Poverty alleviation:
Aid and social pensions

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Poverty alleviation:
Aid and social pensions

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List of abbreviations

Chapter 2-3

BS	Budget Support
CIDA	Canadian International Development Agency
DAC	Development Assistance Committee
DFID	Department for International Development
EC	European Commission
FOC	First Order Conditions
GATG	Gross Aid Transaction Costs
IR	Individual Rationality
NATC	Net Aid Transaction Costs
NPV	Net Present Value
ODA	Official Developmental Assistance
OECD	Organisation for Economic Co-operation and Development
PA	Project Aid
PBA	Program-Based Approach
PGBS	Partnership Global Budget Support
SWAp	Sector-Wide Approach
TCE	Transaction Costs Economics
UNDP	United Nations Development Programme

Chapter 4

AT	Austria
BE	Belgium
CZ	Czech Republic
EE	Estonia
ES	Spain
EU-SILC	European survey on Income and Living Condition
FR	France
GDP	Gross Domestic Product
GR	Greece
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MTSP	Means Tested Social Pensions
PL	Poland
PT	Portugal

SE	Sweden
SI	Slovenia
UK	United Kingdom
UP	Universal Pensions

CHAPTER 1: Introduction

The core theme of this PhD thesis is Poverty Alleviation. Poverty is an important issue in both developing and developed countries. According to Collier (2007), our world account for 1 billion of rich, 4 billion people on track to become prosperous and with their living standards converging to those of the rich and 1 billion people 'stuck at the bottom' (also called 'the bottom billion') (Collier 2007: 3).

The first concern of this book is the bottom billion: around 1 billion people live in developing countries where average growth of gross domestic product (GDP) par capita has been declining since the eighties. An obvious way to react to this reality is to argue for more aid to those countries (mostly concentrated in Sub-Saharan Africa), as one of their main problems is the lack of financial resources. It often does not allow them to set up basic social assistance, to guarantee access to health, education and infrastructures, which are the triggers for the improvement of living conditions and development. We could imagine that if donors funding supplement the resources of poor countries in a substantial way, the latter eventually would be able to escape poverty. However, in the seventies, most high-income countries started to transfer developmental assistance to developing countries. The amount of aid kept on increasing and since the end of the eighties, total official developmental assistance accounted, every year, for more than 50 billion USD (OECD, 2010). The question arises how, with such high amounts of money flowing in, some countries are still 'falling behind' and have such high levels of poverty? And naturally, one asks how the situation can be improved? This latter question has been in the centre of the debate on aid effectiveness for the past 30 years and no consensus has arisen. Chapter 2 and 3 of this thesis take a new stance at the issue. More specifically, we question the choice of aid instruments: Does one instrument (or aid modality) have a better impact in terms of poverty reduction than another? We believe this is a crucial question as the past aid disbursements have not really succeeded in alleviating poverty. Not only the amount of aid matters, but also the choice of aid modality, which is likely to influence the developmental outcome, via multiple possible channels. We analyse two of these channels: first, we look at the impact of different aid modalities on transaction costs and second, we analyse their impact in terms of the behavioural responses of the recipient countries.

On the other side, next to the countries were the GDP per capita has been declining over the two last decades, they are other 5 billion of the population living in 'high-income' and 'middle income' countries (see World Bank's countries classification, World Bank 2010). Even though the average GDP par capita in those countries has been increasing over time, this does not necessarily means that there are no poor. In fact, even in high-income countries, there are still pockets of poverty. These may be due to life cycle risks, such as those that come with getting older. As a matter of fact, elderly face a higher risk of being poor: as the probability of

sickness and disability increases, the possibilities to earn income decreases. Some elderly may therefore have no sufficient (or no) pensions to meet basic needs. Elderly are therefore a vulnerable group of the population, even in rich countries. However, income security in old age has been considered as a fundamental human right since 1948 in the Universal Declaration of Human Right and it should be so. Direct cash support, such as public pensions appears to be the only relevant poverty alleviating instrument as usual redistributive policies that go through labour and educational market, for instance, cannot reach them. In chapter 4, we investigate a particular form of public pensions: social pensions. These cash transfer have the particularity of not being related to past earnings or contributions, nor to work history, and appear to be a relevant tool to alleviate old age poverty. More specifically, we simulate the introduction of two different schemes of social pensions (universal or means-tested) and look at their impact in terms of poverty and costs. The analysis covers 17 European Union countries.

Hence, this book considers two different policies: aid and social pensions, which both aim at alleviating poverty, but in very different settings. In what follows, we describe the motivation behind choosing these policies, the objectives of analysing them, the methodology employed to do so as well as a preview of the results we obtain.

1.1. Aid

1.1.1. Motivations and objectives

Chapter 2 and 3 deal with aid effectiveness, and particularly, with the choice of aid modalities. In the last decade, aid effectiveness has been in the centre of a growing debate (see e.g. Millennium Summit in 2000, the UN conference 'Financing for Development' in 2002, the Paris Declaration on Aid Effectiveness in 2005, the Third High-Level Meeting on Aid Effectiveness in Accra 2008, etc.). Although there is still no agreement on the positive impact of aid on growth and poverty reduction (see e.g. Rajan and Subramanian (2005) for a review of the empirical literature on aid and poverty reduction), there is a widespread consensus on the necessity to analyse more deeply the relationship between aid and its outcomes. As Bourguignon and Sundberg (2007:1) wrote, 'The causality chain [between aid and final outcome] has been largely ignored and as a consequence the relationship between aid and development has been mostly handled as a kind of 'black box''. In this book, we contribute to the literature on aid effectiveness in trying to open this 'black box' by analysing some components of the causality chain. More specifically, we examine the impact of the choice of the aid disbursement channel on the developmental outcomes in two complementary ways:

- In Chapter 2 we concentrate on the aid transaction costs. We show that the choice of aid modality matters in terms of transaction costs, and

consequently in its impact on development. Given the recent commitment of the international community to try and reduce transaction costs, it is crucial to understand for one what is actually meant by aid transaction costs, and how they can be reduced. Is there an aid modality that yields less aid transaction costs than another?

- Chapter 3 then concentrates on the impact of choosing one aid modality over another on the impact in terms of recipients behavioural responses, and consequently on development. It is of crucial importance to understand how recipients will react when receiving aid through different channels. In this chapter, we focus on the two most widely used aid modalities: project aid and budget support.

1.1.2. Methodology and results

In Chapter 2, we investigate the issue of aid transaction costs. Since the nineties, the traditional aid instruments (mainly project aid) have been increasingly criticised (see World Bank, 1998). The international community recognised that project aid does not lead to build local capacities and that it creates a fragmentation and duplication of donors' projects. The latter problems lead to high transaction costs (OECD, 2003). As a reaction to those critics, what can be described as a new aid paradigm (that favours Programme Based Approaches (PBA), such as budget support) had been developed by the international community (see Paris declaration, High Level Forum on Aid Effectiveness, 2005). The Programme Based Approaches - based mainly on the principles of country ownership and donors' coordination – are supposed to reduce the so-called 'aid transaction costs'. Also, the shift to the new aid paradigm implicitly means that aid effectiveness goes hand in hand with transaction cost reduction. Nevertheless, after reviewing the aid literature, we have not found any satisfying definition, typology or measurement of what is typically referred to as 'aid transactions costs'. Definitions found in the literature rest on no theoretical grounds and may actually lead to misinterpretations of transaction costs. The first aim of Chapter 2 is thus to propose a definition of aid transaction costs. To do so, a necessary prerequisite is to link the aid transaction with the Transaction Costs Economics. The other issue we address is whether a change in aid modality is worthwhile, in term of transaction costs reduction. We show that transaction characteristics (uncertainty, frequency of transaction, asset specificity, harmonisation and number of donors) should be taken into account before arguing that one aid modality is more efficient than another. We develop an analytical framework that states when a modality should be replaced by another, according to the specific characteristics of the aid transaction considered. Specifically, a program-based approach (such as budget support) is likely to reduce transaction costs.

Chapter 3 analyses the choice of aid modalities, using a principal-agent model. Concretely, we compare the effectiveness of two major aid modalities, budget support and project aid. As in Chapter 2, we try to understand when a modality is preferred to another, but here, we look at the impact of the different modalities in terms of behavioural response of the recipient. To do so, we consider an economy with two sectors - the developmental sector and the non-developmental sector - and two agents - the donor and the recipient country - that have different preferences over the production in the two sectors. In that respect, the effectiveness of aid depends on its ability to increase the production of 'developmental goods' (in other words, poverty reduction). Furthermore, we model the production of the developmental goods such as only a subset of the inputs is observable by the donors. The productivity of this subset can vary according to the type of good. As in Cordella and Dell'Ariccia (2007), we take into account the intrinsic differences of the modalities. Firstly, conditionality can be associated with budget support, but only a subset of the developmental expenses – the observable ones – can be subject to conditionality. Secondly, when using project aid, the donors control the overall allocation of the aid resources. However, we consider that, because of limited harmonisation and coordination, project aid can be associated with a cost of imperfect fit. We analyse two cases depending on whether conditionality is associated with budget support or not. We find that the aid is better used when it is entirely given via budget support, no matter whether conditionality is used or not. Furthermore, we show that the optimal use of conditionality depends on the recipient's developmental preferences, the productivity of the inputs and the level of aid compared to the recipient's budget: when these parameters are relatively high, conditionality should be enforced. Otherwise, the optimal aid allocation is such that all the aid is given through unconditional budget support. We conclude that conditionality does not always improve aid effectiveness.

1.2. Social pensions

1.2.1. Motivation and objectives

While the current context of ageing population has lead to many discussions on the financial sustainability of existing pensions systems, their ability to prevent poverty should also be part of the picture. Chapter 4 focuses on old-age poverty in Europe, and especially on how pension systems do and could alleviate poverty – and at what cost. In fact, one of the objectives of pension systems concerns poverty alleviation: it should be an important concern of social security systems as elderly constitute a vulnerable group of population. The risks of sickness and invalidity increase and the ability to work decreases with aging. Income opportunities are consequently fewer than for younger age cohorts. These facts obviously affect the risk of being poor: elderly face a higher risk of poverty than the rest of the population. As Eurostat (www.ec.europa.eu/Eurostat) reports, in 2006, the average old age poverty rate in the EU25 countries was 19% for individuals aged 65 and

more and 16% for individuals aged less than 65. This could seem surprising as it is often recognised that European pension systems are relatively well developed in terms of coverage and generosity. Nevertheless, the pension systems are complex and very diverse across countries. More specifically, the way they protect elderly against poverty may vary a lot. The typical pension in Europe is the contributory pension, which - as its name signifies - depends on past contributions/earnings. They usually cover an important share of the population (ranging around 90 % in OECD countries, Pearson and Whitehouse, 2009). But there are always individuals that are out of the contributory system (e.g. informal workers and non-working spouses). Also, among those covered, some individuals may not have accrued full pension rights or contributed enough (e.g. workers with an interrupted career and long term poor). Levels of old-age benefits can thus be insufficient to meet basic needs. Non-contributory pensions – or social pensions – may thus appear to be a relevant tool to protect elderly against poverty.

1.2.2. Methodology and results

Before presenting the results of the simulations, we first clarify the concept of social pensions. What differentiates social pension from contributory pensions? We propose a typology that distinguishes pensions according to their eligibility criteria. Second, we indentify which types of social pensions have been implemented in European countries. Third, we examine the determinants of old-age poverty (namely pensions currently received, other income and household compositions).

However, the main objective of Chapter 4 is to simulate the introduction of different social pension schemes in European countries and analyse their impact in terms of poverty and costs[1]. We simulate the introduction of different social pension schemes using data from the household survey EU-SILC 2006, European Union – Survey on Income and Living Conditions (in 17 countries due to data constraints). Two scenarios are considered: universal pensions and means-tested social pensions. In the first scenario, every elderly receives a retirement benefit at least equal to the poverty line. We see that poverty decreases sharply, without however being totally eradicated. The remaining poverty is due to living arrangements: if elderly were living alone (or with other elderly), there would be no more poor elderly. In the second scenario, we consider two types of means tests: on individual and on couple's income. The level of the social pension is reduced with respect to the personal (or couple's) income resources of the poor elderly.

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

The final chapter of the book concludes and offers some insights for further researches.

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CHAPTER 2: Foreign aid transaction costs: What are they and when are they minimised?

Abstract

"Transaction costs" are commonly referred to in the recent literature on aid effectiveness. The shift to a new partnership aid paradigm (cf. the Paris Agenda) is grounded on the desire to render aid more effective, notably through reducing the high transaction costs generated by the project approach. Aid transaction costs, however, have neither been consistently defined nor measured. In this paper, we propose a definition of aid transaction costs, based on Transaction Cost Economics. We define aid transaction costs as all the economic costs associated with aid management that add no value to the aid delivery. This enables identifying the "net" transaction costs that impede aid effectiveness and should be minimised. We then develop an analytical framework for assessing these costs. This allows the effectiveness of different aid modalities to be compared, according to the context and characteristics of the aid transaction. We show that the choice of aid modality should depend on the aid transaction characteristics and therefore, that the minimisation of transaction costs should not be an end in itself.

2.1. Introduction

Since the 1990's, there has been a growing debate about the effectiveness of development aid. A wide body of empirical literature has been written about the impact of aid on poverty reduction and growth (Burnside and Dollar, 2000; Easterly et al., 2007). However, there is still no clear-cut conclusion about the relative (in)effectiveness of aid.. Although most scholars agree that aid has a surprisingly little impact on development, there is no consensual explanation for its ineffectiveness For a long time, some economists have claimed that the major causes of aid ineffectiveness were weak institutional capacities and bad policy environment in the recipient countries (Burnside and Dollar (2000)). However, as this hypothesis is very deterministic (because it would imply that aid should be given only to recipient countries with good policies), the international community and aid practitioners have also questioned existing aid delivery mechanisms and aid modalities. In particular, some major problems associated with traditional cooperation instruments have been identified – namely projects and structural adjustment programmes.[2] Major criticisms against these modalities deal with the lack of coherence between donors' policies as well as with recipient countries' own policies and systems; the fragmentation and duplication of donor projects: the lack of ownership and leadership by recipient countries; and the lack of long-term effects of projects on building local capacities (World Bank, 1998).

To respond to those criticisms, what can be described as a new aid paradigm has been built around a set of pillars: partnership and participation, ownership of development strategies by domestic constituencies, alignment of donors on domestic policies and systems, coordination and harmonisation between donors, results orientation and mutual accountability. The development community and a number of recipient countries have committed to respect these principles in delivering and managing aid by signing the Paris Declaration on Aid Effectiveness in March 2005 (see http://www.aidharmonization.org).

The new aid paradigm and its pillars are notably supposed to enhance aid effectiveness through reducing the costs arising from multiple and uncoordinated donor practices (OECD, 2003). Aid practitioners often refer to these so-called *aid transaction costs* to explain the poor aid effectiveness and to justify the necessity to change the aid delivery system. As pointed by Acharya et al. (2006), "[t]here are very strong reasons to believe that, all other considerations aside, aid often underperforms because it flows through too many institutional channels. This generates high transactions costs within each recipient nation, and so reduces the value of aid." This issue is becoming more and more problematic due to rising aid fragmentation (Knack and Rahman, 2004).

[2] See Foster and Leavy (2001) for a review of the financial aid instruments and World Bank, 1998 and Bourguignon and Sundberg, 2007 for the debate over aid effectiveness.

Thus the reduction of aid transaction costs has been one of the major motivations behind the shift into the aid delivery system (see Section 3.2), and many efforts have been made to reduce them. This implicitly assumes that improved aid effectiveness goes hand in hand with the reduction of transaction costs. Yet, we have not found any satisfying definition, typology or measurement of aid transactions costs in the literature. Quoting Acharya et al. (2006) "[n]o one has ever measured them. It is not clear that they are measurable." Definitions found in the literature rest on no theoretical grounds and may actually lead to misinterpretations of transaction costs, as shown in Section 3.3. The first point of this paper is thus to review the current use and definitions of aid transaction costs.

Furthermore, this paper intends to address two issues. After showing that the notion of aid transaction costs in the literature is quite indistinct, our first aim is to propose a satisfying definition of aid transaction costs. To do so, we have chosen to regard the aid transaction under the perspective of Transaction Cost Economics (TCE) (Section 3.4). in doing so, we show that one should take account of the characteristics of the aid transaction before arguing that one particular aid modality could reduce transaction costs. The theoretical background exposed in Section 3.4 allows proposing a definition that avoids possible confusion between costs of different natures.

The second issue addressed is whether a change in aid modality is worthwhile, in terms of reducing transaction costs. As shown in Section 3.4, the transaction characteristics should be taken into account before arguing that one aid modality is more efficient than another. Section 3.4.2 therefore develops a simple model that relates costs and different characteristics, and enables assessing whether a modality should be replaced by another, according to the specific characteristics of the considered aid transaction. Finally, Section 3.4.3 discusses the minimisation of transaction costs and argues that this should not be an end in itself, because aid effectiveness does not necessarily go hand in hand with a minimisation of transaction cost.

2.2. Transaction costs viewed by aid practitioners

Many international debates on developmental assistance have centred on the issue of transaction costs. In fact, it has often been agreed that high transaction costs may cause Official Developmental Assistance (ODA) to underperform in several respects: (i) through influencing the volume of aid delivered, by discouraging donors and governments from entering into agreements and reducing disbursement rates; (ii) through reducing aid effectiveness, by consuming donor and government resources that could be otherwise employed and misallocating the resources made available under aid agreements; and (iii) through reducing aid effectiveness, by encouraging donors and recipient governments to allocate resources to activities

that do not address development priorities and, in some cases, undermine institutional development goals (UNDP and DFID, 2000).

The international community is now generally aware of the problem of transaction costs. For instance, the Monterrey conference (2002) specifically called on development co-operation agencies to intensify their efforts to "harmonize their operational procedures at the highest standard so as to reduce transaction costs and make ODA disbursement and delivery more flexible […]". The Rome Declaration on Harmonisation (see http://www.aidharmonization.org) signed in 2003 stands that: "We in the donor community have been concerned with the growing evidence that, over time, the totality and wide variety of donor requirements and processes for preparing, delivering, and monitoring development assistance are generating unproductive transaction costs for, and drawing down the limited capacity of, partner countries". The Paris Declaration on Aid Effectiveness notably encourages donors to untie aid because it "generally increases aid effectiveness by reducing transaction costs for partner countries", and it notes that "[e]xcessive fragmentation of aid at global, country or sector level impairs aid effectiveness. A pragmatic approach to the division of labour and burden sharing increases complementarity and can reduce transaction costs."

Recent efforts to improve aid effectiveness rest on improving donor coordination, harmonisation and alignment on national systems, as well as on concentrating and delegating aid, so as to reduce aid transaction costs (for example, OECD 2003, 2006; EuropeAid, 2007). To this end, the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD) (2003) suggests that as a first step, donors should simplify and harmonise their procedures, align them on partner systems, and be more transparent. Then, additional ways of reducing transaction costs could be streamlining conditionality, rationalising fiduciary assessments, aligning processes, tapping the potential of joint donor frameworks, and timing disbursements to facilitate the smooth execution of budgetary payments (OECD, 2006: 29-31). Concretely, transaction costs may also decrease when donors channel aid funds through national procedures, especially through sector-wide approaches (SWAps) and budget support (OECD, 2003, 2006; EC, 2007).

From the examples above, one observes that the commitment of the international community to try and reduce transaction costs is undeniable. However, one should question more deeply what is intended to be reduced. What are transaction costs actually? How are they measured? Should they be reduced, and how? We first turn to the grey literature issued from aid practitioners to assess their perspective on the matter. It is apparent that there is a lot of confusion and no agreement over a common definition of aid transaction costs. Moreover, measuring aid transaction costs appears to be an unachievable challenge. Then, we will discuss what trends in

transaction costs are expected to occur with a shift in aid modality (namely from project to programme approach), even if evidence is mixed.

2.2.1. Tentative definitions of transaction costs

Aid practitioners commonly refer to transaction costs, but without defining them precisely. For instance, in its Guidelines on *Harmonising Donor Practices for Effective Aid Delivery*, the DAC of the OECD (2003: 114) identifies two types of costs in the aid relationship:

- "Administrative costs of aid – This includes the costs of transferring aid from donors to recipients and the costs of planning aid and monitoring its progress and impact.
- Costs of foregone development of partner institutions – The efficiency losses (due to lowered morale and initiative and loss of scarce skills to donors' parallel structures) associated with low ownership by government, when donors bypass government. The foregone development of partner institutions raises future transaction costs and encourages donors to continue working through parallel structures. […]"

In a footnote of its *Guidelines on the Programming, Design & Management of General Budget Support*, the European Commission (2007 p. 19) states that "[t]ransaction costs may be defined as the extra costs – beyond that of the aid itself – of delivering aid. These costs may be borne by the recipient, the donor, or by both. It may cover, for example, the money, time, inconvenience of identifying, negotiating, implementing, monitoring and evaluating aid delivery."

In its *Guidelines on Support to Sector Programmes*, EuropeAid (2007 p.27) provides some further explanations for understanding transaction costs. It specifies that "[t]ransaction costs occur at all stages of the aid management cycle, from the initial negotiation of aid through to disbursement, implementation (including procurement, construction, etc), and monitoring of the activities it finances. There may also be conversion costs in moving from one financing instrument to another and different elements of risk for different types of transaction. […] Transaction costs are not a pure efficiency loss: the same activities that embody transaction costs may also have positive benefits (for example, learning from working groups, mitigating risks through fiduciary safeguards). Transaction costs are difficult to quantify, and there is much observer bias in their assessment […]".

In a background paper for the *World Development Report*, Dyer (2005) assesses transaction costs in the education sector in Tanzania. She proposes some working definitions and distinguishes different kinds of aid transaction costs: (i) *administrative costs*, which refer largely to the costs in terms of meetings, reports, and arrangements for release and reporting of money and so on, which take up donor and government time; (ii) *tying costs*, which are not addressed explicitly in

her paper, since they are negligible in comparison to other transaction costs; and (iii) *fiscal costs*, relating to financial flows and the use of different aid modalities.

Recognising that the concept of aid transaction costs has hardly been defined in the literature, Acharya et al. (2006) make a conceptual contribution to the debate by suggesting that these transaction costs can be usefully divided into two categories: (a) *direct transaction costs*, that essentially take the form of the absorption of the scarce energies and attentions of relatively senior government staff by a multitude of projects, each of them requiring separate negotiation and distinct management and reporting requirements; and (b) *indirect transaction costs*, that take the form of the dysfunctional bureaucratic and political behaviour that is stimulated by aid proliferation (for example, internal brain drain at the expense of government agencies, topping-up, distortion in the choice of projects, excessive expenditure on technical assistance, competition between donors inducing "hoarding" of information, lack of a sense of responsibility for the outcomes of aid, etc.).

A more recent tentative definition of aid transaction costs has been made by Lawson (2009). He defines them as "the costs necessary for an aid transaction to take place but which add nothing to the actual value of that transaction". He identifies three cost categories: search costs (to identify partners and potential project or programme), bargaining and decision costs (to negotiate the financial agreements and expected outcomes) and the policing and enforcement costs (to respect the monitoring and execution requirements imposed by donors, to monitor donors' commitment and to supervise the project or programme conditions).

2.2.2. Tentative measurement of aid transaction costs

As there is no agreement over a common definition of aid transaction costs, the few tentative assessments of transaction costs have faced considerable measurement problems. Aid transaction costs are particularly difficult to quantify, particularly since there is much observer bias in their assessment (EuropeAid, 2007: 27). Generally speaking, transaction costs are not usually effectively measured, but rather estimated – using proxy indicators to do so.

For instance, an early study performed in Vietnam, which originally had been conceived in order to quantify the transaction costs of managing aid through detailed survey questionnaires and interviews, had to acknowledge that: (i) it is very difficult to gather quantitative information on transaction costs, partly because there is no tested methodology available to measure them, and partly because availability of data was more limited than expected; and (ii) measuring transaction costs in itself incurs unacceptably high transaction costs (UNDP/DFID, 2000). Therefore, the approach adopted had to focus more on the qualitative aspects of transaction costs, and the debate moved on from *what* the transaction costs are to

where they are incurred in the system, *why* they are incurred, and *what could be done to reduce them*.

Similarly, Dyer (2005) attempted to quantify transaction costs, without success. She notes that almost all those interviewed complained about the high level of transaction costs, but no one interviewed is actually trying to quantify them. She does, however, report a number of suggestions as to how transaction costs might be measured (as counting the number of reports, missions, meetings, separate legal instruments, separate audit requirements, and staff members (particularly sector specialists) required by donors).

Amis et al. (2005) conclude that when the initial focus of trying to provide an overall quantitative measurement of transaction costs proved to be impractical, the emphasis shifted towards a more relative approach, ranking burdens of aid as perceived by recipient officials. This is the approach now used by the OECD's DAC (2005).

Watt (2005) conducts a relative approach and focuses on measurement tools such as number of joint missions, numbers of donors that participate in the SWAp under study. Jobin (2008) also proposes an evaluation methodology for comparing transaction costs associated with two or more aid modalities, especially the "partnership" one. As he mentioned "Since TCs [transaction costs] are not directly measured but, rather, estimated (using the critical dimensions of a given transaction as proxies), it is sufficient to find a significant relationship and variation between estimated TCs and a productivity index for a given partnership". To our knowledge, his methodology has neither been applied nor tested.

