes are funded mainly through premiums rather than taxes; employees pay collectively for the provisions designed for their sector. This also means that the relationship between contributions paid and benefits received later is stronger than in the liberal and social-democratic countries. Provisions for parents are limited.

The Netherlands is considered as a hybrid model, somewhere between the social-democratic and the corporatist models. Esping-Andersen does not discuss the Mediterranean countries. Ferrera (1996) argues that Greece, Portugal, Spain and Italy could be regarded as a separate welfare state type, focusing more on employment protection legislation and less on social insurance schemes (see also Boeri (2002)). Also the new member states from Central and Eastern Europe feature a separate type of welfare state that may be characterised as a mixture between the liberal and the corporatist model (SCP (2004)).

[98] In this connection, Algan and Cahuc (2006) argue that Continental and Mediterranean European countries are unable to adopt the Danish type welfare state, referred to as the flexicurity model, because of a lack of public-spiritedness of their citizens.

[99] Another approach to gain insight in the relationship between institutions and economic performance is to run cross-country regressions. This approach has been followed in De Groot *et al.* (2004), De Mooij and Tang (2006) and Dekker and Ederveen (2005). However, these analyses suffer from econometric problems such as omitted variables, endogeneity problems and reversed causality. The results of these regressions should therefore be interpreted with caution.

Dutch economy, i.e. MIMIC. We put our findings in an international perspective by comparing our simulation outcomes with the performance in selected other countries. Thereby, different countries may serve as a benchmark. It gives an idea whether reforms along the lines of a specific welfare state actually move our economy closer to the performance revealed in other countries.

Another approach that is related to ours is the three pillar model (see *e.g.* Leijnse *et al.* (2002); Bovenberg (2002)). It distinguishes between three alternative social contracts in society between the government and its citizens. The first pillar is public and starts from a Beveridgian tradition that emphasises the role of the state. The second pillar involves a social contract between the government and social partners, representing groups of citizens. It reflects a Bismarckian tradition that is found in many continental European countries. The third pillar reflects individual responsibilities and the role of government is primarily to facilitate private behaviour. The welfare states in Figure 7.1 may be seen as each emphasising one pillar (first pillar ↔ UNIVERSAL; second pillar ↔ DIVERSIFIED; third pillar ↔ RESIDUAL).
Yet, our approach differs from the three-pillar framework in two important ways. First, the three pillar approach leaves open the issue of efficient welfare state design. Indeed, it suggests that the three pillars can be combined to yield outcomes consistent with social preferences. Yet, some combinations yield inefficient outcomes, as the example for the cappuccino model reveals (see section 4.5). Our analytical approach in Figure 7.1 provides more guidance on efficient welfare state design. Indeed, we develop coherent models with efficient combinations of institutions, i.e. combinations that are supposed to achieve the frontier on the different trade-offs. We therefore do not consider a basic income (which is inferior to targeting), a full replacement of social insurance by a system of mandatory saving accounts (which is inferior to insurance, at least for bigger risks), or the cappuccino model (which is inferior to exclusive responsibility). A second difference with the three pillar framework is that the DIVERSIFIED WELFARE STATE in Figure 7.1 allows for a broader range of decentralised responsibilities than is usually considered by the second pillar. In particular, we may not only think of responsibility for social partners at the industry level, but also allow for alternative collective groups such as regional communities, professional clubs or generational groups.

Where is the Netherlands heading towards?

The current Dutch welfare state may best be characterised on the left hand side of Figure 7.1, somewhere between the UNIVERSAL WELFARE STATE and the DIVERSIFIED WELFARE STATE. Past reforms, however, also contain elements of the RESIDUAL WELFARE STATE, i.e. reforms that emphasise individual responsibility. It raises the question where the Dutch welfare state will or should be heading towards. This is subject to considerable debate in the Netherlands. Thereby, each of the three prototype models plays an important role. The next three sections elaborate in more detail on each of the three prototype reform directions. After characterising the three welfare state designs, we demonstrate their quantitative implications by constructing concrete comprehensive reform packages in Dutch institutions along the lines of each welfare state

philosophy. This renders the discussion about alternative welfare states more concrete. The packages serve as an illustration of how a certain reform direction might be translated to the Dutch situation, but do not reflect unique representations of the prototypes. Indeed, a design of each prototype may allow for other combinations of institutions that might be equally feasible. Hence, policy makers may learn lessons from each of the three models.

7.3 Residual welfare state

The RESIDUAL WELFARE STATE engages less in redistribution, insurance and commitment. To alleviate poverty, the government supports the most vulnerable people via targeted measures. For the large group of middle- and high incomes, public provisions are largely phased out. These groups increasingly rely on individual savings to deal with small risks and for consumption smoothing purposes. The labour market becomes more flexible due to reforms in employment protection and a smaller role of sectoral trade unions.

Characterisation

In the RESIDUAL WELFARE STATE, the tax system becomes less progressive. A flat tax replaces the current tax structure. It is accompanied by a reduction in the across-the-board tax credits and tax deductions. The tax system is further individualised by abolishing the tax credit for non-participating partners. Income support, *e.g.* via child allowances, becomes more targeted to households with low incomes. This helps reducing tax rates further. At the same time, however, targeting exacerbates the poverty trap. To relax the adverse incentive effects of high marginal tax rates at the bottom of the labour market, an earned income tax credit is introduced for people earning low labour incomes. This aims to encourage the unemployed to search for a job and to enter the labour market.

Trade unions become more fragmented and less geared towards egalitarian wage policies. This is partly because public extension mechanisms of collective wage agreements are abolished. Accordingly, wages become less compressed. This is reinforced by a reduction in the minimum wage and the social minimum income level. The lower wage of low skilled workers creates jobs for the low skilled in service sectors, such as retail, restaurants, and consumer services. The lower market price for child care services, cleaning, gardening and cooking also allows the middle class to buy more of these services on the market and to work longer hours on the formal labour market. This reduces the need for subsidies for child care or low skilled employment. A larger share of services in the RESIDUAL WELFARE STATE is provided by the formal market, which replaces informal household activity and black market services. More generally, private markets gain importance in the RESIDUAL WELFARE STATE, *e.g.* in education, health care and child care. Competition delivers a diverse and efficient supply. The government ensures access to these services by providing means tested vouchers to households who cannot afford these services. These households have the freedom in buying services from public or private providers.

Unemployment and partial disability insurance are cut back. The central government determines the minimal conditions in these insurance contracts, while the administration is delegated to municipalities. Insurance against unemployment and partial disability allow for a menu of contracts. Hence, people can choose for a large or small coverage, *e.g.* in the form of a shorter duration of insurance benefits or a number of waiting days. The larger is the coverage of the insurance, the higher is the insurance premium. The introduction of choice reduces moral hazard. Full disability risk is insured at a more generous level than partial disability. It is administered publicly. To prevent shifting of risks from the scanty insurance schemes for unemployment and partial disability to this more generous public scheme, entry into full disability is subject to tight claim assessment. It poses high demands on the public administrator, which is closely monitored by the government. Activation strategies by the government are scaled back as low benefits already provide incentives for people to exit social insurance quickly.

While insurance is cut back, also employment protection legislation is relaxed. Firms have more freedom to lay off redundant workers without going through lengthy administrative procedures. Moreover, notice periods are shortened and severance payments reduced. To avoid excessive labour turnover, the government introduces experience rating in unemployment insurance. Compared to the current system, the new regime increases worker flows and provides entrants with easier access to the labour market. This reduces inequality between insiders and outsiders and benefits especially young workers, women and immigrants.

The individual life-cycle saving account becomes an important vehicle in the RESIDUAL WELFARE STATE. Contributions to this saving account are voluntary. The government facilitates savings by allowing a tax deductibility of contributions (up to a certain maximum) and leaving the returns in the account untaxed. In this way, it aims to reduce the undersaving problem associated with temptation and self-control problems. Withdrawals from the saving accounts are taxed upon realisation. The saving accounts can be used for a variety of purposes, which gives the government the opportunity to cut back existing provisions. For instance, the account can be used to top up the minimal public insurance provisions in case of unemployment and partial disability. Moreover, they serve as the new scheme for early retirement, maternal and parental leave, the cost of child care and adult education. The government does not further intervene in these activities. Indeed, removing existing institutional barriers provides an environment in which people choose socially desirable time allocations, *e.g.* on education, training and labour market participation.

Tax facilities for retirement savings are cut back. In particular, the level of mandatory savings is reduced and replaced by voluntary savings in the life cycle saving account. Funds from this account, however, can also be used for other purposes during the life cycle. Hence, many people end up with lower wealth at old age, which slightly raises the effective retirement age. Wages for elderly workers become more flexible due to reduced employment protection and less generous insurance benefits. Thus, seniority wages fall and employment for elderly workers expands. The elderly increasingly occupy part-time jobs in the service sectors, which

are then combined with part-time early retirement. Elderly workers who rely on social benefits face the same obligations as their younger colleagues, i.e. they are subject to tight job search requirements.

Comprehensive reform package

Armed with the general characterisation of the RESIDUAL WELFARE STATE, we now design a comprehensive reform package that fits with its philosophy. In particular, we suggest the following policy measures for the reform package, where the ex-ante budgetary impact is mentioned for each measure.

- The general child allowance is abolished. This saves 3 billion euro.
- The across-the-board labour tax credit is abolished. It saves 7 billion euro.
- The tax credit for non-participating partners is abolished. This saves 2¾ billion euro.
- The general tax credit is reduced by 500 euro. It saves 5 billion euro.
- A targeted child credit of 1 200 euro per year is introduced for families and lone parents with an income up to 20 000 euro. The credit is phased out gradually up to an income of 32 000 euro. The ex ante budgetary cost is 1½ billion euro.
- An earned income tax credit is introduced with a maximum of 1 200 euro. The credit is phased in between a gross annual income of 8 000 and 16 000 euro (at a rate of 15%), remains flat until 24 000 euro and is then phased out until 32 000 euro (at a rate of 15%). It costs 3¾ billion euro.
- Public extension of collective wage agreements is abolished. We simulate this by means of a reduction in the relative bargaining power of trade unions by 20%.
- Employment protection is relaxed and replaced by experience rating in unemployment insurance. We simulate this by means of a reduction in the EPL indictor from 2.3 to 1.3 (which is the level of Ireland or New Zealand).
- The gross minimum wage and the social minimum income are reduced by 10% in 2040.[100] This reduces the ratio of the minimum wage and the median wage from 48% to 43%, which is equal to the ratio in the United Kingdom. Benefits that are indexed to the social minimum, such as basic pensions, are not compensated and fall as well. This reform saves 1¾ billion euro ex ante.
- Unemployment benefits are reduced to 50% of the last-earned wage. The duration of these benefits falls from a maximum of 38 months to a maximum of 12 months. Moreover, entry conditions become sharper. Overall, these measures reduce the average unemployment insurance benefit by 25%. It saves 1 billion euro ex ante.[101]
- Benefits in full disability insurance are set at 65% of the last-earned wage. For partial disability, benefits are adjusted along the lines of unemployment insurance, i.e. the benefit level is reduced to 50% and the duration of the first phase is cut to 12 months. This reduces the average disability insurance benefit by 11%. It saves 1 billion euro ex ante.

[100] This comes down to a reduction in the net social minimum by 6.5%. The reduction would be obtained if, for instance, the social minimum would not be fully indexed to the market wage, but instead falls in relative terms by 0.3% per year until 2040.
[101] The average benefit reduction is computed by using microdata outside MIMIC.

- Public sector jobs are reduced. In particular, we abolish 18.000 low-skilled jobs in the public services sector, which are seen as relief jobs for the low-skilled unemployed. It saves ½ billion euro.
- The current progressive tax structure is replaced by a flat tax. It applies only to young tax-payers; the elderly face a reduced rate in the first two brackets. Ex-ante, a flat tax of 30½% balances the government budget. The elderly pay 17.9% less in the first two brackets. The ex-post flat rate to maintain a balanced budget turns out to be 27%.

We have simulated the comprehensive reform package with MIMIC. The government budget in the simulation is balanced ex post by adjustments in the income tax rate. The long-term simulation results are presented in Tables 7.1 and 7.2. Table 7.1 shows the ex post outcomes for the income distribution, some institutional variables and a number of qualitative indicators. The labour market effects are presented in Table 7.2.

Assessment

Table 7.1 reveals a substantial income gain for working people, especially those with higher skills. For instance, the high-skilled experience a gain in income between 5¾% for singles and 6¼% for couples. This is the result of the decline in tax rates. The positive income effects are reinforced ex-post by rising labour supply and tax cuts that the expansion of the tax base allows for (see below). People relying on social benefits experience an income loss because of lower tax provisions, lower social benefit levels and shorter benefit duration. As a result, inequality among singles rises, which is reflected by a rise in the Theil coefficient by 14½%.

Reduced public expenditures in the RESIDUAL WELFARE STATE allow for lower taxes. Table 7.1 shows that the flat tax can be reduced to 27% in the long term. On average, the marginal tax burden falls by 7¾%. The replacement rate drops by 9¼%.

