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ABSTRACT

This article aims to provide an overview of the main mechanisms underlying non-take-up by bringing together insights from existing theoretical models and the large body of empirical evidence. We draw on studies based on the traditional model of economic rationality as well as on behavioural economics. The first strand of literature is based on the assumption that individuals are perfectly rational and therefore perfectly able to optimize the trade-off between costs and benefits. The second, and more recent perspective, focuses on important deviations from the traditional assumptions of rationality by pointing to the role of cognitive biases and behavioural barriers. An important focus of attention in this article is the way policy design and administrations can affect the uptake of public provisions. While the traditional approach tends to pay little attention to the design of public provisions and the role of administrations in improving participation rates, behavioural economics has shed light on the question of how to nudge and prime people into participating in public programmes without fundamentally changing their economic incentives (e.g. simply by changing the default settings in administrative procedures). In this literature review, we bring both strands in the literature together and develop a theoretical framework which lists and links the various mechanisms at play. At the same time, we summarise the most important empirical findings, and identify gaps in the literature. Finally, we pay attention to lessons from the literature regarding how policies could be redesigned to reduce non-take-up.

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1 Introduction

It is widely acknowledged that non-take-up (NTU) of public provisions is a serious problem in contemporary welfare states. Available estimates indicate that in many Western European countries more than half of those eligible for social assistance at active age do not receive it (Amétépé, 2012; Bouckaert & Schokkaert, 2011; Bruckmeier & Wiemers, 2011; Domingo & Pucci, 2014; Dubois & Ludwinek, 2014; Fuchs, 2007). Such high non-participation rates imply that public policies risk missing their purpose. In the case of social assistance, for example, NTU undermines the poverty-reducing capacity of the welfare state. Further, it causes unjustified disparities among those eligible (Fuchs, 2007; Hernanz, Malherbet, & Pellizzari, 2004). Finally, the budgetary cost of NTU may also warrant concern. While NTU saves public funds in the short run, this may not hold true in the longer run (Dubois et al., 2014). For instance, investments in health prevention may reduce future costs of health care, if take-up is adequate. Similarly, NTU of social assistance by families with children may go hand in hand with lower investment in children's educational career.

Not surprisingly, then, there is a vast amount of academic and empirical literature on both the size and the determinants of NTU. Most existing literature considers the issue of NTU from either a traditional economic perspective or a behavioural economic perspective. The first strand of literature is based on the assumption that individuals are perfectly rational and therefore perfectly able to optimize the trade-off between costs and benefits. The second, and more recent perspective, focuses on important deviations from the traditional assumptions of rationality by pointing to the role of cognitive biases and behavioural barriers. Few attempts have been made to integrate both strands of literature (with Bhargava and Manoli (2012); (2015) being a notable exception). Most studies focus on either the costs and benefits of claiming or on associated behavioural barriers. We have therefore little understanding of the relative impact on take-up rates of costs and benefits on the one hand and the importance of behavioural factors on the other hand.

This article aims to provide an overview of the main mechanisms underlying NTU by bringing together insights from existing theoretical models and the large body of empirical evidence. We draw on studies based on the traditional model of economic rationality as well as on behavioural economics. An important focus of attention in this paper is the way policy design and administrations can affect the uptake of public provisions. While the traditional approach tends to pay little attention to the design of public provisions and the role of administrations in improving participation rates, behavioural economics have shed light on the question of how to nudge and prime people into participating in public programmes without fundamentally changing their economic incentives (e.g. simply by changing the default settings in administrative procedures). In this literature review, we bring both strands in the literature together and develop a theoretical framework which lists and links the various mechanisms at play. At the same time, we summarise most important empirical findings, and identify gaps in the literature.

Finally, we pay attention to lessons from the literature regarding how policies could be redesigned to reduce NTU.

The paper is structured as follows. In section 2, this paper provides a brief summary of the developments in theoretical insights into the determinants of non-take-up. Section 3 describes the main features underlying the overview of drivers of NTU as presented in this paper. We will adopt the multi-level framework that allows us to focus not only on the claimant level but also on the role played by policy makers and administrators. Section 4, 5 and 6 each elaborate on one of the three levels included in our framework: the client, the administration and the policy design. These sections explore the empirical evidence on the factors thought to influence take-up. Section 7 finally concludes.

2 Theoretical models of NTU

In the early 1960s, the United Kingdom was one of the pioneers of investigating the underlying causes of NTU (for a review see Van Oorschot & Kolkhuis, 1989). This may not surprise because the British welfare state is highly selective by design, with the risk of high rates of NTU across a wide range of policies. A first more or less integrated model of the decision-making process underlying NTU was presented by Kerr (1982a, 1982b). Kerr's model defined six thresholds which must be passed in sequence with failure at any of them leading to non-take-up: perceived need, basic knowledge of the existence of the scheme, perceived eligibility, perceived utility of the benefit, a positive net balance of beliefs and feelings regarding the (expected) procedural and social outcomes of claiming and perceived stability of the individual's socio-economic situation. Around the same time, an alternative approach developed, which considers the process of claiming as a trade-off to be made between deterring factors (costs) and promoting factors (benefits) rather than a sequence of thresholds to be overcome (e.g. Ritchie & Matthews, 1982). This 'rational choice model' has been adopted by many authors and was further developed in order to estimate multivariate econometric models so as to explore the relative weight of determinants of NTU (e.g. Blundell, Fry, & Walker, 1988; Duclos, 1995; Fry & Stark, 1987).

Building further upon the literature from the 1980s, Van Oorschot (1991) added the importance of the characteristics of the administration and policy design for NTU, and introduced the notion of trigger events (see below). He formulated a series of stages underlying the claiming process in an attempt to integrate insights from both Kerr's threshold idea and the rational choice approach in one theoretical model. The first so-called thresholds stage rests on Kerr's view that before the decision to put in a claim is made, one has to overcome several barriers, e.g. one has to be aware of the existence of the programme. The actual decision to claim is taken during the trade-off stage, when encouraging factors are balanced against deterring elements. In later work, Van Oorschot (1996) added a third stage to this, the application stage. Even if one decides to claim one's entitlements, application can be unsuccessful because one can still withdraw due to difficulties with claiming or because the claim is unrightfully rejected by the administration.

Indeed, one of the big advancements of Van Oorschot's model is its attention to the role of administrations and policy design in explaining NTU. He frames the thresholds and trade-offs faced by potential claimants within a multi-level model including the design of policy rules and their implementation.

As will be discussed below, more recently, important advances have again been made in the literature on NTU by introducing insights of behavioural economics, which integrates notions from psychology into economic analysis and identifies important deviations from the traditional assumptions of perfectly rational behaviour in the take-up of social provisions (Baicker, Congdon, & Mullainathan, 2012). This improved understanding of the influence of cognitive biases and minor situational factors on take-up behaviour and its focus on policy solutions play an important role in the overview of drivers of NTU as presented below.

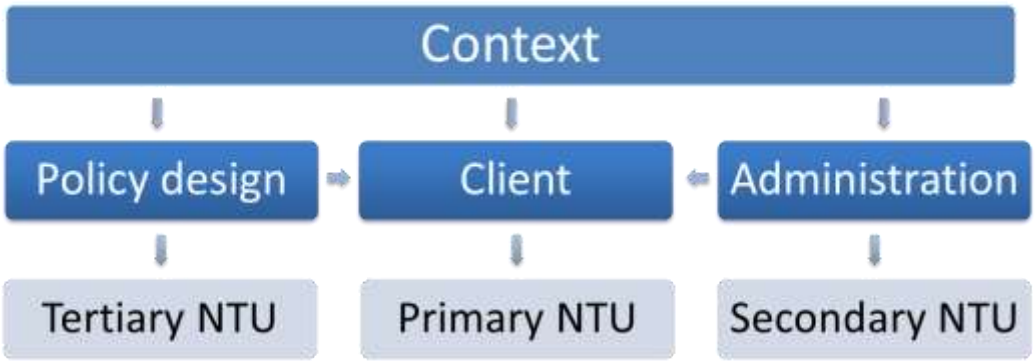
3 Towards an extended overview of drivers and types of NTU

In what follows, we aim to provide a broad overview of the determinants and mechanisms underlying NTU by bringing together empirical research and theoretical insights as offered by different authors and different strands of literature. Given our focus on policy design and implementation we adopt the multi-level framework as presented by Van Oorschot (1996). Van Oorschot classifies factors affecting take-up at three levels: at the client level, at the level of the administration and at the level of the benefit scheme itself. In comparison with Van Oorschot we present a framework that is not so much focused on the stages involved in the non-take-up of benefits but on the multitude of obstacles that deter eligible individuals from applying for benefits and the role herein of policy regulation and administration. Therefore we will complement Van Oorschot's model with insights from behavioural economics and empirical NTU related research.