2.2.3. Transaction costs and aid modalities

Notwithstanding definition and measurement problems, as the OECD (2003: 114) concludes, "the objectives for aid costs are i) they should be low, and ii) they should result from carrying out administrative, planning and monitoring tasks in a way that helps the development of efficient systems for managing resources in partner countries." Different ways of managing aid may distribute transaction costs differently (for example, between international partners and government, between country offices and HQs, between finance ministries and sector ministries) (EuropeAid, 2007: 27). A series of good practices have been identified so as to reduce transaction costs, both at the macro level (such as improving medium term resource planning by the government, and ensuring donors support this process; improving the quality of public expenditure information; improving donor co-ordination; consolidating projects) and at the project cycle management level (for example, improving the project identification and appraisal process by government, and ensuring support for this process by donors; addressing problems with project implementation, monitoring and evaluation which are partly caused by the project

management unit structure; standardising procedures between government and donors; standardising procurement procedures and monitoring requirements) (UNDP/DFID, 2000).

As mentioned, the project approach to development cooperation has been notably criticised for encompassing very high transaction costs, all the more since the aid architecture is becoming more and more fragmented. In response to that critic, it has been suggested that the so-called programme approach[3], especially materialised through sector-wide approaches (SWAps) and budget support, could help to reduce transaction costs. However, this still has not been empirically established in any systematic way (Killick, 2004: 19) and anecdotic field experience is mixed. Martinez (2006) concludes that, as a result of the health SWAp in Mozambique, some transaction costs have been reduced, but others have either remained unchanged (those linked to disease interventions) or even increased (those linked to review processes and to the SWAp forum and its working groups). In addition, several donors continue to field separate missions for each of the sectors, which further increases transaction costs. He mentions that a recent report estimated no less than 143 missions to Mozambique by the main donors providing budget support during 2004-5, plus World Bank missions. Vandeninden (2005) also tried to evaluate the evolution of transaction costs in the health and education sectors in Mali since the introduction of a SWAp, mainly through qualitative data. Her results are mixed as well: some costs seem to have been reduced, but others have increased and new costs have appeared. The OECD (2003: 116) also notes that in Tanzania, many donor representatives have expressed their concern about increasing transaction costs on their side due to the development and monitoring of SWAps and similar co-ordinated aid arrangements; however, these increased transaction costs should be compared to savings that may occur elsewhere.

As for budget support, the use of domestic financial management systems is expected to reduce transaction costs. However, if budget support is coupled with more complex management requirements and demands by donors for deeper

[3] The programme approach or programme-based approach (PBA) has been defined by the Learning Network on Programme Based Approaches (LENPA) as "A way of engaging in development co-operation based on the principle of co-ordinated support for a locally owned programme of development, such as a national poverty reduction strategy, a sector programme, a thematic programme or a programme of a specific organisation." PBAs share the following features: leadership by the host country or organisation; a single comprehensive programme and budget framework; a formalised process for donor co-ordination and harmonisation of donor procedures for reporting, budgeting, financial management and procurement; efforts to increase the use of local systems for programme design and implementation, financial management, monitoring and evaluation (Lavergne and Alba, 2003; quoted in OECD, 2006: 37).

reform and better reporting, transactions costs may change very little (OECD 2003: 122). DFID (2004) reckons that "[a]lthough the transaction costs of budget support are likely to be higher in the short term, as new ways of working between governments and donors are established, net transaction costs should be lowered over the medium term. This is because donors should be using the government's own reporting and accounting systems to monitor progress, rather than negotiating, managing and monitoring literally thousands of projects. […] Preliminary evidence from Uganda indicates that transaction costs may have increased in the short run, as donors have yet to embed new ways of interacting with each other and with Government. However, there are reasonable prospects of a reduction in the medium term." In fact, a reference evaluation of partnership global budget support (PGBS) performed in seven countries confirms that "[a]lthough the high-level negotiation and monitoring costs of PGBS are often perceived as onerous, there are large transaction cost savings for partner countries during the implementation of PGBS-financed activities. The extent of transaction cost savings has been limited by the scale on which other modalities have continued in parallel" (IDD and Associates, 2006).

2.3. Aid transaction costs under the perspective of Transaction Cost Economics

From the sections above, we understand that the analysis of aid transaction costs has so far lacked a solid theoretical background. Existing definitions are vague and do not enable precise identification of the costs. One also understands that the shift to programme approaches has partly been justified by an intention to reduce aid transaction costs. However, definitions are various and do not rest on any theoretical background, no effective methodology has been developed to measure aid transaction costs, and available evidence over their evolution is mixed. Before proposing a generic definition of aid transaction costs and an analytical framework to evaluate when a change in aid modality is desirable, we first present the most relevant economic current to analyse our issue – that is, transaction cost economics. As a matter of fact, aid delivery is a transaction per se: donors transfer money and other inputs to a partner country and in exchange, they expect to observe some results (such as poverty reduction, education, vaccination, etc.). Hence, transaction cost economics may be a useful tool for understanding how these costs can be minimised. We first introduce the main concepts of transaction cost economics, and then analyse aid modalities in terms of governance structures.

2.3.1. Transaction Cost Economics

This stream of economic theory was mainly developed by Oliver E. Williamson in the 1970's, and then by Douglass North in the early 1990's. The theory aims to find out the best way to organise a transaction of goods or services between two economic agents (Williamson, 1993: 16). The theory is grounded on the principle

that the structure of governance chosen for the transaction should minimise transaction costs, considering that each transaction differs according to various characteristics.

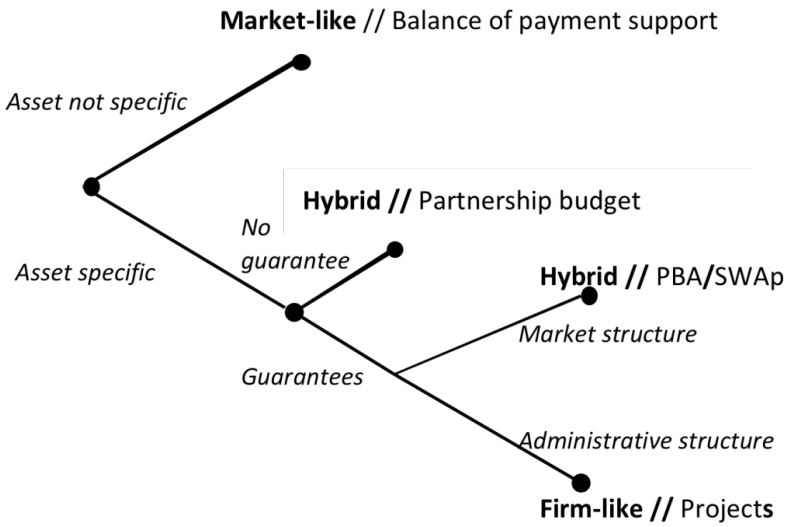
Transaction cost economics also relies on two main behavioural hypotheses that *explain why the costs occur*. The first hypothesis is *bounded rationality*, such that economic agents cannot predict precisely how the transaction will evolve. It implies that every contract is inherently incomplete. The second one is the risk of *opportunism*: because of the contract incompleteness, there is a risk that agents involved in the transaction take profit from the imperfect distribution of information. As a consequence of these two hypotheses, when a transaction takes place, the agents involved bear some costs for coping with contract incompleteness and the risk of opportunism. In the context of developing countries, these hypotheses may be interpreted in terms of corruption, irrational behaviours (for example, implementation of programmes that do not address developmental priorities) and difficulty to ensure the link between donors and recipients (unnecessary monitoring procedures, conditionality, etc.).

Besides, various structures of governance may be preferred depending on the characteristics of each transaction. Transaction cost economics distinguishes between three types of transaction characteristics: *(i) Asset specificity* refers to whether the transaction concerns non-standard goods that require specific investments that cannot be easily re-used for other transactions (for example, producing a specific item can require the construction of a machine that will only produce this item) so that if the transaction ceases, the investment is lost. The impact of this characteristic on the choice of governance is obvious: when asset specificity is high, both parties should want to lead the transaction to a positive end – otherwise, the investments in the specific asset will be lost or devaluated. In the context of foreign aid, investments in specific assets are usually high, because both recipient government and donors have to invest in the aid management process (for example, staff training, technical assistant provision, development of financial and reporting procedures, monitoring, etc.). *(ii) Uncertainty:* as information is always incomplete, agents cannot predict other agents' performance. Following the principal-agent theory, information incompleteness can take the shape of moral hazard (one agent cannot assess the other agent's effort/actions) or asymmetry (one agent has more information than the other). Because of such lack of transparency, the principal (for example, donors) does not precisely know how the agent (for example, recipient government) allocates and manages aid. Uncertainty increases transaction costs since it incites both parties to negotiate complex contracts and/or augment controlling costs. *(iii) Frequency:* as one may expect, the more frequently the transaction takes place, the more easily the costs of setting formal governance structures are recovered.

2.3.2. Aid modalities and governance structures

Relying on the above-mentioned behavioural hypotheses and transaction characteristics, transaction cost economics intends to *design structures of governance that minimise transaction costs*. Figure 1 below presents an analytical framework that shows which governance structure is most adapted depending on transactions characteristics. It also links governance structures to aid modalities.

FIGURE 2.1: Foreign Aid Modalities and Governance Structures



Source: Author's adaptation of Williamson (1994: 52)

Figure 1 above is inspired by Williamson (1994: 52) and distinguishes the three governance structures: market, firm, and hybrid. Williamson interpreted it as follows. Transactions taking place on the market generally concern non-specific goods. In fact, standard products provide both parts of the transaction with sufficient protection against opportunism, as the provider can easily be replaced if he does not respect his commitments. Thus, building a detailed contract that foresees the transaction evolution is not necessary. On the other hand, some goods may have a very high level of asset specificity. In that case, both parts of the transaction have to protect themselves against the risk of transaction cancellation – which would imply important "sunk costs" (Williamson, 1993: 16). When uncertainty and/or transaction frequency are very high, it can be preferable to internalise the transactions into one economic unit: the firm. Inevitably, such a structure of governance is costly to set up and entails management costs. The latter may however be too high compared to the gains of the firm. Some goods may have a relatively high level of specificity and thus require a contract stipulating the

transaction expectations (nature of the item, quality, shipping details, etc.). However, the characteristics may be such that setting up a firm is too costly. For instance, if the transaction is not frequent, the costs that would be induced by internalising the transaction into a firm would not be recovered – thus one would rather set up a contract that still encompasses costs, but that does not entail firm management costs. So-called hybrid structures of governance may therefore be relevant. They present characteristics from both the market and the firm; in practice, they take the form of all other types of contracts between two or more parties.

Aid delivery, as with any transaction, generates some costs. The aforementioned rationale can therefore be applied to the aid delivery system, where the intended use of aid funds may be viewed as asset specificity. Aid transfers that are not associated with specific requirements as for the use of funds, and therefore do not entail specific management tools (for example, conditionality, reform measures, indicators, and monitoring processes) can easily be managed through a market-like governance structure; this situation can be assimilated with the *balance of payment support.* However, donors – and governments – generally attach a value as to how aid funds are used, and are ready to invest in further specific assets (e.g. experts, monitoring systems) to prevent aid from being misallocated by opportunism, as well as to ensure the continuation of the aid transaction. Such asset specificity associated to aid will thus determine a non-market governance structure. According to our analytical framework outlined in figure 1, three cases may be encountered. When donors do matter about the good utilisation of aid funds, but do not have precise requirements as for their allocation (the recipient government is in charge of them) and therefore do not set up specific guarantees system, a hybrid contract appears to minimise aid transaction costs. When applied to our purpose, this situation can be assimilated with *partnership budget support*. When donors stipulate how the money should be allocated and frequently interact with the government on related matters, the corresponding structure of governance appears to be the *program-based approach* (PBA), especially the sector-wide approach (SWAp). When donors have such precise requirements regarding the use of aid funds that they prefer to manage them by themselves, they can set up a firm-like hierarchical structure in order to control the transaction, under the form of a *project*.

This analytical framework gives some theoretical prediction of which governance structure – or aid modality – reduces aid transaction costs, according to the transaction characteristics. We will rely on it in order to determine when a change in aid modality is worthwhile. Different aid management structures will be associated with different transaction costs – but the question as to which is the most appropriate is not straightforward, since it depends on country specificities and the value of different aid characteristics given by donors. For instance, it is often argued that programme aid and budget support should be associated with less

transaction costs than a multiplication of projects, as they promote donor coordination, harmonisation and alignment. However, this has not been formally proved, all the more since they entail new types of costs in the form of coordination costs, development of a common monitoring system, capacity building, etc. As Killick (2004: 19) points it, "the superiority of program aid in this respect remains only a hypothesis because it rests on a presumption of the comparative costs of the respective aid modalities, which has not, so far as is known, been empirically established in any systematic way". In order to test whether one modality generates fewer costs than others according to the characteristics of the transaction, we hereafter extend the intuitions of transaction cost economics into a formal model. *Our aim is thus to identify which modality is preferred – in term of costs minimisation – according to the aid transaction's characteristics*. In other words, we aim to assess whether *a change in aid modality is worth it in order to reduce transaction costs*. Before that, we start by better defining aid transaction costs by using the background of transaction cost economics. This is addressed in Section 3.4 below.

2.4. Defining and estimating aid transaction costs

2.4.1. Aid transaction costs: what they are, what they are not

As already mentioned, there is no universal definition of aid transaction costs. A narrow vision can restrict them to "direct transaction costs" (Acharya et al., 2006) or "administrative costs of aid", including only the "costs of transferring aid from donors to recipients and those of planning aid and monitoring its progress and impact" (OECD, 2003: 114). However, most authors agree on the fact that aid transaction costs encompass a much broader reality.

On the theoretical side as well, the definition of transaction costs is elusive (for example, Allen, 1999). For example, R. Coase, known as the pioneer of transaction cost economics (TCE), never actually used the term transaction cost explicitly in his first major book (The Nature of the Firm, 1937). He was rather referring to general concepts such as "the costs of using the price mechanism" or "the cost of carrying out a transaction by means of an exchange on the open market". Any transaction generates such costs because, as Coase (1961: 15) explains, "[i]n order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on". One of the first appearances of the term transaction costs is to be found in Arrow (1969: 48), who defined transaction costs as "the cost of running the economic system". Williamson (1975) then compares the transaction costs to the frictions in physical science. They are all the "extra-costs" generated from market imperfections. Even if the concept of transaction cost is defined quite

vaguely, it still seems clear from the above that transaction costs are *sunk costs* and differ in that respect, from *production cos*ts.

We believe that this distinction between transaction and production costs is critical in order to reach a satisfying "economic" (rather than general) definition of aid transaction costs.[4] In fact, some activities generating so-called transaction costs (for example, donor-government coordination meetings) also generate positive externalities such as learning from working groups, mitigating risks through fiduciary safeguards (EuropeAid, 2007: 27), bringing about additional technical expertise to national policies, trust and capacity building, etc. Such transaction costs may be actually viewed as "investment" costs and should not be confused with "net" or "sunk" costs emanating from the mere transfer and management of aid that encompass efficiency losses. Let us note from the start that most aid modalities are associated with some investment costs, but that the latter are probably higher when they are run at a large scale – such as PBAs. Therefore, we propose to distinguish between gross and net transaction costs, in the following way:

$$GATC = IC + NATC \quad (1)$$

Where GATC: Gross Aid Transaction Costs; IC: Investment Costs; NATC: Net Aid Transaction Costs

According to that distinction, we propose to define net aid transaction costs as *all the economic costs associated with aid management that do not add any value to the aid transaction*. It is noticeable that only the net transaction costs reduce aid effectiveness and should thus be minimised (see Subsection 3.4.2). In fact, assessing the effectiveness of aid delivery requires looking at the final aid envelope available for the production of a developmental programme – that is, the total amount of aid minus net transaction costs.

$$NVA = GA - NATC \quad (2)$$

Where NVA: Net Value of Aid; GA: Gross Aid

What we called aid investment costs (which may erroneously be commonly termed transaction costs) may actually increase the value of net aid, because they contribute to producing positive externalities: these investment costs may improve information, help build common knowledge, systems and trust, and therefore reduce uncertainty and contribute to decreasing the net transaction costs for future transactions.

[4] Thus we fully agree with Lawson (2009) who specifies that transaction costs "add nothing to the actual value of that transaction".

The economic meaning of aid transaction costs deserves more precision. Regarding the nature of costs, it goes without saying that transaction costs are not merely financial, but should be viewed as opportunity costs (that is, the value of the best alternatives that have been given up for the utilisation of a particular resource). They thus encompass the value of time, perverse incentives effects on staff habits, missed opportunities in terms of resource allocation, etc. Besides, Transaction Cost Economics rest on the assumption of limited rationality and opportunism, which lead to informational imbalances and are therefore very similar to the hypothesis of incomplete information in the principal-agent theory. The aid delivery system is indeed characterised by a chain of principal-agent relationships subject to information asymmetry (Martens et al., 2002; Paul, 2006). For instance, donors may be viewed as principals delegating tasks (for example, the realisation of a project or developmental programme) to the recipient government (viewed as the agent); other principal-agent relationships may also be identified in the aid delivery system, notably between donor agencies' main office and country offices, the Cabinet or Ministry of Finance and sector agencies, etc. Within each principal-agent relationship, the acting agent is often better informed than its principal, certainly regarding the working environment and its own effort or characteristics. These informational imbalances are known to lead to so-called adverse selection and moral hazard problems that create additional costs for the principal. In the context of aid management, a major type of agency cost encountered deals with all the costs associated with the additional controls and incentives set up by donors in order to induce recipient agents into acting in the desired way (for example, conditionality, financial controls and reporting). Another type of cost considered in the principal-agent literature is the economic cost of distortions from an ideal, perfect information resource allocation; this relates, for instance, to over-investment in some sectors or regions preferred by donors. Our definition of aid transaction costs allows taking account of such agency costs.

In concrete terms, there are different varieties of aid transaction costs, which may be differentiated according to several classification criteria, as proposed below.

1. *Timing of cost occurrence:* According to Williamson (1985), there are two kinds of transaction costs: (i) *ex ante costs* of drafting, negotiating, and safeguarding an agreement; ex ante costs can be further divided into search costs and contracting costs; (ii) *ex post costs* of haggling, governance, and bonding to secure commitments; ex post costs can be divided as well into monitoring and enforcement costs. Practically, aid transaction costs may occur at three stages of aid delivery: *ex ante* (identification, negotiation and programming of aid programmes), during implementation (financial transfers, ongoing donor-government dialogue, project management unit, procurement, monitoring), or *ex post* (specific audits and evaluations).
2. *Who bears the costs:* Aid transaction costs can be borne by donors and recipients – in the first case they decrease the amount of resources that can be

transferred to partner countries; and in the second case, they consume domestic resources that could have been valuable for alternative uses.

3. *Net versus gross costs:* As already mentioned, we have to distinguish between the mere efficiency losses – the net costs – from the gross costs that also encompass investment costs. The latter produce some positive externalities on the transaction (improving coordination, information, trust and capacity building) and are expected to foster a decrease in future net transaction costs over the medium run.

2.4.2. Estimating aid transaction costs

As noted above, precisely measuring transaction costs require a lot of quantitative and qualitative data and still remains a challenge. Most authors have attempted to evaluate their evolution using some proxy indicators and/or interviews.[5] However, this methodology does not seem to work very effectively because it misses a theoretical background enabling identification of what should and should not be reduced. Indeed, as already mentioned, some "investment" costs associated with aid management actually help to decrease net transaction costs. Moreover, one should also be aware that transaction costs incurred are related to the transaction's characteristics.

The simple model developed here shows that cost minimisation, and henceforth the choice of an aid modality, depends on the transaction's characteristics. It enables the crucial following question to be answered: *when is a change in aid modality worth?*

Let the index r stand for the recipient government, and $d = 1, \ldots, n$ for the n donors. We first specify transaction costs over one period t. The recipient government and each donor bear different transaction costs according to the transaction's characteristics. It is important to note that a number of factors influence the level of transaction costs: the number of donors active in the country and their degree of coordination, harmonisation and alignment over the recipient government's procedures; but also some characteristics that can be related to TCE theory and more specifically to Figure 3.1: the governance system in the recipient country (which influences the degree of uncertainty), donors' possible specifications over the indented use of funds (which relates to asset specificity), as

[5] This exercise is out the scope of this paper, which limits to proposing a more accurate conceptual framework for comparing transaction costs between different aid modalities. For more indications on how to measure transaction costs, see for instance Jobin (2008) who proposes a number of evaluation questions as well as a transaction-cost measurement framework based on surveys aimed at asking interviewees to assess different dimensions of transactions. Lawson (2009) also proposes some measurement tools and models of questionnaires.

the frequency of transactions (see below). Let us also recall that, following equation *(1)*, we distinguish pure efficiency losses (NATC) from investment costs (IC).

The first step to understand how to choose an optimal aid modality is to identify the links between the Gross Aid Transaction Costs (GATG) and the different characteristics of the transaction over a single period. The GATC ($GATC_r$ and $\mathrm{GATC}_{d=1,..,n}$ for the recipient government and donors respectively) are the sum of investment costs – which are a function of the degree of harmonisation between donors – and net transaction costs – which are a function of the degree of uncertainty and the level of asset specificity. Note also that donors are likely to be heterogeneous, so that from the government's perspective, different donors will be associated with different costs. Let us define:

On the recipient government's side,

$$GATC_r = \sum_{d=1}^{n} \left[IC_{r,d}(h) + NATC_{r,d}(s,u,h) \right] \tag{3}$$

On the donors' side, $GATC_{d=(1,...,n)} = \sum_{d=1}^{n} \left[IC_d(h) + NATC_d(s,u,h) \right]$ (4)

So that the (total) gross aid transaction cost (GATC) for period t is the sum of recipient and donors' costs:

$$GATC = GATC_{d=1,...,n} + GATC_r \tag{5}$$

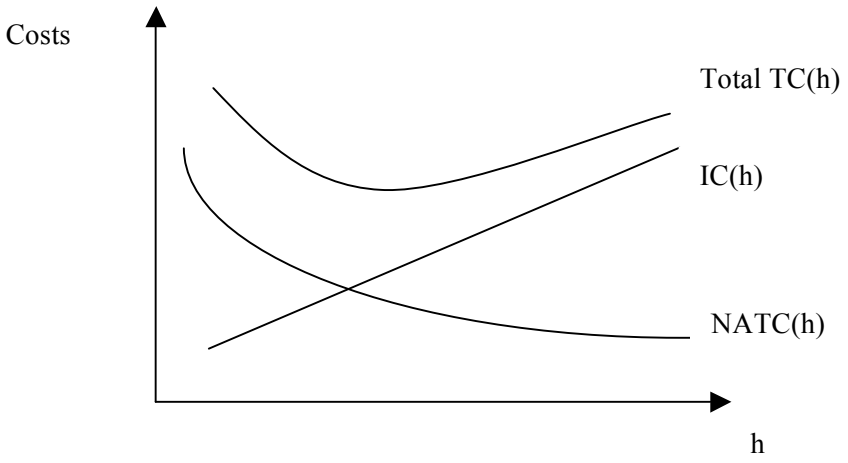
where s represents the level of asset specificity, u the degree of uncertainty and h the degree of harmonisation between donors, with $h=1$ if they fully harmonise their procedures and $h=n$ if there is no harmonisation at all. In fact, if harmonisation is perfect, it is as like all donors formed a single donor.

This model is further specified to render the following characteristics. For both donors and recipients, NATCs are an increasing function in s ($\delta NATC/\delta s > 0$). In fact, when donors have specific requirements on how aid should be allocated, they need to build a "guarantees" system to ensure aid earmarking, which increases transaction costs. If donors align their aid on the recipient government's policies and systems, asset specificity decreases to zero, which in turn decreases NATCs. The same relationship applies to the degree of uncertainty: the more information

asymmetry there is between donors and the recipient country, the more donors require guarantees, which increases NATC ($\delta NATC/\delta u > 0$).[6]

The degree of harmonisation between donors also influences transaction costs. Logically, the more donors are harmonised, the less time-consuming day-to-day interaction with them is for the government ($\delta NATCr/\delta h < 0$). But usually, all the necessary prerequisites for harmonising donor practices (notably in the context of a PBA) incur investment costs, for instance to create special financing and monitoring procedures and/or improving national ones, that may lead to an important (non-linear) "jump" in ICs. Moreover, day-to-day coordination is also demanding for both donors and government, and the effect of harmonisation over *NATCd* is less obvious to assess, and probably depends from one donor to another. FIGURE 3.2 below gives an idea of the evolution of transaction costs with the degree of harmonisation. In this setting, harmonisation decreases NATCs to a certain extent, but it should not be pursued beyond a certain point where the gain in NATC reduction no longer balances necessary investment costs.

FIGURE 2.2: Likely evolution of transaction costs with harmonisation (static model)



Source: Author's elaboration

Equations (3) and (4) thus represent how the GATCs are affected by the various aid transaction characteristics, over a single period, without taking into account that

[6] This assumption is supported by Jobin (2008: 452) who provides numerous references indicating that trust among partners plays a critical role in partnership performance, and that trust can reduce transaction costs.

aid transfers may occur several occasion. Still, from these static equations, one may already draw an important conclusion: as per definition, the aid relationship is always characterised by uncertainty (cf. the principal-agent theory) and as in most cases, donors value at least some asset specificity, an aid transaction with no NATCs is unachievable.