The bottom of Table 7.1 presents effects on our qualitative indicators, which are not captured by MIMIC. First, the more flexible labour market increases the risk of dismissal and reduces commitment between employers and employees. This reduces employment duration and creates a cost in terms of lower investment in specific human capital. It should be weighed against the gains from more flexibility, *e.g.* reflected in shorter unemployment duration and the increase in investment in general skills and innovation. Second, privacy improves. For instance, the government reduces its activation efforts since low benefit levels already provide a natural incentive to exit social insurance schemes. Moreover, the government does not need information about individual incomes since the flat tax can be organised as a payroll tax at the firm level. The third indicator is fertility. On the one hand, the government reduces support for families with children who have sufficiently high incomes. This may reduce the number of children to the extent that fertility depends on financial incentives. On the other hand, the more flexible labour market makes it easier for women to combine work with care for children. Moreover, the price for child care and consumer services declines on account of the lower minimum wage and increased wage flexibility. This encourages fertility. Overall, the impact on

Table 7.1 Long-term effects of a reform package along the lines of the RESIDUAL WELFARE STATE on incomes, institutions and qualitative indicators[a]	
Real after-tax incomes	
Working families	5
division of labour	
single earner couples	½
two earner couples	3½
parenthood	
with young children	4
without young children	7
skill level	
both partners low skilled	½
mixed partner skills	6
both partners high skilled	6¼
Working singles (no children)	5
low skilled	3
high skilled	5¾
inequality index for singles (Theil coefficient)	14½
Social benefit recipients	
unemployed	– 8¾
disabled	– 3¾
welfare recipients	– 4½
Retired	4¼
Institutional indicators	
Income tax rates (level)	27%
Marginal tax burden (absolute change)	– 7¾
Replacement rate (absolute change)	– 9¼
Qualitative indicators	
Commitment	–
Privacy	+
Fertility	+/–
Choice	+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.

Source: MIMIC simulations & complementary analysis

fertility is ambiguous. Finally, the RESIDUAL WELFARE STATE raises choice as insurance and smoothing rely more on individual responsibility and market supply and less on uniform provisions provided by the state.

Table 7.2 shows that reforms of the RESIDUAL WELFARE STATE improve the incentives for labour supply and participation. Indeed, the female participation rate increases by 9%, while hours worked increase by 3% on aggregate. This is primarily due to a fall in marginal tax rates. While the rise in labour supply applies to all agents, especially secondary earners raise their number of hours worked, namely by 6¼%. Since after-tax income differentials rise, agents are encouraged to engage in education and training. Accordingly, the share of high-skilled labour supply rises by 1¾%. This extra supply of skilled labour exerts downward pressure on high-skilled wages. This mitigates the effect on the before-tax wage distribution.

The unemployment rate falls on account of a number of institutional changes. In particular, the lower average tax burden, the lower replacement ratio, reduced union bargaining power, and relaxed employment protection contribute to reducing the equilibrium unemployment rate by 2½%-point. This reduction is concentrated among the low skilled where the rate falls by 8¼%-point. Average unemployment duration falls by 60% (i.e. seven months), primarily due to the reduction in employment protection, the increased flexibility in before-tax wage formation and shorter unemployment benefit duration. The share of long-term unemployment drops by more than one quarter.

The rise in labour supply and the decline in unemployment together increase private sector employment by 7½%. Since public sector employment drops, the aggregate increase in employment is less, namely 6¼%. The expansion of employment broadens the tax base and allows for further cuts in income tax rates. The ultimate income tax is a flat rate of 27%.

Table 7.2 Long-term effects of a reform package along the lines of the RESIDUAL WELFARE STATE on labour market performance[a]

Producer wage	– 7¾
low skilled	– 7¾
high skilled	– 7½
Labour supply in hours	3
primary earners	2
secondary earners	6¼
single persons	2½
Female participation rate	9
Share of high-skilled labour supply	1¾
Employment	6¼
public sector	– ¼
private sector	7½
low skilled	7½
high skilled	7½
Unemployment rate (absolute change)	– 2½
low skilled	– 8¼
high skilled	– ¾
Private sector production	7
Unemployment duration	– 60
Share of long-term unemployment (absolute change)	– 25½
Elderly participation	+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.

Source: MIMIC simulations & complementary analysis

With respect to elderly workers, the RESIDUAL WELFARE STATE is characterised by a shift from mandatory to voluntary savings for retirement. Moreover, subsidies for retirement saving are cut back. Together with the cut in social insurance provisions, this raises the effective retirement age. The elderly who lose their job find re-employment in the private sector, usually at lower wages. Participation in part-time jobs by the elderly becomes more common.

An important risk of the RESIDUAL WELFARE STATE is the creation of an underclass in society. For many groups, low taxes provide good incentives to work and train so that the market flourishes. Indeed, only a small group of vulnerable people relies on income support from the state, which is financed by taxes imposed on the large majority of middle and high incomes. The former group finds it difficult to integrate in the market economy in light of a severe poverty trap. This discourages training and work effort and renders poverty among many households a structural problem. A major challenge of the RESIDUAL WELFARE STATE is, therefore, to prevent the emergence of such an impoverished underclass.

7.4 Universal welfare state

The UNIVERSAL WELFARE STATE provides generous welfare state provisions. To avoid severe distortions, complementary policies are intensified such as child care subsidies, activation of the low-skilled and education subsidies. This further expands public spending, but these expenditures are geared towards participation. Universal income security and uniform public services mitigate poverty and ensure equal opportunities. Stringent rules, mandatory workfare and tough sanctions complement these provisions to maintain a high level of participation. The labour market becomes more flexible to better integrate outsiders.

Characterisation

In the UNIVERSAL WELFARE STATE, people are protected against poverty by means of across-the-board transfer schemes. This holds in particular for families with children, who receive generous child support from the government in the form of cash allowances, child care services and education. Universal supply ensures equal access and avoids stigmatisation of disadvantaged groups. Moreover, subsidies for child care and education remove labour-market distortions imposed by the tax-benefit system. It leaves, however, little freedom of choice and does not allow for free entry and competition. Some selective benefit schemes are used to complement poverty mitigation, such as welfare benefits to the poor. The tax system is progressive and individualised.

Trade unions become more centralised and thus better internalise the consequences of their behaviour on outsiders. The government encourages this by extending agreements of sectoral unions only when they fit with the central agreements of the government and central organisations. Wages become more flexible. This is reinforced by a relaxation of employment protection, which benefits outsiders, such as young people, women and immigrants. Still, high reservation wages in light of generous social benefits put a relatively high floor in the wage distribution. This challenges the government to create jobs for the low skilled. The government obtains this via two channels. First, it creates new public sector jobs to absorb part of the low skilled unemployed. For instance, these are employed in public child care services, education, elderly care and public transport. Participation in these jobs is compulsory. It is part of the

active labour-market policy that combines income support to households with tough obligations (see below). Second, the government provides vouchers for the long-term unemployed.

The benefit level and duration in unemployment and disability insurance are maintained. To combat moral hazard in social insurance schemes, the government adopts both harsh and lenient activation policies. Harsh policies involve tight eligibility criteria, mandatory participation in activation programs, and tough monitoring and sanctioning policies. These obligations impose a fierce infringement on the privacy of individuals. Lenient policies involve government-operated labour market exchange and placement services. Moreover, the government expands the number of public-sector jobs for specific groups, including for the unemployed elderly and the low-skilled unemployed. While the central government determines the budget and type of policies, activation strategies are executed on a decentralised level by municipalities.

Female participation is encouraged in a number of ways. First, employment protection is relaxed by fewer administrative requirements, shorter notice periods and lower severance payments. The philosophy is to organise insurance via explicit social insurance, rather than employment protection. This increases the flexibility of the labour market and increases job-finding probabilities for outsiders. It facilitates the integration of women in the labour market, for instance, by making it easier to get work after a period of maternal or parental leave. Second, female participation is further encouraged by measures targeted at working partners. For instance, childcare is publicly supplied at low private cost, part-time public sector jobs are increased and families with two working spouses receive an additional tax credit. The latter is provided to the spouse with the lowest income in order to encourage hours worked of secondary earners.

Precautionary savings are unimportant due to generous collective insurance schemes. Mandatory saving schemes and tax facilities for early retirement saving are abolished. Retirement wealth cannot be used before the age of 65. These measures stimulate labour market participation of the elderly. Together wit a more flexible labour market, this encourages them to make a second career, usually with shorter weekly working hours and a lower wage. Elderly who rely on social welfare or unemployment insurance are required to participate in public relief jobs, such as health care, child care and basic education.

Comprehensive reform package

We design a comprehensive reform package that fits with the UNIVERSAL WELFARE STATE. It contains the following policy measures.

- The general tax credit for non-participating partners is abolished. It saves 2¾ billion euro.
- The across-the-board earned income tax credit rises by 400 euro. It costs 2½ billion euro.
- A tax credit is introduced for two-earner couples with children under 18 and assigned to the secondary earner. It equals 15% for annual secondary income up to 24 000 euro and is flat afterwards. The maximum credit is 3 600 euro. The costs are 2¾ billion euro.

- Child care is subsidised. The parental price is reduced by two-third for all childcare that matches with labour-market participation of parents. The costs are ½ billion euro.
- Due to selective application of sectoral agreements, trade unions care more about outsiders and, therefore, employment (relative to wages). We simulate this by an increase in the value of employment relative to wages in the value-function of trade unions by 3¾%.
- Employment protection is relaxed. We simulate this by means of a reduction in the EPL indictor from 2.3 to 1.8 (*e.g.* equal to the Danish level).
- Sanctions are extended by 3 months of an additional punitive sanction of 20%.
- The number of public sector jobs is raised by 18 000. The budget equals ½ billion euro.
- A subsidy scheme is introduced for employers that hire previously long-term unemployed workers with low skill. The subsidy equals 50% of the social minimum income, i.e. around 8 000 euro per person. The cost for the government is ½ billion euro.

We have simulated the reform package of the UNIVERSAL WELFARE STATE with MIMIC. The government budget is balanced ex post by adjustments in the income tax rate. The personal income tax rates are increased by 1¾% ex ante. The ex-post impact turns out to be a ¼% reduction in tax rates due to favourable labour market effects of the reforms. The long-term simulation results for the income distribution, some institutional variables and a number of qualitative indicators are presented in Table 7.3. The long-term labour market effects are presented in Table 7.4.

Assessment

Table 7.3 reveals that two-earner couples experience a gain of 2¼% in after-tax income in the UNIVERSAL WELFARE STATE. This holds especially for couples with children. Yet, single earner couples loose 4½ as the general tax credit is individualised. People relying on social benefits also loose because wage moderation causes a decline in social benefits that are linked to gross wages. Working people are compensated for this by means of special tax credits that are all complementary to labour. The average replacement ratio falls by 1%. The Theil coefficient for working singles falls by 1¼%, suggesting that the welfare state slightly reduces inequality in the distribution among working singles with different skills.

The bottom part of Table 7.3 shows the impact of the UNIVERSAL WELFARE STATE on some qualitative indicators. First, the more flexible labour market creates a higher probability of job separation. Shorter employment durations create a cost in terms of lower investment in specific human capital and cause higher temporary lay-offs. A second effect is the impingement on privacy. Tough monitoring, sanctions and workfare policies substantially hurt the privacy of individuals relying on social benefits. Indeed, the UNIVERSAL WELFARE STATE comes along with high information needs from these people. Third, the fertility rate will rise. In particular, the generous public provisions for child care and maternal leave combined with a more flexible labour market facilitate the combination of female participation and raising children. Thus, the rising participation of women is accompanied by higher fertility. Finally, public supply of child

Table 7.3	Long-term effects of a reform package along the lines of the UNIVERSAL WELFARE STATE on incomes, institutions and qualitative indicators[a]
Real after-tax incomes	
Working families	5¼
division of labour	
single earner couples	– 4½
two earner couples	2¼
parenthood	
with young children	6½
without young children	2½
skill level	
both partners low skilled	3
mixed partner skills	5
both partners high skilled	6
Working singles (no children)	¾
low skilled	¾
high skilled	1
inequality index for singles (Theil coefficient)	– 1¼
Social benefit recipients	
unemployed	–1¼
disabled	– 3½
welfare recipients	– 1¼
Retired	– ½
Institutional indicators	
Income tax rates (absolute change)	– ¼
Marginal tax burden (absolute change)	– 1¼
Replacement rate (absolute change)	– 1
Qualitative indicators	
Commitment	–
Privacy	–
Fertility	+
Choice	–

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.

Source: MIMIC simulations & complementary analysis

care, education, and health care ensure equal access to these provisions, but leave little room for individual choice. Thus, it fits more with a relatively homogeneous society.