By distinguishing between three levels (client, administration and policy design) we are able to identify three types of NTU: primary, secondary and tertiary (see

Figure 1). NTU is said to be primary when potential beneficiaries simply do not claim their entitlement (whether intentionally decided or not). In contrast, secondary NTU can be defined as mistakes by the administration during the application process: in this case a client claims the benefit, but the claim is unrightfully rejected. Secondary NTU is directly linked to the workings of the administrations (e.g. errors in the evaluation procedure). Primary and secondary NTU are commonly used concepts in the literature on NTU (Hernanz et al., 2004; Van Oorschot et al., 1989). In this paper we introduce the concept of tertiary NTU to refer to the risk of not having legal access to social rights that one should be entitled to given one's standard of living. We define tertiary NTU as a situation in which vulnerable persons are not entitled to a social provision due to eligibility rules (e.g. behavioural requirements such as concerning work availability). Tertiary NTU hence refers to the efficacy of targeting. For example, in Belgium individuals are required to have a permanent address in order to be eligible for social assistance, which means that many homeless people are excluded from financial support (Steenssens, Degavre, Sannen, Demeyer, & Van Regenmortel, 2007). Strictly speaking, tertiary NTU is not a form of non-take-up as people are formally excluded from specific social rights. Nevertheless, tertiary NTU - which is directly linked to design of the benefit scheme - may be an important reason why public schemes such as social assistance do not reach their anti-poverty objective and is therefore worthwhile to examine.

Figure 1 Primary, secondary and tertiary NTU



Secondary and tertiary NTU refer to the direct impact that the policy design or street level bureaucrats may have on participation rates. However, both policy rules and the way they are administered can also have an indirect influence, i.e. through their impact on the client level (see below). In other words, policy design and administrative implementation can be important drivers of primary NTU. For example: people may be discouraged from claiming because of humiliating treatment by benefit staff. This is an example of primary NTU, although it is clearly driven by aspects of the administration of the social programme. Further, the social context can also be an important factor to understand NTU, in particular the prevailing institutional and policy background, labour market conditions and profile of the population in need of support. For example: the fear of stigma as experienced by the potential claimant may depend not only on the size of a public programme (i.e. policy design) but also on the public discourse about individual responsibility (Baumberg, 2016; Garthwaite, 2015). Likewise, the treatment of claimants is strongly determined by the size of the caseload and hence by the institutional context (e.g. the size of universal vs selective income schemes) as well as the socio-demographic composition of the population. Further, the role and workings of administrations may also depend on the density and the role of non-governmental welfare organizations, and the level and sort of education of street level workers. Moreover, (Hahn, 2013) has shown that Medicaid take-up rates partly reflect the level of the fees paid to care providers. Or, the social network of a migrant client – which can play a crucial role in developing awareness of entitlements – may depend on the degree of residential segregation and thus the workings of the housing market (Bertrand, Mullainathan, & Shafir, 2006). It is clear, then, that while this paper focuses on the characteristics of the policy design, administration and client as drivers of NTU, participations rates are also determined by contextual or exogenous factors. In the following sections, we will subsequently focus on drivers related to the client's behaviour, the policy design and the administration.

By distinguishing between primary, secondary and tertiary NTU the framework can account for a wide variety of situations where people are excluded of social rights. However, not all types of exclusion are covered by our framework. Consider, for example, the situation where parents have decided not to let their youngsters participate in tertiary education simply because they were not aware of potentially being eligible for study allowances. Strictly

speaking, this is not a case of NTU because their children are not students, but it is clearly a relevant situation in a discussion on NTU.

Finally, one should note that the above categories client-policy-administration as well as the subcategories used below (e.g. costs versus behavioural barriers, or information versus process costs) intend to apply structure to our understanding, but that they are by no means exhaustive, and that some factors can be classified under more than one category. They are chosen only for descriptive purposes.

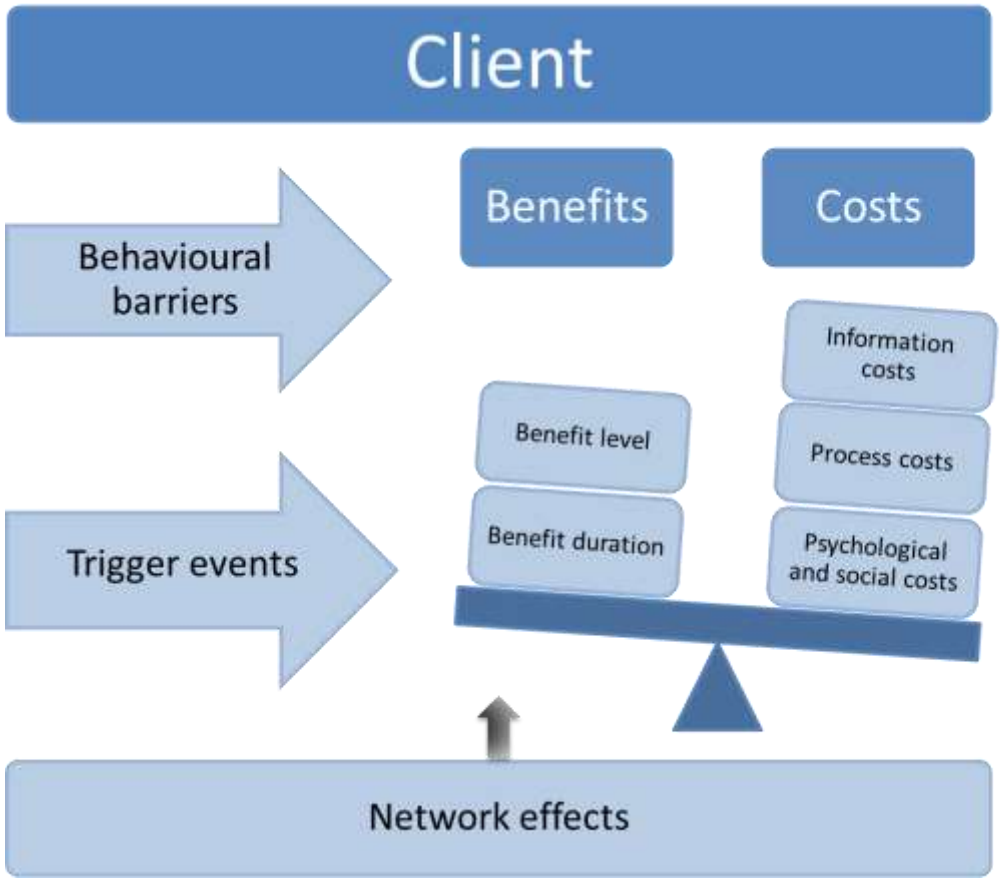
4 The client level

As already pointed out the traditional theoretical approach is based on the premise of a rational consideration of costs and benefits. The standard practice is to distinguish between information costs, process costs and psychological and social costs. As shown in Figure 2, we add three important elements to this trade-off idea. First, we take account of biases, misperceptions and other behavioural barriers that may affect take-up behaviour. Also, we include trigger events that may induce people to put in a claim. Finally, we draw attention to the existence of network effects in the utilization of public provisions. Below, we subsequently discuss the notions and effects as introduced in Figure 2.