Furthermore, in order to understand which aid modality is preferable, one should be aware that aid transactions generally occur at several subsequent periods (that is, in the language of TCE, with a certain frequency). For instance, a one-shot project may be implemented in one or a few periods, while the development of a sector usually requires continuous interaction over many years (high frequency). When taking account of frequency into our model, where $t=1,\ldots,T$, one should be aware that the transaction characteristics are most likely to influence each other. More specifically, it is reasonable to assume that harmonisation progressively enables to reduce uncertainty through sharing information and building trust and common understanding between partners. Therefore, we assume that u_{t+1} is decreasing in h ($\delta u_{t+1}/\delta h_t < 0$) and, consequently, current investments in harmonisation reduce future NATCs: $\delta NATC_{t+1}/\delta h_t < 0$.

2.4.3. Minimising aid transaction costs

When assessing aid effectiveness from a transaction costs perspective, two questions really matter: (i) is it possible to reduce transaction costs in the current framework; and (ii) could another aid modality do better? For instance, it is worth wondering whether shifting from a project approach to a PBA could improve aid effectiveness through decreasing transaction costs. It seems straightforward that a shift to a PBA should be done only if the associated reduction in NATCs at least compensates the additional ICs incurred for creating the necessary conditions for alignment and harmonisation. In other words, one should compare the net present value (NPV) of the two proposed aid modalities, including additional ICs and NATC savings due to a shift in aid modality. This is represented in equation *(6):*

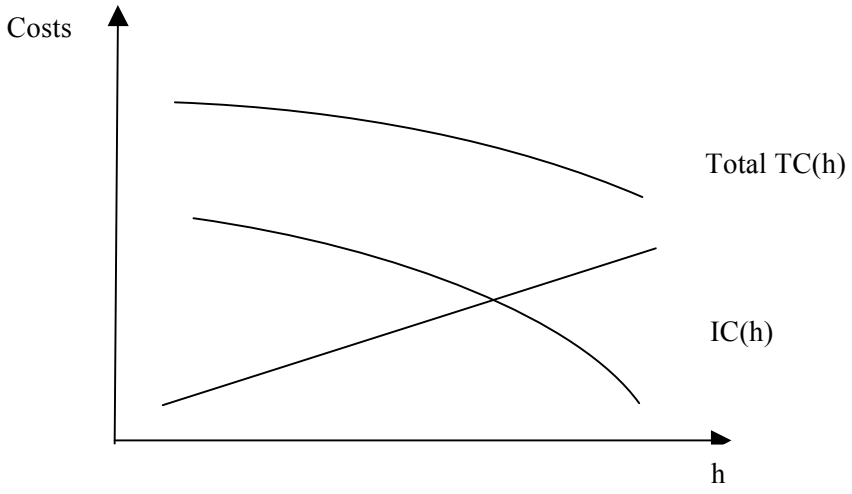
$$\sum_{t=1}^{T}\left\{\frac{IC_t(h)+NATC_t(s,u,h,h_{t-1})}{(1+r)^t}\right\}(PBA)\leq\sum_{t=1}^{T}\left\{\frac{IC_t(h)+NATC_t(s,u,h,h_{t-1})}{(1+r)^t}\right\}(projects)$$

(6)

with r standing for the discount rate, $IC_t(h)$ being increasing in h while $NATC_t$ is decreasing in both h *and* h_{t-1} and increasing in u and s. In this dynamic model, harmonisation plays a double role in reducing NATCs: first, it seems logical that over a single period, the more harmonisation, the less transaction costs are necessary to manage the relationship; but over several periods, we have argued that harmonisation enabled to build capacities, trust and common systems that can further reduce uncertainty, so that the curve of NATCs will probably decrease on a

sharper way with harmonisation, as illustrated in Figure 3.3 below. If this assumption is valid, contrary to the static model where harmonisation was not desirable beyond a certain point, we here see that the more harmonisation (and related efforts and system strengthening), the less long term transaction costs.

FIGURE 2.3: Likely evolution of transaction costs with harmonisation (dynamic model)



Source: Author's elaboration

However, this simple model does not resolve the measurement problem of aid transaction costs: we do not propose any option than assessing them using proxy indicators, but rather model the impact of the transaction's characteristics on transaction costs, as well as the difference between investment costs and net aid transaction costs. Therefore, our model proposes to shift the effort from measuring transaction costs to assessing the value of different aid modalities according to the characteristics of the transaction. In fact, as depicted in Figure 3.1, some aid modalities are more adapted than others according to the context (transaction's characteristics). Equation *(6)* also illustrates the fact that if uncertainty and asset specificity are high, it is less likely that the change from a project approach to a PBA or budget support might compensate the required investment costs. Similarly, if modality PBA is adopted but donors lag behind in harmonising their procedures, the expected benefits in reducing NATCs may not be high enough to compensate the investment costs. This supports anecdotal evidence indicating that the reduction of aid transaction costs after a change to budget support or PBA may not be as high as expected, at least in the beginning of the process.

To sum up, transaction costs are ineluctable and inherent to the aid transaction. Investment costs are especially high when setting up a new aid modality, while NATCs are a consequence of imperfect information and the risk of opportunism (remember the behavioural hypotheses outlined in Sub-section 3.3.1). One should also remember that when assessing the evolution of aid transaction costs, these often occur over several periods/years, so that it is important to evaluate their potential change on a longer time horizon. The model presented above enables to render interesting features of the evolution of aid transaction costs according to the context / transaction characteristics. Therefore, main conclusions are that:

- NATCs increase when asset specificity is high, that is, when donors are not perfectly aligned with recipient's policies and require some guarantee over the intended use of aid; in such a case, a project may be more cost-effective than a PBA.

- Uncertainty, which is notably due to information asymmetry between partners, raises NATCs; yet, some ICs (for instance in the context of increased coordination and harmonisation between donors) may help decrease future uncertainty, and therefore subsequent NATCs; therefore, the costs of setting up a PBA may be recovered after some time.

- Harmonisation has two opposite effects on transaction costs: it is likely to increase ICs since it requires setting up new ways of working together; but it presumably reduces the NATCs borne by the recipient government (the effect on the NATCs borne by donors is not straightforward); hence, the decision to shift to a PBA may be influence by comparing the two types of costs.

- Frequency also should influence the choice of an aid modality because when the interaction between donors and the recipient government is frequent (for instance, long term development programmes in the health or education sectors), ICs incurred to manage the relationship (for example, to set up a PBA) are expected to be recovered after some time, so that their impact on the reduction of NATCs will be more consequent; while one-shot interventions (for example, the construction of a unique facility) are probably better managed through a project.

2.5. Conclusions

The Paris Agenda aimed at enhancing aid effectiveness was designed as a way to respond to the project approach deficiencies, especially in a context of increasing donor fragmentation. Among other objectives, the Paris Agenda aims to reduce the transaction costs associated with aid delivery by aligning domestic programmes

and systems, and by using new financing and management modalities, such as SWAp and budget support.

Recognising that the concept of aid transaction costs – even if commonly used by practitioners – has hardly been defined or measured, this paper has aimed to develop a theoretical background to the concept by analysing it in relation to Transaction Cost Economics. The proposed definition of aid transaction costs rests on the concept of opportunity cost and emphasises the fact that "true" transaction costs are "net" costs – that is, they do not take account of "investments" activities adding value to the outcomes of aid. We thus proposed an analytical framework that allows comparing how they vary with different aid modalities, according to the context and characteristics of the aid transaction.

The minimisation of transaction costs is often advanced as an important aspect of aid effectiveness. However, our definition and the model above help to explain that *the optimal aid modality (governance structure) depends on the characteristics of the transaction* – for example, on the relation between a particular donor and the recipient government, and their respective preferences as for the allocation of aid. The optimal governance structure may still generate a lot of costs (at least in the short run) and is likely to change if the characteristics of the transaction also change. In particular, the investment costs associated with a PBA can play an important role in reducing information asymmetry and in bringing donors' and government's preferences closer to each other. Yet, it is probably mistaken to adopt a PBA if donors are not ready to harmonise their procedures. Therefore, *the minimisation of "apparent" aid transaction costs should not be an end in itself*. For instance, if donors really disagree with the development programme of the recipient government, which leads to high asset specificity and the need to set up guarantees for the utilisation of aid, the project approach could be preferred.

Note also that donors are likely to be heterogeneous, so that it may be worth setting up a PBA (with increased coordination and harmonisation) for a number of "traditional" donors, while some donors with specific characteristics might do better keeping on with the project approach.

As a conclusion, we have seen that Transaction Cost Economics allow an assessment of the conditions under which new aid modalities (such as PBAs) are likely to reduce transaction costs and henceforth improve aid effectiveness.

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CHAPTER 3: How should donors give foreign aid? A theoretical comparison of aid modalities*

Abstract

We develop a theoretical model to analyse the simultaneous use of two major foreign aid modalities: project aid and budget support. We show that the aid is better used when it is entirely given via budget support, no matter whether conditionality is used or not. Furthermore, we show that the optimal use of conditionality depends on the recipient's developmental preferences, the productivity of the inputs and the level of aid compared to the recipient's budget: when these parameters are relatively high, conditionality should be enforced. Otherwise, the optimal aid allocation is such that all the aid is given through unconditional budget support. We conclude that conditionality does not always improve the aid effectiveness.

* This Chapter is based on a work with Izabela Jelovac.

3.1. Introduction

With this chapter, we participate to the ongoing debate about the effectiveness of existing modalities to donate aid to developing countries. To compare aid modalities, we adapt the theoretical model of Cordella and Dell'Ariccia (2007) and we incorporate the idea that the production of developmental goods can vary according to the observability of its inputs.

The effectiveness of foreign aid has been a major concern for the past decade. Several empirical studies have shown the weak impact of aid on poverty reduction and growth (e.g. Boone, 1996; Easterly, 2003, 2006; Hansen and Tarp, 2001, Burnside and Dollar, 2000; Collier and Dollar, 2002).[7]

The causes often pointed out are weak institutional capacities, corruption and the fungibility problem: all of these problems are present in many developing countries. Because of this observation – that aid is not efficient – aid modalities have also been criticised. In fact, apart from the inherent deficiencies of developing countries, the inefficiency could also come from the instruments chosen to deliver foreign aid. The two main instruments (or modalities) are project aid (PA) and budget support (BS). Project aid involves the direct participation of the donors in the design and the implementation of a developmental project. With budget support, the donors provide support through the recipient government budget. [8] Donors, in the case of budget support, can also impose conditionality on how to allocate the available resources.

These two instruments have a very different impact on development, their respective pros and cons have been largely analysed in the literature. First, we should note that the project aid has been the major aid modality since the 1950's. This trend can be explained by the belief that the main constraint to development was a lack of investment, a problem that could be overcome by channelling capital investment to developing countries. However, these off-budget funds have been more and more criticised over time, with regards to their poor impact on development: the main issues are a lack of coherence (between the individual projects of each donors and also with the national policies of the recipient country), no building of institutional capacities (because the donors do not use the national procedures), lack of transparency, risk of double use of resources (e.g. two schools are built in the same village) and high transaction costs (see chapter 2, World Bank, 1998; Lavergne, 2003, Tarp, 2002).

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[7] Yet the literature on the impact of aid on growth and poverty reduction does not reach an agreement. See Rajan and Subramanian (2005) for a survey.

[8] 'The general characteristics of budget support are that it is channelled directly to partner governments using their own allocation, procurement and accounting systems, and that it is not linked to specific project activities' (OECD, 2007).

In the late 1990's, because of the weaknesses of the project aid, the donors' community started to consider the need for changes in the aid delivery system. There are five principles underlying the 'new aid system delivery', also called programme-based approach: 'ownership, alignment, harmonisation, managing for results, and mutual accountability' (OECD, 2005). [9] One of the aid modalities that best reflects these new principles is budget support. Budget support can take different forms: general budget support (funds mixed with recipient's general budget), sector budget support (e.g. funds transferred to health ministry) and conditional budget support (the aid is still injected in the recipient budget but the donors specify how the funds should be allocated). Even if the part of the budget support in the total worldwide aid allocation is not yet significant, the international community considers budget support as a promising aid modality: 'budget support avoids many of the problems that accompany other forms of aid (e.g. uncoordinated projects that undermine government systems, impose high transaction costs and lack sustainability). It tends to enhance country quality level of aid as a whole' (OECD, 2007).[10] Next, according to the OECD (2007), budget support should preferably be introduced in highly aid-dependant countries, when the recipient is a credible partner (e.g. in term of her commitment to a poverty reduction strategy) and when there is a certain level of governance and macroeconomics management. Consequently, more and more donors are emphasising budget support as a way of financing development to complement or substitute for project aid (World Bank, 2005).

When comparing aid modalities, one should be aware of the different dimensions of the aid instruments. We can distinguish four dimensions: the type of finance (grants or loans), the procurement conditions (if aid takes the forms of materials, skills or money, and if it is tied on particular source on supply), the targeting of the resources (if the aid is ex-ante assigned to a particular use) and the disbursement channel (through or outside government budgeting). When comparing budget support and project aid, we focus on the disbursement channels and, to a certain extend, on the targeting of resources (when considering conditional budget support).

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[9] 'Programme-based approach share the following features: leadership by the host country or organisation; a single comprehensive programme and budget framework; a formalised process for donor co-ordination and harmonisation of donor procedures for reporting, budgeting, financial management and procurement; Efforts to increase the use of local systems for programme design and implementation, financial management, monitoring and evaluation' in Harmonising Donor Practices for Effective Aid Delivery' (OECD, 2005).

[10] General budget support represented 5% of the total aid or some $5bn in 2004, but it goes up to 45% of total aid in Uganda and reaches some similar proportion in other sub-Saharan countries (OECD, 2007).

However, while the (small) theoretical literature on aid allocation has recently grown, there are, to our knowledge, few attempts to compare these two instruments in a single formal model. Svensson (2000a and 2003) analyses the rent-seeking problem when there are competing social groups in a developing country and the time inconsistency problem when aid is conditional to policy reforms. Azam and Laffont (2003), focusing on ex-ante optimal contracts to avoid free riding, show how aid contracts can induce the recipient to reveal her preferences towards development. Still, they do not consider different disbursement channels of aid. In that respect, Arimoto and Kono (2009) compare project aid and budget support. The focus of their paper is the coordination between aid and the costs born by the recipient in order to achieve a developmental output. They specifically compare the aid proliferation with project aid and budget support. They show that budget support can reduce the aid proliferation, but only if the donors are fully altruistic. The paper by Cordella and Dell'Ariccia (2007) compares the respective advantages of budget support and project aid and look at the final production of 'developmental goods'. They find that conditional budget support is always preferable to unconditional budget support. Moreover, project aid is more efficient than budget support when the developmental preferences of the recipient are high and when the total aid available is small relative to the recipient's budget.

To obtain these important results, Cordella and Dell'Ariccia analyse the BS and PA modalities in two separate albeit general models. The one assumption that we have found to cause a loss of generality in their analysis is the use of a symmetric function for the production of developmental goods, in which observable and non-observable inputs are equally productive.

Given the important policy implications of such theoretical results, our aim is to understand the limits of each model and to offer complementary results when those are relevant. We therefore adapt Cordella and Dell'Ariccia's model to account for variability in the input productivity. This new dimension is relevant, especially because the productivity of the inputs can illustrate the issue of varying transparency. Indeed, it is relatively easier to observe the allocation of resources in some countries and for some types of developmental goods. This can be interpreted as a relatively high degree of transparency, and correspond to a production function in which the observable inputs are exogenously more productive than the non-observable ones.

Concretely, we want to compare the effectiveness of the two major aid modalities, budget support (BS) and project aid (PA). We consider an economy with two sectors - the developmental sector and the non-developmental sector - and two agents - the donors and the recipient country - that have different preferences over the production in the two sectors. In that respect, the effectiveness of aid depends on its ability to increase the production of 'developmental goods'. Furthermore, we model the production of the developmental goods such as only a subset of the

inputs is observable by the donors. The productivity of this subset can vary according to the type of good.

As in Cordella and Dell'Ariccia, we take into account the intrinsic differences of the modalities. Firstly, conditionality can be associated with budget support, but only a subset of the developmental expenses – the observable ones – can be subject to conditionality. Secondly, when using project aid, the donors control the overall allocation of the aid resources. However, we consider that, because of limited harmonisation and coordination, project aid can be associated with a cost of imperfect fit.

We analyse two cases depending on whether conditionality is associated with budget support or not. In the first case, we show that the unconditional budget support weakly dominates project aid: if we consider that project aid funds are perfect substitutes for recipient's own funds (that there is no costs of imperfect fit associated with project aid), then the donors are indifferent between PA and unconditional BS (we can have a mixed contract). But if donors funds are not perfect substitutes for recipient's ones (e.g. because of imperfect fit of the project, lack of coordination and double use of resources), budget support always yields a higher level of production of developmental good, so that the optimal contract is to give aid only through BS. In both cases, the optimal aid contract leads to a distortion in the resources allocation because only a subset of the foreign aid reaches the developmental sector. Two major problems underlie this inefficiency: the crowding out effect of PA (also called the fungibility problem) and conflict of interest between donors and recipients (e.g. different developmental priorities).

We then look at whether conditionality can reduce the inefficiency. If we allow conditionality with BS, the optimal aid allocation depends on the recipient's preferences. More specifically, we show that the conditionality does not always increase the production of the developmental good. It only does so when the donors and recipient's preferences are relatively close. In that case, conditional budget support is the optimal foreign aid allocation. When the preferences are relatively far apart, conditionality is not optimal. The optimal contract in that context is the same as the one in the non-conditional case. Then, the inefficiency in resources allocation remains the same. These findings are in accordance with a quote of the former chief economist of the World Bank François Bourguignon in Le Monde (16/02/2008): 'the countries where aid is the less efficient because their difficulties to use it are the most in need. Imposing them severe conditions to obtain the aid would be equivalent to not helping them. And this is worst than all'.

One of our results constitutes therefore a counterexample to a finding of Cordella and Dell'Ariccia (2007). We show that the optimality of the conditionality depends on the productivity of the production factors, the developmental preferences and the ratio between aid and recipient's revenue while in Cordella and Dell'Ariccia,

the conditionality is always preferred. We find that more recipients accept the conditionality when the transparency is low (when the productivity of the observable input is low). Additionally, the optimality depends on the aid dependency ratio: when the recipient becomes more aid dependent, the need for conditionality increases. This counterexample to Cordella and Dell'Ariccia's result should be used to generalise the set of results they provide.

Another difference with Cordella and Dell'Ariccia concerns the optimality of project aid. In our framework, project aid can be an optimal contract only in the specific case of low developmental preferences coupled with perfect substitutability between donors and recipient's resources. In this particular case, the donors are indifferent between giving aid through unconditional budget support or project aid. This is a consequence of the specific production function for the developmental goods that we use here, so we do not pretend to generalise Cordella and Dell'Ariccia's results on that ground.

The chapter is structured as follows. The Section 4.2 briefly explains the trends in aid modalities over the past decades and reviews the theoretical literature. The model is described in Section 4.3. Section 4.4 presents two extreme benchmark cases: One in which no aid is given and another in which the donors and the recipient share the same objective. In Section 4.5, we derive and discuss the optimal aid modalities assuming that the recipient and the donors do not need to share the same developmental objectives. Section 4.6 concludes. Proofs are in the Appendix.

3.2. The model

The model presented in this section is adapted from Cordella and Dell'ariccia (2007). In our stylised framework, a developing country cares about the production of a developmental good, $s(k,e)$, that depends on an observable input, k (capital goods invested by the recipient), and a non-observable input, e (effort, administrative and managerial outlays, anything that is not observable to a donor). We assume a Cobb-Douglas production function for this developmental good: $s(k,e) = k^{1-a}e^{a}$ where a $(0 \leq a \leq 1)$ represents the productivity of the non-observable component of the development good production function.[11] To a certain extent, the parameter a can be interpreted as reflecting the level of transparency in the developing country: when transparency is low, more inputs are therefore non-observable, which decreases the productivity of the observable ones. Given that we assume constant return to scale, it also means that the productivity of the non-observable increases when transparency is low. The developing country also cares about a non-developmental good, m. The preferences of the developing country for

[11] We assume that all inputs have the same prices and that it does not affect the fundamental results of our analysis.

the developmental good and the non-developmental one are represented by a Cobb-Douglas utility: $V(m,s) = m^{1-\alpha}s^{\alpha}$, where α ($0 \leq \alpha \leq 1$) represents the recipient's developmental preferences (if $\alpha = 1$ she only cares about the developmental good).

To produce goods *m* and *s*, the government of the developing country has at its disposal a tax revenue *G* (exogenous and observable to the donor) and a transfer (aid) given by the donor.

The total aid available is denoted *T* (exogenous). The aid can be given through two modalities: project aid and budget support. The donors have to decide how to spread out the total aid *T* such that the level of developmental good is maximised (we consider that they only care about the developmental sector). The share of aid allocated via PA and BS is denoted as *A* and *B*, respectively. The resources given via BS are simply added to the recipient's budget *G*. Moreover, still in the case of BS, the donors can also decide to impose the capital level (*k*) that the recipient has to carry out in order to receive the BS. This reflects the conditionality.

When PA is used, the resources *A* do not go to the recipient budget, but are fully controlled by the donors. This allows us to consider the resources given through project aid (*A*) as an observable variable and then to add the resources *A* to the capital level *k* in the developmental goods production function (total capital goods are thus *k*+*A*). Moreover, when eluding the national procedures, the project could not perfectly fit with the recipient poverty reduction strategy. So, the project could have a lower impact than if it were undertaken by the recipient. In the model, there is thus an efficiency loss due to the imperfect fit of the project: only a share γ of the resources given via PA has an effective impact in the production of the developmental good, with $0 \leq \gamma \leq 1$ (if $\gamma = 1$, there is no efficiency loss). The amount of resources $(1-\gamma)A$ represents the cost of imperfect fit.

We assume that the donors only care about the developmental good level of the recipient. This assumption could be interpreted as if we assumed paternalistic behaviour from the donors. However, we do not want to enter into this debate, and this hypothesis only means that the donors have their own developmental preferences. The government of the recipient country may have a different view about the priorities. This does not necessarily mean that their preferences are better or worse than the donor's ones. An expense could be crucial for the government (to improve civil servants' working conditions) without having a direct impact on poverty reduction for instance. The utility function of the donors consequently takes into account only the developmental good production function $s(k,e)$. Finally, we consider that the donors allocate the whole resources available *T*.

To sum up, the timing of the model is the following. In the first stage, the donor observes the preferences and budget of the government and then decides how to allocate the total aid available, T, between A and B. If we allow for conditionality, the donor decides whether to use it and the level of resources that the government has to dedicate to the observable input k. In the second stage, the government observes the aid allocation and then decides how to spread her total available resources between the two inputs needed to produce the developmental good and the non-developmental good. If the budget support is conditional, then the government decides on the level of the non-observable input of the developmental good and the level of the non-developmental good. In addition, she chooses whether or not she respects the conditionality.

In what follows, we provide a benchmark that expresses the optimal allocation when no aid is given. We further determine the first best (when the preferences of both the donor and the government coincide) and the second best aid contract when (i) conditionality is not possible and when (ii) conditionality is allowed.

3.3. The benchmark

In the absence of aid, the government allocates her budget *G* between *k*, *e* (the two production factors for the development good) and *m* (the composite good representing the non-developmental goods) so as to maximise her objective function (1) subject to her budget constraint (2):

$$\underset{k,e,m}{Max} \quad V(m,s(k,e)) = m^{(1-\alpha)} e^{a\alpha} k^{\alpha(1-a)} \tag{1}$$

$$s.t. \quad k + e + m \leq G \tag{2}$$

Our problem is concave. Therefore, the first order conditions (F.O.C.) give us the optimal level of resources dedicated to the capital component, the non-observable component and to the sectors other than development, as summarised in Table 3.1.

TABLE 3.1: First order conditions - benchmark

k^*_{NA}	e^*_{NA}	m^*_{NA}	s^*_{NA}	V^*_{NA}
$\alpha(1-a)G$	$\alpha a G$	$(1-\alpha)G$	$\alpha a^a (1-a)^{1-a} G$	$\alpha^\alpha (1-\alpha)^{1-\alpha} a^a (1-a)^{1-a} G$

The results are intuitive. The more the recipient cares about development (i.e. the higher α), the more resources are dedicated to developmental production factors, *k* and *e*, and the less to the composite good, *m*. In other words, if the developmental preferences are high, few resources will be allocated to the non-developmental sector. The repartition between *k* and *e* also depends on their respective

productivity, a and 1-a. More resources will be allocated to the more productive factor.

We now consider that the donor gives aid and we determine the first best allocation. We consider a hypothetical first best, where the production of the developmental good is maximised. Therefore, in our first best, the preferences of the recipient are perfectly aligned with those of the donors ($\alpha = 1$).

$$\underset{A,B}{Max} \quad s(k+\gamma A, e) \quad s.t. \quad k+e \leq G+B \quad and \quad A+B=T \tag{3}$$

If $\gamma = 1$, the optimal contract is such that all the aid is given indifferently through budget support and project aid since no loss of efficiency is associated with PA. But for every $\gamma < 1$, PA leads to a lower level of developmental good than BS. Then the optimal contract is such that all the aid is given by BS.[12] The solution is provided in Table 3.2.