Table 7.4 shows the implications of the UNIVERSAL WELFARE STATE for the labour market. We see that the reforms raise the participation rate of partners by 14½% in persons.[102] In terms of hours worked, it rises by 8¾% since many partners occupy part-time jobs. Labour supply by primary earners and single persons does not increase. Overall, we see that the increase in the work of secondary earners raises aggregate labour supply by 1½%. Since after-tax income differentials between high skilled and low skilled workers change only little, the reforms have

[102] In absolute changes, this is a rise of 10%-points in the female participation rate. Hence, it would raise the participation rate from a baseline value in 2040 of 64% to 74%. This is still 3% below the participation rate of men. To compare, the female participation rate in Sweden today is 72%, while that for men is 3%-points higher.

only a moderate impact on training decisions. Accordingly, the share of high skilled labour supply increases only slightly.

Table 7.4 Long-term effects of a reform package along the lines of the UNIVERSAL WELFARE STATE on labour market performance[a]

Producer wage	– 4¼
low skilled	– 5½
high skilled	– 3½
Labour supply in hours	1½
primary earners	– ¼
secondary earners	8¾
single persons	0
Female participation rate	14½
Share of high-skilled labour supply	¼
Employment	3
public sector	1
private sector	3½
low skilled	5¾
high skilled	2¾
Unemployment rate (absolute change)	– 1¼
low skilled	– 4¼
high skilled	– ¼
Private sector production	3
Unemployment duration	– 35½
Share of long-term unemployment (absolute change)	– 12
Elderly participation	+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.
Source: MIMIC simulations & complementary analysis

The unemployment rate falls by 1¼% in the UNIVERSAL WELFARE STATE. It is caused by the relaxation of employment protection, employment subsidies for the long-term unemployed, and the changing role of trade unions. The government creates ample jobs for the low skilled through the expansion of public relief jobs. Yet, this primarily serves social objectives rather than labour market performance. The decline in unemployment is concentrated among the low-skilled, where the rate falls by 4¼%. The more flexible market of the UNIVERSAL WELFARE STATE is accompanied by higher job turnover rates and higher job finding probabilities for the unemployed. Thus, unemployment duration drops by almost 36% of the initial level, which is about 4 months. The share of long-term unemployment falls by 12%-point. Together with the rise in female labour supply, we observe an overall rise in employment by 3%.

The UNIVERSAL WELFARE STATE comes along with a reduction in privileges for elderly workers. For instance, the tax deductible accumulation of retirement wealth is reduced. Moreover, special provisions in social insurances for the elderly are abolished. This raises labour market incentives for the elderly. The elderly find it easier to obtain work after being dismissed due to the fall in seniority wages induced by the more flexible labour market.

Flexible and part time jobs for elderly are available in the private sector and in public sector service jobs geared to the elderly.

Summing up, the UNIVERSAL WELFARE STATE combines an expansion of welfare state spending with an increase in labour supply and a fall in unemployment. Expenditures are targeted on mitigating pre-existing distortions imposed by the welfare state itself. Indeed, higher expenditures on childcare, low-skilled employment and education are ways to complement welfare expenditures geared to solidarity.

7.5 Diversified welfare state

The DIVERSIFIED WELFARE STATE organises part of solidarity in decentralised clubs, e.g. via compressed wage structures and occupational insurance and saving schemes. To avoid exit and competition, clubs impose barriers to mobility. This provides commitment and encourages investment in long-term relationships. To mitigate distortions, some complementary policies are organised within clubs, e.g. for child care, activation of the low-skilled, training and activation of elderly workers. It goes along with diversity between clubs. The government cares for vulnerable outsiders that have no access to clubs, e.g. by means of targeted tax relief for low-skilled workers and targeted child support for families with low incomes.

Characterisation

While redistribution in the DIVERSIFIED WELFARE STATE remains a task of government via the progressive tax-benefit system, the size of this public redistribution falls. In particular, general tax credits and the across-the-board labour tax credit are cut in exchange for lower tax rates. This allows for smaller disincentive effects from taxes on hours worked and training. Social benefits, such as child allowances, become more targeted. They are phased out with family incomes to comply with household ability to pay. Also the tax system maintains elements of household ability to pay, such as the credit for non-working partners.

Redistribution via wage compression remains important. Indeed, sectoral trade unions adopt egalitarian wage policies by claiming sector-specific rents. High wage costs for the low-skilled reduce low-skilled employment, however. To prevent increasing unemployment among the low skilled, the government provides targeted tax relief for employers who hire low-skilled people. This policy is considered more effective to create low-skilled employment than an earned income tax credit since it is better targeted on people earning low hourly wages. Moreover, it avoids adverse incentive effects on hours worked, induced by the phasing out of tax relief based on total income.

Partial disability insurance is the full responsibility of occupational groups. The government sets the legal basis for minimal social insurances to avoid adverse selection. Unemployment insurance relies more on sectoral premium differentiation, but a national share of unemployment insurance remains important. To mitigate moral hazard with public

unemployment insurance, welfare benefits and full disability insurance, the government regulates and monitors the insurance administrations of the occupational groups.

Social insurance benefits are somewhat reduced. Occupational groups rely more on employment protection through notice periods and severance payments as an alternative form of insurance for the employees. Decentralised clubs limit exit opportunities for their members as competition would potentially hurt the interest of other group members. Commitment raises the internal flexibility in firms and increases investments in specific human capital. Yet, these privileges for the insiders hamper mobility and reduce the job-finding opportunities for outsiders. This causes relatively long unemployment duration and makes it difficult for young people and re-integrating women to find work. In some upcoming service sectors, the DIVERSIFIED WELFARE STATE develops facilities for female workers to combine work with care for children, such as childcare facilities and internal job flexibility. This applies especially to government sectors, where there are facilities for part-time work, parental leave and child care.

Decentralised administrators combat moral hazard in inflows by tight monitoring and claim assessment. The incentives to reduce moral hazard are strong since clubs have the exclusive financial responsibility to act in the interest of their group members. Yet, some cost of moral hazard can still be shifted unto the collective pool as the government is responsible for welfare schemes, long-term unemployment and full disability. The insurance administrations in the DIVERSIFIED WELFARE STATE set up reintegration programs to get the unemployed back to work, preferably within their own occupational group. The government is responsible for people who cannot rely on occupational provisions. It thus adopts activation measures to integrate these people in the labour force.

Occupational groups organise collective second-career pools to re-employ elderly workers who loose productivity. Participation by the elderly is stimulated as long as they are able to work. Re-employment often takes place in part-time jobs and at lower wage rates. The government provides extra tax relief for low-skilled people above 55 in the form of an earned income tax credit. This supplements the incomes for elderly workers with lower skills and renders wage flexibility for the elderly more feasible.

In many sectors, the opportunities to work longer increase. Thus, the effective retirement age becomes more heterogeneous among clubs. Also the life-cycle saving account receives favourable tax treatment. This voluntary account is, however, transformed in most occupational groups into a mandatory scheme in which employers and employees contribute funds. The accounts can be used for a selection of expenditures, including child care, education, parental leave and early retirement.

On-the-job training is the responsibility of employers and employees. The role of government is to avoid distortions in human capital decisions. Thus, the monetary costs of education are tax deductible and marginal tax rates are reduced. Commitment in labour relations provides incentives for employers to invest in the human capital of their employees.

Comprehensive reform package

The reform package that goes along with the DIVERSIFIED WELFARE STATE contains the following policy measures

- The general tax credit is reduced by 600 euro. It saves 6½ billion euro.
- The labour tax credit is reduced by 200 euro. It saves 1¼ billion euro.
- The general child allowance is reduced by 50%. It saves 1½ billion euro.
- A targeted child credit of 600 euro per year is introduced for families and lone parents with an income up to 20 000 euro. It is phased out with an annual gross household income up to 32 000 euro (at a rate of 5%). The ex ante budgetary cost is ¾ billion euro.
- Child care is subsidised within collective groups. On average, the parental price of childcare falls by 25% of the total costs. It is simulated as a subsidy on childcare with a budget of ¼ billion euro.
- Unemployment insurance becomes more diversified among groups. On average, benefit duration is reduced from 38 to 24 months. During the first six months, benefits equal 70% of the last-earned wage; it then falls to 65% during the next 12 months and to 60% during the last phase. The average unemployment benefit falls by 7%. It saves ½ billion euro for the government.
- Insurance benefits for permanent disability is 70% of the last-earned wage. Insurance for partial disability is reformed along the lines of the unemployment insurance. On average, the disability benefit falls by 8%. It saves ¾ billion euro for the government.
- Sanctions are extended by 3 months of an additional punitive benefit cut of 20%.
- Trade unions become stronger and their bargaining power increases by 5%.
- A credit is introduced for firms hiring low skilled workers. For each full-time employee with an income between the minimum wage and 130% of that, the firm receives a credit of 1 600 euro. For part-time workers, the credit is proportional to their working time and conditional on the hourly wage. For full-time wage incomes between 20 000 and 32 000 euro, the credit is gradually phased out at a rate of 11.5%. The budgetary cost is 2½ billion euro.
- A subsidy scheme is introduced for employers that hire previously long-term unemployed workers with low skill. The subsidy equals 75% of the social minimum income, which is around 12 000 euro per person. The cost for the government is ¾ billion euro.
- The income tax system is simplified. The current system with four rates is transformed into a scheme with two rates. The current top rate is reduced to 45%. The first three brackets are merged into a single rate of 35% to maintain the government budget balanced ex-ante. Ex-post, a further reduction in the rate of the new first bracket to 33½% is possible.

We simulate the reform package of the DIVERSIFIED WELFARE STATE with MIMIC, taking the income tax rate in the first new bracket to balance the government budget ex post. Table 7.5

Table 7.5 Long-term effects of a reform package along the lines of the DIVERSIFIED WELFARE STATE on incomes, institutions and qualitative indicators[a]	
Real after-tax incomes	
Working families	1
division of labour	
single earner couples	1¼
two earner couples	2
parenthood	
with young children	¾
without young children	1½
skill level	
both partners low skilled	– 1½
mixed partner skills	1¼
both partners high skilled	1½
Working singles (no children)	2½
low skilled	1¾
high skilled	2¾
inequality index for singles (Theil coefficient)	9¾
Social benefit recipients	
unemployed	– 3¼
disabled	– 5¼
welfare recipients	– 2½
Retired	2
Institutional indicators	
Income tax rates (level)	33½%; 45%
Marginal tax burden (absolute change)	– 3½
Replacement rate (absolute change)	– 4½
Qualitative indicators	
Commitment	+
Privacy	–/+
Fertility	–
Choice	– /+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.

Source: MIMIC simulations & complementary analysis

shows the long-term implications for the income distribution, institutional variables and the qualitative indicators. Table 7.6 shows the long-term labour market effects.

Assessment

Table 7.5 shows that the income effects induced by the DIVERSIFIED WELFARE STATE are mixed. On the one hand, the government engages in less redistribution via progressive taxes. This hurts the income of the low skilled and of people in part-time jobs but favours people in full-time jobs and with higher skills. Benefit recipients suffer from lower incomes in light of the reforms in the tax system and the reduction in social benefits. The decline in public redistribution is mitigated somewhat by wage compressing institutions that benefit low skilled workers. Moreover, targeted public support schemes of the government provide support for low-skilled

workers. The income of elderly people is protected and actually rises in light of reduced tax rates. The inequality indicator for singles reveals that the income distribution becomes more unequal. The Theil coefficient rises by 9¾%. This reflects the emphasis that the DIVERSIFIED WELFARE STATE puts on encouraging full-time jobs at the expense of part-time work. Moreover, reduced tax progression favours high skilled over low skilled employment. Base broadening measures allow for a reduction in tax rates. The marginal tax burden falls by 3½%. The replacement rate falls by 4½% on average.

Table 7.6 Long-term effects of a reform package along the lines of the DIVERSIFIED WELFARE STATE on labour market performance[a]

Producer wage	– 3½
low skilled	– 3
high skilled	– 3¾
Labour supply in hours	2
primary earners	1¾
secondary earners	¾
single persons	2¾
Female participation rate	– 3½
Share of high-skilled labour supply	½
Employment	2½
public sector	¼
private sector	3
low skilled	2¼
high skilled	3¼
Unemployment rate (absolute change)	– ½
low skilled	– 1¾
high skilled	0
Private sector production	2¼
Unemployment duration	– 7
Share of long-term unemployment (absolute change)	– 3¾
Elderly participation	0/+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.
Source: MIMIC simulations & complementary analysis

The bottom part of Table 7.5 shows the scores of the DIVERSIFIED WELFARE STATE on qualitative indicators. First, commitment between employers and employees is strengthened. It ensures relatively long employment relations, which promotes specific investments in human capital and the internal flexibility in clubs. The limited flexibility of employment in this welfare state makes it necessary for wages to respond flexible to macroeconomic shocks. The second indicator refers to privacy, the effect on which is ambiguous. On the one hand, privacy improves due to smaller government involvement. On the other hand, the tough reintegration requirements imposed by decentralised insurance administrations reduce privacy of people relying on social insurance. Overall, the impact of the DIVERSIFIED WELFARE STATE on privacy is mixed. Third, the impact on fertility is likely to be negative. While the government pays due

attention to income support to families with a low income, it does fairly little to support the combination of female labour market participation and parenthood. For instance, the rigidities in the labour market hurt the opportunities for women to take temporary leave during parenthood. Only in clubs of modern service sectors and the public sector do employers facilitate the combination of work and family care. Note that low fertility may not be socially harmful. The fourth indicator, i.e. individual choice and diversity, also yields mixed results. On the one hand, diversity between clubs is large so that there is ample room for diversity. Within these collective groups, however, there is little room for individual choice. Indeed, collective saving and insurance schemes aim to reduce transaction costs and to benefit from economies of scale. This fits poorly with individual choice. A final remark on the DIVERSIFIED WELFARE STATE refers to the administration of social insurance. Exclusive responsibility for social insurance administrations in decentralised collective groups may well be efficient to fight moral hazard. It may come along with gains in the form of increased exit from social insurance schemes, an effect that is not captured in our simulations. Whether this latter benefit is important relies on one's assumptions regarding the efficiency of administrators, an issue on which we lack a clear empirical basis.

