Societal Choices, Structural Poverty and Social Cost

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1 Introduction

In this paper we examine some in- and exclusion processes which operate on the interface between education, labour market and social protection. Making use of the panel study of Belgian Households (PSBH) for the period 1993-1997, we follow two well-established traditions within the econometric analysis of poverty. On the one hand, we model poverty dynamics as a first-order Markov process (see Boskin and Nold (1975) and McCall (1971) for early applications, Cappellari and Jenkins (2002) for a more recent example). On the other hand, we use microsimulation to evaluate the effects of different government policies (see Orcutt (1957) for initial uses of this technique, Merz (1991) for a historical overview and Atkinson, et al. (2002) for a recent application).

In this context, *structural poverty* not only designates persistent poverty, but also the structural processes exerting some short or long-term influence on poverty: education, social protection and various labour market policies. The *societal choices* refer to three successive paradigms of the welfare state, each of which prescribes different instruments of poverty-combating strategy. For example, the traditional welfare state proposes social security as the main anti-poverty instrument. The active welfare state attributes a pivotal role to employment in income acquisition as well as personal and social development. Finally, the knowledge society views social integration mainly through education and lifelong learning.

By simulating some specific examples from each welfare state paradigm, we put the above-mentioned basic strategies to the test. Within the framework of this paper, we have confined the analysis to some simple scenarios which yield indications of the efficiency of each these basic strategies.

Using the econometric model estimated in section two, we simulate the effect of three typical scenarios on poverty risks and dynamics in section three. Section four discusses the costs and benefits of each scenario, and section five concludes with the policy implications.

2 Estimation of the Mobility into and out of Poverty

2.1 Definitions

In earlier work (Nicaise et al. (2001), a model was developed describing poverty dynamics from an institutional angle. In that context a distinction was made between 5 states of social protection. We simplify the latter model and consider only three states, of which the first two correspond to poverty:

1. Insufficient Protection (IP): family income lies below the legally guaranteed minimum income. For some reason, people in this state forego income support[1]. Note that some individuals in this state may draw an income from work or (other) social benefits; however, this does not lift them above the official poverty line.

[1] For a model of non-uptake see Riphahn (2001).

2. Social assistance or minimum income (MI): the municipal social service pays the difference between earned income and the guaranteed minimum income.

3. Non-poverty (NP): family income lies above the minimum income threshold, whether it consists of wages or social security benefits.

The group of poor people amounts to about 12% of the population (about 10% of all individuals out of school but not yet (early) retired). From the above distinction it is clear that our definition of the poverty threshold is identical to the Belgian government's cut-off point for receiving social assistance. In the literature this poverty line is considered to result in an underestimation of the number of poor people. We nevertheless maintain it for the following reasons. First this threshold distinguishes a qualitatively different part of the population, those entitled to income support. Second, a higher poverty line would blur the difference between the IP and the MI states, making a model accounting for both poverty and social assistance dynamics much more difficult.

The dataset we use is a subset of the Panel Study of Belgian Households (Mortelmans et al. (2004)), from which we retained all individuals out of school but not yet (early) retired, since pensioners, children and students are excluded from certain states. Our sample thus consists of 5380 individuals, with monthly observations on income and labour market status during the period 1993-'97.[2]

2.2 Three-Stage Estimation

A second change in comparison with earlier work is the methodological refinements we make. Not only do we include more variables into our model, but we also correct for the endogeneity of the key variables employment and schooling. We do this by estimating the model in several stages and by including the generalized residuals (Cox and Snell (1968), Gouriéroux et al. (1987)) of the previous stages in each regression. This amounts to Heckman's (1976, 1978) control function approach adapted for ordered and multinomial choice equations (Dubin and McFadden (1984)). To correct for the selectivity in the initial states, we also include control functions generated from static labour and poverty equations for the initial period.