TABLE 3.2: Optimal contract - benchmark

k^*_{FB}	e^*_{FB}	m^*_{FB}	s^*_{FB}	V^*_{FB}
$(1-a)(G+T)$	$a(G+T)$	0	$a^a(1-a)^{1-a}(G+T)$	s^*_{FB}
with $B^* = T$ and $A^* = 0$ (for $\gamma < 1$)				

In the first best case, the aid is perfectly effective: no aid is diverted to the non-developmental sector and the production of developmental good is maximised.

3.4. The second best analysis

The First Best cannot be achieved for every $0 \leq \alpha < 1$, that is, if the recipient's preferences are not perfectly aligned with those of the donors. In that case, there is a conflict of interest between the donors and the recipient.

3.4.1. Aid without conditionality

The donor chooses how to allocate the aid (PA or BS) in order to maximise the level of developmental good whereas the recipient fixes the level of k, e and m, once the aid allocation is observed. The problem has the following form:

[12] The proof that $A^* = 0$ (for $\gamma < 1$) is the same as in the case 3.4.1. See equation (9).

$$\text{Donors: } \underset{A,B}{Max} \quad s(e,k+\gamma A)=e^{a}(k+\gamma A)^{1-a} \quad s.t. \;\; A+B=T \tag{4}$$

$$\text{Recipient: } \underset{k,e,m}{Max} \quad V(m,s(e,k+\gamma A))=m^{(1-\alpha)}e^{a\alpha}(k+\gamma A)^{(1-a)\alpha}$$

$$s.t. \;\; k+e+m \leq G+B \tag{5}$$

And such that every variable is positive (these non-negativity constraints are implicit in the remaining of the chapter). We solve the problem by backward induction. We thus consider the maximisation problem of the recipient first.

❖ The recipient's maximisation

From the F.O.C., we obtain the optimal level of k^{*}_{NC}, e^{*}_{NC} and m^{*}_{NC} (the subscript *NC* stands for No Conditionality):

$$k^{*}_{NC}=\alpha(1-a)(G+B)-(1-\alpha(1-a))\gamma A \tag{6}$$

$$e^{*}_{NC}=\alpha a(G+B+\gamma A) \tag{7}$$

$$m^{*}_{NC}=G+B-e^{*}_{NC}-k^{*}_{NC}=(1-\alpha)(G+B+\gamma A) \tag{8}$$

The level of the capital good invested by the recipient k^{*}_{NC} is decreasing in *A* while it is increasing in *B*. When project aid increases, the optimal capital level decreases because the recipient, for every $0<\alpha<1$, reallocates some funds from the budget *G* to the non-developmental sector. The PA has a negative incentive effect on the implication of the government in the developmental sector financing. In fact, having observed that the donors finance themselves the developmental sector, the recipient can re-assign some funds that would have been allocated to *k* if no aid were given. There is thus a crowding out of the aid, which reflects the *fungibility* problem.

However, when we examine the level of *m* (see equation (8)), we see that it is increasing in both *A* and *B* but the PA leads to a weaker allocation of resources to the non-developmental sectors than the BS:

$$\frac{\partial m^{*}_{NC}}{\partial A}=\gamma(1-\alpha)<\frac{\partial m^{*}_{NC}}{\partial B}=1-\alpha \text{, for every } 0<\gamma<1. \tag{9}$$

In fact, since the project aid funds *A* are not transferred to the budget *G*, the recipient cannot absorb all the resources *A*. In that respect, we can say that the BS leads to a worse distortion in resources allocation. Nevertheless, $s^{*}_{NC}=(k^{*}_{NC}+\gamma A^{*})^{1-a}.(e^{*}_{NC})^{a}$ is increasing in both *A* and *B* (and more in *B* than in *A* if $\gamma<1$).

❖ Donors' maximisation

We assume that the donors care only about the level of development good. The total budget available is exogenously given and allocated entirely (so that the budget constraint is binding). They consequently maximise the level of development good:

$$\underset{A,B}{Max} \quad s(e, k+\gamma A) = e_{NC}^{*\,a}(k_{NC}^{*}+\gamma A)^{1-a} \;\; s.t. \;\; A+B=T \tag{10}$$

There is no interior solution for the maximisation problem (10). We have, for every $\gamma < 1$, a corner solution: $A_{NC}^{*} = 0$ and $B_{NC}^{*} = T$. That is, the donors give all the aid through budget support and do not use project aid. When $\gamma = 1$, then PA has exactly the same impact as BS on the level of developmental good. In that case, the donors are indifferent between PA and BS.[13] The optimal levels of resources allocation when there is no conditionality are thus as in Table 3.3.

TABLE 3.3: Optimal allocation – no conditionality

k_{NC}^{*}	e_{NC}^{*}	m_{NC}^{*}	s_{NC}^{*}	V_{NC}^{*}
$\left(1+\frac{T}{G}\right)k_{NA}^{*}$	$\left(1+\frac{T}{G}\right)e_{NA}^{*}$	$\left(1+\frac{T}{G}\right)m_{NA}^{*}$	$\left(1+\frac{T}{G}\right)s_{NA}^{*}$	$\left(1+\frac{T}{G}\right)V_{NA}^{*}$
with $A_{NC}^{*} = 0$ and $B_{NC}^{*} = T$				

***Proposition 1*:** Budget support weakly dominates project aid, when conditionality is ruled out.

When it is not possible to condition the level of observable input to the disbursement of BS, the optimal aid contract is such that all the aid is given via BS. This is the consequence of the crowding out effect of the project aid: the recipient observes that the donors finance the developmental good and therefore decreases the resources he would have allocated without any aid. But if the project aid funds are perfect substitutes for the recipient's ones, the donors are indifferent between PA and BS (however, the proportion of PA has to be restricted in order to satisfy the non-negativity constraint). In both cases, the optimal aid contract leads to a distortion in resources allocation: a part of the aid, $(1-\alpha)T$, is allocated to the

[13] Moreover, in order to respect to non-negativity constraint, the recipient is indifferent between PA and BS only if $A^{*} \leq \frac{\alpha(1-a)}{1-\alpha(1-a)}(G+B^{*})$. If not, BS dominates PA even if $\gamma = 1$.

non-developmental sector. When considering the realistic hypothesis of imperfect fit of PA, we have seen that the impact of the fungibility coupled with the misalignment of the preferences leads to a poor improvement of the development. Even if more aid funds are allocated to the non-developmental good with BS, the donors, while maximising the production of the developmental good, proposes a contract with only budget support.

To reduce the inefficiency due to the high resources diversion, the donors could introduce conditionality over the observable component. We now turn to the case of PA and BS associated with conditionality.

3.4.2. Aid with conditionality

As previously stated, the production of a development good depends on an observable component (the capital level *k*) and an unobservable one (*e*). Therefore, the donors can impose the level of capital when giving the aid through BS. The conditionality is thus only associated with BS. If the aid is given only through PA, the level of capital is decided by the recipient as above. It could seem simple to define conditionality as a minimum level of expenses, but in our framework with unobservable inputs, it does reflect the limited capacities of the donors to monitor all recipient's expenses. This is evidently a major shortcoming of the budget support.

We proceed as before to determine the optimal allocation of aid.

- **The recipient maximisation problem**

The aid given via BS is transferred to the recipient only if the latter respects the conditionality, that is, if the resources allocated to the observable input are at least as high as the level decided by the donors: $k \geq \tilde{k}$. Therefore, the recipient chooses the level of resources allocated to each input knowing that if the level of resource allocated to the observable component is inferior to the conditional level, he does not receive any budget support. The maximisation problem has thus the following form.

$$\underset{k,e,m}{Max} \quad V(m,s) = \quad m^{(1-\alpha)} e^{a\alpha} (k+\gamma A)^{(1-a)\alpha} \quad s.t. \quad k+e+m \leq G+B \,,$$

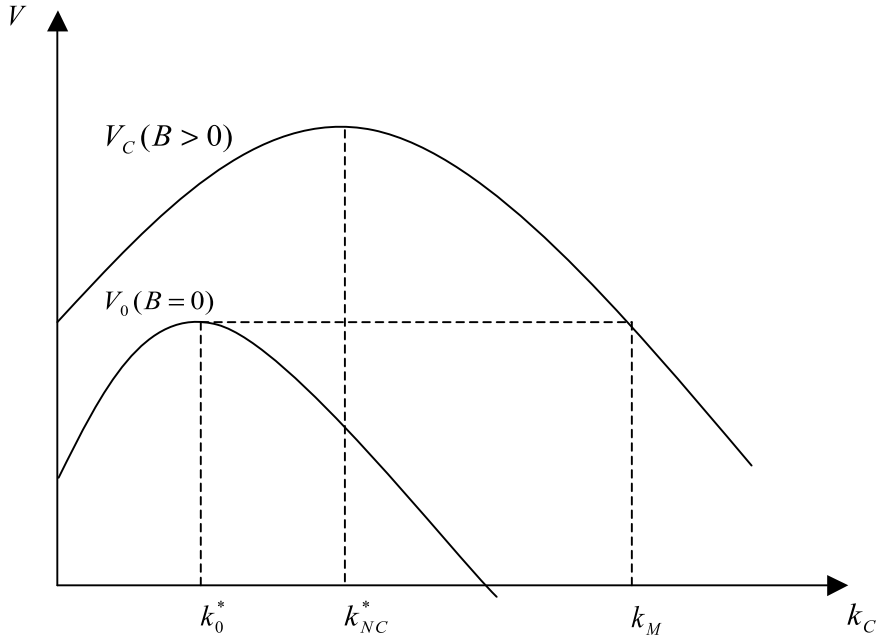
$$\text{with} \qquad \begin{cases} B > 0 \quad if \quad k \geq \tilde{k} \\ B = 0 \quad if \quad k < \tilde{k} \end{cases} \tag{11}$$

To understand the influence of the conditionality $\tilde{k}$ on the recipient's behaviour, we have to take into account the individual rationality constraint (IR) of the recipient: the latter accepts the conditionality if and only if her utility level when no BS is given (V_0) is smaller than the utility level when BS is granted (V_C): $V_C \geq V_0$. We can determine the critical level of capital, denoted k_M, that satisfies the equality of the two utility levels: $V_C(k_M) = V_0(k_0^*)$, with k_0^* being the best response level of observable input when no budget support is granted. More precisely, $k_M(a, \alpha, \gamma, B, G)$ is such that:

$$\begin{aligned} &\alpha(1-a)\ln(k_M + \gamma A) + (1-\alpha+\alpha a)\ln(B+G-k_M) \\ &= \alpha(1-a)\ln(k_0^* + \gamma A) + (1-\alpha+\alpha a)\ln(G-k_0^*) \end{aligned} \tag{12}$$

Consequently, we can distinguish three cases (Figure 3.1 hereunder helps identifying those three cases).

FIGURE 3.1: The utility of the recipient and the conditionality



a. *when* $\tilde{k} \geq k_M$: the conditional level does not satisfy the IR. The recipient is therefore better off allocating the amount of capital k_0^*, which maximises her utility when no BS is granted:
$k_0^* = \alpha(1-a)G - (1-\alpha+\alpha a)\gamma A$.

b. *when* $\tilde{k} \leq k^*_{NC}$: in the second case, the conditional level is lower than the level of capital maximising the recipient's utility when BS is granted, k^*_{NC}. In other words, the conditionality is not binding here and the recipient chooses the capital level k^*_B that maximises her utility when both aid modalities are given. This level of capital coincides with the one chosen by the recipient when aid is unconditional:
$k^*_B = k^*_{NC} = \alpha(1-a)(G+B) - (1-\alpha+\alpha a)\gamma A$.

c. *when* $k^*_{NC} \leq \tilde{k} \leq k_M$: the conditional level is greater than the non-conditional level k^*_{NC} but still smaller than the k_M. The conditionality is binding in this case: the recipient chooses the capital level $\tilde{k}$. This is so because $V_C(k)$ can be shown to be concave and at k_M, as illustrated in figure 4.1.

The above discussion allows us to write the F.O.C. of the recipient's maximisation problem above as follows.

$$k^*_C = \begin{cases} Max\{\tilde{k}, k^*_B\} & if \quad \tilde{k} \leq k_M \\ k^*_0 & if \quad \tilde{k} > k_M \end{cases} \tag{13}$$

$$e^*_C = \frac{\alpha a}{1-\alpha+a\alpha}(G+B-k^*_C) \tag{14}$$

$$m^*_C = \frac{1-\alpha}{1-\alpha+a\alpha}(G+B-k^*_C) \tag{15}$$

$$s^*_C = \left(\frac{\alpha a}{1-\alpha+\alpha a}\right)^a \left(G+B-k^*_C\right)^a \left(k^*_C+\gamma A\right)^{(1-a)} \tag{16}$$

It is interesting to note at this stage that the individual rationality constraint depends on a level of capital k_M that is increasing in the level of the recipient's developmental preferences, α, when all the aid is given through budget support:

Lemma 1: $\frac{\partial k_M}{\partial \alpha} > 0$ when $A = 0$ and $B = T$. (Proof in appendix)

The intuition behind this intermediate result is the following: governments whose objectives are far from those of the donor (i.e. governments characterised by a low α) dislike allocating resources to capital *k*; they prefer *m*, the non-developmental good. Therefore, the IR constraint is harsher for them than for governments whose objectives are closer to the ones of the donors. In other words, governments with a

low α satisfy conditionality only if it requires a sufficiently low level of capital. This means in technical terms that they face a lower k_M.

❖ The donors' maximisation problem

We now determine the level of BS, PA and the conditionality threshold maximising the production of the developmental good.

$$\underset{\{A,B,\tilde{k}\}}{Max} \quad s_C^*(A, B, k_C^*) = \left(\frac{\alpha a}{1-\alpha+\alpha a}\right)^a \left(G + B - k_C^*\right)^a \left(k_C^* + \gamma A\right)^{1-a}$$

$$s.t. \quad \begin{cases} A + B = T \\ k_C^* = \begin{cases} Max\{\tilde{k}, k_B\} & if \quad \tilde{k} \leq k_M \\ k_0 & if \quad \tilde{k} > k_M \end{cases} \end{cases} \tag{16}$$

Proposition 2:

The optimal aid modality is always budget support: $B^* = T$ and $A^* = 0$. The optimality of conditionality depends on the developmental preferences of the recipient, the productivity of the inputs in the production of the developmental good, and the amount of aid compared to the recipient's government budget:

(i) For $\alpha < \tilde{\alpha}\left(a, \frac{T}{G}\right)$:

No conditionality needs to be imposed at the optimum (or any level of conditionality that is not binding can be imposed). The resulting allocation of resources is given in Table 3.4.

TABLE 3.4: Optimal allocation – conditionality 1

k^*	e^*	m^*	s^*
$\alpha(1-a)(G+T)$	$\alpha a(G+T)$	$(1-\alpha)(G+T)$	$\alpha(1-a)^{1-a}a^a(G+T)$
with $\tilde{k} < \alpha(1-a)(G+T)$			

(ii) For $\alpha > \tilde{\alpha}\left(a, \frac{T}{G}\right)$:

The optimum requires conditionality: $\tilde{k} = (1-a)(G+T)$. The resulting allocation of resources is the following:

TABLE 3.5: Optimal solution – conditionality 2

k^*	e^*	m^*	s^*
$(1-a)(G+T)$	$\frac{\alpha a^2}{1-\alpha+\alpha a}(G+T)$	$\frac{a(1-\alpha)}{1-\alpha+\alpha a}(G+T)$	$(1-a)^{1-a}\left(\frac{\alpha a^2}{1-\alpha+\alpha a}\right)^a (G+T)$

The proof of Proposition 2 (see appendix) suggests that if the conditionality is too high, that is, for instance, if the donors are too demanding, the introduction of the conditionality yields inefficiency, compared to the case where conditionality is not binding. In fact, if all the aid is given through project aid, the recipient decreases her initial resources allocated to the observable input. This reflects the fungibility problem as explained in the unconditional case. Even if the efficiency loss associated to PA is low, the impact of aid on the development good level will be weaker than with BS (but equivalent if $\gamma = 1$).

This argument helps us formulating the intuition behind proposition 2 as follows. The conditionality should be imposed only on recipients with relatively high development preferences[14]. In fact, when their objectives are relatively close to those of the donors, the introduction of conditionality improves the final production of developmental goods. However, when the preferences are relatively far apart, there is no need to impose conditionality. Indeed, the recipient with low developmental preferences will not respect the resources allocation decided by the donors and consequently they will receive no aid at all. This situation is even worse than a high aid funds eviction to the non-developmental sector. Moreover, even if the conditionality respects the IR, the level of developmental good is lower than when no conditionality is introduced ($s^*_{C2} < s^*_B$). The optimal contract in that case is to give all the aid through unconditional budget support.

It is also interesting to note that in Proposition 2, the threshold level of preferences $\tilde{\alpha}$ is decreasing in the aid budget and it is increasing in the recipient's budget. For a recipient with some given developmental preferences, there is a need to condition the allocation of aid as the latter becomes more important relatively to the recipient's own resources. In other words, the need to condition the aid allocation

[14] Conditionality is not always optimal, contrary to Cordella and Dell'Ariccia (2007). If we assume symmetric production function as in their model (*a = 1/2*), we have similar results. We do not otherwise.

is increasing when the recipient becomes more aid dependent. Moreover, the threshold $\tilde{\alpha}$ is decreasing in the productivity of the unobservable input a. In other words, for a given level of preferences, more recipients will be willing to accept the conditionality when the productivity of the observable input k decreases. This reflects the issue of transparency: when the transparency decreases, the donors have less ability to monitor the allocation of resources. The level of conditionality imposed decreases because the observable input k is less productive, but in the same time, more recipients are willing to accept it.

3.5. Conclusions

Foreign aid and its effectiveness in promoting development have been extensively questioned in the literature (see Tarp, 2006 for a survey). In order to understand why aid has not always been effective one must look at the reaction of the recipient government when receiving aid. However, we believe that the modalities chosen to give aid have different impacts on the government incentives to finance the developmental sector. To analyse the two major aid modalities, project aid and budget support, we have adapted the model of Cordella and Dell'Ariccia. In addition, we allow for the simultaneous utilisation of both modalities. More importantly, and contrary to Cordella and Dell'Ariccia, we use a functional form to represent the production of developmental goods that allows us to discuss the role of transparency to explain the efficiency of alternative aid modalities.

In practice, it is recognised that budget support has a higher impact on development than project aid, because the latter is associated with a loss of efficiency. Indeed, the projects often do not completely fit into the national needs for development (a hospital is built 1 km away from another one, etc). Moreover, project aid faces the fungiblility problem: the recipient can reallocates some development expenditures to the non-developmental ones having observed the donors' contribution. Budget support has also some limitations: if the corruption is significant, it is clear that the aid is just diverted to non-developmental expenditures and will not foster development.

We have taken these considerations into account to build the analytical framework. First, the model has shown that when no conditionality is enforced, the optimal contract is such that all aid is allocated through budget support and that project aid is not utilised. The fungibility issue is represented by the crowding out of recipient's resources away from the developmental sector. However, when relaxing the hypothesis of loss of efficiency with PA, the donors are indifferent between PA and BS, but the proportion of project aid has to be limited in order to limit the impact of the fungibility. In both cases, since the donors and recipient's preferences are not aligned, there is a distortion in the aid allocation. Some aid funds are indeed diverted to the non-developmental sector. The impact of the

foreign aid depends thus only on the recipient's preferences. The foreign aid is more efficient when the recipient's preferences are high. For relatively low preferences, the aid has a very weak impact on the production of developmental goods.

We then look at the conditionality as a tool to increase aid effectiveness and derive the optimal contract: the optimal contract depends on the recipient's preferences toward development, the level of aid relative to the recipient's budget and the productivity of the developmental inputs. More specifically, for recipients with high developmental preferences, the optimal aid contract is to give aid only through conditional BS. In that case, the conditionality does improve the level of developmental goods. We have also shown that more recipients accept the conditionality if the transparency decreases and if the aid dependency is relatively high. For relatively low developmental preferences, the optimal contract is such that all the aid is given via unconditional budget support. In fact, the recipients with low development preferences do not accept the conditionality. As seen in the first part, giving the aid through unconditional budget support leads to a high distortion in the resources allocation (a relatively large part of the aid is diverted to the non-developmental sector) but it is still better than to give no aid at all.

Consequently, the conditionality does not always improve the aid effectiveness: if the recipient has some low preferences for development, the optimal resources allocation is equivalent to the one of the non-conditional case. It only does for relatively development-oriented recipient: 'More conditionality cannot compensate for weak government commitment or implementation capacity' (Koeberle et al. 2005). Our main result differs in that sense from the idea that conditionality always improves the development (Cordella and Dell'Ariccia). The aid ineffectiveness can thus be reduced only in some situations (high preferences, weak transparency, and high aid dependency). This also reflects the idea that weak recipients should not be subject to severer conditions. Even if there is distortion in the aid allocation, it is still better than not helping them at all (François Bourguignon, Le Monde, 16.02.2008).

However, the model is based on limiting assumptions. The first one is the observability of the recipient's type. A further step will be to compare these two aid disbursement instruments when the recipient's preferences are not observable. Moreover, the form of the production function leads to some restrictions. In fact, the multiplicity property of the Cobb-Douglass function implies that project aid is dominated by budget support. However, a more general utility function would have not highlighted the impact of the productivity of the different inputs. Another shortcoming is the implicit assumption of funds predictability. The recipient does not perfectly observe the aid disbursement, especially in the case of project aid. We could introduce this problem of predictability in the model. Our intuition is that the utilisation of PA will increase since the fungibility will reduce.

Last, we would like to comment on the OECD remark about the utility of project aid: 'Within the public sector, projects may be appropriate for mutually agreed activities where a Development Partner is better placed – technically or administratively, to manage the project on behalf of government, for example: technical assistance projects, large scale infrastructure projects, "piloting" projects, where particular service delivery innovations need to be tested before their mainstreaming by government – for example, new approaches to agricultural extension, to road safety or to teaching science.' (OECD, 2007). Our model only associates project aid funds with a loss of efficiency. However, we could also consider that in some case (such as the ones mentioned by the OECD), there is a gain in efficiency and not a loss ($\gamma > 1$). Our model also shows that donors could still use project aid to disburse the aid, as soon as no lost of efficiency is associated with the projects. This requires, among others, better coordination with the recipient's policies and harmonisation between donors.

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3.7. Appendix

Proof of Lemma 1

The critical level of capital k_M is defined such that the level of recipient's utility when budget support is granted and when it is not, are equal : $V_C(k_M) = V_0(k_0^*)$.
We consider the case where $A = 0$ and $B = T$.
In that case, k_M is such that $f(k_M, \alpha) = 0$, where

$$f(k_M,\alpha) = \alpha(1-a)\ln(k_M) + (1-\alpha+a\alpha)\ln(T+G-k_M) - \ln(G) - \alpha(1-a)\ln\left[\alpha(1-a)\right] - (1-\alpha+a\alpha)\ln(1-\alpha+a\alpha)$$

We determine the sign of the partial derivative of k_M with respect to α using the implicit function theorem:

$$\frac{\partial k_M}{\partial \alpha} = -\frac{\dfrac{\partial f(k_M,\alpha)}{\partial \alpha}}{\dfrac{\partial f(k_M,\alpha)}{\partial f(k_M)}} = \frac{(1-a)\ln\left\{1+\dfrac{k_M - k_B^*}{\alpha(1-a)(T+G-k_M)}\right\}}{\dfrac{k_M - k_B^*}{k_M(T+G-k_M)}}.$$

We now prove that this partial derivative is positive.
By construction of k_M (see Figure 4.1), we have that $k_M > k_B^* = \alpha(1-a)(T+G)$.
Moreover, the recipient budget constraint $k + e + m \leq G + B$ together with $B=T$ imply $k_M < T + G$.
Therefore, at $f(k_M, \alpha) = 0$ (which is the equation defining k_M), we have $\dfrac{\partial k_M}{\partial \alpha} > 0$.

QED.

Proof of Proposition 2

To solve maximisation problem *(16)*, we distinguish different candidates for a solution, considering the three cases identified with the help of Figure 4.1.

a. When $\tilde{k} > k_M$, the IR is violated and
$k_C^* = k_0 = \alpha(1-a)G - (1-\alpha+\alpha a)\gamma A$.
The recipient does not accept the conditional level of capital because it is too high (the IR is violated). Since the conditionality is not respected, no BS will be given: $B = 0$. One candidate for a solution in that case is thus:

$A^* = T$ and $B^* = 0$;

$k_0^* = (1-a)\alpha(G+\gamma T) - \gamma T$;
$e_0^* = \alpha a(G+\gamma T)$;
$m_0^* = (1-\alpha)(G+\gamma T)$;
$s_0^* = [\alpha(1-a)(G+\gamma T) - \gamma T]^{1-a} . [\alpha a(G+\gamma T)]^a$;
and any $\tilde{k} > (1-a)\alpha(G+\gamma T) - \gamma T$.

b. If the conditional level of capital is smaller than the non-conditional one ($\tilde{k} < k_{NC}^*$).