Note that the distinction between information costs, process costs and psychological and social costs on the one hand and behavioural barriers as presented in Figure 2 is somewhat artificial. Figure 2 assumes that there is a clear distinction between both factors related to the trade-off between benefits and costs and those related to behavioural barriers. The first one would involve a rational process where claimants weight costs and benefits, the second would add elements involved in the psychology of individual decision making and behaviour (such as procrastination, misperception of risks, etc.). In reality, however, many empirical studies on the trade-off between costs and benefits already take into account cognitive biases. For example, they often include people's susceptibility to social comparison and social norms which may induce stigma attached to claiming public provisions and restrain people from participating. In the standard model stigma is considered as a social and psychological cost that affects the utility of participating in a programme. The same susceptibility to social comparison is present in behavioural economics. This strand of literatures points to the fact that it gives rise to a social multiplier effect: the aggregate impact of an intervention on a group is larger than the sum of its effects on each individual decision (Duflo & Saez, 2003; Rege, Telle, & Votruba, 2012). The more people that are enrolled in a programme, the more likely that newly eligible persons start claiming benefits.

The issue of role of social norms and perceptions in take-up behaviour illustrates that the difference between the costs involved in traditional trade-off literature and behavioural barriers is less straightforward than early students in behavioural economics have suggested.

Figure 2 Determining factors at the client level



4.1 Benefits

In a rational framework, the benefit of participating in a programme largely depends on the (perceived) needs of clients and the extent to which these needs are met by the programme. In this case, needs do not only refer to the current situation in terms of income, debts, health, etc. but also to the stability of this situation. Incentives refers here mainly to the economic benefits of participating in a public provision. This means that the extent to which a programme satisfies needs is related to its pecuniary characteristics (Hernanz et al., 2004): net benefit levels (i.e. taking into account the effect of benefit take-up on the level of other income elements or assets) and time limits.

The positive correlation between the level and duration of the entitlements and take-up is probably the single most robust finding in the literature. First, there is indirect evidence on various proxies for the duration of benefits.

Many studies on the take-up of welfare benefits use a range of variables that can act as plausible proxies for a person's long-term earnings potential and expected benefit duration (e.g. age, education, household composition) and find that take-up rates are significantly lower among eligible individuals for which the expected duration of the benefit spell is

relatively short (Bargain, Immervoll, & Viitamäki, 2012; Riphahn, 2001). Although, such proxy-based approach has been used extensively in the non-take-up literature, the proxies used are often subject to identification problems. For example, using a proxy like single parenthood it is hard to distinguish between the role of the size of expected benefit level and the duration of the expected benefit spell. Higher take-up rates among single parents can be explained by the fact that either the expected duration of the benefit spell is relatively long or the value of the benefit rather high (or both). Moreover, this approach assumes that take-up behaviour is independent of unobserved determinants or characteristics of single parenthood (e.g. stigma or level of needs). Therefore, it is better to provide more direct evidence as, for example, offered by Blank and Ruggles (1996). They have confirmed the positive impact of benefit duration on the take-up of Aid to Families with Dependent Children (AFDC) and Food Stamps in the US using monthly longitudinal data on the actual duration of eligibility spells. In addition, surveys among potential and actual beneficiaries have shown that the former are more inclined to believe that the expected benefit spell is too short and the benefit too low to offset the cost of claiming (Vrooman & Asselberghs, 1994; Wildeboer Schut & Hoff, 2007).

In addition, there is a large and growing body of literature on the positive relationship between participation rates and the expected benefit level (based on estimated benefit levels, drawn from administrative or survey data) (Anderson & Meyer, 1997; Bargain et al., 2012; Daponte, Sanders, & Taylor, 1999; Fuchs, 2007; GAO, 2005; Kayser & Frick, 2000; Tempelman & Houkes-Hommes, 2015; Wildeboer Schut et al., 2007). For example, in a study on participation in the German welfare system, Kayser et al. (2000) found that households that are entitled to rather small benefits (i.e. less than ten percent of their income) have take-up rates of less than 20%. This percentage increases as the amount of the benefit rises: almost 80 percent of the households entitled to benefits that are twice their pre-social assistance income claim social assistance.[1]

4.2 Information costs and process costs

The trade-off idea assumes that the incentives to participate are balanced against the costs. Costs associated with a claim are commonly grouped into three main categories: information costs (i.e. the cost for acquiring information about eligibility), process costs (i.e. time and effort related to the claiming process), and psychological and social costs (e.g. stigma) (Hernanz et al., 2004).

Information costs refer to the role of imperfect information, i.e. lack of information and misinformation. Evidently, information costs rise as the complexity of a benefit scheme increases, or when the interaction between welfare state arrangements is large (e.g. when participation in one benefit programme affects eligibility to other programmes). Where

[1] Note that, as Dahan and Nisan (2010) have pointed out, most of this research suffers from the risk of selection bias. For example, the observation that households with lower expected benefit levels tend to participate less may be due not only to the fact that the incentives to claim are too low, but also that they face higher costs (e.g. because people with higher earnings potential may face higher stigma costs). Nevertheless, in a study using a natural experiment to investigate the determinants of the take-up of reduced tariffs for water consumption in Israel while controlling for the level of costs, they come to a similar conclusion: households who are entitled to higher benefits have substantially higher take-up rates compared to a control group of households.

information costs refer to the time and effort invested in gathering the information on the existence of public provisions, the eligibility criteria, the claiming process and its consequences (e.g. what happens if one makes a successful claim but then this claim appears to affect entitlement to other benefits, or a mistake were to be discovered), process costs refer to time and energy spent in the claiming process itself. Process costs are the physical and administrative thresholds individuals may encounter in applying for a social programme. One can think of difficulties with filling in forms, travelling costs, queuing… Process costs also relate to the uncertainty associated with the outcome of claiming. This uncertainty may be particularly important in the context where street level administrators have a large degree of freedom in deciding who is eligible and who is not.

Basic information on the existence of public provisions but also more specific information regarding eligibility conditions and the application procedure are necessary for potential claimants to become aware of their eligibility, i.e. to develop a proper 'perceived eligibility' (Kerr, 1982a, 1982b). If information costs are too big, potential claimants may remain unaware of their social rights. In this case information costs run the risk of becoming a threshold rather than a cost that is traded-off against the benefits of programme participation (Kerr, 1982a, 1982b; Van Oorschot, 1996). Such ignorance can result in what Warin (2010) has labelled as 'quasi' NTU which refers to a situation where a person fulfils all eligibility requirements except some behavioural conditions which he or she easily could have fulfilled if only he or she had known about the public provisions and the exact condition to be entitled (e.g. the requirement for newcomers to participate in a language course to be entitled to social assistance).

An important aspect of both information and process costs is that they give rise to what we can label a 'programme multiplier effect', i.e. participating in one type of social programme increases the likelihood of participating in another (Hernanz et al., 2004). Claimants experience economies of scale in collecting information and becoming familiar with the administrative requirements of the application process.

There is extensive empirical research using socio-demographic characteristics as proxies for the level of costs. These studies find that participation rates in public provisions are negatively associated with information and process costs. Socio-demographic variables that are often used as proxies for information and process costs in non-take-up research are municipality size, household composition and educational level (assuming that people living in small municipalities, single parent households and low skilled persons face higher costs). Both Riphahn (2001) and Kayser et al. (2000) conclude on the basis of such proxies that information and application costs are very relevant for explaining NTU of social assistance in Germany (see Currie and Grogger (2002) for a similar study with similar conclusions regarding the US Food Stamp Program, and Mood (2006) for the take-up of social benefits in Australia)[2]. The disadvantage of this proxy-based research is that it provides only indirect evidence (see supra). Moreover, it is hard to distinguish between the effect of information costs and process costs and other factors that may be at play.