In a first stage, the three observed schooling levels are modelled using an ordered logit model. During the second stage, we consider the states employment and non-employment and estimate them with a state-dependent logit model. Finally, with respect to poverty we discern the three states: IP, MI and NP, which are state-dependently estimated using a multinomial logit model. Covariates in the different equations include socio-economic background (parental education and occupation, nationality, residence), individual characteristics (gender, age, health, religion), family composition (single- versus two-adult household, presence of children) and macroeconomic circumstances (GDP growth, unemployment rates).

2.3 Results of the estimations

Our model generates some insights into direct and indirect causal connections between risk factors and outcomes in terms of poverty:

- Socio-economic background (in terms of parental education and occupation) strongly influences a person's educational achievement and hence his risk of becoming and staying poor. It also lowers the latter risk by increasing the probability of getting and keeping a job.

- Women obtain higher educational degrees, but tend to lose this advantage through lower employment probabilities.

[2]We reconstructed monthly income data by combining the yearly income and monthly activity variables from the panel. For a detailed account of the methodology, see Nicaise et al. (2004).

- Younger people enter the labour market better educated, but experience more fluctuations. Even after controlling for employment, low age entails a higher risk of getting poor, possibly due to lower wages and social security benefits. This also suggests that better education does not protect younger people completely from poverty.
- Family composition: singles not only find it harder to get a job, but are also more vulnerable in other ways. For example, they face relatively higher fixed expenses relative to their income. The presence of younger children not only lowers employment possibilities, but also constitutes a heavy burden on the family budget, thus generating a twofold poverty risk.
- Being a foreigner (especially from outside the EU) lowers the probability of finding and keeping a job. It also lowers family income (after controlling for employment) and the probability of receiving social assistance.
- Poor health mainly affects employment probabilities, but does not seem to have much direct effect on the likelihood of falling into poverty.
- City dwellers are characterised by a higher labour market volatility and higher social assistance uptake. There also seem to be regional differences in terms of protection through the minimum income. Flemish people run a higher risk of IP and have a lower probability of benefiting from social assistance. Whether this pattern results from higher informal solidarity or voluntary non-take up in Flanders or from greater generosity of social services in Brussels and Wallonia, is unclear.
- The effects of the economy at large are at least dubious. A higher country-wide unemployment rate increases inflow rates into and decreases exit probability from IP, but does not seem to have any effect on transition probabilities to and from MI.

3 Simulation of Three Anti-Poverty Strategies

In this section, we microsimulate ex-post three basic strategies against poverty: increasing the coverage of the minimum income, activation of the unemployed poor and raising the educational level of vulnerable groups. Using the estimated Markov model, we simulate the impact of these anti-poverty policies for the representatives of the respective target groups present in our sample over the period they were observed, i.e. a time horizon of five years.

3.1 Scenarios

Every anti-poverty policy presumably has a different impact on the transition probabilities between the three poverty states. In the this section, we will examine the effects of three broad categories of policies, by means of ex-post micro-simulation of some typical examples of measures:

1. optimization of the coverage of social assistance: every household which becomes poor will get social assistance,
2. activation: a temporary job is offered to all jobless poor individuals,
3. education: low-skilled individuals are encouraged to obtain a diploma of upper secondary education.

Each of these strategies can be seen as representing one of three competing views on the welfare state: the traditional welfare state, the active welfare state or the knowledge-based society.

In our simulations we assume that the effects of each strategy apply as from January 1993, the beginning of our observation period. We indeed apply ex-post microsimulation (Merz (1991)): each policy will be applied to each member of the respective target groups present in our database.

This procedure allows us to compare the different policies without having to generate hypothetical macro-economic time series nor representative sample individuals.

The target groups consist of people to whom the conditions of the specific policy apply in January 1993. We will simulate the policies for these groups only and we do not consider 'late joiners' into the respective programs. For each individual, we know the starting poverty and employment states, or we can predict them using the static estimations for the initial period. We also know, for each individual, the labour market and poverty transition probabilities[3], which allow us to construct a time path of probabilities for both employment and poverty states. Comparing time-paths with and without policy intervention gives an indication of the impact of this policy over time.