In that case, the conditionality is not a constraint and the donor's problem is equivalent to the one solved in Section 4.1. Therefore, all the aid is given through BS and the second candidate for a solution is:

$A^* = 0$ and $B^* = T$;
$k_B^* = \alpha(1-a)(G+T)$;
$e_B^* = \alpha a(G+T)$;
$m_B^* = (1-\alpha)(G+T)$;
$s_B^* = \alpha(1-a)^{1-a} a^a (G+T)$;
any $\tilde{k} < k_B^*$ is part of the solution.

c. If the conditional capital level $\tilde{k}$ is between the non-conditionality level k_{NC}^* and the critical level k_M, the best reply capital level is $\tilde{k}$.

From the F.O.C. of the donors' maximisation problem for this case, we obtain:

$k_C^* = \tilde{k} = Min\{(1-a)(T+G), k_M\}$;
$A_C^* = 0$ and $B_C^* = T$.

The optimal level of conditionality is therefore either the capital level $\tilde{k} = k_M$ that binds the IR or $\tilde{k} = (1-a)(G+T)$ that leaves the IR slack and that is equivalent to the level of observable input in the first best allocation.

As can be anticipated from Lemma 1, we now prove that for high levels of recipient's developmental preferences α, the IR is not binding: $(1-a)(T+G) < k_M$. The opposite holds for low a: $(1-a)(T+G) > k_M$.

Formally, there exists a threshold level $\tilde{\alpha}\left(a, \frac{T}{G}\right)$, decreasing in its arguments, which allows distinguishing the following subcases; relative to the case c above.

1. For $\alpha > \tilde{\alpha}\left(a, \frac{T}{G}\right)$, a candidate for a solution is $k_{C1}^* = \tilde{k} = (1-a)(T+G)$; $A_{C1}^* = 0$ and $B_{C1}^* = T$. The corresponding level of developmental good is:

$$s_{C1}^{*} = (1-a)^{1-a}\left(\frac{\alpha a^2}{1-\alpha+\alpha a}\right)^{a}(T+G).$$

2. For $\alpha < \tilde{\alpha}\left(a, \frac{T}{G}\right)$, a candidate for a solution is $k_{C2}^{*} = \tilde{k} = k_M$; $A_{C2}^{*} = 0$ and $B_{C2}^{*} = T$. The corresponding level of developmental good is:

$$s_{C2}^{*} = \left(\frac{\alpha a}{1-\alpha+\alpha a}\right)^{a}(T+G-k_M)^{a}(k_M)^{1-a}.$$

To prove this useful result, we want to determine whether the critical level of capital k_M is greater or smaller than the first best level of capital $k_{FB}^{*} = (1-a)(T+G)$.

In fact, if $k_M > k_{FB}^{*}$, the conditionality is not binding and the optimal level of conditionality is $\tilde{k} = k_{C1}^{*} = k_{FB}^{*}$.

Otherwise, the conditionality is binding and the optimal level of conditionality is to impose the critical level of capital: for $k_M < k_{FB}^{*}$, $\tilde{k} = k_{C2}^{*} = k_M$.

As said in the proof of Lemma 1, the critical level of capital k_M is such that $f(k_M,\alpha) = 0$ and $k_M > k_B^{*}$. Moreover, $\left.\frac{\partial f(k,\alpha)}{k}\right|_{k=k_M} = \frac{k_B^{*} - k_M}{k_M(T+G-k_M)} < 0.$

It is thus straightforward that if $f(k_{FB}^{*},\alpha) > (<) 0 \Leftrightarrow k_M > (<) k_{FB}^{*}$.

We can rewrite $f(k_{FB}^{*},\alpha) = \ln(1+\frac{T}{G}) - g(a,\alpha)$, with

$$g(a,\alpha) = -(1-\alpha+\alpha a)\ln(\frac{a}{1-\alpha+\alpha a}) + \alpha(1-a)\ln(\alpha).$$

Moreover, $g(1,\alpha) = g(a,1) = 0$ and $g_{\alpha}^{'}(a,\alpha) = (1-a)\ln(\frac{\alpha a}{1-\alpha+\alpha a}) < 0$. The function $g(a,\alpha)$ is also decreasing in the productivity a of the unobservable input: $g_{a}^{'}(a,\alpha) = \alpha\ln(\frac{1-\alpha+\alpha a}{\alpha a}) - \frac{1-\alpha}{a} < 0$. Therefore, $g(a,\alpha) > 0$.

We can deduce that for low enough values of developmental preferences α, $f((1-a)(T+G)) = \ln(1+\frac{T}{G}) - g(a,\alpha) < 0$ and then that $k_M < (1-a)(T+G)$.

The opposite holds for high enough values of α. Consequently, there exists a level $\tilde{\alpha}$ such that $f(k_{FB}^{*},\alpha) = 0$, which allows distinguishing the two subcases.

Since $g'_\alpha < 0$ and $g'_a < 0$, the threshold $\tilde{\alpha}$ depends on a and on $\frac{T}{G}$, and it is decreasing in its arguments.

Finally, we compare all the candidates for a solution, distinguishing the 2 subcases identified above.

For $a > \tilde{\alpha}\left(a, \frac{T}{G}\right)$, the two possible solutions are either

$$s_B^* = \alpha a^a (1-a)^{1-a}(T+G) \quad with \quad A_B^* = 0 \quad and \quad B_B^* = T$$

$$or \quad s_{C1}^* = (1-a)^{1-a}\left(\frac{\alpha a^2}{1-\alpha+\alpha a}\right)(T+G) \quad with \quad A_{C1}^* = 0 \quad and \quad B_{C1}^* = T.$$

We thus have that $s_B^* < s_{C1}^* \Leftrightarrow \alpha^{1-a} < \left(\frac{a}{1-\alpha+\alpha a}\right)^a$ which is equivalent to the following condition:

$h(a,\alpha) = (1-a)\ln(\alpha) - a\ln(a) + a\ln(1-\alpha+\alpha a) < 0$.

Since $h(1,\alpha) = h(a,1) = 0$ and $h'_\alpha(\alpha,a) = \frac{(1-a)(1-\alpha)}{\alpha(1-\alpha+\alpha a)} > 0$,

we have that $h(\alpha,a) < 0 \quad for \quad \alpha < 1$.

Consequently, $s_B^* < s_{C1}^*$. The optimal contract is such that ($\tilde{k}$, A^*) = (k_M, 0).

For $a < \tilde{\alpha}\left(a, \frac{T}{G}\right)$, there are also two candidates for a solution:

Either $s_B^* = \alpha a^a (1-a)^{1-a}(T+G) \quad with \quad A_B^* = 0 \quad and \quad B_B^* = T$ or

$$s_{C2}^* = \left(\frac{\alpha a}{1-\alpha+\alpha a}\right)^a (T+G-k_M)^a (k_M)^{1-a} \quad with \quad A_{C2}^* = 0 \quad and \quad B_{C2}^* = T.$$

We can now compare the two possible levels of developmental good for this subcase:

$$s_{C2}^* = \left(\frac{\alpha a}{1-\alpha+\alpha a}\right)^a (T+G-k_M)^a (k_M)^{1-a} \text{ and } s_B^* = \alpha a^a (1-a)^{1-a}(T+G).$$

From the definition of k_M, we can write:

$$(s_{C2}^*)^\alpha = (s_B^*)^\alpha \left[\frac{(1-\alpha+\alpha a)^{1-\alpha} G}{(T+G)^\alpha (T+G-k_M)^{1-\alpha}}\right].$$

We can prove that $\frac{(1-\alpha+\alpha a)^{1-\alpha} G}{(T+G)^\alpha (T+G-k_M)^{1-\alpha}} < 1$.

In fact, if $T = 0$, then $k = \alpha(1-a)G$ by the definition of k_M.

In that case, $\dfrac{(1-\alpha+\alpha a)^{1-\alpha}G}{(T+G)^{\alpha}(T+G-k)^{1-\alpha}}$=1 and thus $s^*_{C2} = s^*_B$.

Moreover, $\dfrac{(1-\alpha+\alpha a)^{1-\alpha}G}{(T+G)^{\alpha}(T+G-k)^{1-\alpha}}$ is decreasing in T.

Consequently, we have that $s^*_{C2} < s^*_B$.

QED.

CHAPTER 4: Social pensions in Europe: the aim, the impact and the cost

ABSTRACT

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

4.1. Introduction

Pension systems have two major objectives. The first is an insurance objective that aims at smoothing consumption of individuals between working and retirement years. The second concerns poverty alleviation, which usually occurs by redistribution within the elderly population cohort. This chapter focuses on the latter objective and more specifically on how pension systems do and could prevent poverty in old age. Since the ability to work decreases with aging and income sources are consequently fewer than for the young age cohorts, the elderly constitute a vulnerable section of the population. Hence provision of pensions constitutes an important concern of the social security system. In addition, direct cash transfers – such as pensions – appear to be the only available tool to alleviate old-age poverty since other public policies, which go through labour market for instance, simply cannot reach them. However, even in high-income countries where pensions systems are relatively well developed in terms of coverage and generosity (OECD 2007), elderly usually face a higher risk of deprivation than the rest of the population. To face this reality, the reinforcement of poverty alleviation instruments within pension systems has been recommended by international organisations (e.g. ILO (2003), World Bank (2005)). Social pensions, universal pensions, and minimum pensions are some of the main examples. . These forms of retirement schemes guarantee a transfer to retirees *independently* of their past contributions and earnings. In low and middle income countries with a sizable presence of informal sector, with poor evidence of social responsibility, few people are entitled to receive pension income, thus, these non-contributory pensions may be a relevant tool to alleviate poverty. (see e.g. Willmore (2007) and Palacios and Sluchynsky (2006) for a discussion of the role of social pensions in low-income countries, as well as a review of the existing social pension schemes). In high-income countries, the coverage of the mandatory pension systems is usually higher (ranging from 60% to 95 % of the population aged 15-64).[15] However, this figure does not reflect the fact that an important share of the covered population may not have accrued full pension rights or contributed enough, even where coverage is very high. Levels of old-age benefits can thus be insufficient to meet basic needs. The reinforcement or the implementation (if any exists) of social pension schemes may consequently be relevant in high-income countries as well.

The major contribution of this chapter is to simulate the introduction of social pensions in European countries (different forms are considered, as explained subsequently) and look at their impact in terms of poverty reduction and costs (Sections 2.4-2.6). Similar exercises have been carried out for African countries

[15] OECD data: World Bank pensions database in M. Pearson and E. Whitehouse (2009).

and Latin American countries.[16] We also provide a typology of social pensions, which explain their role in pension systems. As shown, the design of pension systems varies widely across European countries and it is important to distinguish social pensions from other poverty alleviating instruments within contributory schemes. We also review briefly the types of social pension schemes existing in each country.

Before presenting the results of the simulation, we discuss old-age poverty in Europe using data from the household survey EU-SILC 2006 (European Union – Survey on Income and Living Conditions). The remaining of the chapter focuses on 17 countries due to data constraints. In order to understand the social pensions' impact, it is necessary to examine the determinants of old-age poverty in each country, namely pensions currently received; elderly labour income and living arrangements (Section 2.3).

In the simulation, two scenarios are considered: universal pensions (UP) and means tested social pensions (MTSP). In the first scenario, every elderly receives a retirement benefit enough to put him/her at or above the poverty line. We see that poverty decreases sharply, without however being totally eradicated. The remaining poverty is due to living arrangements: if elderly were living alone (or with other elderly), there would be no more poor elderly. For the MTSP we consider two types of scheme, (a) a means tested scheme on an elderly individual's income and (b) the same on a elderly couple's income. The level of social pension is adjusted in accordance with the personal (or couple's) income resources.. Poverty reduction is less important with the test on couple's income, again due to living arrangement and intra-household redistribution. But in both cases of MTSP, the impact on poverty is smaller than with a universal pension. Nevertheless, the difference between both schemes is not significant since in most countries, poor elderly have few other income resources than pensions. In contrast, the impact on the prospective costs of both scenarios varies largely: the additional costs of the means tested social pensions are, on more than half cheaper than the ones of the universal pension.

However, the simulation we undertake is static. It therefore does not take into account on how individuals will respond to the introduction of different social pensions schemes. If one would conduct a behavioural simulation (which is out of the scope of our analysis), the costs would certainly be higher. It is particularly true for the means tested social pensions, which induces stronger disincentive effects;

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

such has 'hiding income', reducing labour supply and saving and changing living arrangements. As a matter of fact, workers, particularly those close to the eligibility line, have less incentive to work, as extra-earnings will lead to the same level of social pension benefit. It then also penalises those who save for their retirement period.[17] Moreover, as only poor elderly receive a means tested benefit, elderly who are not poor because they benefit from other household incomes, but have low pension and/or personal income, will have the incentive to live alone in order to benefit from the means tested social pension and increase its level. Due to these disincentive effects the number of elderly for MTSP will increase, leading to higher costs for MTSP as compared to the one predicted in our simulations. Next to the disincentive issues, our simulation 'forces' individual to benefit from the means tested pensions. However, the means testing may also lead to the so-called 'take up' issue, where some elderly, due to stigmatisation, complexity of the procedure, etc, may be reluctant to claim a social transfer based on it.. This problem will reduce the impact of means test in term of poverty reduction. Finally, a universal scheme is easier to implement than a means test pension as means testing requires information on incomes and is therefore administratively more expensive. These issues are discussed in Section 2.6.

It is worth noting that the social pension schemes could be designed differently. We had chosen to set up the age condition at 65 as it is the most common legal age of retirement in Europe, but it could also depend on life expectancy (especially if we do the same exercise in developing countries where life expectancy varies greatly). The maximum level of the social pension is fixed at the poverty line of each country (that is 60% of the equivalent disposable income). We could consider a smaller level also, which will reduce the costs, and possibly the distortion on labour supply. Finally, the form of the means test can also be discussed. In the simulations, we have considered two different possible cases: every elderly receives a top-up transfer so that his personal income (current pensions received plus other incomes) reaches the poverty line or that the incomes of elderly couples are at least equal to the poverty line. The test could also take into account incomes of other cohabitants, but the disincentives in term of living arrangements would be even stronger.

The remaining of the chapter is structured as follows. In Section 2.2, the difference between the several forms of social pensions will be clarified. The current situation in European countries will also be reviewed. Section 2.3 aims at analysing poverty in the countries under study. It focuses on several elements, such as the impact of

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

current pension systems, the labour income and assets of the elderly and the household composition. The simulations results of two schemes of social pensions are presented in Section 2.4. We discuss the coverage of the schemes in Section 2.5 while the costs of these programs are analysed in Section 2.6. Before concluding, the last section raises the question of adverse incentive issues and questions which social pension scheme would be preferable.

4.2. Social pensions within pension systems

4.2.1. A taxonomy

The design of pension systems varies greatly among European countries. At the same time, there are numerous typologies that categorise their differences. The aim of this section is to propose a clear typology of the different types of retirement incomes and particularly to understand the role of social pensions within retirement schemes.

One of the common typology of pension systems classifies pension income provisions into three tiers (OECD 2004, 2005, 2006, Pearson and Whitehouse 2009).[18] The first tier concerns the non-contributory cash transfers that guarantee a minimum level of income during old age. The level of benefit and the entitlement are independent of work history. Their financing is consequently independent of employees' contributions but rather depends on general taxation. The role of these pensions is to prevent poverty in old age. Two forms of non-contributory pensions can be distinguished: Universal pension (UP) also called basic pension, and means tested social pension (MTSP).. *Universal pensions* are **flat rate** transfers given to all individuals above a certain age. Benefits are the same regardless of income, asset or work history. Their disbursement may be conditional on years of residency (or citizenship). *Means tested social pensions* are similar to universal pensions, but the **entitlement and the level of the transfer depend on an income test**.[19] The test can take different forms across countries (e.g. on household income, personal income, financial assets).

The second tier, which is the predominant one in European countries, includes the mandatory schemes that link future pension income to individual's resources. However, its extent varies across countries. The eligibility is always related to work history. They can be managed either by the public or private sector and are typically financed by workers and employers' contributions. The objective of this tier is mainly to smooth consumption between working and retirements years.

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[18] There is also the 'pillar's approach', see e.g. World Bank 2004, 2005 and M. Jakubowicz 2006. And the Typology of Whitehouse (2007).

[19] Let us note that these programs may be part of a general social assistance scheme and then concern younger cohorts as well.

The third tier comprises voluntary schemes and intends to incite individuals to save more, on a voluntary basis, and increase their income during old age. Two types of voluntary pensions are usually distinguished according to their link to an employment relationship (individual and occupational private pension).[20]

The limitation of such typology however, is that the frontiers between each tiers may be blurry in many cases. For instance, one could question whether minimum pension guaranteed within a contributory pension plan stands in the first tier or in the second. It is also worth for pension benefits that are weakly related to previous contributions (flat rate pensions), but whose eligibility depends on work history. The fact that contributory schemes may also include some poverty alleviating instruments and that the benefit formula varies widely across countries may lead to a lot of confusion. To better clarify the typology, one should also consider the common distinction between 'Bismarckian' and 'Beveridgean' pension schemes.

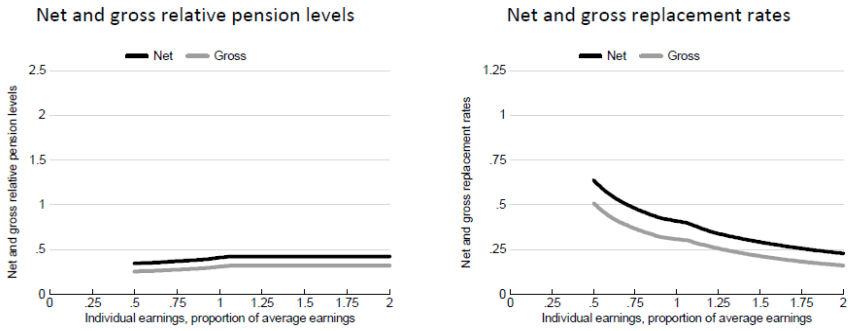
Within contributory schemes, two types of systems are usually distinguished according to their pension benefits formula and in particular to their link between past earnings and retirement income. In 'Bismarckian' oriented countries, this link is strong, leading to a relatively high and uniform pension replacement rate (define as the individual (net or gross) pension entitlements as a proportion of (net or gross) individual lifetime-earnings when working) among individuals of all income levels. On the other hand, in 'Beveridgean' oriented countries, the benefits are flat and consequently poorly linked to past contribution. It implies higher replacement rates for low earners than for high earners and therefore involving intragenerational redistribution. Typical Bismarckian countries are France, Italy and Germany while United Kingdom, Ireland and The Netherlands are labelled as Beveridgean.[21] Figures 4.1 and 4.2 illustrate the implications of these two different benefit rules: in UK, benefits are flat among all earners' types and the replacement rates are therefore decreasing with earnings. While in Italy, the benefits are increasing with earnings implying a flat replacement rate for different earning types. These graphs account for the mandatory schemes. One should nevertheless be aware that in Beveridgean countries, private (voluntary) pensions are much more developed than in Bismarckian countries. As mentioned by Conde-Ruiz and Profeta (2003), 'Bismarckian systems have typically a larger size of the public pension system, a smaller fraction of private pensions and lower returns from private pensions'. The best example is the Netherlands where 91% of employees are covered by a private occupational scheme (OECD 2009). Furthermore, it is worth noting that some Bismarckian oriented countries may have a flat component (such as Luxembourg), but that the latter has a weak impact on redistribution because it is compensated by the tight link between contributions and benefits and the relative size of the earnings-related pensions. Also, some countries that initially had a Beveridgean

[20] This distinction also applies worth for the private pensions within the second tiers.

[21] For a classification see e.g. I. Conde-Ruiz and P. Profeta (2007) and OECD (2005)

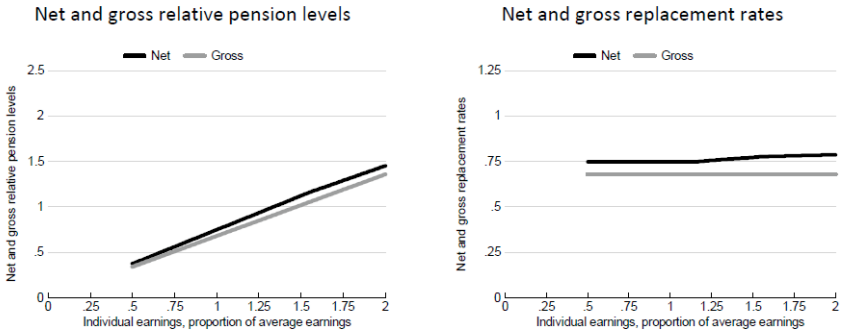
approach have topped up their flat pensions by an earnings-related pension (e.g. the Scandinavian countries). They have consequently become closer from the Bismarckian approach even though their contributory scheme encompasses a Beveridgean flat pension (OECD 2009, Hinrichs 2006).

FIGURE 4.1: Pension level and replacement rate in United Kingdom



Source: OECD (2009)

FIGURE 4.2: Pension level and replacement rate in Italy



Source: OECD (2009)

The distinction between Beveridgean and Bismarckian types of pension is particularly relevant in the context of our analysis because it shows to what extent the contributory pensions have an insurance role (Bismarckian) or rather a redistributive – poverty alleviating role (Beveridgean). It therefore raises the following question: are pure Beveridgean pensions universal pensions? In the literature (e.g., Pearson and Whitehouse 2009), they are usually not differentiated. However, as one of the reasons for being of universal pension is to enlarge pension's coverage, the distinction between them is essential. As a matter of fact, Beveridgean pensions are contributory pensions as their entitlement depends on work and/or contributions history. Individuals must accrue enough pensions' rights in order to be entitled. It does also explain that in countries such as UK, with flat

rate Beveridgean pension, individuals (e.g. with interrupted carrier, housewives) may not benefit from it. However, this is evidently not the logic behind universal pension, which is not related to any work history and aims at covering the whole elderly population.

Another ambiguity with usual typologies of pension systems is that contributory schemes also include minimum pensions guaranteed or pension credits (the benefits for low earners are calculated as if they had a higher income). These have a similar objective than social pensions, namely preventing poverty, but concern only individuals covered by the contributory scheme. Next to this difference in eligibility rules, they are comparable to means tested social pensions, but here, the test concerns exclusively the level of the entitled contributory pension and no other income sources. Some authors (e.g. Pearson and Whitehouse 2009) consider them as social pension, as they claim that in high-income countries a high proportion of elderly is covered by contributory schemes. One should however be aware that they are exceptions (e.g. Ireland has no contributory scheme) and that such high coverage rates can be lower in middle and low income countries.

As it may appear from above, pensions systems are complex and institutional settings vary widely across countries. Our aim is not to review all European systems (for such international comparison see e.g. European Commission 2006, Whitehouse 2007, OECD 2007, 2009), nor to classify them into different clusters, but rather to clarify the terminology of the different pension plans and avoid confusion. In view of the two typologies mentioned above, one may see that it may be difficult to differentiate social pensions clearly from some of benefits within the contributory schemes. The reason for this ambiguity is that contributory schemes are designed in many different ways: some privilege the link between contributions and benefits and some focus more on poverty alleviation through flat rate pensions. On top of that, earnings-related pensions may also be complemented by minimum pensions guaranteed and flat rate pensions may be topped up by some earnings-related scheme. Many combinations are possible. Table 4.1 reviews the different pension types. It revises the three tiers (or pillars) typology (described above) in distinguishing pensions' income according to their eligibility rules.

In the social pensions' category (category 1 in table 4.1), the eligibility is independent of work and contributions history. Universal pensions (1.a.) cover all individuals above a certain age and usually depend on residency conditions. Means tested pensions (1.b.) are safety nets targeted to the elderly poor. The level of the benefits and entitlement depend on current income (may also depends on partner's or cohabitant's income (as in Belgium) and on other financial assets).

The contributory pensions (category 2) include three sub-categories: the first two encompass all *mandatory* pensions whose eligibility depends on work and/or contribution history (2.b). This category is organised very differently across

Europe. Some countries may only have a Beveridgean pension (e.g. Ireland), or only an earnings-related pension (Bismarckian) (e.g. Italy), which may in addition include a minimum pension, guaranteed (e.g. Belgium). And Beveridgean pensions may also be complemented by an earnings-related one (e.g. Czech Republic, Luxembourg). In addition, some mandatory contributory schemes may be public or private (e.g. In Denmark).[22] The third sub-category (2.b) concerns pensions that are made on a *voluntary* basis (occupational or individual schemes).

TABLE 4.1: Typology of pension systems

<table>
<tr><td rowspan="2">1. Non-contributory pensions (or social pensions)
First tier</td><td colspan="3">a. Universal pensions</td></tr>
<tr><td colspan="3">b. Means tested social pensions</td></tr>
<tr><td rowspan="4">2. Contributory pensions</td><td rowspan="3">a. Mandatory pensions
Second tier</td><td colspan="2">“Beveridgean” pensions type (flat benefit)</td></tr>
<tr><td rowspan="2">“Bismarckian” pensions type (earnings’ related benefit)</td><td>Minimum pensions guaranteed</td></tr>
<tr><td>No minimum pensions guaranteed</td></tr>
<tr><td colspan="3">b. Voluntary private pensions
Third tier</td></tr>
</table>

Source: author’s elaboration

4.2.2. Social pension in Europe

As already mentioned, the typical method to provide for old-age support in Europe is through the contributory, and predominantly, the earnings’ related schemes.