[2] For similar studies using migrant background as a proxy for literacy levels and understanding of the native language, see (Aizer & Currie, 2004; Amétépé, 2012; M. Baker & Benjamin, 1995; Currie, 2000; Kayser et al., 2000; Riphahn, 2001; Tempelman et al., 2015).

In this sense, field experiments are more informative. There is indeed research using randomized controlled experiments to show the effect of information and/or process costs on claiming decisions (see e.g. Dahan et al., 2010; Daponte et al., 1999; Duflo, Gale, Liebman, Orszag, & Saez, 2005; Hastings & Weinstein, 2007). For example, using a random research design to test possibilities to increase participation in the 'Free Application for Federal Student Aid' program in the US, Bettinger, Long, Oreopoulos, and Sanbonmatsu (2009) have shown that providing information and assistance can be effective ways to improve college access, but only in combination. Only providing information without also giving assistance with completing the form had no significant effect.

Although many studies have confirmed the important role of information and process costs in take-up behaviour[3], there are also studies that fail to find a significant impact of information or process costs on NTU behaviour (see e.g. Jones (2010)). For example, a field experiment by Booij et al. (2012) regarding the role of information costs for the take-up of student loans in the Netherlands did not yield significant differences in take-up behaviour between treatment and control group. Moreover, several studies in behavioural economics claim that their results are not particularly consistent with the argument that lack of information is an important determinant of NTU (e.g. Bhargava et al., 2012; Bhargava et al., 2015; Currie, 2000).

Such contrasting results can be explained by at least four factors. First, they may signal the diversity in the availability of information across public programmes and hence the awareness and knowledge about entitlements. For example, studies that focus on the US Food Stamp Program in the 1980s and 1990s tend to find strong evidence of information costs being a major determinant of high NTU rates (Blaylock et al., 1984; Coe, 1983; Daponte et al., 1999). This may indicate that information of this programme was indeed scarce back then. Second, it may be difficult to identify the role of information and process costs due to the way they mutually interact (see Bettinger et al., 2009 above) or interact with other variables. For example, there are indications of interaction effects between the time and effort one wants to invest in information seeking and claiming on the one hand and the benefit level on the other. If the expected gains are considered to be too low, one is less inclined to spend time on gathering, understanding and mastering eligibility conditions and application procedures (in other words, the relative information and process costs become too high) (Hernanz et al., 2004). In addition, an important explanatory factor for cross-programme differences in information costs may be the size of the programme.

As Currie (2004) and Van Oorschot (2002) have demonstrated, lack of information is a more significant problem for smaller programmes than for large, well-established programmes. Finally, models that focus on the costs and benefits of claiming may miss important factors explaining NTU, particularly behavioural factors. Behavioural economists have indeed shown that providing information may not suffice to increase participation rates because claiming decisions are sensitive to manner and frequency with which programme information is provided (e.g. Bhargava et al., 2015). For this reason small, non-informational changes to the implementation of a programme (e.g. changing the appearance or complexity of claiming

[3] See also the evidence from surveys among claimants and non-claimants of social assistance in France (Bourguignon, 2011), Belgium (Steenssens et al., 2007) and the US (Blaylock & Smallwood, 1984).

forms) can yield substantive changes to claiming. We come back to this in section 4.6, when we discuss behavioural barriers.

4.3 Psychological and social costs

As already explained, the standard model of NTU includes the psychological and social costs related to the take-up of public programmes, thereby focusing mainly on stigma costs. Stigma is a somewhat ambiguous concept, open to many interpretations (Hernanz et al., 2004). Van Oorschot et al. (1989) have argued that stigma covers feelings varying from, amongst others, a wish not to be associated with the group of claimants, or the fear of losing the respect of peers, to resistance against giving personal information and a wish not to be exposed to humiliating treatment by social workers (Van Oorschot et al., 1989). All these feelings refer to a sense of shame. Stigma therefore goes beyond a multiplier effect (the fact that individual participation decisions are sensitive to overall participation rates). Stigma often arises from negative social attitudes towards specific groups (e.g. welfare claimants) (Besley & Coate, 1992), and the extent to which these attitudes are also internalised by potential claimants. These negative social attitudes may be held by peers, administrators or the public opinion, for example, as reflected in the media and political discourse (Baumberg, 2016). The reasons why particular people face high stigma costs can be related to the fact that they depend on public provisions, but also because they live in a specific neighbourhood, or because they are jobless or at least do not participate in what qualifies as legitimate work (Garthwaite, 2015). The extent of stigma related to a public programme depends not only on how benefit receipt is put forward by the media and by policy makers but also on its design and implementation (see below).

Stigmatizing collective perceptions, attitudes and behaviour towards recipients of public provisions are widely seen as a major determinant of NTU. Potential claimants may refuse to apply because they do not want to be associated with the alleged characteristics of participants in social programmes (e.g. lacking the skills to cope for oneself). As Warin (2014) has pointed out in the context of welfare programmes, such clash between one's self-image and public perceptions and expectations of claimants may not only be driven by stigma but also by perceived unrealistic or unacceptable requirements imposed upon them, such as the requirement to demonstrate autonomy and responsibility. If individuals fear not being able to take on certain commitments, they may become discouraged when faced with stringent eligibility conditions and decide not to participate.

By the same token, NTU can sometimes be seen as an act of resistance against a social security or social assistance system that fails to provide the support that is needed. NTU can derive from the rejection of what the social protection system has to offer, or the conditions under which benefits and services are provided, and the role it assigns to claimants. Warin (2008) has labelled this type of NTU 'non-take-up by disinterest'. It refers to indifference or denial by part of the needy of the existing public transfers and services, and the institutions that offer it.

Empirical evidence of the impact of stigma on NTU is again to a large extent indirect and based on proxies. Commonly used proxies for being particularly vulnerable to stigma are municipality size, church attendance, having (young) children… This type of research tends to confirm the negative correlation between stigma and programme participation (Aizer et al., 2004; Kayser et al., 2000; Riphahn, 2001). Moreover, in a study on the NTU of the Food Stamp Program and Special Supplemental Nutrition Program for Women, Infants, and Children, Manchester and Mumford (2012) claim to have developed a model that allows the researchers to distinguish between the impact of stigma and the role of process costs. Using proxies, they conclude that psychological costs are four times more important on average than time costs associated with food assistance programmes.

There is also more direct evidence based on surveys and quasi experiments (e.g. Holford, 2015). For example, in a survey among claimants and non-claimants of social benefits in the UK, Baumberg (2016) finds that claimants increasingly feel stigmatised. Moreover, claimants and non-claimants often give at least one stigma-related reason for delaying or not claiming (see Steenssens et al. (2007) for more survey based evidence).

Nevertheless, other studies find only little empirical support for strong negative attitudes towards benefit dependence and the fear of stigmatization being an important threshold for claiming, or at least less important than information and process costs (Van Oorschot, 1994; Wildeboer Schut et al., 2007). However, this is not to say that negative attitudes and fear of stigmatization play no role at all in explaining NTU. As a matter of fact, Van Oorschot (1994) has found that they negatively impact on other factors important in claiming behaviour (e.g. people's openness to available information). More generally, it seems reasonable to conclude that despite the attention that stigma has drawn in non-take-up studies throughout the years, its relative contribution and the way it operates are still not well understood. Or, as Currie (2004) concludes in a literature review on the take-up of social programmes in the US and UK: 'It seems clear that stigma cannot be the only cost facing participants'.

4.4 Network effects

The fact that take-up behaviour partly depends on social comparison and social norms (cf. supra) reveals that the analysis of the composition of social networks may be important in explaining incomplete claiming. There is also a large empirical literature which shows that there is an important role for network effects in explaining NTU behaviour.