3.2 Full Coverage by the Guaranteed Minimum Income

Under this scenario, everybody in IP in January 1993 receives social assistance. We assume that reception of income support entails behavioral changes: conditional on observed characteristics, our target group will adopt the dynamics of the MI group. The target group in our sample consists of 170 people in the IP state in January 1993.

In Figure 1, three time-paths of the probability of being non-poor are plotted: the crosses depict the observed probabilities in the target group, the grey circles represent the simulated time-path without any program and the diamonds describe the simulated time-path after application of the program. Visual comparison of the observed with the simulated baseline informs us that the predictions (and thus the estimations) are quite accurate. We also notice that the rate of spontaneous exit from poverty (minus re-entry) amounts to 80% after approximately 2 years.

A successful policy should achieve the following goals:

1. accelerate the spontaneous exit,
2. lift the remaining 20% out of poverty,
3. prevent new entries into poverty.

Increased coverage achieves none of the three goals above: it decelerates the spontaneous exit and decreases it to about 60% over five years. This approach is purely curative: it does not alter the entry probability, but alleviates its effect. The potentially positive effects on the exit probabilities of social assistance are clearly outweighed by a 'poverty trap' effect.

The impact of increased coverage can also be illustrated in a different way. Knowledge of the transition probabilities allows us to compute some steady-state parameters for each individual, which, averaged over the target group, are given in Table 1. For comparison, these numbers are also given for the total sample. The probability of being poor for the population out of school and not yet retired amounts to 3.15%, two thirds of which do not apply for social assistance. The mean spell in poverty is about 8 months. Looking at the target group, the picture changes drastically. In the long run and without extra policy measure, about 21% of the target group would live on or below the poverty threshold, with a mean spell of 13 months in IP and slightly more than 3 years in MI. A policy of perfect coverage by the social assistance system would *raise* the probability of poverty to 36.6% and the expected duration to almost 6.5 years.

These findings do sound somewhat paradoxical: strengthening the safety net raises the poverty risk. Of course this conclusion follows directly from the yardstick with which we chose to measure the effects of a policy. In no way do we advocate the abolishment of social assistance, which at least fills income gaps and therefore has benefits in its own right. On the other hand, this exercise also shows the potentially adverse effects on the poverty dynamics of an increased social assistance coverage.

[3]When a policy affects the labour market transitions, the poverty transition probabilities are obtained by predicting them with and without employment and then mixing them with the employment probabilities.

Figure 1: Full coverage of the guaranteed minimum income: predicted effects on the time path of non-poverty