[22] Mandatory pensions can be managed by the public or private sector and the benefit rule may be defined contributions, defined benefits and the financing mechanism PAYG or fully funded. This discussion is however out of the scope of our analysis (see e.g. OECD 2009).

However, most European countries have also adopted several means of keeping retirees' incomes above a minimal level. They all have one form of social pension scheme, or even several coexisting. We also consider poverty alleviation instruments within contributory schemes such as the minimum pensions. In addition, to prevent confusion between universal pension and the flat (Beveridgean) pensions within contributory schemes, we consider an additional category for Beveridgean pension.[23] This sub-section gives a brief overview of the poverty alleviating instruments implemented in European countries (which is summarised in Appendix 1).

Universal pensions are only present in two countries: Denmark and The Netherlands. In both countries, the condition to be eligible for the full benefit depends on the number of years of residency (40 years in Denmark and 50 years in the Netherlands). The Netherlands universal pension is completed by voluntary private pensions and an occupational pension (which is known as quasi-mandatory since the coverage of employees is more than 90%). The situation is equivalent in Denmark. But in addition, there is a means tested social pension that targets poor elderly (taking account of all income sources).

In Czech Republic, Estonia, Ireland, Luxembourg Lithuania and United Kingdom, the contributory scheme comprises a flat rate pension whose eligibility depends on the years of contributions (see OECD 2009 for the details conditions per countries). However, the importance of the Beveridgean pension compared to other types of pensions varies significantly across those countries. The extreme case is Ireland where there are no mandatory earnings-related (Bismarckian) pensions. Voluntary occupational pension complements the flat rate pension and a means tested social pension is available for the poor elderly (taking into account income and assets). The system in United Kingdom complements the flat contributory pension by a public earnings-related one which includes a minimum pension in the form of a pension credit (this scheme is relatively small compared to the flat pension). There is also a large voluntary private pensions sector. In addition, a means tested social pension has been introduced to target the poorest elderly. In Czech Republic, Estonia and Luxembourg, the flat contributory pension is complemented by a relatively large earnings-related pension. In the three cases, a means tested social pension guarantees safety nets to the poorest (it is part of the general social assistance in Czech Republic and Luxembourg) and a minimum pension is also included within the earnings-related pension in Czech Republic and Luxembourg. The flat pension in Lithuania is also complemented by an earnings-related pension.

[23] Note again that the existence of a Beveridgean type of benefit does not mean that the overall pension system is Beveridgean. It can be topped-up by earnings-related pensions and eventually becomes more Bismarckian (e.g. Luxembourg).

In all other countries, a minimum level of pension is guaranteed within the earning related scheme, except in Austria, Germany and Italy. In these three countries, the unique type of pensions is a public earnings-related one, which is complemented by means tested social pensions targeted to poor elderly (part of general social assistance for Germany). In addition to those three exceptions, countries with the minimum pensions share the common characteristics of a large earning-related pension scheme. Note again, the design of the earning-related pension varies a lot across countries.[24] There are four countries with only a minimum pension: Sweden, Poland, Slovenia and Slovak Republic. And the last eight countries (Belgium, Cyprus, France, Greece, Spain, Latvia, Malta and Portugal) encompass both a minimum pension within the earnings-related pensions and a means tested social pension.

From what precedes, we can only conclude that European countries have made some efforts in guaranteeing elderly with minimum income. Nevertheless, it does not mean that these social pension schemes have been effective in preventing old-age poverty. Assessing their effectiveness would require much more additional information on the different schemes, notably on the level of social pensions with respect to the standards of living in each country, and it is far beyond the scope of our research.

One should however be aware that the existence of one or several poverty alleviating pension types does not necessarily imply low poverty rates in old age. Several reasons can explain that. First, where only minimum pensions are implemented, it is clear that individuals out of the contributory scheme (e.g. housewives, agricultural workers, informal workers, etc.) face a high risk of poverty. Second, when a means tested pension is guaranteed, some eligible individuals may not claim it (e.g. feel stigmatised, administratively too complicated, etc.). This is referred to as the 'take-up issue'. Moreover, the eligibility conditions may be too narrow (benefit level too high compared to minimum living standards, the eligibility may also depends on other household members' incomes, etc.). Finally, even with a universal pension, poverty prevention is not guaranteed, as the level of the benefit may not be high enough to cover basic needs. In Denmark, the annual full universal pension in 2006 was 7.790 Euro (representing 17.5% of average earnings) while in the Netherlands, the universal pension was 12.017 euro (30% of average earnings) (OECD 2007).

Some additional information on each social pension schemes (such as pension levels, eligibility conditions, coverage, etc.) would be needed to evaluate their effectiveness in alleviating poverty. We limit ourselves at pointing out the fact that there exist different forms of social pensions in each European country, but that

[24] See footnote 9.

some improvements could be made. It will be particularly evident when looking at relatively high old-age poverty, discussed in the following section.

4.3. Poverty in Europe

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

4.3.1. Data and methodology

We aim at examining old-age poverty (current and after introduction of social pension schemes) in Europe using the European survey on Income and Living Condition (EU-SILC) from 2006. It is a household survey that covers the 25 EU members (plus Norway and Iceland) with an original sample size of 536.993 individuals.[25] However, due to missing values in some incomes variables, we had to exclude some countries.[26] The remaining of the chapter focuses on 17 countries: Austria (AT), Belgium (BE), Czech Republic (CZ), Estonia (EE), Spain (ES), France (FR), Greece (GR), Ireland (IE), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), Poland (PL), Portugal (PT), Sweden (SE), Slovenia (SI), and United Kingdom (UK). Finally we excluded all records with negative disposable income. The final sample size amounts for 368.978 individuals and 138.441 households.

We focus on one type of poverty measure: "at-risk-of-poverty rate" (or poverty rates), that is the share of individuals with an equivalent disposable income below a relative poverty line. [27] Here, the disposable income is a core concept: it represents the sum of incomes and social transfers of all household members (see Appendix 2 for a detailed composition). In order to account for differences in household size and economies of scale within household, equivalence scales are used to yield equivalent disposable income. In other words, they allow us to go from household resources to personal well being. We apply the OECD scale, which implies that the consumptions needs of children are smaller than for adults. The equivalent household size is computed using the following formula: 1+ 0.5 * (adult -1) + 0.3 * kid 1, with adult being individuals over 14 years old. If the per capita scale were used, elderly poverty would be relatively much more lower than for other age

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

[26] In order to simulate the introduction of social pensions, we have to recompose the disposable income, using the formula in Appendix 2. Unfortunately, for some countries, the net old-age benefit variable was not available. Even after applying the current tax rate on pensions in those countries, the correlation with the disposable income provided in the dataset and its computation using the formula in Appendix 2 was too weak to carry out the simulation.

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

groups, as few elderly live with children (see Lanjouw et al. (1998) for the incidence of equivalence scale on old-age poverty in transition economies). Like most cross-national studies on poverty within relatively wealthy countries, we compare equivalent disposable income with a relative poverty line, set at 60% of the median national equivalent income (which is also the official method adopted by Eurostat (2000)).[28] It is important to realise that relative poverty measures are therefore influenced by the income distribution in each country. The at-risk-poverty rate indentifies individuals with low income in comparison to other residents in that country.

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

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

4.3.2. Evidence of old age poverty

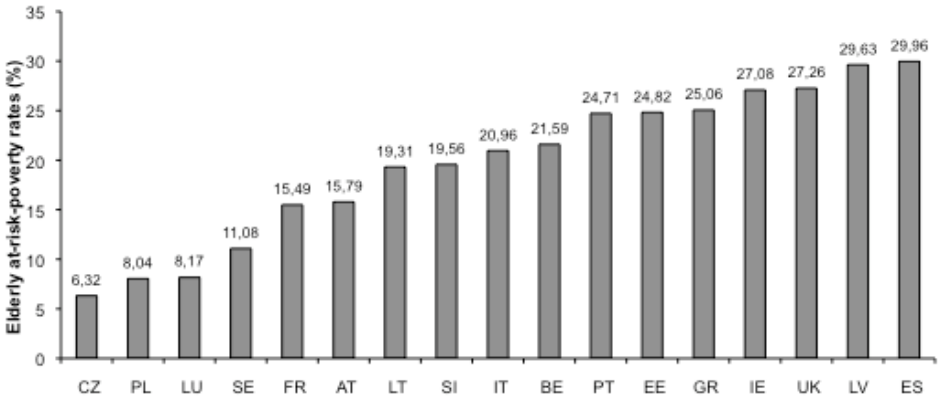
Elderly are a vulnerable group of the population. When getting older, the likelihood of sickness and disability increases and consequently reduces the earning capacity. At the same time, usual redistributive policies that go through labour, educational and output market for instance, cannot reach them. Direct cash support, such as public pensions appears to be the only relevant poverty alleviating instrument. As mentioned by Kidd and Whitehouse (2009), income security in old age has been considered as a fundamental human right since 1948 in the Universal Declaration of Human Right. As a matter of fact, the effort of European countries to provide elderly with an income support has been continuous. On average, they spend 7 percent on gross domestic product (GDP) on public pensions (EU-SILC 2006, see appendix 3).[29] However, it is still legitimate to question the ability of the current pension schemes in alleviating poverty. From figure 4.3, we see that elderly poverty rates vary largely across countries: the average poverty rate in the 17 countries is 19.7%, while the minimum rate is in CZ (6.32%) and the maximum in ES (29.96%). The issue we raise in this section is whether old people are poorer

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

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

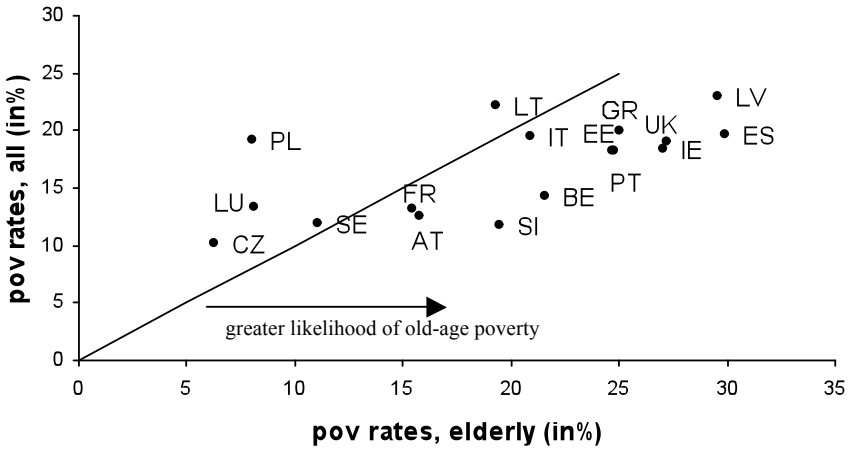
than the overall population. From Figure 4.4, it appears that in most countries elderly poverty rates are significantly higher than for the whole population. [30]

FIGURE 4.3: Elderly at-risk poverty rates



Source: EU-SILC database (2006)

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

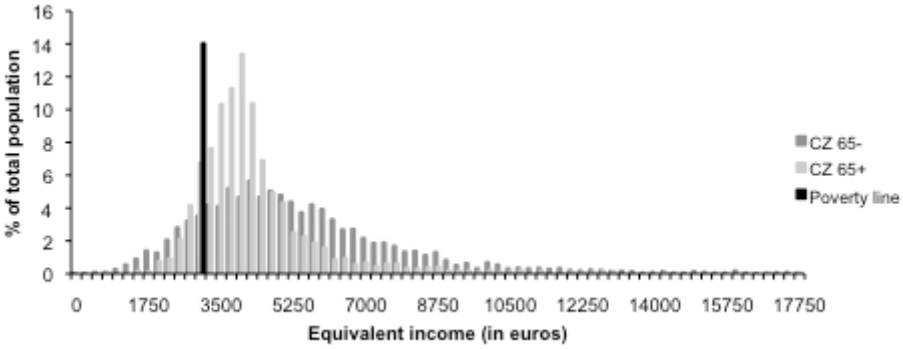


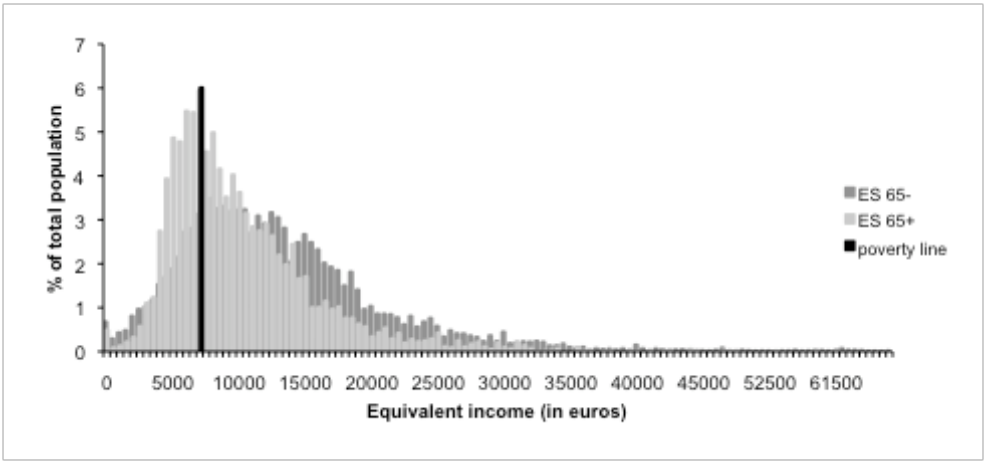
Source: EU-SILC database (2006)

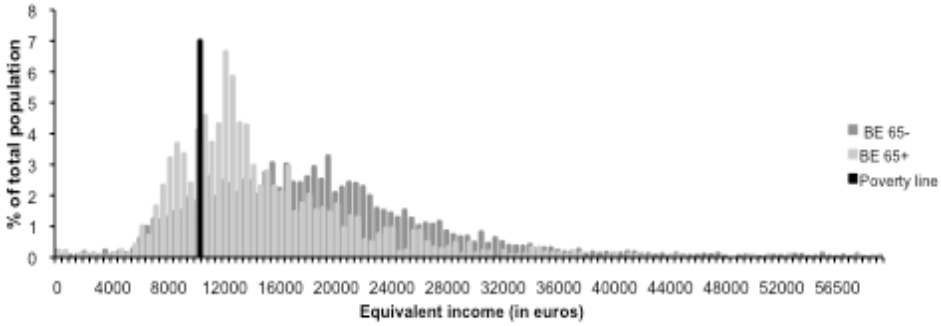
[30] See appendix 5 and 6 for the at-risk-poverty rates (for total population and elderly) in each countries.

Only in Czech Republic, Poland, Luxembourg, Lithuania and Sweden, elderly face a smaller poverty risk than the total population. This evidently does not imply that pension systems perform better in these countries. Many other factors can influence elderly poverty (e.g. elderly labour supply, family solidarity, etc.). But before looking at the determinants of poverty, one has to be aware that the above findings, and especially the fact that the elderly at-risk-poverty rates are weak in most of new European Member Sates (CZ, PL, LT and also SI), is directly influenced by the poverty measure we utilise. As the equivalent income is compared to the national median income (60% of the equivalent median income more precisely, see appendix 4), poverty rates also reflect the fact that the overall income level in these countries is low. It would evidently be a mistake to conclude that elderly are better off in Czech Republic than in Belgium for instance. We can compare the income distribution in three countries (CZ where the rates is the smallest, BE where the rate is close to the average and ES, with the highest rate) to understand why there are such differences in poverty rates. Figure 4.5 shows that the income distribution in CZ is more 'concentrated' around the poverty line for both age cohort (less than 65 years old and 65 years old and more). In Belgium, the income distribution of the two cohorts is different, leading to a more important difference between old-age poverty rates and the one of the non-elderly. The old-age poverty in Spain is more important as the elderly income distribution is even more skewed to the left than in Belgium.

FIGURE 4.5: Income distribution in CZ, BE and ES







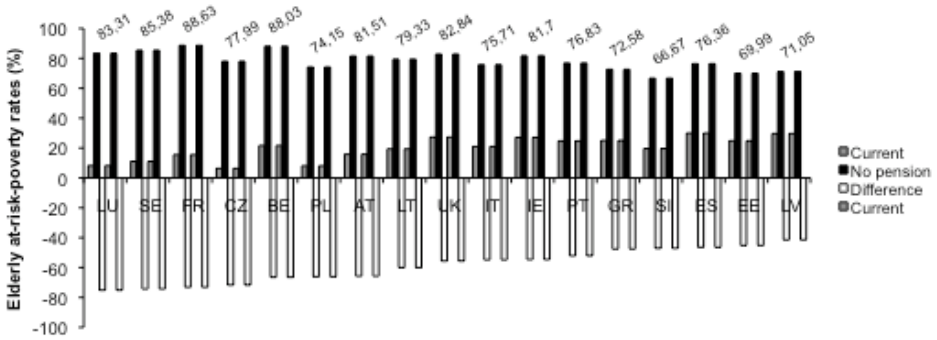
Source: Author's own calculations based on EU-SILC database (2006)

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

4.3.3. Poverty and current pensions

We first consider the impact of pension benefits. Doubtlessly, retirement transfers have a great impact on old-age poverty. If one considers the artificial situation where no public pension systems exists, the average poverty rates in Europe would reach up to 78 percent for the elderly population, as shown on figure 4.6. Of course, these results are artificial because they do not take into account changes in living arrangements and elderly labour supply. For instance, family ties would become stronger and other solidarity mechanisms would emerge. The elderly labour supply would also probably increase. In addition, savings and private pensions would also increase. Still, it is a good indication of the importance of public support to elderly covered by the pension schemes.

FIGURE 4.6: Poverty rates for the old-age population, with and without pensions



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

It is also important to note that even if the impact of pensions currently received is significant; a part of the elderly population is not affected by such an artificial policy since they simply do not receive any pension. The pension coverage (considered here the percentage of individuals with a positive pension included in their personal income) evidently affects the current poverty rates. There can be

several reasons of low coverage: individuals did not participate in labour market covered by the public scheme (self-employed, the agricultural workers, the informal workers), individuals did not contribute enough to qualify for benefits (interrupted career, housewife, etc.) or lifetime earnings have been too low (long term poor). Moreover, an old-age person can also make the choice to continue working. Table 4.2 shows the proportion of elderly population receiving a positive pension (the latter could still be very low). On average, coverage is very high in the European countries considered (almost 90% of all elderly). But still, in countries such as Spain and Greece, the relatively low coverage can also explain the high poverty rates and the relatively low impact of pension (it may be due to e.g. low labour force participation at younger age for women or high proportion of informal or agricultural workers of those cohorts). However, one has to be aware that the coverage rate may be artificially low in countries were the pension of an elderly is adapted if he lives with a dependent partner. As example, the pension benefit of a Belgian retiree is increased by 25 percent if he/she lives with a spouse who does not receive any replacement income.

TABLE 4.2: Percentage of elderly population that received a pension

Countries	Share of elderly with positive current pension
AT	92,60
BE	85,59
CZ	99,28
EE	98,93
ES	78,80
FR	93,00
GR	84,88
IE	86,37
IT	91,80
LT	99,83
LU	96,90
LV	99,14
	98,02
PT	91,85
SE	97,05

SI	97,85
UK	98,86

Source: EU-SILC database (2006)

The no-pensions poverty rates also show the dependence of the elderly to pension income: the lower the difference between poverty rates before and after pensions, the lower the value of the pension with respect to the poverty line and the higher the proportion of elderly having other income sources to subsist. There are four potential income sources: financial assets, voluntary private pensions, labour income and family solidarity.

4.3.3.1. Old-age poverty and other income

Though few individuals still work after 65 years old (on average 6.6% in the countries considered), it partially explains the weaker poverty increase after no pensions in some countries (e.g. in EE, LT, LV where the percentage of elderly that have positive labour income is among the highest, see appendix 5). Participation in private voluntary pension plans can play the same role. However, this participation is insignificant, except in three countries (SE, UK and IE, see appendix 6). Concerning the incomes from assets, it is difficult to assess their impact on elderly poverty, as they are an income component at household level. We however looked at two income variables (income from rental of a property or land and interests, dividends, profit from capital investments in unincorporated business) in households composed by elderly only. It appears that the share of households with elderly that have such assets is relatively large in BE, FR, LU, AT, UK and SE, but low in Eastern and Southern European countries (see appendix 7). For these Eastern and Southern European countries, the relatively small changes in poverty rates without pensions could also be explained by family solidarity. But as we will see in the following section, the household dimension of poverty may lead to diverse effects on old-age poverty.

4.3.3.2. Poverty rates and household composition

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

- It leads to overestimate poverty when old individuals have sufficient incomes resources but live with poor household members. For instance, a pensioner can have a pension higher than the poverty line, but has to 'share' it with other poor household members so that all household members are finally poor;

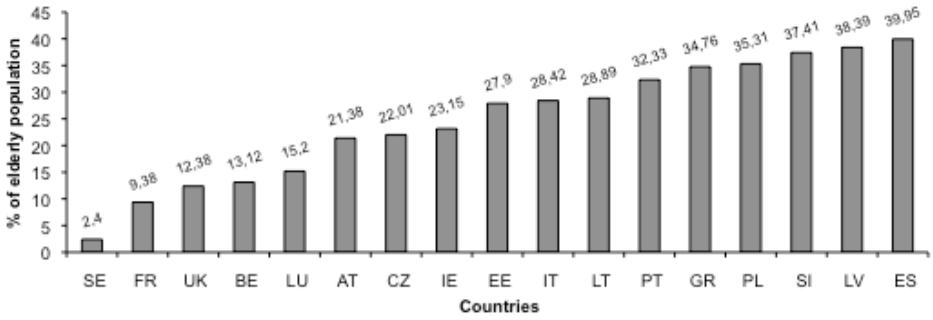
- It leads to underestimate poverty when elderly have few income resources but are not considered poor because they live, and depend, on other household's members' income.

In this section, we therefore look at how old-age poverty would be affected if elderly were living among themselves or with their younger spouse only. In what follows, we refer to extended family as household where at least one elderly is living with at least one non-elderly without being partner, and as elderly couple living with at least one non-elderly. We artificially split extended household but do not separate couples of one elderly and one non-elderly. This last type of household is called 'intergenerational couple'.[31]

- **Current households composition**

The percentages of elderly living within an extended household are represented in figure 4.7. In all countries, the majority of elderly lives alone or with other elderly. Nevertheless, the share of elderly living in extended household varies significantly among countries. As one may expect, it is particularly high in Southern and Eastern European countries (Spain, Latvia, Poland, Slovenia and Greece) and low in Sweden, France, United Kingdom, Belgium and Luxembourg.

FIGURE 4.7: Percentages of elderly living within an extended household



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

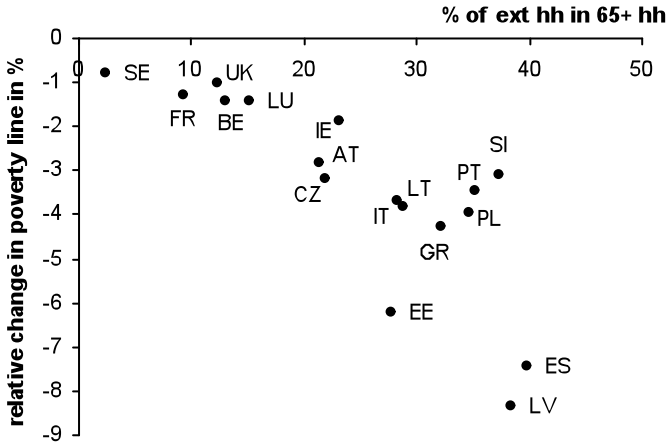
- **Poverty and modified household composition**

In this section, we compute poverty rate assuming another household composition than the current one. Specifically, we create new household units such that elderly

[31] The reason of not splitting intergenerational couple is that it is less probable that any change in pensions' provision rules will lead to strategic divorce. However, it is much more likely to influence the decision of living in an extended family or not.

do not live with non-elderly (e.g. their children). We however do not split couple of 65+ and 65-. We then re-compute poverty rates (comparing the new household equivalent income with the new poverty line). One of the first implications of this scenario is that the poverty line after the modification of the household composition decreases with the proportion of extended household (and is therefore lower than the current one, see appendix 4) as depicted in figure 4.8. This is a consequence of the used of the equivalent scale (which implies economies of scale within household) and the fact that household units are now smaller.

FIGURE 4.8: Impact of the change in household composition on median equivalent income

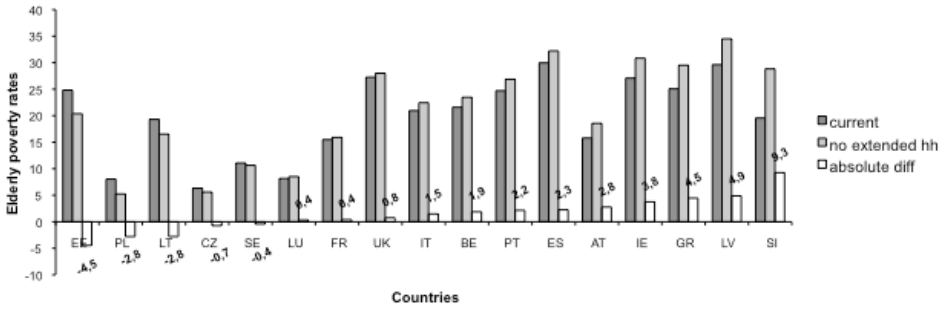


Source: Author's own calculations based on EU-SILC database (2006)

The impact on poverty rates is not directly linked to the proportion of extended household as it depends mainly on the income distribution within extended households. From figure 4.9, it appears that in most countries, elderly would be poorer if they were separated from other household members. It is particularly significant for Slovenia, Latvia and Greece. On the other hand, in Poland, Lithuania and Estonia (less significantly in Czech Republic and Sweden), poverty rates would decrease.