Table 7.6 shows the labour market effects of the reforms of the DIVERSIFIED WELFARE STATE. We see that working singles and primary earners raise their number of hours worked by 2¾% and 1¾%, respectively. This is the result of a reduction in the marginal tax burden induced by lower income tax rates. Labour supply of secondary earners rises much less, however. First, the phasing out of some income support measures with household income raises the marginal tax burden on secondary incomes. Second, a less progressive tax system comes along with a higher average tax on small part-time jobs. Indeed, part-time work is discouraged. This reduces the female labour market participation rate by 3½%. Hence, women either work longer hours or withdraw from the labour market. Overall, we observe an increase in labour supply by 2%. Larger after-tax income differentials between high skilled and low skilled workers encourage training. Hence, the share of high-skilled labour supply rises by ½%.

The unemployment rate falls by ½%. This is especially due to the decline in the unemployment rate among the low skilled, which falls by 1¾%. The lion share of this effect is caused by tax relief for low-skilled workers and the vouchers for the long-term unemployed. As these measures are targeted at the low skilled outsiders, they effectively reduce wage costs for employers and create jobs for low-skilled people. Moreover, these measures help to integrate the long-term unemployed into the labour market. Indeed, the share of long-term unemployment falls by 3¾%. The unemployment rate among skilled workers does not fall.

The DIVERSIFIED WELFARE STATE aims to increase participation of elderly workers. In some clubs, retirement becomes more gradual via increased opportunities for part-time retirement. Elderly workers increasingly occupy a different job at an older age, but usually within their own club. In other clubs, however, seniority wages remain important and the privileged position of elderly is maintained. This renders the impact on elderly participation rather modest.

Summing up: the DIVERSIFIED WELFARE STATE raises labour supply as the government plays a smaller role in redistribution and insurance. This role is partly taken over by decentralised clubs who become increasingly important. This mitigates the effects of public sector reforms. Moreover, the gains materialise to the male insiders of the labour market, not to female outsiders. The government helps to integrate low skilled outsiders through targeted measures.

7.6 Comparing welfare states

This section compares the three welfare states discussed in previous sections. Table 7.7 shows a selection of outcomes from Tables 7.1 – 7.6. The comparison provides insight in the most effective reform directions, as well as the costs they entail. The appendix to this chapter provides a sensitivity analysis of the reform packages for a number of critical parameters of the model. It reveals that the qualitative conclusions of this chapter remain unaffected if alternative parameter values would have been used, but that the quantitative effects can change.

Inequality

The first three rows in Table 7.7 show the differential impact of the three welfare state reforms on institutional variables that capture the impact on inequality. The RESIDUAL WELFARE STATE and to a lesser degree the DIVERSIFIED WELFARE STATE raise inequality as measured by the Theil coefficient for working singles. Hence, these welfare states increase after-tax income inequality as redistribution by the state is cut back. Moreover, replacement rates and the marginal tax burden fall in these welfare states, most prominently in the RESIDUAL WELFARE STATE. In the UNIVERSAL WELFARE STATE, the replacement rate falls as well but only mildly so. The Theil coefficient for working singles increases, suggesting smaller after-tax income differentials between high income and low income workers.

Labour supply

The three welfare states all raise labour supply. The reforms along the lines of the RESIDUAL WELFARE STATE exert the largest impact. This is due to a large reduction in marginal tax rates. Both primary earners and secondary earners raise their hours worked. Aggregate labour supply rises by 3%. The UNIVERSAL WELFARE STATE raises labour supply by 1½%, despite an initial increase in tax rates. It is solely caused by higher female labour market participation. The reason is that public expenditures are geared towards activities that are a close complement to female labour supply. The DIVERSIFIED WELFARE STATE raises labour supply by 2%. It originates from increased labour supply of primary earners and singles, but not from females.

Skill

Larger after-tax income differentials between high-skilled and low-skilled workers in the RESIDUAL WELFARE STATE and the DIVERSIFIED WELFARE STATE encourage agents to engage in training. This raises the share of skilled workers. The effect is largest in the RESIDUAL WELFARE

STATE where the share of skilled labour supply increases by 1¾%. In the DIVERSIFIED WELFARE STATE, training in firm-specific knowledge might be further encouraged due to commitment between employers and employees. In the UNIVERSAL WELFARE STATE, training efforts increase least.

Table 7.7 Long-term effects of three comprehensive reform packages[a]

Institutions	RESIDUAL	UNIVERSAL	DIVERSIFIED
Inequality index for working singles (Theil)	14½	– 1¼	9¾
Marginal tax burden (absolute change)	– 7¾	– 1¼	– 3½
Replacement rate (absolute change)	– 9¼	– 1	– 4½
Income tax rate (absolute changes)	.	– ¼%	.
Income tax rate (level)	27%	.	33½%, 45%
Labour market performance			
Labour supply in hours	3	1½	2
primary earners	2	– ¼	1¾
secondary earners	6¼	8¾	¾
Share of high-skilled labour supply (absolute change)	1¾	¼	½
Female participation rate	9	14½	– 3½
Total employment	6¼	3	2½
Unemployment rate (absolute changes)	– 2½	– 1¼	– ½
low skilled	– 8¼	– 4¼	– 1¾
high skilled	– ¾	– ¼	0
Share of long-term unemployment (absolute change)	– 25½	– 12	– 3¾
Miscellaneous			
Production	7	3	2¼
Commitment	–	–	+
Privacy	+	–	– /+
Fertility	–/+	+	–
Choice	+	–	– /+
Elderly participation	+	+	+

[a] All figures reflect ex post effects. They are expressed in relative changes, unless indicated otherwise. The government budget is balanced ex-post by adjusting income taxes.

Source: MIMIC simulations & complementary analysis

Female participation

Table 7.7 reveals that the female participation rate rises most substantially in the UNIVERSAL WELFARE STATE. Also in the RESIDUAL WELFARE STATE do more women enter the labour market. To a large extent, this is caused by the abolishment of the tax credit for non-participating partners. Moreover, the more flexible labour market helps integrating women in jobs. Progressive taxes, childcare subsidies and in-work benefits for secondary partners further encourage female participation in the UNIVERSAL WELFARE STATE. The participation rate of women declines under the reforms of the DIVERSIFIED WELFARE STATE. Indeed, rigidities, insider-outsider differences and less tax progression reduce female participation.

Unemployment rate

The unemployment rate falls in each of the three welfare states and drops most in the RESIDUAL WELFARE STATE. It is caused primarily by wage moderation, induced by a lower average tax wedge, a lower replacement rate, a weaker position of trade unions, and a relaxation of employment protection. Some measures are geared towards the low-skilled, such as the earned income tax credit and the lower minimum wage. Therefore, especially the unemployment rate of low-skilled workers falls, namely by 8¼%. The decline in unemployment in the UNIVERSAL WELFARE STATE and the DIVERSIFIED WELFARE STATE is 1¼% and ½%, respectively. These effects are induced by measures that are targeted for this purpose. In the UNIVERSAL WELFARE STATE less employment protection, less egalitarian wage policies of sectoral trade unions and an expansion of employment subsidies for the long-term unemployed contribute to lower unemployment, especially among the low skilled. In the DIVERSIFIED WELFARE STATE, lower benefits, wage subsidies and subsidies for the long-term unemployed contribute to it.

Unemployment duration

Table 7.7 shows that the share of long-term unemployment drops in all three welfare states. Relaxed employment protection is responsible for this in the UNIVERSAL WELFARE STATE and the RESIDUAL WELFARE STATE. In the RESIDUAL WELFARE STATE this is reinforced by shorter unemployment benefit duration and other measures aimed at reducing unemployment. In the UNIVERSAL WELFARE STATE wage subsidies for the long-term unemployed further contribute to it. The DIVERSIFIED WELFARE STATE yields the smallest decline in unemployment duration as it leaves employment protection unchanged while trade unions become actually more powerful. This welfare state emphasises more the benefits of commitment, rather than flexibility. Consequently, employment durations remain longer. Still, the share of long-term unemployment drops due to shorter unemployment benefit duration, wage subsidies for the low-skilled and vouchers for the long-term unemployed. If decentralised administrators would be relatively efficient in raising exit rates from social insurances, these effects would become larger in this latter welfare state.

Elderly participation

Although we are unable to quantify the impact of welfare state reforms on the participation rate of elderly workers, Table 7.7 suggests that the reforms will raise employment among people in the 55-64 age group. To get some feeling for the potential size of this increase, we may compare Dutch performance with that in a number of other countries. For instance, while the elderly participation rate in the Netherlands is projected at 51% in our baseline projection for the long term, today this rate equals 60% in the United States and 62% and 72% in Denmark and Sweden, respectively. If the Netherlands would be able to raise the participation rate to, say, 60%, this would imply a rise in the total Dutch participation rate by 1.5%.[103] The

[103] Approximately 18% of the workforce will be in the 55 to 64 age group in 2040. An increase of 9%-points would thus imply a 1.5% rise in the aggregate participation rate.

unanswered question is, however, to what extent reforms do indeed raise the participation rate of elderly workers. In our three prototype reform directions, higher employment among the elderly is achieved in two ways: better supply incentives and more jobs for elderly. Regarding supply, the reduction in mandatory savings and saving subsidies help increasing the effective retirement age since they reduce retirement wealth. Empirical evidence suggests that these effects are small, though. Better supply incentives can be reinforced by the abolishment of special arrangements for the elderly unemployed, such as weak job search obligations and long unemployment benefit durations. Regarding demand, reduced seniority wages help to integrate dismissed elderly in new jobs in the market sector in the RESIDUAL WELFARE STATE. In the UNIVERSAL WELFARE STATE, the government plays an important role to facilitate the integration of elderly workers, *e.g.* via public service jobs for elderly workers who cannot find employment in the market and via mandatory workfare in exchange for benefits. The DIVERSIFIED WELFARE STATE has more difficulty to integrate the elderly, but some sectors raise elderly employment via sectoral job pools. Further research should teach us by how much the alternative policies will help raising the effective retirement age.

Qualitative indicators

While each of the three welfare states is able to improve the performance of the labour market, there is a cost associated with each of the reforms as well. First, the RESIDUAL WELFARE STATE yields the largest gains in terms of labour market performance. The market integrates new people so that the risk of long-term exclusion falls. Other benefits are more privacy, and an increase in choice and diversity due to market supply. Yet, the cost of these improvements is a rise in inequality, a reduction in income security and a loss of commitment in labour relations. Hence, the RESIDUAL WELFARE STATE seems most beneficial in a world with a relatively low aversion against risk and inequality and high priority to privacy, individual choice, flexibility and a low tax burden.

The UNIVERSAL WELFARE STATE yields a more moderate improvement in labour market performance, but combines this with more equality and insurance. Moreover, it better combines fertility with female labour market participation. Yet, there is a cost associated with lower commitment in labour relations, an impingement upon privacy, and a loss of diversity. Moreover, welfare state expenditures remain high, which makes it more vulnerable for ageing. The UNIVERSAL WELFARE STATE seems most appropriate if society features a strong preference for emancipation of women and the integration of new people in the labour market. It assigns little priority to commitment, diversity, privacy and privileges for elderly.

The DIVERSIFIED WELFARE STATE achieves slightly smaller improvements in employment as the UNIVERSAL WELFARE STATE and these improvements are more concentrated among insiders in the labour market. It performs less well with regard to the integration of women, young people and immigrants and is accompanied by more inequality. Commitment and long-term relations between employers and employees are a key aspect of this welfare state. Moreover,

decentralised administrations may well be efficient. The cost is a decline in equality and income security, a poor integration of outsiders and low mobility and flexibility in labour flows.