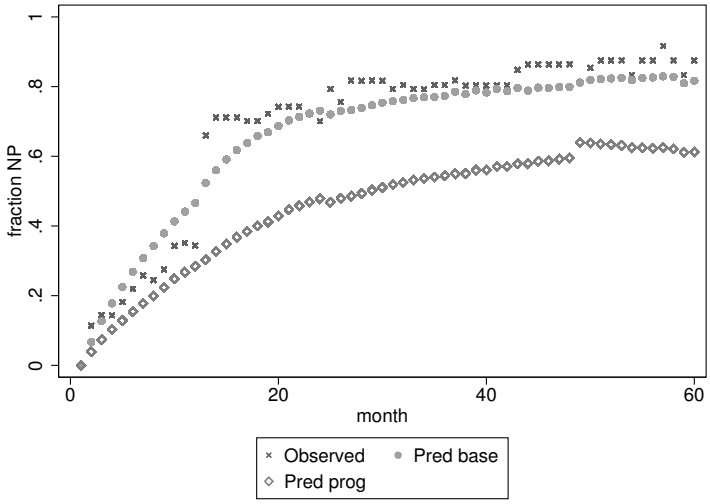


Table 1: Steady state characteristics of the full coverage scenario

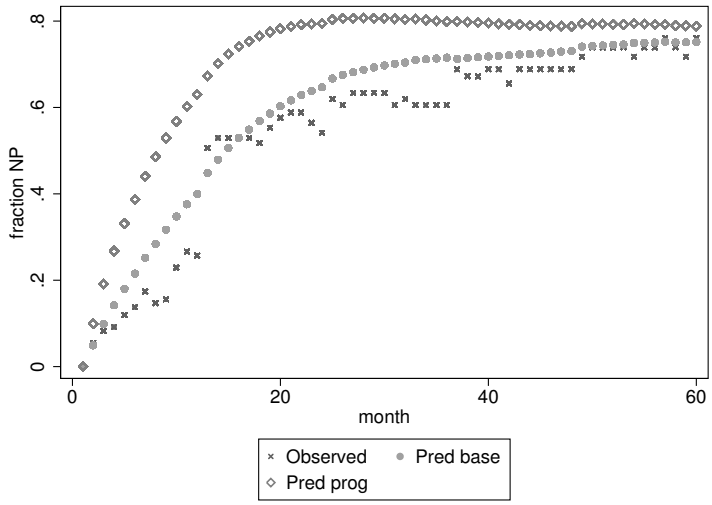
	Total Sample	Target Group	
		no program	100% coverage
$\hat{\Pr}[\text{NP}]$	96.85	79.34	63.44
$\hat{\Pr}[\text{IP}]$	2.22	15.75	0.0
$\hat{\Pr}[\text{SA}]$	0.93	4.91	36.56
$\hat{\text{E}}[t_{NP}]$	1117	116.9	116.9
$\hat{\text{E}}[t_{IP}]$	7.43	13.31	0.0
$\hat{\text{E}}[t_{SA}]$	8.42	37.35	77.81

3.3 Activation

In this scenario, we assume that the non-working poor get a job for a period of one year. A first expected, direct effect is that this job will increase their exit probability from, and lower the (re-)entry hazard into poverty. A second, indirect effect is that persistence in employment will sustain this effect after the end of the program.

The target group in our sample consists of 160 individuals in January 1993, who are offered and supposed to accept a job at that moment. Without any program, about 30% of the non-working poor manage to be at work after 5 years. A first direct effect of the activation policy is that the estimated probability of being at work is about 5.5% higher with the program four years after it is finished. Of the participants, however, more than 60% appear unable to stay at work.

Figure 2: Activation scenario: anti-poverty effects



The anti-poverty effects of this policy will strongly depend on the quality and the suitability of the job offered, parameters unaccounted for in this simulation. By setting the 'at work'-dummy equal to one, we implicitly assume that the program provides jobs of the same quality as those that are otherwise performed voluntarily by persons with comparable characteristics (except for the duration which is kept fixed here).

The activation policy (see Figure 2) now seems to affect mainly the *timing* of poverty exits. The direct effects are (a) a substantial increase of the exit and (b) a decrease of the entry probability. After 12 months the program reaches its maximum impact: it lifts an extra 23% of the participants above the poverty line, compared to the trend without program. Later on this result diminishes since the policy reaches its ceiling while the baseline poverty odds keep diminishing. The net residual effect of this program is about 3.7% four years after its termination. The modest long-term residual effect from this policy can also be noticed from Table 2: the steady-state probability of being non-poor increases by about 3.5%. The mean spell out of poverty, however, increases from 9 to 11.5 years.

3.4 Education

The most recent welfare state paradigm stresses education and knowledge as determining factors of social integration. We translate this into a scenario where the lowest-skilled are encouraged to obtain a degree of upper secondary education. In the 'youth variant', the target group consists of

Table 2: Steady state characteristics of the activation scenario

	no program	activation
$\hat{\Pr}$ [NP]	73.47	77.90
$\hat{\Pr}$ [IP]	14.25	11.38
$\hat{\Pr}$ [SA]	12.28	10.73
$\hat{\mathrm{E}}[t_{NP}]$	107.4	134.8
$\hat{\mathrm{E}}[t_{IP}]$	12.30	9.48
$\hat{\mathrm{E}}[t_{SA}]$	45.87	38.04

all low-skilled (i.e. individuals with no degree of upper secondary education) *below the age of* 25, in the 'learn-fare' variety it is made up of the *poor* low-skilled younger than 50 years.