Many studies have generated estimates of social interaction effects from observational data on take-up behaviour in a number of areas, including with regard to the participation in welfare programmes (Bertrand, Luttmer, & Mullainathan, 2000), in prenatal care (Aizer et al., 2004), and in disability insurance (Rege et al., 2012). Through family, friends, neighbours, social organizations, etc., people learn about what can be considered as proper behaviour. Moreover, social interactions affect individual take-up behaviour because of the help that a social network can offer with administrative requirements and reduction of information costs (Bouckaert et al., 2011). Peer effects also arise because peers can provide important information in deciding whether to participate in a public programme, or, by contrast, in

finding work. People who tend to interact mainly with workers may find it harder to obtain information about welfare, and are more likely to obtain information about job opportunities (Bertrand et al., 2000). Likewise, surveys among Pension Credit recipients in the UK have shown that encouragement and help from friends led older people to address the barriers around the complexity of claiming procedures (Bunt, Adams, & Leo, 2006; Steenssens et al., 2007).

4.5 Trigger events

Van Oorschot (1991, 1996) has introduced the notion of trigger events, i.e. sudden disruptive events that induce people to put in a claim. For example, the occurrence of health problems and the associated increase of medical costs can force people to take up their entitlements. Triggers are often events that disturb the existing balance between costs and benefits. Trigger events draw attention to the fact that the process of claiming is a dynamic process. Rather than conceiving the claiming process as a series of stages that have to be passed in sequence (see Kerr's thresholds idea), Van Oorschot's model stresses the fact that people can re-enter it after a basic decision not to claim has been taken or, by contrast, an initial decision to apply for a benefit can be reversed in a later stage, e.g. due to an unpleasant experience with the public administration. In the former case one could say that NTU is frictional or temporary. In a study of the NTU of several benefits among elderly people and social assistance clients in two major Dutch cities, Van Oorschot (1995) found delayed claiming to be substantial, varying from 5 per cent to as much as 45 per cent of the recipients. Furthermore, delayed recipients often reported having been triggered by information-related events (advice) rather than by needs-related events.

4.6 Behavioural barriers

Research into behavioural economics has raised serious questions about the rationality of many judgments and decisions that people make, including the decision to take up (or not) a benefit. People make mistakes and they lack perfect focus or perfect will power. This strand of literature has pointed to the importance of behavioural barriers both to decide optimally and to act optimally. People may be prevented from deciding optimally, for example, because they may not be perfectly aware of the choice that would be most in their private interest.

But even if they are fully aware of the best choice decision, people often lack the will to implement them because of, for example, their tendency to prefer the status quo to change. These behavioural constraints hold even stronger for poor people. As Mani, Mullainathan, Shafir, and Zhao (2013) have shown, poverty seems to impede cognitive functions.[4] The next sections focus consecutively on the cognitive barriers to consistent decision-making; and the reasons why people fail to implement their decisions. Thereafter, sections 5 and 6 discuss

[4] Tempelman et al. (2015) consider this shortfall of cognitive resources of the very poor as a possible explanation for their finding that while in general the probability of take-up of Dutch welfare benefits increases when income decreases, those with the lowest income do not have the highest probability of take-up.

how these behavioural barriers are influenced by programme design and the way it is implemented and communicated.

4.6.1 Behavioural barriers to decide optimally

Drawing on a variety of psychological research and experimental evidence (particularly related to health insurance take-up), Baicker et al (2012) have identified three barriers to decide optimally: choice overload and complexity, lack of understanding about costs and benefits and misperceptions of risk. Choice overload refers to the increasing difficulty to choose as the number of choices increases. An overload of choices can increase the burden on mental resources and the time required to make a choice, reducing the net satisfaction that can be derived from making a decision, leading to procrastination or preventing individuals from being able to make a decision at all. There is empirical evidence of this, for example, in retirement plans (Carroll, Choi, Laibson, Madrian, & Metrick, 2009). Beshears, Choi, Laibson, and Madrian (2013) have shown that by collapsing the multitude of retirement saving plans into a binary choice between status quo and a pre-selected alternative one is able to significantly increase enrolment rates. This points to the effectiveness of simplification of benefit schedules as a means to increase participation rates (cf. below).

Furthermore, one's decision to participate in a public program may be hampered by difficulties in correctly understanding the costs and benefits of public provisions. For example, 'financial illiteracy' may prevent potential claimants from participating because they do not understand the relevant incentives provided by the programme (Bertrand et al., 2006). This factor shows some overlap with the notion of information costs, as defined by the rational choice model. However, while the standard approach focuses mainly on the difficulties in finding the necessary information for individuals to become aware of their eligibility, behavioural economics points to the difficulties of understanding the information available and choosing which benefit scheme is relevant for a given situation. The difference between getting information and understanding it may explain why not all studies into the role of information provision in participation rates find a substantial impact (cf. supra).

There is ample evidence that in order to increase the take-up of public goods, it is important not only to provide information but also to pay attention to the way it is presented (Baird, Cullinan, Landers, & Reardon, 2016; Bertrand et al., 2006; Bhargava et al., 2015; Chetty & Saez, 2013; Dechausay, Anzelone, & Reardon, 2015; Duflo et al., 2003; Farrell, Smith Jared, Reardon, & Obara, 2016; Hossain & List, 2012; Kling, Mullainathan, Shafir, Vermeulen, & Wrobel, 2012; Saez, 2009; Thaler & Sunstein, 2008).

Finally, an important impeding factor for adequate decision-making is the complexity of accurate risk assessment. There are several reasons why people are often biased when assessing risks. Misperceptions of risks can arise due to a tendency to give more weight to

recent events than to earlier ones (Thaler et al., 2008). Further, people tend to overestimate low probabilities while giving little weight to high probabilities (Kahneman & Tversky, 1979). Or, they may underestimate the benefits of job search (Babcock, Congdon, Katz, & Mullainathan, 2012). Misperceptions of risks may influence the time invested in job search activities, but may also affect decisions to buy insurance, or to participate in welfare programs.

4.6.2 Behavioural barriers to act optimally

Even if people are perfectly convinced of the advantages of participating in a public programme, they may still refrain from actually applying for a number of reasons. Baicker et al. (2012) have identified three sources of why people's behaviour is not always consistent with their decision making: present bias and limited self-control, susceptibility to channel factors, and reference dependence and framing.[5] Present bias refers to an individual's propensity to downplay outcomes in the future and overvalue outcomes in the present. Consequently, relatively small immediate costs (e.g. information costs) can outweigh relatively important rewards in the future (e.g. social assistance receipt). People's tendency to focus on the present may give rise to problems of limited self-control: one may choose to procrastinate immediate cost activities and give priority to immediate reward activities (O'Donoghue & Rabin, 1999). Present bias may explain why poor people may intend to sign up for welfare programmes but somehow never get around to it (Bertrand et al., 2006).

Baicker et al. (2012) have defined channel factors as 'contextual factors that can channel behaviour toward or away from particular decision outcome'. Channel factors are related to what we have already labelled as 'process costs' (for example, filling out a form or queueing) but it draws attention to the potentially strong impact of seemingly small costs. While such hassle costs may seem trivial and are often neglected in programme design, they can be detrimental in the context of programme take-up (Bertrand et al., 2006; Bitler, Currie, & Scholz, 2003; Dechausay et al., 2015). Automatic enrolment, enrolment assistance, simplification of application procedures, etc. can therefore have an outsized impact on claiming outcomes (see below).

In addition, where individuals start from matters for choice because it creates a reference point that affects how they value outcomes (i.e. reference dependence). This means that preferences may not be stable but vary through time. Further, reference dependence also explains why we are risk averse. According to Thaler et al. (2008), 'losing something makes you twice as miserable as gaining the same thing makes you happy'. In a context of uncertain outcomes (e.g. in terms of eligibility for other public programmes), such risk aversion may negatively impact on the decision whether or not to apply for a public service or benefit scheme. More in general, it explains why individuals tend to stick with the status quo. The consequences of risk aversion in the context of take-up behaviour have been extensively studied, focusing, for example, on the impact of default setting (e.g. Madrian and Shea (2001);

[5] Baicker et al.'s list of reasons of suboptimal acting also includes the influence of social comparisons. This factor has already been discussed in Sections 0 and 4.