Two opposite effects have to be distinguished: some elderly depend financially on other household members and if there are separated from them they become poor (poverty increases) and some elderly support financially other non-elderly household members and thus become non-poor if there are no extended-households. Depending on the household composition in each country and especially on the intra-household intergenerational distribution, one of these effects will dominate the other.

FIGURE 4.9: Elderly poverty rates, with and without extended households



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

It is important to understand the ambiguity between poverty and household composition, especially in the case of social transfers, such as social pensions, targeted to a specific age group. Since poverty is computed using equivalent household income, it implies that the additional transfer will be shared among household members.[32]

4.4. Simulating the impact of social pension

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

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

[32] Using OECD equivalent scale leads to the assumption of equal resource sharing among household members, with downward adjustment for children. However, an opposite situation where non-elderly members do not share their income with the elderly in the household is also possible (see e.g. in India, Dreze and Shrinavasan 1997).

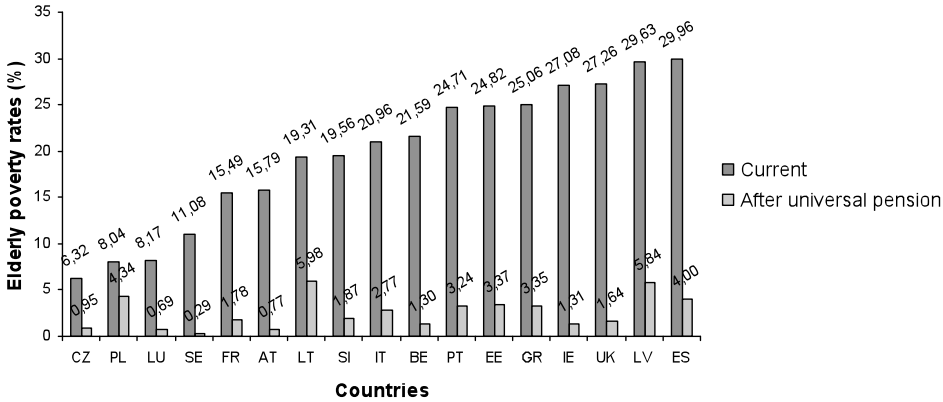
4.4.1. Universal pension

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

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

The personal income after the introduction of the universal pension is thus: $y_i^*=y_i+p+T$, where y_i is the personal income of individual i with no pension.[33] The new poverty rate is then computed: we sum the new personal income y_i^* for all household's members and then apply the equivalent scale. From figure 4.10, we see that poverty rates decrease sharply: the average poverty rate for the 17 countries goes from 19.7 percent to 2.5 percent.

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



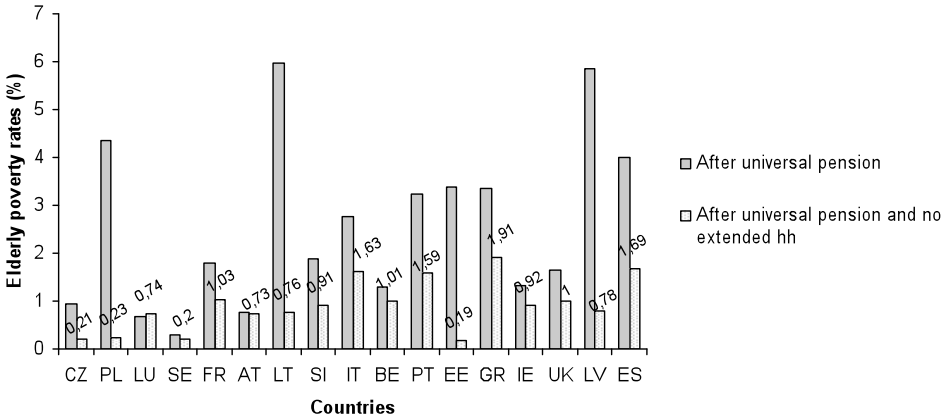
Source: Author's own calculations based on EU-SILC database (2006)

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

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

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

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



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

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

4.4.2. A means tested universal pension

With a universal pension, every elderly receives a pension benefit at least equal to the poverty line. Even to those who initially had other income resources to be out of poverty (e.g. housewife who receives no pension but whose husband's pension is raised due to their living arrangement, see 'taux des ménages' in Belgium). In order to reduce the cost of such a program, a social planner could introduce a

means test to restrict the eligibility to those in need. For instance, one could consider that the poverty line income is guaranteed to individuals aged 65 and more *but only* if they live in poor household, using the following formula: T=Max (0, s-p) if age>=65 and if $y_{eq}<s$, where T is the transfer needed to adjust the pensions currently received (p) with the poverty line (s) and y_{eq} the equivalent disposable income. In this case, hence referred to as 'modified universal pension', the impact on poverty is exactly the same as in the case of the universal pension. Poor elderly receive exactly the same additional transfer as in the universal pension case. The only difference is that this transfer is not awarded to elderly who are currently receiving a low pension level but are not poor (thanks to other income sources or support from household's members). The fact that the latter do not receive an additional transfer does not affect poverty rates as they were already out of poverty.

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

We could alternatively means test using the equivalent household disposable income. But it would strongly penalise poor elderly who, because they cannot subsist on their own, live in extended household. The incentive of living separately will be extremely high as the benefit received by an elderly would be reduce with respect to incomes of the other household members. Strategic changes in household composition (e.g. elderly would live without their children) would finally lead to a similar situation to that of the means test using personal income, as the income after strategic change in living arrangement would basically be the personal income of elderly. We however consider the means test on the income of the couples as it is less likely that this mean-test will lead to strategic divorces.

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

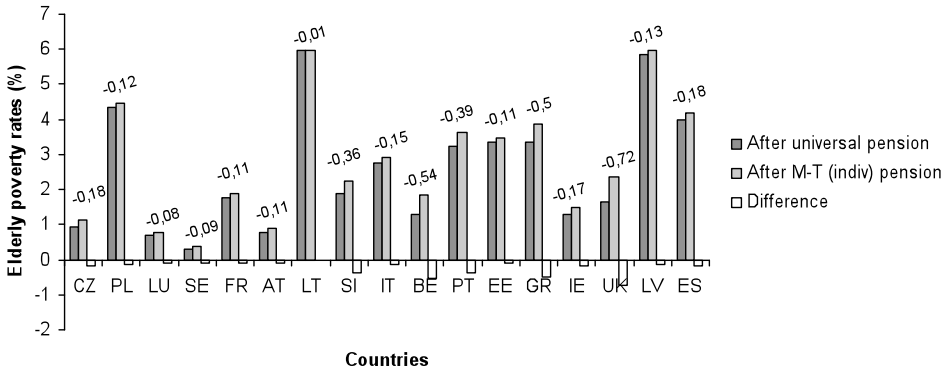
4.4.2.1. Means tested social pension: Individual income

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

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

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

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



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

4.4.2.2. Means tested social pension: Couple's income

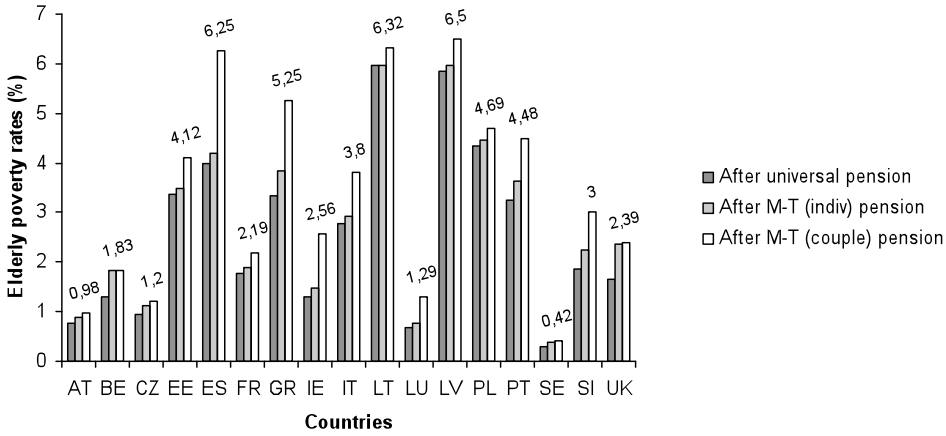
Another way of designing a means tested social pension is to adapt the level of benefit as a function of the incomes of both partners. To illustrate the difference

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

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

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

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



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

4.5. Who are the beneficiaries of Social pensions?

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

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

column of table 4.3 thus also reports the proportion of the elderly who have a current pension below the poverty line.

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

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

1. Countries	2. Current poverty rates	3. % under universal pension	4. % under modified universal pension	5. % under individual M-T	6. % under couple M-T
CZ	6,32	23,76	5,34	5	5,16
PL	8,04	16,13	4,52	4,24	3,96
LU	8,17	33,63	6,44	6,33	6,75
SE	11,08	40,48	10,74	10,61	10,7
FR	15,49	37,66	13,08	12,78	13,9
AT	15,79	35,57	13,54	13,48	15,36
LT	19,31	43,07	16,53	15,93	15,61
SI	19,56	47,47	18,17	17,8	18,07
IT	20,96	46	18,56	18,34	19,02
BE	21,59	41,41	16,55	16,18	20,39
PT	24,71	58,2	23,31	22,97	23,35
EE	24,82	63,97	23,74	23,45	22,72
GR	25,06	56,17	21,98	21,13	22,62
IE	27,08	73,18	25,59	25,43	25,54
UK	27,26	55,99	24,47	23,96	25,15
LV	29,63	81,22	29,06	28,86	28,01
ES	29,96	57,93	24,27	23,78	26,95

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

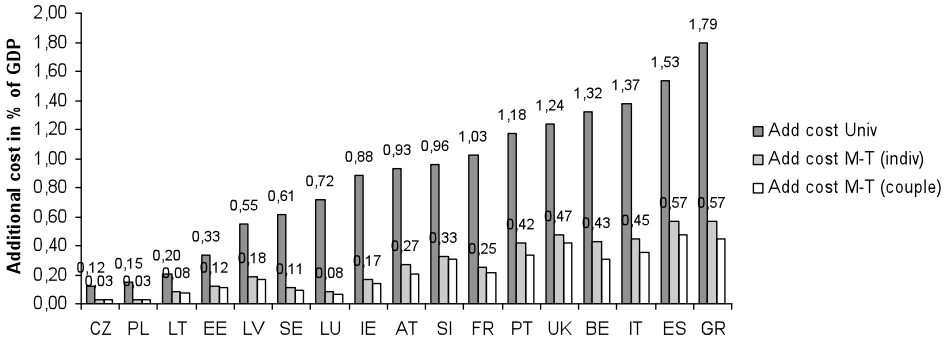
4.6. Costs of universal pensions schemes

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

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

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

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

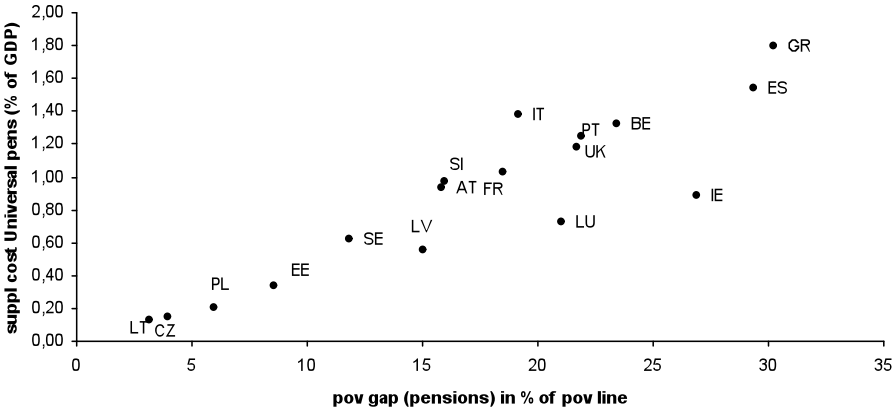


Source: Author's own calculations based on EU-SILC database (2006)

The cost of the universal pension scheme depends on the gap between the current pensions received and the poverty line. In other words, it is linked to what we here call the 'pension poverty gap' for the elderly. This is the mean difference between the pension income currently received by elderly and the poverty line, expressed as a percentage of the poverty line. The figure 4.15 shows the relationship between the 'pension poverty gap' and the supplementary cost of the universal scheme. When current pensions are far from the poverty line, the additional cost will evidently be higher. The proportion of elderly who receive a pension also influences the pension poverty gap. The larger the share of the elderly population who do not receive any pension, the higher the poverty gaps.[34] Let us note that the cost is slightly smaller when the proportion of elderly in the total population is small (e.g. Luxembourg and Ireland) and inversely (e.g. Italy).

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

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



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

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

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

The cost difference between the two (individual and couple) means tested pensions is due to the fact that the level of benefits of the additional transfer is reduced so as to bring elderly couples out of poverty. Since the level of the additional transfer

also takes into account the income and pension of the partner, the transfer is always smaller than with the individual means test. The difference is particularly high in countries where the proportion of elderly who receive no (or very low) pension, and depends on the income of their partner, is high.

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

From what precedes, one could question the utility of universal pension, compared to the means tested ones. It costs much more that the means tested schemes while the difference in terms of poverty reduction is not so impressive. The cost difference is mainly explained by the fact that non-poor elderly benefit from the additional transfer. This problem has been central in the debates on universal versus means test transfers for many years already.[35] To quote Besley (1990, p. 119), "Universal provision entails a cost in the form of a leakage of some of the benefit to the non-poor". Nevertheless, as Sen (1995) mentioned, the problem with means tested benefits is that the "so-called targets" are not easily indentified (see administrative costs hereafter) and that they are not "unreacting".

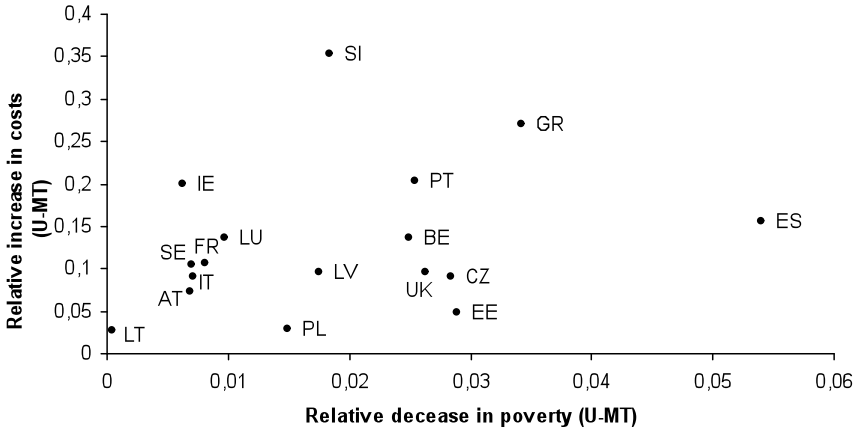
In order to know which countries are more leaning towards universal or means tested pension, a first step could be to compare the difference between the relative decrease in poverty from the universal pensions and from the means tested pensions, with the relative increases in costs induced by both schemes.[36] In fact, figure 4.15 maps the countries for which we have undertaken the simulations and compares the relative (des)-advantages of universal pension with respect to means tested pensions. Two conclusions can be drawn from figure 4.15. First, under this static framework (or assuming the same behavioural responses to the social pensions in each countries), some countries are more leaning towards universal pensions. If we look for example at Luxembourg (LU), Belgium (BE) and Spain (ES), for a similar increase in cost (between universal and means tested pension), the universal pension leads to a more important poverty reduction (than with means test) in BE than in LU, and to a even stronger poverty reduction in ES. It is however difficult to find the frontier that could allow us to affirm that one countries should opt for a specific scheme (especially for countries such as BE, while it is easier for extremes such as LU and ES). Figure 4.15 just allows us to say that for a same increase in cost, some countries (such as ES) are more inclined to universal pension. Second, some countries are dominated by others. If you

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

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

compare Slovenia (SI) and Latvia (LV), for the same impact in term of poverty, the cost difference is much higher for SI. But once again, this affirmation is not obvious for every country (e.g. when we compare SI with PT, it is not clear anymore than SI is dominated by PT).

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



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

However, this graph compares our static results and therefore assumes no change in behaviour or the same ones across countries. As our simulation is static, it shows only the mechanical effects of the introduction of such pensions.[37] One should however consider that, first, social pensions of all forms lead to some behavioural response from individuals, and second, that these behavioural responses differ according to the type of social pensions (namely, universal or means tested). These issues are important because they will have an impact on poverty.

4.7.1. Incentives effects of social pensions

If we consider the incentives effects of social pensions in general, it is know that the guarantee of receiving an income during old age affects labour supply and savings before retirements (see e.g. Disney and Emmerson (2005)). Individuals will decrease those latter, as they know they will receive an income in old age. Social pensions also affect household behaviour in many possible ways. First, one effect (which also comes from social protection in general) is that family ties

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

weaken (Bourguignon 2005, Englehardt et al. 2005). Elderly that are provided with sufficient income do not need to live with their children for instance. Second, it can also affect the behaviour of other household members. For instance, Ardelington et al. (2007) shows that social pensions in South Africa relieve credit constraints of households and allow elderly to support financially their younger household members to find jobs. In that case, social pensions promote youth employment.

4.7.2. Incentives effects: universal versus means tested pension

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

- Labour supply and savings

As Piggot, Robalino and Jimenez-Martin (2009) recognise, the literature on the means test impact on saving and labour supply is sparse but still offer some evidence that means testing creates disincentives to work and save. [38]

To begin with, in the theoretical literature, several authors found that means testing reduce labour supply and savings, and particularly that the reduction is more severe than with universal benefits.[39] The disincentives effects are even stronger with a means test as any extra-wage received will be compensated anyway by the means tested transfer. More specifically, it is recognised that 100% withdrawal rate (i.e. the means tested benefit is reduced by 1 euro for every 1 euro of wealth) lead to

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

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

disincentives in saving and working compare to a universal benefit (which encompasses a 0% withdrawal rate). The poor elderly will then become poorer; the elderly who are at the margin of poverty will become poor in order to become eligible. It similarly reduces the incentive to save for old age. On the empirical side, several authors have estimated the incentives effect of means testing: the overall conclusions are that means test transfers lead to higher disincentive effects on labour supply and saving than universal transfers (or than means tested transfer with lower withdrawal rate).

For instance, Neumark and Powers (1998, 2000) analyse the behavioural responses to the Supplemental Security Income (SSI), which is a means-tested transfer for elderly (aged 65 or more) and disable persons administered by the Social Security Administration. As the SSI benefits vary across States, Neumark and Powers exploit this variation to estimate (with the difference-in-difference methodology) the impact on savings (Neumark and Powers 1998) and on labour participation (Neumark and Powers 2000) using data from the 1984 Survey of Income Program Participation. They find evidence that SSI reduces savings, and particularly those of men and female householders close to the age of retirement. When looking at the incentives on pre-retirement labour supply, they also find that SSI has a negative effect on employment and earnings of 60-64 year-old men. The more generous the benefit is, the more pre-retirement labour supply decreases. French (2005) develop a dynamic model to look at the behavioural effect of the elimination of the earning test (using the Panel Study of Income Dynamics for the years 1968-1997) and also find similar conclusions about the job market exist.

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

As a last example, Decoster, Orsini and Van Camp (2007) develop a micro-simulation model to assess ex-ante the labour supply effects on a reform of survival benefit. Basically, they analyse the impact of reforming the means test on survival

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

benefit (namely they abolish a threshold after which survivor benefit suddenly drops, because of a means test). They find that labour supply of windows would increase.

- Living arrangements

As we have mentioned earlier, social pensions may have effects on the whole household and on living arrangements (Ardelington et al., 2007). However, if we compare means testing with universal transfers, one may think that the means test would lead to strategic changes in family composition. In fact, as the entitlement and the amount of the transfer depends on some forms of means test, one may expect that elderly who financially depend on other family members will live on their own so as to become entitled to the means tested transfer. It has often been argued that social security, and especially pension system, induces a decrease in family size as pensions enable elderly to live separately from their children (see e.g. Bourguignon (2005)). However, even if in most European countries the majority of elderly live alone or in couple, the proportion of extended households may still be significant in some countries (particularly in Eastern and Southern countries). When the reason of living with their children is income support, the number of eligible elderly will increase, and so will the costs of the means tested schemes. This effect on living arrangements will be even stronger when the test takes account of other household's member incomes. In the case of the means test on couple's income, strategic 'divorce' of two elderly may also occur so that the level of benefit they both receive is higher.

- Incentives to hide income or increase informal labour supply

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

From above, one may expect that different schemes induce different incentives effects that may lead individuals to modify their choices. In figure 2.16, the three social pensions we have considered are represented and the arrows' direction represent the increases in costs and distortions in behaviour that one may expect.[41]

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

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

Distortions →

Distortions ↓

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

Cost ↑

← Cost

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

4.7.3. Administrative cost of means testing and take up

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

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

4.8. Conclusions

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

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

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

It is however important to take account of adverse incentive effects induced by the means test when comparing both social pension schemes. As a matter of fact,

living arrangement, savings and labour supply are expected to change. The long run cost of the means tested pension will probably be much higher than the one predicted by the simulation. Moreover, the means test leads to supplementary administrative costs. Hence, universal pensions are easier to administer. On the other hand, the cost will be lower if the take-up issues are important (here we have forced elderly to take the additional benefit).