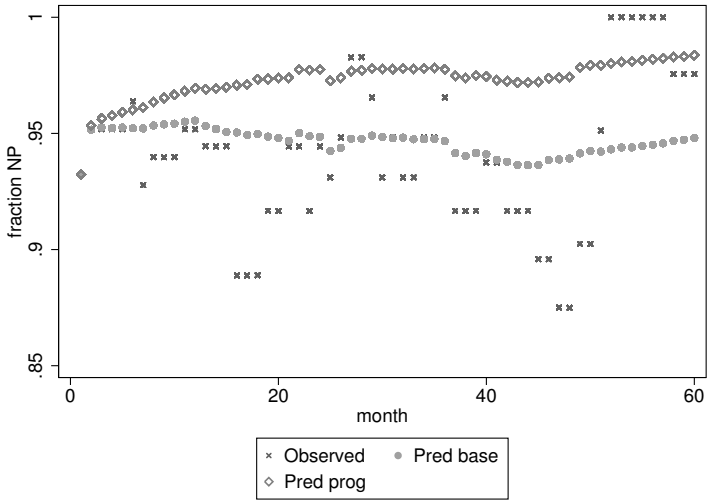
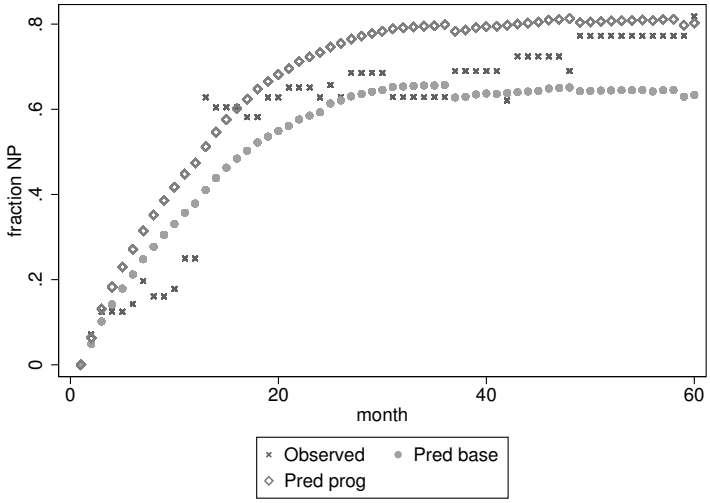


Figure 3: Education scenario, target group < 25 years: anti-poverty effects

The first target group in our sample consists of 192 individuals who, in January 1993, are younger than 25 and have no degree of upper secondary education. Of these 179 (93.23%) are not poor, 4 (2.08%) are insufficiently protected and 9 (4.69%) receive social assistance. The small number of low-skilled school-leavers living below the poverty line may be explained by the fact that most of them still live with their parents. Some form of protection seems to spring from their social capital. However, since we consider a period of 5 years, our model should implicitly account for the period in which these youngsters leave their parental household to live on their own. Nevertheless, a degree of higher secondary education seems to offer some extra and lasting protection against poverty to hardly 5% of the target group.

In the second variant (learn-fare), the target group consists of 67 low-skilled poor respondents below the age of 50. Figure 4 again shows the lasting effects of increased education. The probability of living above the poverty line increases by 17%. This relatively large impact is also reflected in a 40% decrease of the mean spell duration in social assistance.