Suri, Sheppes, Schwartz, and Gross (2013)) and on the importance of framing manipulations (e.g. Farrell et al. (2016); Hossain et al. (2012)). An important lesson to be learnt regarding framing manipulation is that in order to increase the participation in public provisions, the cost of non-participation should be framed as an ongoing loss rather than a forgone gain (Bertrand et al., 2006).

To this list of sources of suboptimal behaviour, a number of authors have added prospective memory failure, i.e. the fact that people may just forget about their decisions. Such failure to remember planned intentions or to follow-through on tasks is believed to have a downward impact on participation rates in public programmes. According to Holman and Zaidi (2010), it is the overconfidence with respect to prospective memory that is particularly welfare reducing because it encourages procrastination. Imperfect memory provides an explanation of many recent empirical findings that show how smartly designed reminders can have strong behavioural effects (see below). We return to the policy implications of these behavioural barriers in subsequent sections.

5 The level of the policy design

So far, we have focused on factors directly related to the client level. However, policy design and the structure and functioning of the administration are also relevant. The policy design determines among others benefit levels and duration as well as eligibility criteria. Administrative procedures and requirements have a direct impact upon information costs, process costs and behavioural barriers. We first discuss the role of policy design.

The maximization of take-up rates is not the only priority of policy-makers when constructing policy instruments. An important ambiguity in designing, for example, social or labour market policies concerns the pursuit of employment or equity objectives versus the burden of financing them (Atkinson, 1995). Together with issues of fairness and social legitimacy, such budgetary constraints fuel the need for selective targeting of benefits and services at specific populations, in particular at those in 'real need' of accommodating policies (Van Oorschot & Roosma, 2015). In the context of welfare programmes, this need to screen between the poor on the one hand and non-poor or non-deserving poor (given, for example, their unwillingness to work) on the other hand has often resulted in complicated means-tests and stringent behavioural conditions, including work availability requirements.

However, such tests and requirements can constitute important barriers to programmes enrolment. It has been argued that policy makers therefore face a trade-off between the rigor of screening and complete take-up of selective measures (e.g. Kleven & Kopczuk, 2011). Some authors have even argued that the preoccupation with errors of inclusion and benefit fraud is often so big that policy makers are scarcely interested in developing strategies to tackle the problem of NTU (Smolensky, Reilly, & Evenhouse, 1995).

The way a policy is designed can affect take-up rates both directly and indirectly. In the former case, to which we refer as tertiary NTU (see above), eligibility rules formally exclude certain vulnerable groups (e.g. the homeless). The policy design can also influence participation rates

in a more indirect way, i.e. through their impact on take-up behaviour at the client level and on the administrative treatment of claims. At the level of the policy design, eligibility rules and entitlement conditions are set up and the benefit structure is defined. Moreover, policy makers decide on the size of the budget that is assigned to the benefits and services provided, as well as to the administration of the public programme. In what follows we glance through the relevant characteristics of the policy design and discuss how it may bear on NTU-rates, either directly or indirectly. Figure 3 focuses on the impact of the policy design on NTU behaviour at the client level, either through the way it affects the costs and incentives that potential claimants may take into account when deciding to claim or not, or because policy instruments in part create the conditions within which behavioural barriers, trigger events and network effect are more or less likely to occur.

Figure 3 Determining factors at the policy level

5.1 Degree of targeting

The degree to which public provisions are targeted to specific population groups and the way targeting is achieved are important design characteristics of public provisions when it comes to reducing NTU-rates. Selective social programmes are found to be associated with significant higher degrees of NTU than universal programmes (Baker, 2010; Deacon & Bradshaw, 1983; Van Oorschot, 2002; Van Oorschot et al., 1989). Moreover, within the category of selective programmes, high levels of selectivity (i.e. targeting at very specific population groups) have been found to be associated with higher levels of NTU. For example, in a study using administrative data on school meal participation in Scotland, Holford (2015) has shown that take-up rates among low-income families increased as subsidized meals became also available to better-off children. The size of the target group (and hence the level of any income threshold) seems to play a crucial role in explaining NTU rates. A potential reason why selectivity is associated with NTU is that targeted programmes can create more stigma. This is especially true in the context of welfare schemes. Selectivity distinguishes needy persons from non-needy persons. Benefit entitlement can be seen as direct proof of one's need of support, and can therefore generate stigma, particularly in societies in which there is a strong work ethic and regard for self-reliance and responsibility.

Van Oorschot et al. (1989) have argued that being in need of support is particularly stigmatizing for 'outsiders' such as the unemployed and migrants. Furthermore, being entitled to social assistance benefits is also stigmatizing as welfare programmes are generally tax-financed and therefore tend to have lower social legitimacy than contributory social insurance programmes (Baumberg et al., 2012; Van Oorschot et al., 2015). A final factor contributing to the stigma attached to welfare schemes is the fact that the practice of means-testing itself is stigmatizing. Claimants often perceive the treatment by social workers during income assessments as humiliating (Steenssens et al., 2007; Van Oorschot et al., 1989).

The stigmatizing nature is not the only reason why selectivity decreases participation rates. Targeting often leads to a fragmentation of public provisions, thereby increasing the

information costs of potential claimants. For example, many countries operate several welfare schemes each providing cash assistance to low-income single parents, or to the disabled in need, or to the able-bodied in need, or to the elderly, etc. In addition, each of these population groups can apply for several cash and non-cash benefits, e.g. general assistance, 'tied' assistance like housing allowances, reduced tariffs for public transfers, etc. Such excess of social programmes may not only increase information costs (which are larger for smaller programmes than for large, well-established programmes) but also give occasion for choice overload (see above).

5.2 Way of targeting

The optimal policy design seeks to improve targeting efficiency while keeping eligibility criteria as simple and transparent as possible. The need to identify very precisely who deserves support and who does not, tends to make selective schemes very difficult to administer. Targeted schemes are often characterized by very complicated rules and regulations regarding eligibility, including behavioural conditions and several thresholds regarding income sources and assets. Clearly, it is difficult for policy administrations to translate complex policy designs in simple and brief application procedures. In addition, programme complexity may give rise to administrative errors in assessing entitlements (Van Oorschot, 2002). At the client level, elaborate regulations may increase the time and effort needed for gathering, understanding and mastering eligibility conditions and application procedures. Especially where individuals are already uncertain about their eligibility, the complexity of assessing the criteria has been found to reinforce their belief that they were probably not entitled (Baker, 2010). Not only the complexity of the regulation, but also the nature of eligibility rules and conditions themselves can affect the level of NTU. First, programme rules may formally exclude certain groups from a public provision, leading to what we have called 'tertiary' NTU (see above). This is especially problematic if administrations are required to use rather rough proxies for identifying the level of 'need' or available resources of their clients. In addition, potential claimants may decide not apply for a benefit when eligibility conditions are perceived as insulting or stigmatizing, or requiring the disclosure of too much personal information. An overload of behavioural conditions that seek to evaluate the claimant's sense of autonomy and responsibility can induce NTU 'by disinterest' (see above).

These are important considerations to take into account when setting eligibility conditions and designing a means-test. The concern about the inherent complexity of means-tests, and associated NTU-rates, can also be a key motivation for adopting a categorical approach, i.e. to provide social benefits and services on the basis of socio-demographic characteristics that are relatively easy to observe, for example age or household composition. While categorical schemes may be less effective in targeting the most vulnerable (that is, they increase the likelihood of 'tertiary NTU'), they may simplify the application process considerably, thereby reducing primary and secondary NTU.

5.3 Benefit type and structure

The traditional model of economic rationality emphasizes the importance of the economic incentives provided by a public programme for explaining participation rates. In the case of benefit payments or subsidies, benefit levels and the duration of entitlement have been found to be important drivers of NTU (see above). The waiting period too can be considered as an important pecuniary determinant of NTU (Hernanz et al., 2004). Given that people tend to dislike incurring costs in the present to obtain gains in the future, long waiting or latency periods may discourage people to apply for a benefit. This present bias may also explain why increasing the frequency at which benefits are paid, without changing their level, can improve programme outcomes (Mullainathan, Schwartzstein, & Congdon, 2012).