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

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

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4.10. Appendix

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

Countries	**Universal pension**	**Means tested social pension**	**"Beveridgean" pension**	**Minimum pension**
AT		x		
BE		x		x
CY		x		x
CZ		**x**	**x**	**x**
DK	**x**	**x**		
DE		x		
EE			x	x
ES		x		x
FR		x		x
GR		x		x
HU				x

IE		**x**	**x**	
IT		x		
LT			x	
LU		**x**	**x**	**x**
LV		x		x
MT		x		x
NL	**x**			
PL				x
PT		x		x
SE				x
SI				x
SK				x
UK		x	x	x

Source: OECD (2009), and for non-OECD member countries, Whitehouse (2007).[42]

Appendix 2: disposable income

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

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

Appendix 3: Cost of public pensions in percent of Gross Domestic Product

Countries	Current cost (in % of GDP)
AT	10,02
BE	6,87

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

CZ	5,93
EE	4,48
ES	6,31
FR	10,64
GR	8,57
IE	3,78
IT	11,27
LT	4,53
LU	5,47
LV	4,25
PL	8,32
PT	9,15
SE	6,33
SI	8,93
UK	8,12

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

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

Countries	Poverty line	Poverty line no extended household
AT	10671,59	10366,18
BE	10226,13	10080
CZ	2888,324	2795,976
EE	2182,631	2045,917
ES	6856,8	6345,6
FR	9726,9	9599,2
GR	6000	5760
IE	11787,5	11561,38
IT	8815,429	8488,2
LT	1449,147	1393,752
LU	17729,6	17470,2
LV	1542,414	1413,384
PL	1865,772	1800,449
PT	4400,583	4212
SE	10659,82	10570,88

SI	5589,986	5416,19
UK	11574,15	11451,31

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

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

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

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

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

Countries	Proportion of elderly that receive a private voluntary pension
AT	0,7
BE	0,7
CZ	1
EE	0,1

ES	1,7
FR	0,1
GR	0,1
IE	3,3
IT	0,6
LT	0
LU	0,4
LV	0
PL	0,1
PT	0,5
SE	24,9
SI	2
UK	10,2

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

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

Countries	% of elderly households	Mean assets as a share of poverty line
AT	64,57	2,11
BE	76,02	7,35
CZ	3,77	0,42
EE	6,56	0,32
ES	23,63	3,22
FR	85,82	7,79
GR	19,27	7,54
IE	17,17	2,68
IT	50,75	4,75
LT	9,18	0,98
LU	74,35	11,25
LV	2,13	0,52
PL	2,20	0,79
PT	24,11	4,50
SE	73,99	5,10
SI	37,30	1,30
UK	62,26	6,51

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

Appendix 8: Poverty rates for total population

Countries	Poverty rates	Poverty rates (with Universal pension)	Poverty rates (no extended household)	Poverty rates (with Universal pension and no extended household)
AT	12,55	10,48	13,14	11,09
BE	14,15	9,1	14,55	11,11
CZ	10,15	14,69	10,18	10,14
EE	18,16	16,11	17,77	15,76
ES	19,62	10,44	21,26	18,17
FR	13,06	15,08	13,02	10,88
GR	19,96	15,12	21,19	16,77
IE	18,37	15,29	18,76	16,16
IT	19,37	19,86	19,53	16,56
LT	22,11	11,96	21,99	20,34
LU	13,28	19,14	13,49	13,07
LV	22,84	18,33	23,83	20,45
PL	19,03	13,69	19,89	20,56
PT	18,14	9,97	18,7	15,29
SE	11,83	7,83	12,04	10,5
SI	11,68	14,66	13,99	9,93
UK	19,02	10,48	19,09	15,09

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

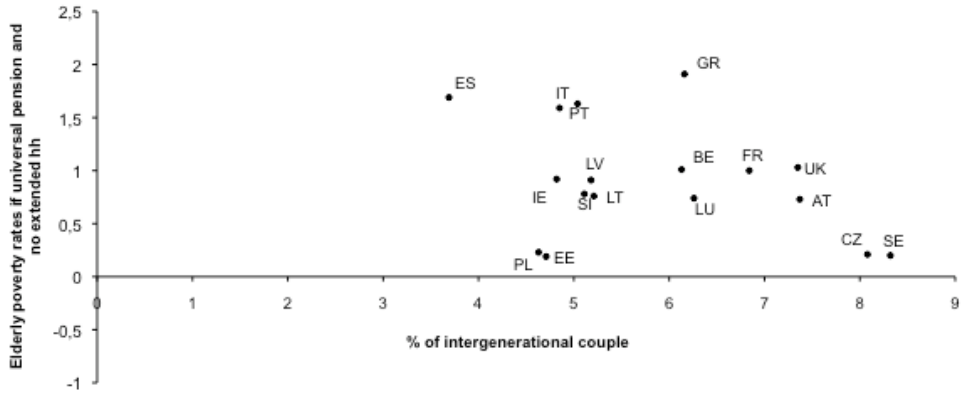
Appendix 9: Old-age poverty rates

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

PL	8,04	4,34	5,25	0,23
PT	24,71	3,24	26,87	1,59
SE	11,08	0,29	10,64	0,2
SI	19,56	1,87	28,82	0,91
UK	27,26	1,64	28,01	1

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

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



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

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

	Poverty rates	Poverty rates individual M-T	Poverty rates couple M-T
AT	15,79	0,88	0,98
BE	21,59	1,84	1,84
CZ	6,32	1,13	1,2
EE	24,82	4,09	4,12
ES	29,96	5,62	6,25
FR	15,49	1,89	2,19
GR	25,06	4,21	5,25
IE	27,08	1,48	2,56
IT	20,96	2,92	3,8
LT	19,31	5,98	6,32

LU	8,17	0,77	1,29
LV	29,63	6,36	6,5
PL	8,04	4,46	4,69
PT	24,71	3,87	4,48
SE	11,08	0,38	0,42
SI	19,56	2,23	3
UK	27,26	2,36	2,39

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

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

Countries	% of old couples with non-elderly
AT	0,45
BE	0,44
CZ	0,34
EE	0,47
ES	1,34
FR	0,24
GR	1,37
IE	0,30
IT	1,12
LT	0,44
LU	0,48
LV	0,67
PL	0,56
PT	1,03
SE	0,05
SI	0,86
UK	**0,37**

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

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

	GDP (millions of Euros)
AT	256162
BE	318193
CZ	113696
EE	13229
ES	984284

FR	1806429
GR	210458
IE	176758
IT	1485378
LT	23978
LU	34150
LV	16047
PL	272089
PT	155446
SE	313450
SI	31056
UK	1944751

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

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

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

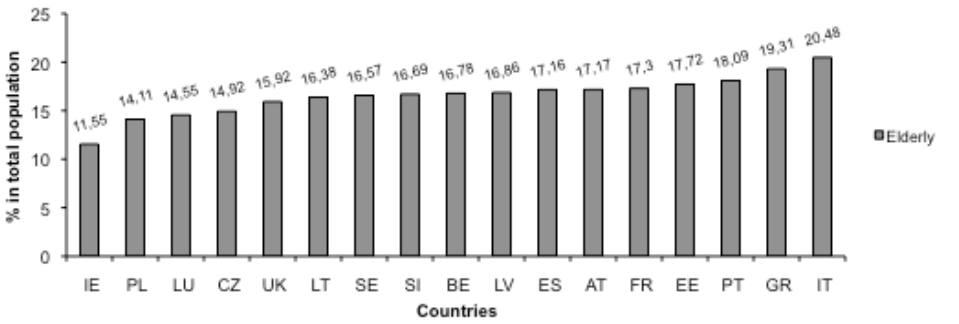
Source: Author's own calculations based on EU-SILC database (2006)

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

		Cost of the	Additional		Additional

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

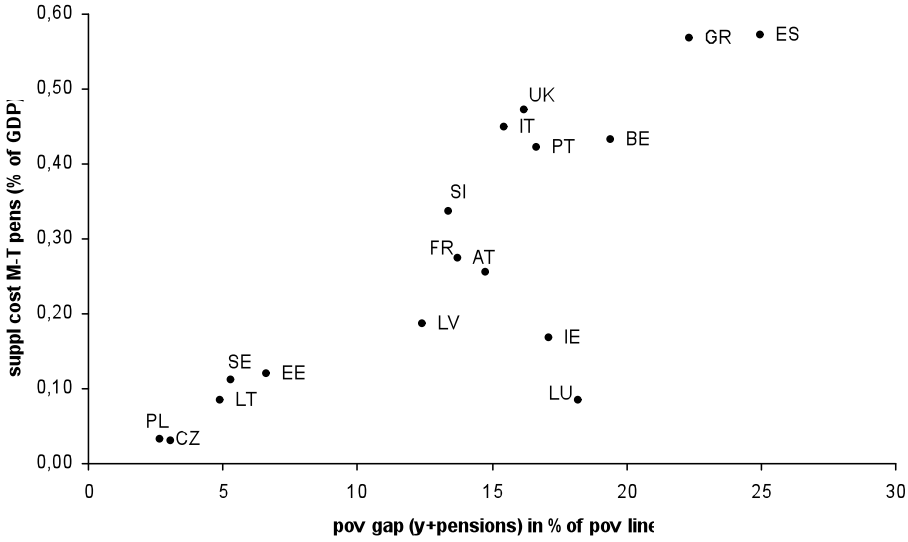
Source: Author's own calculations based on EU-SILC database (2006)



Appendix 16: Proportion of elderly in total population

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

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



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

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

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

CHAPTER 5: Concluding remarks

5.1. Aid

> 'The causality chain [between aid and final outcome] has been largely ignored and as a consequence the relationship between aid and development has been mostly handled as a kind of 'black box''. Bourguignon and Sundberg (2007:1)

The two chapters on aid aim at answering one question: how should aid be given?

Chapter 2 first analyses the criticisms of the previous aid paradigm, based mainly on project aid. More specifically, we focus on the aid transaction costs that are supposed to decrease with program-based approaches. Recognising that the concept of aid transaction costs – even if commonly used by practitioners – has hardly been defined nor measured, this chapter has aimed to develop a theoretical background to the concept by analysing it in relation with the Transaction Costs Economics. Our definition of aid transaction costs rests on the concept of opportunity cost and emphasises the fact that 'true' transaction costs are 'net' costs – that is, they do not take account of investments activities adding value to the outcomes of aid. We thus proposed an analytical framework that allows comparing how they vary with different aid modalities, according to the context and characteristics of the aid transaction.

The minimisation of transaction costs is often advanced as an important aspect of aid effectiveness. However, our definition and the model we developed help understand that *the optimal aid modality (governance structure) depends on the characteristics of the transaction* – e.g. on the relation between a particular donor and the recipient government, and their respective preferences as for the allocation of aid. The reduction of aid transaction costs should not be an end in itself. According to our analytical framework, program-based approaches are supposed to reduce transaction costs, but only under some conditions (if donors' harmonisation increases so that investment cost are compensated by the transaction costs reduction).

Further research should focus on the evaluation of aid transaction costs. To do so, more attention should be paid to the evolution of the transaction characteristics: the harmonisation, the frequency of the transaction, the asset specificity (whether donors have specific requirements as how the aid should be allocated) and the uncertainty (trust between donors and recipients).

In chapter 3, we look at the reaction of the recipient government when receiving aid. We believe that the modalities chosen to give aid have different impacts on the government incentives to finance the developmental sector. To analyse the two major aid modalities - project aid and budget support - we have adapted the model of Cordella and Dell'Ariccia: we allow for the simultaneous utilisation of both modalities and more importantly, we use a functional form to represent the production of developmental goods that allows us to discuss the role of transparency to explain the efficiency of alternative aid modalities.

First, the model has shown that when no conditionality is enforced, the optimal situation is such that all aid is allocated through budget support and that project aid is not utilised. The fungibility issue is represented by the crowding out of recipient's resources away from the developmental sector. However, when relaxing the hypothesis of loss of efficiency with PA, the donors are indifferent between PA and BS. In both cases, since the donors and recipient's preferences are not aligned, there is a distortion in the aid allocation. Some aid funds are diverted to the non-developmental sector.

We then look at the conditionality as a tool to increase aid effectiveness and derive the optimal use of aid modalities. The latter depends on the recipient's preferences toward development, the level of aid relative to the recipient's budget and the productivity of the developmental inputs. More specifically, for recipients with high developmental preferences, the optimal aid allocation is to give aid only through conditional BS. In that case, the conditionality does improve the level of developmental goods. We have also shown that more recipients accept the conditionality if the transparency decreases and if the aid dependency is relatively high. For relatively low developmental preferences, the optimal contract is such that all the aid is given via unconditional budget support. In fact, the recipients with low development preferences do not accept the conditionality. As seen in the first part, giving the aid through unconditional budget support leads to a high distortion in the resources allocation (a relatively large part of the aid is diverted to the non-developmental sector) but it is still better than to give no aid at all.

Consequently, conditionality does not always improve aid effectiveness: if the recipient has some low preferences for development, the optimal resources allocation is equivalent to the one of the non-conditional case. It only does for relatively development-oriented recipient: 'More conditionality cannot compensate for weak government commitment or implementation capacity' (World Bank 2005). The aid ineffectiveness can thus be reduced only in some situations (high preferences, weak transparency, and high aid dependency). This also reflects the idea that weak recipients should not be subject to severe conditions. Even if there is distortion in the aid allocation, it is still better than not helping them at all (François Bourguignon, Le Monde, 16.02.2008).

Further research should be dedicated to test model prediction against empirical data (and therefore finding data on the disbursement of project aid and budget support). Also, in our model, it is assumed that the preferences of the recipients are observable by the donors. However, even if there exists some indicators (such as governance indicators), it is hard to know whether the recipient government is e.g. pro-development, corrupted or not. Another research could relax this assumption.

5.2. Social pensions

> "As we grow old, we work, produce and earn less, and therefore need a secure source of income to see us trough live" World Bank (1994:1)

Chapter 4 focuses on old-age poverty alleviating mechanisms, and in particular on social pensions. We have seen that in most European countries, contributory schemes include poverty-alleviating instruments (such as a minimum pension and a flat pension, called Beveridgean component). However, in most countries, elderly face a higher risk of being poor than the rest of the population. We therefore simulate the introduction of different types of social pensions in 17 European countries.

We first consider a universal pension: every elderly is entitled with the poverty line, unconditionally. Then we introduce two other schemes, which restrict the entitlement to a group of elderly that meet an income test. As expected, the more information we use on income, the less important the impact on poverty is and the less costly the schemes are. The average poverty with the universal scheme drops to 2.5 percent, to 2.8 with the individual means test and to 3.4 on the one on couple's income. It could seem surprising that poverty remains in the case of universal pension. This remaining poverty is only a consequence of living arrangements: if all elderly would be living alone, old age poverty would be eradicated. The impact of universal pension is thus lower in countries where the proportion of elderly living in extended household is higher.

Besides, the more we use income information to restrict the entitlement, the less the cost is. In fact, the additional cost of the universal pension is on average 0.88 % of GDP with the universal scheme, 0.27 % and 0.22 % for the individual and couple's means tests. Next to the determinants of poverty (especially elderly incomes other than pensions), the high difference in cost between the universal and means tested schemes is mainly explained by the 'leakage' of universal pension to non-poor elderly.

It is however important to take account of adverse incentive effects induced by the means test when comparing both social pension schemes. As a matter of fact, living arrangement, savings and labour supply are expected to change. The long

run cost of the means tested pension will probably be much higher than the one predicted by the simulation. Moreover, the means test leads to supplementary administrative costs. In that respect, universal pensions are easier to administer. On the opposite, the cost will be lowered if the take-up issue is important (here we have forced elderly to take the additional benefit).

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

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

5.2.2. References

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5. Samenvatting

Deze verhandeling onderzoekt twee beleidsopties voor armoedebestrijding. Eerst bekijken we de overdracht van ontwikkelingshulp aan ontwikkelingslanden. Meer specifiek concentreren we ons op één vraag: Hoe moeten ontwikkelingslanden hulp krijgen? In hoofdstuk 2 mengen we ons in het debat over de transactiekosten van hulpverlening. Daartoe stellen we een definitie van transactiekosten van hulpverlening voor. En, belangrijker nog, bepalen we wanneer een verandering in de wijze van hulpverlening de transactiekosten écht doet dalen. In hoofdstuk 3 ontwikkelen we een principaal-agentmodel om de impact van de belangrijkste twee hulpwijzen van armoedebestrijding te vergelijken. De tweede beleidsoptie die we bestuderen, heeft betrekking op armoedebestrijding in hoge-inkomenslanden, meer specifiek in Europa. Ze bestaat in de invoering van sociale pensioenen, en moet armoede verminderen bij een bijzonder kwetsbare bevolkingsgroep in die landen: de ouderen. In hoofdstuk 4 simuleren we (in een statisch kader) verschillende types van sociale pensioenen: al dan niet via middelentoets getest, en met twee verschillende middelentoetsen. We schetsen hun impact op armoedevermindering en kosten in zeventien Europese landen.

6.1. Hulpverlening

6.2.1. Motivatie

De hoofdstukken 2 en 3 gaan over de doeltreffendheid van hulpverlening, en in het bijzonder over de keuze van de hulpverleningswijzen. De laatste tien jaar werd meer en meer gedebatteerd over de doeltreffendheid van hulpverlening (zie bijv. de *Millennium Summit* in 2000, de VN-conferentie '*Financing for Development*' in 2002, de *Paris Declaration on Aid Effectiveness* in 2005, en de *Third High-Level Meeting on Aid Effectiveness* in Accra in 2008). Er is nog altijd geen consensus over de positieve impact van hulpverlening op groei en armoedebestrijding (zie bijv. Rajan en Subramanian, 2005, voor een overzicht van de empirische literatuur over hulpverlening en armoedevermindering). Toch is haast iedereen het eens over de noodzaak om het verband tussen hulpverlening en haar resultaten grondiger te analyseren. Zoals Bourguignon en Sundberg (2007:1) schreven: "Het oorzakelijke verband [tussen hulpverlening en eindresultaat] werd grotendeels genegeerd. Daardoor werd ook het verband tussen hulpverlening en ontwikkeling meestal als een soort 'zwarte doos' behandeld." We proberen deze 'zwarte doos' te openen en enkele componenten van het oorzakelijke verband te analyseren. Zo dragen wij bij tot de literatuur over de doeltreffendheid van hulpverlening. Meer specifiek

onderzoeken we de impact van de gekozen hulpverleningskanalen op de ontwikkelingsresultaten.

6.2.2. Doelstellingen en werkwijze

De algemene doelstelling van de laatste hoofdstukken? De kritische beoordeling van het hulpverleningssysteem en de verschillende hulpverleningswijzen, via twee complementaire methoden. Met de eerste onderzoeken we wanneer een wijziging in hulpverleningswijzen de transactiekosten van de hulpverlening fundamenteel vermindert. Daaruit blijkt dat de kostenreductie afhangt van de specifieke kenmerken van de hulpverleningstransactie (hoofdstuk 2). De tweede methode vergelijkt de twee hulpverleningswijzen aan de hand van een principaal-agentmodel, waarin de kenmerken van de hulpverleningstransactie worden gespecificeerd (hoofdstuk 3).

Hoofdstuk 2 onderzoekt het nieuwe 'hulpverleningsmodel', vooral op basis van de principes van landeigendom en donorencoördinatie, en de beweegredenen voor deze verandering in het hulpverleningssysteem. Daaruit blijkt dat de vermindering van de zogenaamde 'transactiekosten van hulpverlening' een van de belangrijkste beweegredenen was. Dat betekent impliciet dat de doeltreffendheid van hulpverlening hand in hand gaat met de vermindering van haar transactiekosten. Toch vonden we, na onze literatuurstudie over hulpverlening, geen afdoende definitie, typologie of maatstaf voor transactiekosten van hulpverlening. De definities in de literatuur steunen niet op een theorie, en kunnen tot verkeerde interpretaties van transactiekosten leiden. Hoofdstuk 2 wil dan ook vooral een definitie van transactiekosten van hulpverlening voorstellen. Een eerste vereiste daarvoor is de hulpverleningstransactie te linken aan de transactiekosteneconomie. Het andere thema dat we behandelen, is de vraag of een wijziging van de hulpverleningswijze de moeite waard is qua transactiekostenreductie. We tonen aan dat er rekening moet worden gehouden met de transactiekenmerken (onzekerheid, frequentie, specifieke karakteristieken van de geschonken goederen, harmonisering en het aantal donoren), voor je kunt zeggen dat een hulpverleningswijze efficiënter is dan een andere. We ontwikkelen een analytisch kader dat bepaalt wanneer een hulpverleningswijze plaats zou moeten ruimen voor een andere, volgens de specifieke kenmerken van de betrokken hulpverleningstransactie.

Hoofdstuk 3 analyseert de keuze van hulpverleningswijzen aan de hand van een principaal-agent model. Concreet vergelijken we de doeltreffendheid van twee belangrijke hulpverleningswijzen: budgettaire steun en projecthulp. Zoals in hoofdstuk 2 proberen we te vatten wanneer een bepaalde hulpverleningswijze de voorkeur geniet boven een andere, maar hier specificeren we de context van de hulpverleningstransactie. We beschouwen een economie met twee sectoren – de ontwikkelingssector en de andere – en twee agenten - de donor en het ontvangende

land – met verschillende voorkeuren voor de productie in de twee sectoren. In een dergelijke economie hangt de doeltreffendheid van de hulpverlening af van haar vermogen om de productie van 'ontwikkelingsgoederen' te verhogen (dus met andere woorden, om de armoede te verminderen). Bovendien modelleren we de productie van de ontwikkelingsgoederen zo dat de donoren maar een deel van de input zien. De productiviteit van dit deel kan variëren volgens het type goed. Zoals Cordella en Dell'Ariccia (2007) houden we rekening met de intrinsieke verschillen van de hulpverleningswijzen. Ten eerste, kan de budgettaire steun voorwaardelijk zijn, maar dat mag alleen maar gelden voor het observeerbare deel van de ontwikkelingsuitgaven. Ten tweede, controleren de donoren met projecthulp de volledige toewijzing van de hulpmiddelen. Toch nemen we in acht dat projecthulp met onvolledig aangepaste kosten gepaard kan gaan, als gevolg van beperkte harmonisering en coördinatie. We analyseren twee gevallen, waarin de budgetsteun voorwaardelijk is of niet. We ontdekken dat de hulpverlening beter wordt aangewend wanneer ze volledig via budgetsteun wordt geboden – ongeacht of die voorwaardelijk is of niet. Bovendien tonen we aan dat het optimale gebruik van voorwaardelijkheid afhangt van de ontwikkelingsvoorkeuren van het ontvangende land, de productiviteit van de input en het niveau van de hulpverlening in vergelijking met het budget van het ontvangende land. Wanneer deze parameters relatief hoog zijn, moet er voorwaardelijkheid worden opgelegd. In andere gevallen gebeurt de optimale hulpverleningstoewijzing via onvoorwaardelijke budgetsteun. We besluiten dat voorwaardelijkheid de hulpverlening niet altijd doeltreffender maakt.

6.3. Sociale pensioenen

6.2.1. Motivatie

De verouderende bevolking leidde tot heel wat discussies over de financiële houdbaarheid van de bestaande pensioensystemen. Toch moet er ook rekening worden gehouden met hun vermogen om armoede te voorkomen. Hoofdstuk 4 focust op de armoede bij ouderen in Europa. Het bestudeert vooral hoe pensioensystemen armoede (zouden moeten) bestrijden, en tegen welke kosten. Want een van de doelstellingen van pensioensystemen is de bestrijding van armoede. Dit zou een belangrijke bekommernis van sociale zekerheidssystemen moeten zijn, want ouderen vormen een kwetsbare bevolkingsgroep. Bij het ouder worden, stijgt het ziekte- en invaliditeitsrisico en daalt de werkbekwaamheid. De inkomenskansen van ouderen zijn dus kleiner dan die van jongere leeftijdsgroepen. Deze feiten hebben een duidelijke invloed op het armoederisico: ouderen lopen een groter risico op armoede dan de rest van de bevolking. Dit kan verrassend lijken, omdat de Europese pensioensystemen vaak gezien worden als relatief goed ontwikkeld qua dekking en gulheid. Toch zijn ze complex en verschillen ze sterk van land tot land. Vooral de manier waarop ze ouderen beschermen tegen armoede, varieert behoorlijk. Het typische pensioen in Europa is het inkomenspensioen, dat – zoals de naam zegt – afhangt van vroegere inkomsten/bijdragen. Het

bijdragesysteem dekt een groot deel van de bevolking (ongeveer negentig procent in de OESO-landen, volgens Pearson en Whitehouse, 2010). Maar er zijn altijd personen die buiten dit systeem vallen, zoals informeel actieven en niet-werkende echtgenoten. Ook bouwden sommige personen die wel onder het bijdragesysteem vallen, geen volledige pensioenrechten op of droegen ze niet voldoende bij, zoals actieve personen met een onderbroken loopbaan, en langdurig armen. Het inkomen van sommige mensen op oudere leeftijd is dus onvoldoende om aan hun basisbehoeften te voldoen. Pensioenen die niet op bijdragen steunen – sociale pensioenen – lijken dan ook belangrijk om ouderen te beschermen tegen armoede.

6.2.2. Doelstellingen en werkwijze

De belangrijkste doelstelling van hoofdstuk 4? De invoering van verschillende sociale pensioenschema's in Europese landen simuleren, en hun impact qua armoede en kosten[43] analyseren. We simuleren de introductie van verschillende sociale pensioenschema's met gegevens uit de gezinsstudie *EU-SILC* (*European Union – Survey on Income and Living Conditions) 2006*. Databeperkingen limiteren onze simulatie tot zeventien landen. We bekijken twee scenario's: universele pensioenen en via middelentoets geteste sociale pensioenen. In het eerste scenario krijgt iedere oudere een pensioenuitkering die minstens gelijk is aan de armoedegrens. We zien dat de armoede sterk afneemt, maar niet helemaal verdwijnt. De overblijvende armoede is te wijten aan woonomstandigheden: als ouderen alleen zouden wonen (of samen met andere ouderen), dan zouden er geen arme ouderen meer zijn. In het tweede scenario bekijken we twee types van middelentoetsen: op individueel en gezinsinkomen. De hoogte van het sociale pensioen daalt volgens het individuele (of gezins-) inkomen van de arme ouderen.

Er zijn ook secundaire doelstellingen. De eerste is de verduidelijking van het concept sociale pensioenen. Wat onderscheidt sociale pensioenen van inkomenspensioenen? We stellen een typologie voor die pensioenen onderscheidt naargelang hun toekenningscriteria. De tweede secundaire doelstelling is de identificatie van de types sociale pensioenen die in de Europese landen van toepassing zijn. De derde secundaire doelstelling is het onderzoek van de determinant van armoede bij ouderen (al ontvangen pensioenen, ander inkomen en gezinssamenstelling).

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[43] Kakwani en Subbarao (2005) voerden een gelijkaardige simulatie uit in vijftien Afrikaanse landen. Ze stelden vast dat de kostprijs van een universeel pensioen niet betaalbaar is (gemiddeld bijna drie procent van het BNP). Dethier, Pestieau en Ali (2010) simuleerden de invoering van universele en via middelentoets geteste sociale pensioenen in achttien Latijns-Amerikaanse landen. Zij kwamen tot de conclusie dat universele pensioenen de armoede substantieel zouden verminderen, tegen aanvaardbare kosten.

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6. Biography

Frieda Vandeninden was born June 6, 1983 in Liège, Belgium. She studied Economics at the University of Liège and graduated with a master degree in 2005, with summa cum laude. During the last year of her master, she completed an internship at the Belgian development agency in Mali.

In 2005, Frieda started her PhD in the European Social Protection Programme at the Maastricht Graduate School of Governance (MGSoG) and was granted with a three years EU Marie Curie PhD Fellowship.

In 2008, she returned to the University of Liège as a researcher at the CREPP (Centre of Research in Public Economics and Population Economics).

From 2005 up to now, she wrote several papers on foreign aid, social protection and poverty. She presented her work to several workshop and international conferences.

In addition to her research, she taught diverse courses (tutorial in advanced microeconomics for master students, training programme in Social Protection for Southeast Asian Professionals and a course on 'social protection financing' for the 'Executive Masters of Science in Social Protection Financing', organized by ILO and the University of Mauritius). She also attended several PhD courses in Economics at the University of Leuven, Brussels and Louvain-la-Neuve (Belgium).

Currently, she is still working at the University of Liège and her ongoing research projects concern social inclusion in Africa and inheritances in Belgium.

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