7.7 International benchmarking

We can compare the labour market performance of the Netherlands also with other countries. Such an international comparison may provide additional information on how institutions affect labour market outcomes. Moreover, international benchmarking gives us an indication to what extent labour market outcomes might be improved would the Netherlands reform its welfare state in a certain direction. Yet, the problem with a simple international comparison of outcomes is that it is difficult to determine the causal relationship between institutions and labour-market performance. For instance, is the Dutch labour-market performance relative to other countries a result of different institutions? Or is there a large unexplained residual that can be related to culture, history, preferences and other issues? This section aims to contribute to this understanding by exploring the impact of institutional changes on labour market performance indicators. In particular, we first compare the labour-market performance in a number of countries with that of the Netherlands in a recent year. Thereby, we select a limited number of countries that can in some way serve as an illustrative example for each of the three different prototypes. In particular, we take the United States, New Zealand and the United Kingdom to compare the outcomes for the RESIDUAL WELFARE STATE; we take Denmark, Sweden and Norway to compare the UNIVERSAL WELFARE STATE; and we consider Germany, Switzerland and Austria to compare the DIVERSIFIED WELFARE STATE. Subsequently, we put the outcomes from the international comparison in the perspective of the outcomes for our three alternative welfare states explored in previous sections. By thus comparing these outcomes, we explore whether institutional reforms along the lines of our prototypes will indeed move the Dutch performance indicators in the direction of other countries.[104] Below, we discuss, respectively, the performance in the field of social cohesion, employment, female participation, and the share of long-term unemployment.[105]

Social cohesion

We take the replacement rate as the indicator for social cohesion, i.e. the incomes of social benefit recipients compared to workers. The left panel of Figure 7.2 shows the absolute change in the replacement rate of the three reform packages explored in the previous sections. For the international comparison, we take the average of four different replacement rates: the initial

[104] While the international comparison refers to a recent observation, the model simulations refer to long-term outcomes. Since we have no access to long-term projections for other countries, we are unable to provide a comparison of long-run outcomes. Therefore, we rely on historical observations to compare the Netherlands with other countries. This is not problematic if future trends in the Netherlands are similar to those in other countries.

[105] For many indicators, we cannot directly compare variables from MIMIC with internationally similar labour market data. For instance, we have no comparable estimates of the equilibrium rate of unemployment in other countries. Therefore, we do not compare welfare states with respect to the unemployment rate. The same holds true for skill-specific variables.

replacement rate for a family with an average production worker and two children, the initial replacement rate for a single person without children, and the replacement rate for both household types in long-term unemployment. The right panel of Figure 7.2 presents the absolute difference of the replacement rate in a country compared to the Netherlands in 2002. The decline in the average replacement rate in the RESIDUAL WELFARE STATE moves the Netherlands closer to the current performance of the Anglo-Saxon countries, although there remains a substantial difference. The modest decline in the DIVERSIFIED WELFARE STATE and the negligible effect in the UNIVERSAL WELFARE STATE come closer to the performance of the continental European countries, respectively, the Scandinavian countries.

Figure 7.2 Comparing welfare states with respect to the replacement rate[a]

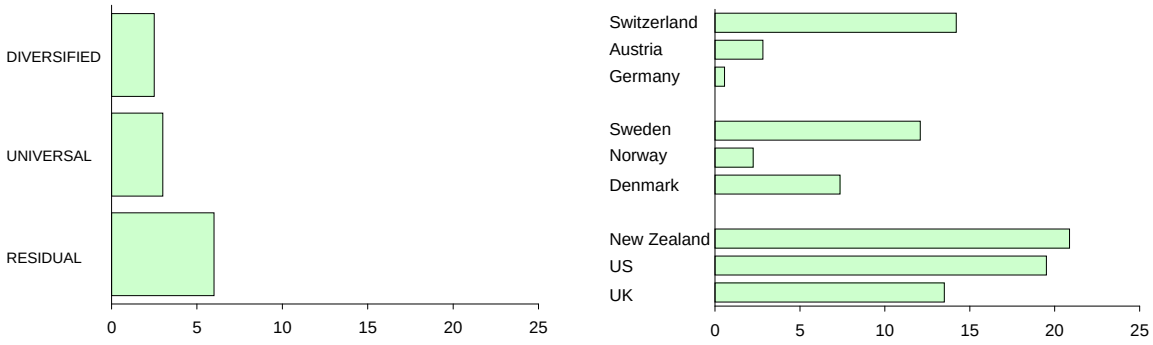
[a] The absolute change for the replacement rate of the three welfare states (left panel) is obtained from Table 7.7. In the right panel, we take the absolute difference between the replacement rate of a country and that in the Netherlands in 2002. For the replacement rate, we take the average of four replacement rates, as mentioned in the main text.
Source: OECD (2004) and MIMIC simulations

Employment

Figure 7.3 shows the performance in terms of employment, measured in full-time equivalent. The left panel shows the impact of the three reform packages; the right panel shows the performance of other countries compared to the Netherlands. Thereby, employment in labour years is determined by the average number of hours per worker in terms of a full-time work time of 1721 hours per year, multiplied by the participation rate. The left panel reveals that the three welfare states raise employment, especially in the RESIDUAL WELFARE STATE with an increase of 6¼%. The right panel shows that this moves the Dutch labour market performance in the direction of Anglo-Saxon countries, which feature higher employment rates. Still, the difference remains large. For instance, employment in labour years in the Anglo-Saxon countries is 22 to 35% higher than in the Netherlands. A similar conclusion applies to the other welfare states. It suggests that it is difficult to explain the low number of hours worked in the

Netherlands compared to other countries only by institutional factors. Indeed, there remains a large unexplained residual.[106]

Figure 7.3 Comparing welfare states with respect to employment in labour years[a]



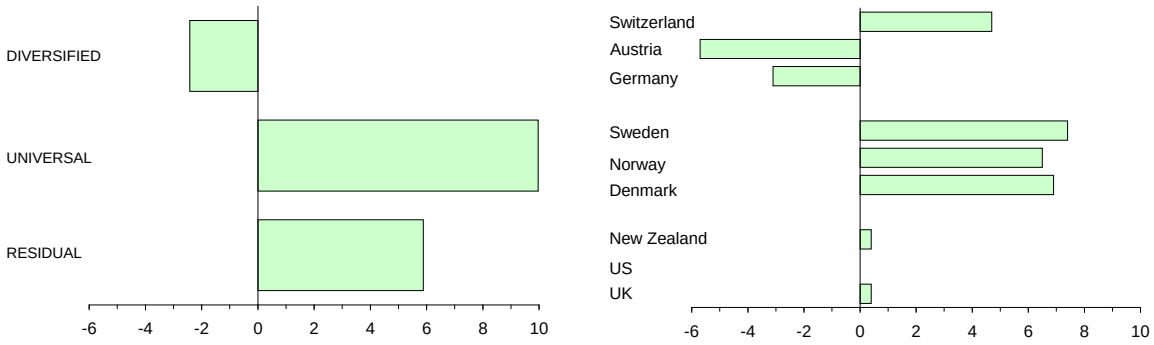
[a] The relative change in employment for the three welfare states (left panel) are obtained from Table 7.7. In the right panel, we take the relative difference compared to the Netherlands of employment in labour years in 2004. It is determined as hours per worker times the participation rate, expressed in full time equivalents of 1721 hours per year.
Source: OECD Employment Outlook 2005 and MIMIC simulations

Female participation rate

Figure 7.4 shows the female participation rate. The left panel shows the result of our simulations for the absolute change in the female participation rate. The right panel shows the absolute difference between the female participation rates in nine other countries and that of the Netherlands in 2004. We see that the rise in the female participation rate in the UNIVERSAL WELFARE STATE is consistent with the performance of Denmark, Sweden and Norway. Indeed, the Dutch performance would overtake the current participation rate of these countries. Also the decline in female participation in the DIVERSIFIED WELFARE STATE is consistent with the performance in some continental European countries, although not with Switzerland. For the RESIDUAL WELFARE STATE, we obtain an increase in female labour participation, which however does not apply to New Zealand, the United States and the United Kingdom, where female participation is similar to that in the Netherlands today.

[106] Using cross-country panel regressions, Dekker and Ederveen (2005) also find that the difference in hours worked between the United States and Europe can only be partly explained by institutional factors. There is a hot debate among economists on this. Prescott (2004) argues that this difference can be fully explained by a difference in tax rates. Alessina *et al.* (2005), however, argue that this explanation holds only for an unrealistically large labour supply elasticity. Other factors thus seem to play a role as well.

Figure 7.4 Comparing welfare states with respect to female participation[a]



[a] The absolute change in female participation rates for the three welfare states (left panel) are obtained from Table 7.7. In the right panel, we take the absolute difference compared to the Netherlands of the female participation rate in 2004.
Source: OECD Employment Outlook 2005 and MIMIC simulations

Long-term unemployment

Figure 7.5 shows the share of long-term unemployment, measured as unemployment that lasts for more than 12 months. The left panel shows the absolute change in the share of long-term unemployment in our three prototype welfare states. The right panel shows the absolute difference in the share of long-term unemployment compared to the Dutch share in 2004. We see from the right panel of Figure 7.5 that the Dutch share of long-term unemployment is large compared to other countries, except for Germany. Less employment protection in the Scandinavian and Anglo-Saxon countries is responsible for higher job turnover rates and shorter unemployment duration. The reforms in the UNIVERSAL WELFARE STATE and the RESIDUAL WELFARE STATE move the Dutch performance in their direction, which materialises in a lower share of long-term unemployment. The DIVERSIFIED WELFARE STATE yields a smaller decline in the share of long-term unemployment as this welfare state leaves employment protection virtually unchanged. Yet, the share of long-term unemployment drops, which is more consistent with the Austrian experience than that of Germany and Switzerland.

Figure 7.5 Comparing welfare state with respect to long-term unemployment[a]

[a] The absolute difference in the share of long-term unemployment for the three welfare states (left panel) are obtained from Table 7.7. In the right panel, we take the absolute difference of this share in countries compared to the Netherlands in 2004.
Source: OECD Employment Outlook 2005 and MIMIC simulations

7.8 Conclusions

This chapter aims to structure the debate on comprehensive welfare state design, taking account of complementarity and substitutability in institutions. We develop three comprehensive prototypes and propose a concrete reform package along the lines of each of them. First, the RESIDUAL WELFARE STATE engages in less redistribution, insurance and commitment. The government supports only the vulnerable people via targeted measures. The tax burden falls and the labour market becomes more flexible. Simulations of a reform package along the lines of the RESIDUAL WELFARE STATE suggest that employment expands by 6¼% while the unemployment rate among the low skilled falls by 8¼%. It moves performance closer to that of Anglo-Saxon countries, although differences in hours worked and the replacement rate remain substantial. Second, the UNIVERSAL WELFARE STATE provides more generous welfare state provisions. Complementary policies, such as child care subsidies, mandatory workfare, sanctions and more labour market flexibility, are used to mitigate severe distortions from redistribution and insurance. While the tax burden increases, these complementary measures help to expand employment and reduce unemployment. A typical reform package is found to reduce low skilled unemployment by 4½% while female participation increases by 14½%. This moves Dutch labour market performance closer to the Scandinavian countries, although hours worked remains lower. It suggests that a larger welfare state can be compatible with more employment and lower unemployment, but only if measures are complementary to labour market participation. Finally, the DIVERSIFIED WELFARE STATE organises part of solidarity in decentralised clubs that provide security in exchange for long-term commitment. The government cares for vulnerable outsiders that have no access to these clubs. A typical reform package along these lines is found to reduce low skilled unemployment by 1¾%-point and to raise aggregate labour supply by 2%. While each comprehensive welfare state reform is able to improve labour market performance, each entails a social cost as well: there is no gain without pain. These social costs differ across the three welfare states. Social priorities for equality, insurance, commitment, diversity, privacy and labour-market outcomes will determined what will be the most desirable direction for the future of the Dutch welfare state.

Appendix Sensitivity Analysis

The labour market effects of the reform packages in this chapter are driven by the parameters in the MIMIC model. For a number of parameters, there is uncertainty about their exact value. Indeed, parameters that have been estimated feature non-zero standard errors while elasticities that are calibrated usually suffer from a great variation of estimates found in the empirical literature. To explore how robust our conclusions are with respect to the choice of parameters, this appendix discusses the simulation results of the three reform packages in case of alternative parameter values. In particular, Tables 7.8 and 7.9 first repeat the results from the simulations in Table 7.7. Then, we present a sensitivity analysis for seven alternative parameter values. In

particular, Tables 7.8 and 7.9 show the absolute deviation from the benchmark simulation in case of an alternative parameter value or model specification. If the difference is small, we report a blank in the tables. In performing the sensitivity analysis, we explore the following parameters.

- Training: Reduce the impact of wage differentials on training incentives by 25%.
- Matching: Set all parameters in the matching model equal to zero.
- Labour supply: Raise labour supply elasticity of women from 0.5 to 1.0.
- Wages: Reduce value of informal income in reservation wage in negotiations by 50%.
- Production: Reduce substitution between unskilled & skilled labour from 1.8 to 1.4.
- Export: Increase the export elasticity from 2 to 3.
- Interest: Increase the real interest rate from 3% to 4%.