Another reason for keeping waiting periods relatively short is that people can be overly optimistic about their prospects for improvement. People may defer making a claim because they expect their need for support to change even before the waiting period expires. For example, Storer and Van Audenrode (1995) have found that the waiting period of two weeks for the unemployed to receive unemployment insurance benefits in Canada, was one of the drivers of NTU during the first month of unemployment. Many unemployed may have expected to find a new job relatively quickly and did not think it worth the investment of time and effort in the application process.

The type of benefit is another element of the policy design that can influence take-up behaviour. There is ample evidence of programmes that provide cash benefits generating higher participation rates than programmes that provide in kind benefits of direct services. Much of this research relates to the US welfare system (Currie, Grogger, Burtless, & Schoeni, 2001; Daponte et al., 1999; Schanzenbach, 2009; Weisbrod, 1970). One reason for the preference of welfare clients for cash benefits is the flexibility that these benefits give to individuals. Non-cash benefits do not allow individuals to shift resources away from programme purposes towards needs that they might consider more pressing (GAO, 2005). In addition, programmes such as the US Food Stamp Program are perceived as generating high stigma costs, as recipients may feel stigmatized every time they go to a shop and use the stamps (Hernanz et al., 2004).

5.4 Degree of discretion

Uncertainty regarding the outcome of claiming a benefit increases process costs and induces inconsistent decision-making and behaviour. Optimal policy designs therefore feature a clear set of benefit entitlements and eligibility rules. In order to reduce entitlement assessment uncertainty, it is furthermore important to impose a limit to the degree of administrative discretion (Behrendt, 2002). Discretion allows administrators to customize support to the needs of claimants. In the context of social work, it is often considered as a key parameter of professionalism. But whereas discretion can be seen as an important aspect of professional judgment and decision making in professional work (Evans & Harris, 2004; Evetts, 2002), it increases the likelihood of administrative errors to occur and it may also deter potential claims because of non-transparent entitlement rules. Indeed, discretion tends to go hand in hand

with substantial variation in rules and practices between local welfare agencies, and even, within local welfare agencies, between social workers. For example, De Wilde (2016) and Van Mechelen and Bogaerts (2008) observe large differences between Belgian welfare agencies as well as between case managers in the eligibility of claimants for welfare payments and in the client's obligation to take part in an activation programme or to find work. From the claimant's perspective, such variation gives rise to uncertainty, but also to feelings of being vulnerable and left unprotected, and to fears of stigmatization (Behrendt, 2002; Steenssens et al., 2007). Such observations should highlight the importance of striking the right balance between discretion and professional autonomy on the one hand and standardization of entitlement rules and benefit levels on the other.

6 The level of the administration

Secondary NTU refers to a situation where non-participation is directly linked to the functioning of the administration. This type of NTU is especially important in the context of non-automatic enrolment, where street-level administrators are involved in the application process. Administrators may wrongly reject applications of eligible persons because they make mistakes or make discretionary decisions based on loose programme rules. Or, they may fail to refer a person to the agency that supplies the care or benefits someone needs. The drivers of secondary NTU include not only the internal and external organization of government administrations; also the policy design and other contextual factors may play an important role. For example, Van Oorschot (1994) has pointed out that welfare schemes where the means-test is based on commonly used income concepts (e.g. last year's total taxable income) give less rise to rejection errors than tests that use more specific income notions (e.g. actual monthly income). In addition, in the Netherlands, the level of NTU in a municipality is positively correlated to the caseload per social worker (Van Oorschot, 1994). The number of recipients per social worker depends in part on the internal organization of a welfare agency, though obviously budgetary constraints set at the policy level are also a determining factor. Other policy or contextual drivers for secondary NTU include, amongst others, the level of discretion set by the policy design, the level and type of education of social workers…

In this section, we focus on the drivers at the level of the administration (see also Figure 4). We pay attention not only to drivers of secondary NTU, but also to administrative features that shape individual take-up behaviour at the client level and therefore have an indirect impact on NTU rates: the internal organization of an administration (given the impact of stigma costs), the degree and quality of information provision and the user-friendliness of the application procedure.

However, before proceeding with a discussion of Figure 4, it should be noted that the administration of a public provision encompasses many different concerns and often serves many conflicting objectives. Administrators are in this sense no different from policy-makers (see above). Administrators, for example, often perceive a trade-off between the user-friendliness of the application procedure and its effectiveness to identify non-eligible claiming,

or even to deter fraudulent claiming. Moreover, government administrations include different levels of workers (e.g. senior managers versus street-level practitioners) with often antagonistic or divergent interests. Lipsky (1980), for example, has argued that in order to process large caseloads, street-level bureaucrats may develop routines and simplifications which conflict with the organizational goals and objectives. In order to be effective as a measure to improve programme participation, policy strategies need to take such conflicting interests into account.

Figure 4 Determining factors at the administrative level

6.1 Degree and quality of information provision

Government administrations have an important role to play in raising the general awareness of public programmes, as well as in providing more specific information on eligibility rules, entitlement conditions and application procedures. They can make use of the internet, or large-scale advertising or mailing campaigns for doing so (Finn & Goodschip, 2014; Tempelman, Houkes, & Prins, 2011; Van Oorschot, 1994). The choice of communication channel is largely dictated by the age, place of residence, etc. of the population targeted (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Not surprisingly, targeted information campaigns that make use of existing data in order to reach potential claimants have proven to be more effective in approaching harder-to-reach groups (Finn et al., 2014; Van Oorschot, 1994). Such a proactive approach allows for a more personalized way of providing eligibility information and therefore increases participation rates (Chetty et al., 2013; Dechausay et al., 2015; Farrell et al., 2016; Kling et al., 2012; Schultz et al., 2007).

Cumulative research in behavioural economics has deepened our understanding of ways to improve the effectiveness of information provision in terms of NTU reduction. Effective information campaigns remove barriers to both optimal decision making (such as lack of understanding and choice overload) and optimal behaviour (such as present bias and susceptibility to social comparison).

Proper understanding, for example, can be promoted by paying attention to the simplicity of the message (Baird, Reardon, Cullinan, McDermott, & Landers, 2015; Bhargava et al., 2015; Chetty et al., 2013) and by using visual presentations (Bhargava et al., 2015; Farrell et al., 2016). In addition, good quality information aims to reduce choice overload by structuring complex choices (Thaler et al., 2008). Further, loss-framed messages may generate greater responsiveness than their gain-framed information (Bertrand et al., 2006; Farrell et al., 2016; Hossain et al., 2012; Thaler et al., 2008), this means that it is important to stress the long-term risks of not participating and the losses associated with non-compliance. Finally, given one's susceptibility to social comparison, and the associated social multiplier effect, optimally framed messages may also emphasize the number of claimants that already participate in a programme (Duflo et al., 2003; Rege et al., 2012). In sum, behavioural economics have drawn our attention to the importance of considering the provision of information as an important part of an overall strategy of nudging and priming people into participating in public programmes.

6.2 User-friendliness of the application procedure

Programme participation can be significantly improved by reducing process costs (see above). Process costs include both time consuming administrative requirements (e.g. gathering certificates) and seemingly small hassle costs that nevertheless have large impact on participation decisions (e.g. queuing). Some studies have shown that the time required to go through the claiming procedure can be significantly reduced by setting up an online application process on the Internet (Bekker, 2014; GAO, 2007; Kopczuk & Pop-Eleches, 2007), although it is clear that this solution may be less effective for measures aimed at the elderly or other groups that have limited access to the internet.[6] In addition, providing personal enrolment assistance (e.g. during home visits) has been found to be an effective measure to increase participation rates (Finn et al., 2014; Schanzenbach, 2009; Tempelman et al., 2011). Also efforts to simplify or translate application forms so that they are easier to read and to understand can significantly reduce the complexity of the claiming procedure (Bertrand et al., 2006; Bitler et al., 2003). These forms could also be partially pre-filled by making use of administrative data (Bertrand et al., 2006; Tempelman et al., 2011). A low-cost intervention that has been proven to be particularly helpful in reducing NTU is to use smartly designed deadlines and reminders in order to diminish information costs (Farrell et al., 2016) or process costs ((Babcock et al., 2012; Baird et al., 2015; Dechausay et al., 2015; Garner, 2005; Karlan, McConnell, Mullainathan, & Zinman, 2016; Kling et al., 2012; Mayer, Cullinan, Calmeyer, & Patterson, 2015; Taubinsky, 2013)). But the ultimate solution for reducing process costs is of course the introduction of automatic enrolment. For example, Madrian et al. (2001) have shown that when claimants are enrolled by default in a savings programme, very few opt out, and most employees do not change the default contribution rate or the default allocation of assets. Given their enormous impact on individual behaviour, administrators should pay considerable attention to setting smart default rules.

At the same time, automatic enrolment, especially for means-tested benefits limits the possibilities of targeting to information that is already available to administrations, which is sometimes of varying quality, timeliness and comprehensiveness, potentially introducing tertiary NTU.

6.3 Internal organization of agencies charged with policy delivery

The internal organization of the agencies charged with policy delivery can also influence whether or not someone eligible for a programme participates. Creating an environment that allows for and even stimulates respectful treatment of claimants and regular and lawful granting of benefits is an important challenge for administrators. Organizational structures should seek to prevent unfriendly accusative or stigmatizing communication between claimants and street level workers, as well as caseworkers making errors in assessing entitlements. The organizational structure here also includes the practical organization of day-to-day casework, for example, the extent to which workers can rely on administrative data to

[6] Note that Dechausay et al. (2015) and Ebenstein and Stange (2010) failed to find a similar positive impact of easing the process of claiming through telephone claims.

assess claims, or the availability of computer hardware and software. In Lipsky's terms (1980), organizational design features should avoid street level bureaucrats to develop coping mechanisms that conflict with policy objectives such as to reach the entire target population. This should however not lead to an oversimplification of street-level practice that undermines the application of professional judgment (Brodkin, 2008). Obviously the time that is available to caseworkers to assess entitlements substantially contributes to the quality of casework. In this sense the caseload per worker is in important organizational feature. Although there is little evidence on the impact of organizational design features and management strategies on take-up rates, the way tasks are divided across caseworkers may also be a relevant factor. Caseworkers often combine two functions: on the one hand they provide services as well as information and help with administrative requirements, on the other hand they assess eligibility and check whether all eligibility conditions are fulfilled. The vigilance of caseworkers for fraud and freeloaders may have a negative impact on the caseworkers' service function; it may affect the claimant's confidence in a legitimate outcome of application procedure and increase perceived stigma on the part of the claimant (Van Oorschot, 2002). To some extent the connectedness between the service and the control function depends on the internal organisation of an agency. For example, in welfare agencies that provide cash benefits for the able-bodied the control on work availability requirements and the provision of benefits are often subsumed under different administrative units. There is however as yet no systematic research available linking such organisational specialisation to lower NTU rates.

6.4 External organization of agencies charged with policy delivery

Another organizational feature that is relevant in the context of NTU is the degree of collaboration between agencies that are charged with the delivery of similar benefits and services. Although NTU research has shown little interest in measuring its precise impact, it is frequently described as an important factor contributing to NTU (Daigneault, Jacob, & Tereraho, 2012; Steenssens et al., 2007).

Partnership with other organisations can play an important role in adopting an outreaching approach and taking information into communities. By working together, organizations can draw on a broader range of resources and expertise. A high level of integration is therefore believed to result in a higher quality of service delivery, improved access to services and better outcomes at the client level (Raeymaeckers & Dierckx, 2012). The development of multi-professional networks can also have a beneficial effect on the degree and way of referring individuals to the public benefits and services that they need. So it can reduce the size of secondary NTU caused by persons that need help but apply for the wrong benefit without being referred to the programme that is specifically designed for supporting this kind of person. In this sense network governance impacts on the information cost that claimants face. A promising practice in this respect is the introduction of one-stop shops where individuals who apply for one benefit are automatically informed about the other programmes that they could be eligible for (e.g. Fuchs, 2007). Further, inter-agency cooperation and coordination can reduce process costs by bundling application procedures. For example, when a child is

born in Ontario, parents have the opportunity to apply for a birth certificate and a social insurance number at the same time (Daigneault et al., 2012).

7 Conclusions

This article aims to provide a broad overview of the main drivers of NTU. For doing so we have adopted the multi-level framework as presented by Van Oorschot (1996), distinguishing between processes and mechanism at three levels: the client level, the administration level and the policy design level. Most studies have devoted much attention to the client level. This is in particular true for studies that are rooted in a rational choice framework and focus on the trade-off between costs and benefits of claiming. Empirical evidence has indeed shown that the incentive to participate in a programme largely depends on the degree of needs, the expected duration of needs, and the extent to which these needs are met by the programme. As far as the costs are concerned, the traditional model of economic rationality has mainly focused on time and effort that is required to acquire the information that is needed for claiming and to actually put in a claim as well as the psychological and social costs associated with stigma. This strand of literature has provided evidence that participation rates in public provisions are negatively associated with the costs of claiming, mainly using socio-demographic characteristics as proxies for the level of costs. NTU rates appear to be much higher among population groups that are assumed to face higher costs, such as single parent households, families with a migration background, the low skilled, etc. However, in this paper we have listed a number of basic caveats related to this proxy-based approach. In particular, the proxy used may often be associated with a range of factors, which do not all reflect the cost of claiming social benefits.

More recently, important advances have been made in the literature on NTU by introducing insights of behavioural economics, aiming to identify the most important behavioural barriers to decide rationally and to behave accordingly. This perspective has drawn attention to, for example, people's tendency to overestimate low probabilities, or their propensity to give more weight to outcomes in the present and to underweight outcomes in the future.

Research in behavioural economics has shed light on the relevance of characteristics of the administrative level, using mainly randomized experiments. For example, effective information campaigns in terms of increasing participation rates should pay attention to the simplicity of the message, preferably using visual presentations, and stress the long-terms risks of non-participation. Other low-cost interventions that have been proven to be helpful in reducing NTU are smartly designed deadlines and reminders or the use of well-considered defaults.

In the final sections of this paper we have drawn on a broad range of empirical literature to define the drivers of NTU on the levels of the administration and policy design. We have emphasized the importance of administrative features regarding the internal organization of the agencies charged with policy delivery (based on the insights of Lipsky (1980)) as well as their external organisation (e.g. the degree to which they are embedded in a multi-professional network). Areas of concern with regard to the policy design are the degree of targeting (as fragmentation may increase stigma and information costs), the way of targeting (as complexity may increase information and process costs), the benefit type and structure (e.g. long waiting periods may deter people from claiming),

and striking the right balance between discretion and professional autonomy on the one hand and standardisation of entitlement rules and benefit levels on the other.

Based on the theoretical literature and empirical evidence we have reviewed, we can however not draw conclusions about the relative importance of each of above factors in explaining NTU. This lacuna is unfortunate but can be explained by a least three factors. Firsts, most studies focus on one or two mechanisms, while ignoring other relevant factors for disentangling NTU. Secondly, it is difficult to compare the results of the studies reviewed since they differ on several aspects: i.e. as regards the benefit under study, the data available, the statistical methods used and the research design. Finally, while empirical studies try to provide evidence of the importance of above factors, their relative role will always vary across programmes, countries and individuals.

Future research may help to gain a better understanding of the underlying mechanisms of NTU by constructing theories about how all of these above factors determine the decision to take up across time and programmes. Empirically, advances could be made by collecting better data on NTU (which would allow for using more meaningful proxies) and by investing more in experimental designs for assessing the impact of different factors on NTU.

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