Table 7.8 Differential labour market effects of three welfare states under different parameter values

	RESIDUAL	UNIVERSAL	DIVERSIFIED
Benchmark simulation[a]			
Share of high-skilled labour supply	1¾	¼	½
Female participation rate	9	14½	– 3½
Labour supply in hours	3	1½	2
Employment	6¼	3	2½
Unemployment rate (absolute change)	– 2½	– 1¼	– ½
low skilled (absolute change)	– 8¼	– 4¼	– 1¾
Lower impact on training[b]			
Share of high-skilled labour supply	– ¼		
Female participation rate			
Labour supply in hours			
Employment			
Unemployment rate			
low skilled			
No impact on search & matching[b]			
Share of high-skilled labour supply		– ¼	– ¼
Female participation rate			
Labour supply in hours			
Employment	– ¼	– ¼	– ¼
Unemployment rate		¼	¼
low skilled	½	1¼	1
Higher labour supply elasticity[b]			
Share of high-skilled labour supply			
Female participation rate	8¾	14	– 3¾
Labour supply in hours	¾	1¼	
Employment	1	1½	
Unemployment rate			
low skilled			

[a] The baseline figures are expressed in relative changes, unless indicated otherwise

[b] The sensitivity analysis figures are expressed as absolute changes relative to the benchmark figures

The choice for these parameters is governed by their uncertainty and their relevance. The sensitivity analysis shows the magnitude of their impact. From the tables, we find that the qualitative conclusions for the different reform packages do not change in case of alternative parameter values. The quantitative effects do change, however. This hold especially for more disaggregated variables, such as low-skilled unemployment or female participation. The macroeconomic variables change less.

Table 7.9 Differential labour market effects of three welfare states under alternative parameter values

	RESIDUAL	UNIVERSAL	DIVERSIFIED
Benchmark simulation[a]			
Share of high-skilled labour supply	1¾	¼	½
Female participation rate	9	14½	– 3½
Labour supply in hours	3	1½	2
Employment	6¼	3	2½
Unemployment rate (absolute change)	– 2½	– 1¼	–½
low skilled (absolute change)	– 8¼	– 4¼	– 1¾
Fall-back position in wages[b]			
Share of high-skilled labour supply			
Female participation rate	– ½	– ¼	–¼
Labour supply in hours			
Employment	– ½	– ½	–¼
Unemployment rate	¼	¼	¼
low skilled		½	½
Substitution high & low[b]			
Share of high-skilled labour supply	– ½	– ¼	–¼
Female participation rate			
Labour supply in hours	– ¼		
Employment	– ¾	– ¼	–¼
Unemployment rate	½	¼	
low skilled	2¾	1¼	1
Higher export elasticity[b]			
Share of high-skilled labour supply			
Female participation rate	¼		
Labour supply in hours	¼		
Employment	½	¼	¼
Unemployment rate	– ¼		
low skilled	– ¾	– ¼	– ¼
Higher interest rate[b]			
Share of high-skilled labour supply	¼		
Female participation rate	½		
Labour supply in hours	¼		
Employment	¼		
Unemployment rate	– ¼		
low skilled	– ¾	– ¼	– ¼

[a] The baseline figures are expressed in relative changes, unless indicated otherwise

[b] The sensitivity analysis figures are expressed as absolute changes relative to the benchmark figures

8 Welfare state design and globalisation

This chapter explores the relationship between the international environment and the national welfare state. We look at the susceptibility of alternative welfare states for international trends in trade, technology and immigration. Subsequently, we elaborate on welfare state design in a world with policy competition induced by mobile firms and workers.

8.1 Introduction

Changing conditions in the social, demographic and international environment induce a need for welfare state reform. Chapter 6 stresses that the combination of ageing, globalisation, technological change, and the changing role of women in our society triggers a need for change in welfare state institutions. Some of these developments can be foreseen, such as ageing. Others already manifest themselves, such as the changing role of women. Yet other trends are surrounded by considerable uncertainty. This holds in particular for international developments, such as trade integration, multinational activity, the international mobility of capital and labour, and technological change that spills over across national borders.[107] This chapter explores the interaction between these international trends and welfare state design. In particular, we focus on two issues: (i) the impact of international trends on the desirable structure of the welfare state and (ii) the role of strategic policy competition on welfare state design. Section 8.2 explores the first issue. In particular, we consider how trends in trade, technology and immigration will affect labour market performance and the distribution of income under alternative welfare states. Section 8.3 analyses national welfare state design in the presence of policy competition. Section 8.4 concludes.

8.2 Susceptibility to global shocks

How robust are welfare states for trends in the international environment? This section explores the impact of trade, technology and immigration.

Trade and skill-biased technological change

Through international specialisation, increased trade can bring substantial welfare gains to society. Yet, trade may also come along with a rise in international outsourcing and specialisation of activities that currently provide employment for low skilled workers in Western Europe. For instance, companies can respond to import competition from low-wage countries of Eastern Europe and Asia by outsourcing non-skill-intensive activities. Sapir (2005) shows that outsourcing and specialisation have indeed become increasingly important during the last decades, especially due to the rise of imports from East Asia. It thus reduced the relative

[107] In developing their scenarios, De Mooij and Tang (2003) and Huizinga and Smid (2004) dub the international environment as one of the key uncertainties for the future.

demand for low-skilled workers in European countries and worsened their labour market position. In fact, globalisation makes the demand for low-skilled labour more elastic: workers can more easily be substituted for each other across national borders if their relative costs become too high.

The distributional consequences of outsourcing and specialisation can be reinforced by technological change, especially skill-biased technological change.[108] It raises demand for high-skilled workers relative to low-skilled manual employees. Information and communication technologies tend to be skill biased as the automation and computerisation of production processes destroy low-skilled jobs, not only in manufacturing but also in services (De Groot and Nahuis (2003)). In the coming decades, there seems ample room for further adoption of information and communication technology in Europe, especially in service sectors. This can have important implications for European labour markets and welfare states. Since the increase in the supply of high-skilled labour is expected to level off in the coming decades, a rising demand for skills will worsen the position of low skilled workers in European labour markets (Jacobs (2004)).

The labour market effects of trade integration and skill-biased technological change depend on the welfare state (see *e.g.* Davis (1998)). In countries where wages are flexible, shifts in demand are likely to cause more wage inequality between low and high-skilled labour. In the United States, which is characterised as a flexible labour market, wage inequality between high skilled and low skilled workers has already been rising since the mid-1970s. In countries where wages are relatively rigid, however, unemployment among the low skilled will rise with little downward pressure on wages. Typical European welfare states, where wages are relatively rigid, have therefore experienced rising unemployment among the low skilled. The effect on wages is smaller as effective minimum wage protection and social security benefits prevent wages from falling at the bottom (see Moore and Ranjan (2005)).

The distributional and labour market implications of trade integration and skill-biased technological change have important implications for society. Rodrik (1997) argues that globalisation exposes a social fault line between those with education, skills and mobility to flourish in global markets and those without. The losers are increasingly anxious about their standards of living and their precarious place in an integrated world economy. The result is severe tension between groups. The challenge for governments is to make globalisation compatible with domestic social and political stability, i.e. in ensuring that international economic integration does not contribute to domestic social disintegration. This imposes a serious challenge for the welfare state. It emphasises first of all the importance of the education

[108] There is ample debate on the extent to which wage differentials have increased in the past and will increase in the future, see *e.g.* Autor *et al.* (2006). Moreover, it is difficult to disentangle the effects of globalisation and skill-biased technological change on wage inequality empirically. Feenstra and Hanson (1999) suggest that both outsourcing and skill-biased technical change have been important for rising wage inequality in the United States. Gorter *et al.* (2005) conclude on the basis of various studies that the unfavourable position of low-skilled workers is more likely to be caused by skill biased technological change than by international specialisation and outsourcing.

system to encourage skill formation among younger cohorts and prevention of school dropouts. In addition, there is a need to keep low skilled people connected to the labour market.

The three prototype welfare states discussed in the previous chapter each deal with this latter challenge in a different way. First, the RESIDUAL WELFARE STATE integrates the low skilled most successfully via a more flexible labour market and lower reservation wages: the unemployment rate among the low skilled drops by 8¼%-points relative to the baseline, which more than offsets the impact of skill bias. It leads, however, to more income inequality between skills. Besides, it runs the risk of a severe poverty trap, thus causing a sustained underclass in society that relies on the welfare state. Second, the UNIVERSAL WELFARE STATE adopts an intensive public activation strategy to employ low skilled people, combined with more flexibility in job flows to stimulate labour market adjustment: the low-skilled unemployment rate here falls by 4½%-point. The falling market demand for low skilled labour will make the active government role increasingly important and will raise the tax burden in the future. This runs the risk of exacerbating labour market distortions among skilled workers and makes the UNIVERSAL WELFARE STATE more vulnerable for globalisation. It thus further raises the challenge to stimulate human capital formation as a way to facilitate skill bias and trade integration. Finally, the DIVERSIFIED WELFARE STATE has most difficulty in integrating the low skilled due to labour-market rigidities: our simulations reveal that the low-skilled unemployment rate falls by 1¾%-point relative to the baseline, which is insufficient to compensate for the impact of skill-biased technological change in our baseline. The compressed and rigid wage structure in this labour market is responsible for this. Government subsidies for low skilled labour aim to integrate vulnerable outsiders in the labour market. This relaxes the problems, but also raises the tax burden for higher incomes and thus distorts the labour market elsewhere. While the DIVERSIFIED WELFARE STATE is thus susceptible to global shocks, it encourages investments in firm-specific human capital. If trends would make these firm specific skills increasingly important in the future, *e.g.* because the Netherlands would specialise more in sectors where this type of investment is important, globalisation would fit with this type of welfare state. Otherwise, trade integration and skill-biased technological change impose a serious threat on the position of low-skilled labour under this welfare state.

Immigration

The economic literature reveals that immigration will have a distributional impact as well. When capital is fixed, immigrants decrease the earnings of the production factors to which they are substitutes (labour) and increase the earnings of the production factors to which they are complements (capital).[109] If migrants have relatively low skills, immigration will mainly reduce the wage of low-skilled workers. In the long term, the impact on the labour market tends to be

[109] The net gain to capital owners, defined as the change in capital owners' income minus the loss to native workers, is called the immigration surplus. The more wages fall as a result of migration, the larger is the immigration surplus. Thus, the immigration surplus increases with labour demand elasticity (in absolute terms). This reflects a trade-off: while decreasing wages lead to a larger immigration surplus, they result in more redistribution from native workers to capital owners. Roodenburg *et al.* (2003) give an overview of the impact of immigration on the labour market in the short-run.

smaller due to adjustment processes. As immigration decreases the capital to labour ratio, it increases the return to capital. This will cause an inflow of capital, which raises wages. In the longer term, native workers would thus neither gain nor lose from immigration. Still, the impact on the wage distribution may persist if the immigrant population has a different skill distribution than natives. In fact, if immigrants are low skilled, it reinforces the impact of trade integration and skill-biased technical change on the income distribution, i.e. it further reduces the income of the low skilled. In the presence of labour market rigidities, immigration may also raise unemployment among the low skilled. Several review articles summarise the evidence regarding the impact of immigration on the labour market (Borjas (1994), Friedberg and Hunt (1995), Bauer and Zimmermann (1999) and Longhi *et al.* (2004)). These reviews conclude that immigration tends to exert a negative but small impact on wages in both The United States and the European Union. Moreover, since European labour markets are less flexible than that in the United States, immigration may also increase unemployment in Europe. Although the effects on unemployment appear to be small in the long term, crowding out effects for natives can be substantial in the short run (Angrist and Kugler, 2003).[110]

The other impact of immigration is on the government budget. The fiscal impact of immigration can be assessed by the lifetime net contribution to public finances via generational accounting. Recent research in the Netherlands has concentrated on the so-called 'non-western immigrants', which includes immigrants from Turkey, Morocco, Suriname, and the Antilles/Aruba. For an average non-Western immigrant, Roodenburg *et al.* (2003) show that the fiscal impact has been negative for the Dutch welfare state. One reason is that immigrants have relatively low employment rates, low wages, and relatively high claims on welfare state expenditure programmes. Also in some other countries, immigrants perform worse than natives on the labour market, which renders their fiscal impact negative (*e.g.* Borjas and Hilton (1996), Hansen and Lofstrom (2003), Riphahn (2004) and Ederveen *et al.* (2004)).[111] However, this does not apply to all European countries. For instance, immigrants seem net contributors to the public sector in Germany and Spain (Bonin (2005)). Also in countries that adopt selective immigration policies, such as Australia and Canada, studies generally report a positive fiscal impact of immigration. The key variables determining the fiscal impact of immigration are the skill level of immigrants and their labour-market position. If immigrants are low skilled and poorly integrated in the labour market, then the fiscal impact of an immigrant is most likely to be negative. In that case, immigration will threaten the financial sustainability of the welfare state. If immigrants are high-skilled and easily integrated in the labour market, the fiscal impact of an immigrant is more likely to be positive. In that case, immigration will relax the financial burden and improve the sustainability of the welfare state.

[110] For some discussion, see Borjas (1999a; 2003), Longhi *et al.* (2004) and Ederveen *et al.* (2004).

[111] The poor labour market position of immigrants can be explained partly by the less favourable labour market characteristics of these immigrants, *e.g.* in terms of education and language skills. Yet, even after correction for these unfavourable characteristics, the labour market attachment of immigrants is still worse than for comparable groups of low skilled natives (OECD, 2002).

How robust are the three prototype welfare states for shocks in immigration? The RESIDUAL WELFARE STATE performs best in terms of integration of immigrants in the labour market due to its flexibility. Moreover, it provides the fewest benefits. The fiscal impact is thus likely to be positive. Thus the RESIDUAL WELFARE STATE seems relatively robust for immigration shocks and is most consistent with a fairly liberal immigration policy. The UNIVERSAL WELFARE STATE does worse in terms of integration than the RESIDUAL WELFARE STATE as low skilled wages cannot fall much due to high reservation wages and minimum wage floors. This welfare state also provides generous and uniform welfare state arrangements, which makes it more likely that the fiscal impact becomes negative if immigrants lead to higher unemployment. The UNIVERSAL WELFARE STATE is therefore less robust for immigration shocks. It will probably adopt more restrictive immigration policies and may consider more limited access of immigrants to welfare state provisions. Finally, the DIVERSIFIED WELFARE STATE performs poorly in terms of integration of newcomers in the labour market. Indeed, the protection of insiders comes at a cost of high unemployment among outsiders. This makes it less likely to have a positive fiscal impact of immigration. Hence, the DIVERSIFIED WELFARE STATE seems consistent with restrictive immigration policy as well.

8.3 Strategic policy competition

Globalisation and immigration not only exert a direct impact on the welfare state by affecting labour market outcomes and the income distribution, but also induce a process of competition between states. It means that governments set their institutions in such a way that they provide a favourable environment for mobile factors of production. Policy competition restricts the freedom of the nation state to design its own welfare state institutions. It is apparent in, for instance, corporate taxation. Indeed, tax competition has driven down corporate tax rates in Europe ever since the early 1980s (Devereux *et al.* (2002)). There is no country that can escape this strategic tax game since it would cause capital flight and hurt national welfare. The question is whether the case of corporate taxation also applies to welfare state institutions. In other words: to what extent does policy competition restrict the freedom of the nation state to design national welfare state institutions?

A generous welfare state is often believed to hurt the competitiveness of a country as it tends to raise unit labour costs relative to other countries. Indeed, the labour costs associated with social policy, such as social insurance premiums or costs related to labour market regulation, account for around 40% of total wage costs in European countries (Chen & Funke (2003)). To the extent that these indirect wage costs are not borne by the workers but by firms, it can influence firm decisions where to settle, reduce exports, and increase unemployment. It thus would make the welfare state more distortionary in economic terms.

The welfare state may also impact the quality of immigrant inflows. Low skilled immigrants may have an incentive to move to more generous welfare states because they are more likely to become unemployed and receive benefits. In contrast, skilled immigrants have little incentive to

move to a generous welfare state because they are less likely to receive benefits and more likely to face a high tax burden. In this way, more generous welfare systems would act as a so-called 'welfare magnet' for low skilled immigrants (see *e.g.* Borjas (1999)).

The impact of the welfare state on international flows of capital and labour may force governments to cut back their welfare state if factors become more mobile across borders. Indeed, cutting taxes and benefits would then raise the inflow of productive mobile production factors, thereby raising the welfare of incumbent workers. At the same time, it would keep out immigrants that impose a negative fiscal impact on the government budget. In light of a growing mobility of factors, some authors predict a significant fall in tax revenue and reduced scope for regulations of labour markets in the future (see *e.g.* Tanzi (2003)). The mobility of production factors is thus believed to induce a race to the bottom which hurts vulnerable low skilled people and which benefits mobile high skilled workers and international firms.[112]

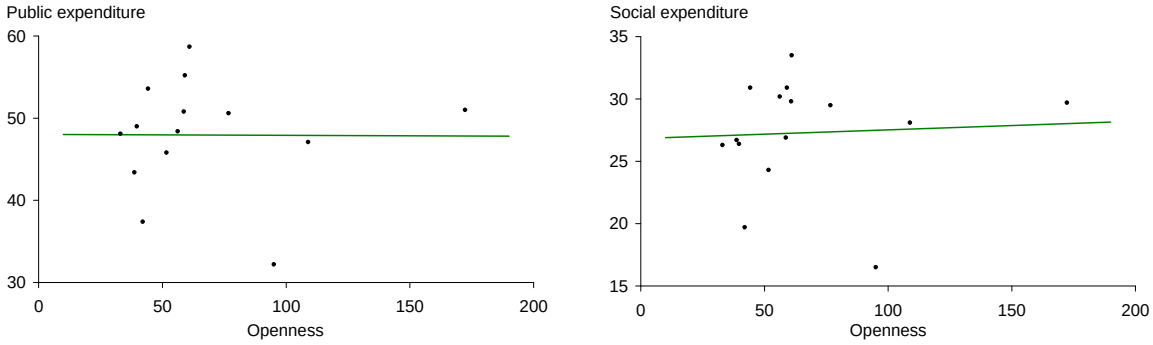
Despite fears for a cut back of welfare states in light of policy competition, there are also opposing forces. In particular, globalisation makes the welfare state more important in social and political terms. Indeed, the welfare state can prevent disintegration in society and is a critical factor for the public support for economic integration in the first place. In that sense, globalisation may even call for a bigger welfare state, rather than a smaller one. Rodrik (1998) emphasises this after exploring the correlation between openness and government size. He argues that more open economies can teach us something about the impact of globalisation on the welfare state since openness reflects the degree of integration in the world economy. If globalisation would undermine the welfare state, we would expect that more open economies nowadays have smaller governments and lower social expenditures. Rodrik, in contrast, finds a robust positive correlation between an economy's exposure to international trade and the size of government spending. He explains this by the role of government in dealing with external risks imposed on a more open economy. The government can mitigate such risks by taking up a larger share of the economy's resources. It thus acts as an insurance device against external shocks. This underlines the productive function of the welfare state in a globalising world.

We have also explored the correlation between openness and the size of government within the European Union. It is illustrated in the left panel of Figure 8.1, which shows the correlation between total government spending in terms of GDP in a cross-section of 15 European countries in 2003 and an indicator for openness, measured by trade as a share of GDP.[113] The left panel in Figure 8.1 suggests no significant correlation between openness and the size of government. The right panel of Figure 8.1 shows that the correlation between openness and the social expenditure share is not statistically significant either.

[112] It is sometimes claimed that policy competition provides a rationale for international cooperation. Indeed, social dumping involves an externality since individual governments do not take into account the implications of their policies on the welfare of neighbouring countries. To solve this coordination problem, harmonisation may yield a better outcome for all countries. The subsidiarity principle in Europe suggests that international spillovers can thus justify harmonisation of policies.

[113] Data refer to the old 15 European Union countries, excluding Luxembourg. We add Switzerland as the 15th country. As the sample is small, the results are not robust for the inclusion or exclusion of some countries. Rodrik (1998) reports more roubst findings by using a larger data set.

Figure 8.1 Correlation between openness and the size of the welfare state[a]



[a] Openness is measured by exports plus imports divided by GDP in 2003. The left panel correlates this openness indicator with the share of total public expenditures in GDP in 2003. The right panel correlates openness with social expenditures in GDP. We use data for the old EU15 member states, excluding Luxembourg, plus Switzerland.
Source: Eurostat: epp.eurostat.cec.eu.int and Worldbank: econ.worldbank.org

Hence, there seems little indication of a negative correlation between openness and the size of the welfare state. It appears that openness to international competition does not induce governments to cut back their welfare state. Globalisation may therefore well be compatible with a large welfare state in European countries. Other empirical observations are consistent with this. For instance, De Grauwe and Polan (2003) empirically explore the impact of social expenditures in OECD countries on indicators for competitiveness. They find no significant effect, suggesting that social expenditures can well be reconciled with a good competitive position of countries. It suggests that social policies not only involve a cost for mobile factors, but also a benefit. Furthermore, there is little indication of social dumping in Europe. For instance, social security spending as a percentage of GDP in European countries has actually risen since the early 1980s (De Mooij *et al.* (2003)).[114]

Also evidence on welfare magnets does not provide strong support for spillovers, although some studies suggest an impact of welfare states on immigrant quality. For instance, Borjas (1999b) finds that US states with more generous welfare provisions attract more immigrants. For Europe, Boeri *et al.* (2002) find that welfare benefits in the European Union countries distort the skill composition of migrants. In particular, they conclude that the more generous countries (like Denmark and the Netherlands) act as welfare magnets for low-skilled immigrants. Yet, other studies find no evidence for the welfare magnet hypothesis (Zavodny (1997); Pedersen *et al.* (2004); Kaushal (2005)). They suggest that location decisions of new immigrants are primarily governed by the presence of previous immigrants, i.e. it depends on network effects. The independent effect of the welfare state on immigration thus tends to be weak. Moreover, countries with more generous welfare states generally pursue more restrictive immigration policies. The combination of a generous welfare state and strict immigration policy may thus serve more as a barrier than as a magnet to immigrants.

[114] It suggests also that there is little value added from policy harmonisation. The European Union does play a role in welfare state design through the open coordination method, i.e. benchmarking, information exchange about best practices and peer pressure. This aims to motivate national governments to improve the functioning of their labour markets.

Summing up, empirical evidence provides little ground to fear for social dumping in light of globalisation. Yet, strategic policy competition would intensify if the people of Europe would become more mobile. In that case, governments may more intensively compete to attract high-skilled workers so that policy competition might trigger a race to the bottom and a possible erosion of income redistribution and public insurance schemes (Sinn (2003)). As long as labour remains as immobile internationally as it is today in the European Union, however, domestic workers will largely bear the incidence of welfare state provisions in the form of lower incomes. The Dutch nation state can therefore still design its own welfare state, without being severely restricted by policy competition with other countries.[115]

8.4 Conclusions

This chapter explores the interaction between international trends and welfare state design. It emphasises that trade integration, skill-biased technical change and immigration inflows may bring aggregate welfare gains, but also hurt the position of low skilled workers in European labour markets. This induces a challenge for national welfare states to integrate low skilled workers in the future. Our three welfare states obtain this in different ways. The RESIDUAL WELFARE STATE seems best prepared to integrate the low skilled since it allows for the most flexible wages. This helps integrating the low skilled in the labour market. The DIVERSIFIED WELFARE STATE is susceptible to international shocks as it features a rigid wage structure and is less geared to the integration of newcomers. The UNIVERSAL WELFARE STATE takes an intermediate position but is vulnerable to immigration of low skilled workers as it may hurt the financial sustainability of the welfare state.

We also analyse the room for manoeuvre of nations in designing a welfare state in the presence of policy competition. In principle, competition between states for mobile factors of production imposes restrictions on national welfare state design if labour would be highly mobile. Indeed, it might induce governments to retreat. However, there is little reason to worry as long as labour remains as immobile across borders as it is today. Moreover, the productive role of the welfare state and its insurance function render the welfare state an important condition for internationalisation in the first place. Empirical indicators provide no indication of a serious impact of policy competition on the welfare state up to now.

[115] This does not rule out that countries could converge to similar institutional structures, driven by experimental information about best practices in the European Union.

9 Conclusions

This study adopts a welfare economic analysis of the institutions of the welfare state. It complements this by a quantitative economic assessment of policy reforms in the Netherlands, using an applied general equilibrium model. The study identifies promising reform options, illustrates and quantifies trade-offs, and assesses comprehensive reforms for the future.

Economic analysis of the welfare state

The welfare state fulfils a number of functions in our society. We have grouped them under the heading of the three R's of the welfare state. The first R stands for *redistribution* between people who differ in their abilities. Interpersonal redistribution is desirable to the extent that society assigns a positive value to equality. In redistributing income, however, society meets a fundamental trade-off between equity and efficiency. We explore this trade-off for in various appearances. In particular, we look at the tax-benefit system, benefits in kind, wage compressing institutions and complementary instruments like subsidies to labour complements and activation policies.

The second R refers to *risk*. The welfare state protects individuals against labour market risks by providing social insurance. Thereby, it meets a fundamental trade-off with moral hazard. We elaborate on the optimal insurance contract and discuss complementary instruments, such as activation policies and employment protection. Also the efficiency of the insurance administration is discussed to combat moral hazard.

The third R stands for *reallocation* of income over the life cycle. This is especially important in the context of life-long-learning, the combination of work and care for children, and saving for early retirement. Public intervention can be welfare improving because of hyperbolic discounting, capital market imperfections or pre-existing distortions induced by other public policies. The key question is how the government can best facilitate efficient smoothing, thereby taking account of the implications for the labour market.

Quantifying reforms in the Netherlands

For a selection of welfare state institutions in the Netherlands, we provide a quantitative assessment of reforms. Figures 9.1 – 9.3 summarise some of our findings.

Figure 9.1 presents various policies that reduce the amount of redistribution and insurance, e.g. by cutting social benefits or tax credits. In particular, we present a reduction in welfare benefits, unemployment benefits, disability benefits, the tax credit for non-participating partners in couples, and two forms of child support. It illustrates the key trade-offs between equity and efficiency and between insurance and incentives. The figure takes the results from chapters 3 and 4, thereby normalising the size of shocks to ¼ billion euro. The savings for the government budget are used to cut income tax rates by 0.1%-point. Figure 9.1 shows that benefit reductions typically raise the incentives for labour supply by allowing for lower marginal tax rates (left panel of Figure 9.1). This is particularly effective if marginal tax rates are reduced for

secondary partners, who are relatively elastic in their labour supply, or for income groups that are densely populated. If benefits are targeted to the unemployed or partially disabled, lower benefit levels also reduce the unemployment rate because of a fall in the replacement rate (right panel of Figure 9.1). Benefits that are not related to the labour market position of households exert very small effects on unemployment.

Figure 9.1 Simulated effects of lower social benefits or credits on labour supply and unemployment[a]

[a] All simulations are normalised at a budgetary effect of ¼ billion euro. The revenues are used to cut income tax rates. The simulations are: WB: reduction in welfare benefits (Table 3.5); UB: reduction in unemployment benefits (Table 4.3); DB: reduction in disability benefits (Table 4.3); PC: reduction in the tax credit for non-participating partners (Table 3.13); CB: reduction in general child benefits (opposite from Table 3.15); CC: reduction in the targeted child credit (opposite from Table 3.15). Effects on labour supply are in relative changes; effects on unemployment in absolute changes.

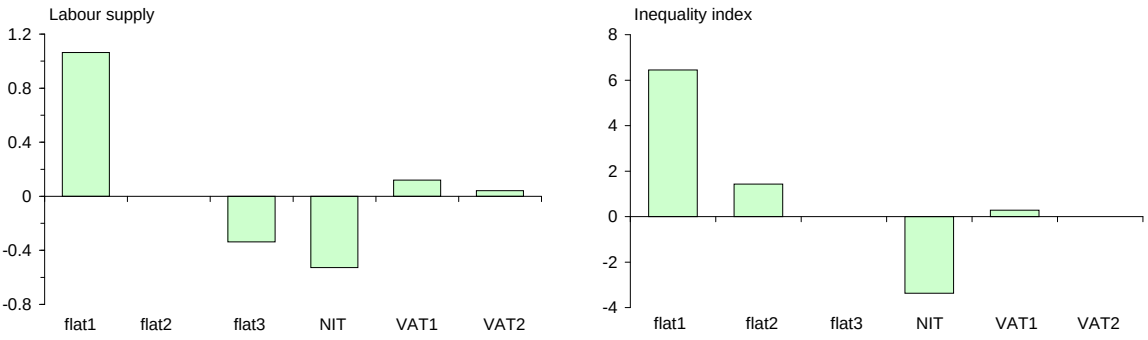
Figure 9.2 shows the implications of a variety of tax credits and subsidies in the Netherlands. Most of these credits and subsidies aim to reduce the tax burden for low incomes; some focus on reducing tax distortions for female workers in part time jobs. Again, the figures are taken from chapters 3 and 4, where simulations are normalised to ¼ billion euro. The revenue is raised by an increase in income tax rates by 0.1%-point. The right panel of Figure 9.2 shows that tax credits targeted at low incomes are effective to reduce the unemployment rate among the low skilled. By raising marginal tax rates for higher incomes, however, the left panel reveals that they reduce labour supply. Hence, there is a trade-off between policies that aim to cut low skilled unemployment and policies that foster labour supply. The effects of these targeted credits on overall employment are therefore small. Only vouchers for the long-term unemployed tend to escape this trade-off since they are not conditional on income, but well targeted on the unemployed. Hence, the deadweight loss of this instrument is relatively small. The scope for using vouchers is limited though. The left panel of Figure 9.2 reveals that childcare subsidies are most effective in encouraging labour supply as they mitigate tax distortions at the margin of employment by secondary earners. Again, the scope for using this instrument is limited since the overall size of the childcare sector is less than 0.5% of GDP in the Netherlands.

Figure 9.2 Simulated effects of higher credits and subsidies on labour supply and low skilled unemployment[a]

[a] All simulations are normalised at a budgetary cost of ¼ billion euro. It is financed by higher income tax rates. The simulations are: WC1: general earned income tax credit (Table 3.7); WC2: targeted earned income tax credit (Table 3.7); ETR: employer tax relief (Table 3.19); ALM1: relief jobs for the low skilled in the public sector (Table 4.5); ALM2: vouchers for the long-term unemployed (Table 4.5); CC: combination credit for working couples with children (Table 3.15). CS: childcare subsidies that reduce the parental price (Table 3.17). Effects on labour supply are in relative changes; effects on low-skilled unemployment in absolute changes.

Figure 9.3 shows the impact of shifts in the structure of the tax-benefit system. It includes various proposals for a flat tax, a basic income, and two alternative shifts from income taxes towards value added taxes. Here, we take the results from chapter 3. For the basic income proposal, we present only 10% of the simulation of chapter 3 to put the size of this reform in the perspective of other proposals. Figure 9.3 shows that policies that raise inequality, as measured by our aggregate inequality index, come along with an increase in labour supply. This holds for one version of the flat tax and for one version of the shift from income taxes towards value added taxes.

Figure 9.3 Simulated effects of budgetary neutral shifts in the tax system on labour supply and inequality[a]



[a] The inequality index reflects the Theil coefficient of the entire income distribution, based on individual incomes. The simulations are: Flat1: replacement of the current income tax structure by a flat tax of 37,5% (Table 3.9); Flat2: replacement of the current income tax structure by a flat tax of 42% and an increase in the general tax credit by 1 100 euro (Table 3.9); Flat3: replacement of the current income tax structure by a flat tax of 43,5% and an increase in the general tax credit by 1 400 euro (Table 3.9); NIT: introduction of a negative income tax or basic income (we present one tenth of the simulation in Table 3.11); VAT1: shift of 2.5 billion euro from income taxes towards value added taxes; VAT2: shift of 2.5 billion euro from income taxes towards value added taxes whereby the general tax credit is increased as well. Effects on labour supply and the Theil coefficient are in relative changes.

If inequality does not change by the reforms, we observe no increase in labour supply. In fact, a flat tax that leaves overall inequality unaffected actually reduces labour supply since it raises the marginal tax on part time jobs that are occupied by elastic female workers. A basic income reduces aggregate inequality but is most distortionary in terms of labour supply. The simulations thus clearly reveal the trade-off between an equitable income distribution and labour supply incentives.

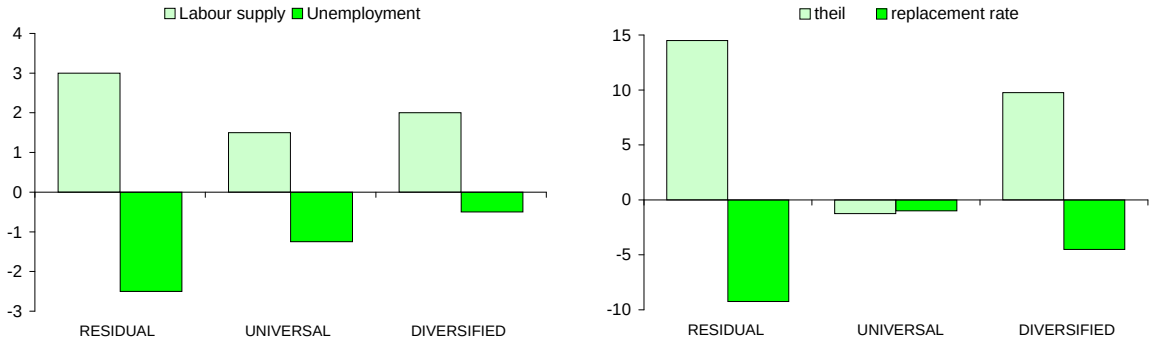
We have also simulated a number of reforms in labour-market regulations in the Netherlands, such as minimum wages, employment protection, the extension of collective wage agreements and sanctions. As the size of these reforms is difficult to compare, we only summarise the qualitative impact of these policies. We find that lower minimum wages and less wage compression induced by trade unions would reduce the unemployment rate among the low skilled. They bring along more inequality, though. Sanctions are effective in encouraging outflows from social insurances and help to distinguish benefit cheaters from genuine claimants. Relaxed employment protection is found to contribute to higher employment and causes a small reduction in unemployment. It comes at the cost of less insurance and commitment though.

We are unable to quantify the impact of specific policy reforms related to life long learning and early retirement. Hence, we stick to our qualitative analysis on these policies. Regarding life long learning, we conclude that most arguments for a more active role of government are not convincing. Yet, some subsidies or tax credits may be justified to mitigate the distortionary impact of taxes and social insurance on learning decisions. Encouraging elderly participation would require a range of reforms, including a further reduction in subsidies for wealth accumulation, and more flexibility in the labour market for elderly. In future research, we aim to develop tools to quantify the implications of these policies.

The future of the Dutch welfare state

Since the institutions of the welfare state are closely related, we present comprehensive prototype reform packages for the future of the Dutch welfare state. By simulating reform packages along the lines of these prototypes, we provide quantitative insight in their overall labour-market implications. It gives a feeling for the margins of government intervention to steer future labour market developments. The prototype welfare states are called the RESIDUAL WELFARE STATE, the UNIVERSAL WELFARESTATE and the DIVERSIFIED WELFARE STATE. The simulation results of the reform packages are summarised in Figure 9.4.

Figure 9.4 Simulated effects of comprehensive reform directions on labour market performance and social cohesion indicators[a]



[a] The inequality index reflects the Theil coefficient of working singles. Effects on labour supply and the Theil coefficient are in relative changes. Effects on replacement rate and unemployment rate are in absolute changes. See Tables 7.1 - 7.6 for details.

The RESIDUAL WELFARE STATE is characterised by a more flexible labour market and more emphasis on private responsibility. Solidarity with vulnerable groups is maintained via targeted income support measures. Reforms include lower social benefits, a lower minimum wage, the introduction of a 27% flat tax, and a relaxation of employment protection. Figure 9.4 suggest that these reforms raise labour supply in the long term by 3%. Unemployment falls by 2½%-point so that aggregate employment expands by 6¼%. At the same time inequality increases, which is reflected by a higher Theil coefficient and a lower replacement rate. It moves Dutch labour market performance closer to the Anglo-Saxon countries, although the difference in inequality and hours worked remain substantial. The RESIDUAL WELFARE STATE is relatively robust for shocks in globalisation and fits best in an individualised, heterogeneous society.

The UNIVERSAL WELFARE STATE is characterised by a combination of more flexibility on the labour market and generous public provisions. To avoid moral hazard and high rates of inactivity, it is combined with activation and public expenditures that are complementary to labour. Reforms contain a further individualisation of the tax system, higher public childcare support, tight eligibility criteria, monitoring and sanctioning in social insurance, an abolishment of privileges for elderly, and intensified activation strategies. Figure 9.4 reveals that the UNIVERSAL WELFARE STATE raises labour supply by 1½% in the long term, especially due to higher female participation. The unemployment rate falls by 1¼%. Aggregate employment expands by 3%. This moves Dutch performance closer to that of the Scandinavian countries, although hours worked remains lower. This welfare state fits with a relatively homogeneous society with a well-educated labour force and a high priority to emancipation of women. It is vulnerable, however, for shocks in low-skilled immigration and skill-biased technical change and comes at a cost of privacy and commitment.

The DIVERSIFIED WELFARE STATE emphasises commitment, long-term relations and decentralised solidarity in small collective groups. This substitutes for state responsibilities in

social insurance and redistribution. Reforms include less tax progression, selective reductions in social insurance provisions and a government role to subsidise low-skilled employment. Figure 9.4 shows that the DIVERSIFIED WELFARE STATE raises labour supply by 2% and reduces the unemployment rate by ½%. Aggregate employment expands by 2½%. Limited mobility and tight employment protection prevent the adjustment of employment to global shocks and hamper the integration of immigrants in the labour market. Hence, the DIVERSIFIED WELFARE STATE is relatively vulnerable for globalisation. The benefits from commitment and a possible efficient decentralised administration of social insurances are not quantified, however.

Summing up

We find that several reforms in Dutch welfare state institutions may help raising the quantity and quality of labour supply. This is an important policy objective in light of future trends. Yet, there is no gain without pain. Indeed, society needs to make choices between better labour market performance and the social costs of achieving that. The three comprehensive reform directions make different choices regarding these dilemmas. Which of these reform directions is most feasible or desirable for the Netherlands depends on social preferences and the dominant future developments in society.

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