Figure 4: Education scenario, target group poor < 50 y: anti-poverty effects



3.5 Discussion

Despite the methodological and data problems discussed in sections **??** and **??**, the following conclusions seem to emerge from our analysis:

- raising the *coverage of social assistance*, while alleviating the harshest effects of poverty, also tends to increase the number of poor through the poverty trap effect. Admittedly, the findings relate to the period 1993-1997 in Belgium, in the context of a sluggish economy and rather 'passive' income compensation policies. In the mean time, work incentives have been built into the social assistance regulations and benefits have been linked with activation. Nevertheless, the simulation warns against the possible perverse effects of mere income compensation.

- Getting people into *work* for a limited period (one year) affects mainly the timing of the poverty exits, but has less effect on the steady state parameters. Exits from poverty accelerate in the short short run. However, the longer-term impact of activation is very modest unless high-quality jobs are offered (e.g. combinations of work and training).

- The *education* scenario appears to yield the most substantial and durable effects, especially when focused on those living in poverty (learn-fare variant).

In order to make the estimated effects of the three strategies comparable, we have to take into account the size differences of the initial target groups. To do so, we reweighed the reported results. In Table 3 the poverty impact of policies is reported as a percentage of the overall group of poor people (IP and MI) in the initial period (January 1993). Increasing the coverage of social assistance will increase the steady state fraction of poor people by 3.94%. This result is the net effect of the decreased share of under-protected people (-3.90%) and the increased share of people receiving social assistance ($+7.84\%$).

Upon comparing the strategies with each other, the full coverage of MI has (by definition) the highest impact on extreme poverty (IP), while improving education of the low-skilled has the highest overall impact (IP and MI), strikingly more than activation of the unemployed. And yet, all in all, none of the simulated strategies appear to provide the panacea against poverty.

The rather modest impact of our simulations is of course partly due to the criterion that we use to compare the different policies (fraction of the initially poor who remain poor in the long

Table 3: Net steady-state impact of policies as a fraction of the total number of poor in the initial period

	NP	IP	MI
100% coverage	-3.94%	-3.90%	+7.84%
Activation	+3.14%	-2.03%	-1.10%
Education of the young	+1.22%	-0.14%	-1.08%
Education of the poor	+5.11%	-1.09%	-4.03%

run), which is of course affected by a sizeable deadweight effect. The negative connotation of the latter term seems rather unfair, since the fact that so many initially poor finally escape poverty reflects both the effectiveness of other existing poverty-alleviating measures and the adaptability of human nature to difficult conditions.

4 Social Costs and Benefits

In a final step, the economic implications of the three selected strategies for combating poverty were examined, with a particular focus on their costs and benefits for the government and for society as a whole.

The full coverage of the minimum income guarantee (in 1993-97 prices) leads to an additional budgetary cost of EUR 3,570 per individual over five years. In itself this need not have a negative impact on social welfare (perhaps even the contrary), provided it simply involves a redistribution of wealth from the wealthy to the poor. As we have seen, however, this scenario contains a poverty trap effect, which in the longer term inhibits the labour market participation of the target group and reduces wealth creation. Overall, therefore, in the longer term, this strategy is likely to lead to a net cost rather than a net benefit for the society as a whole.

The second strategy, involving an activation policy for a period of one year, costs the government an estimated EUR 9,800-13,200 per year in direct additional expenditure. This cost can be explained partly by the intensive guidance offered to candidates and the productivity and training bonuses paid by the government to companies and agencies taking part in the scheme. However, several studies (Vleugels et al., 1998; Nicaise, 2002; Rubbrecht et al., 2005) suggest that high-quality activation programmes deliver a net social benefit in the longer term thanks to a net gain in employment, even where that gain is limited.

The third strategy, promoting the attainment of minimum qualifications by all young/poor people, can be regarded as an investment in human capital, which unsurprisingly turns out to be by far the most costly option. Direct public spending on senior secondary education alone quickly works out at EUR 7,000 per student per year, while the direct private costs amounted to approximately EUR 800-1,000 per student per year in 2000 (Fripont et al., 2001). The opportunity costs (loss of potential income from employment) are undoubtedly even greater, despite the limited employment chances of the unskilled. All these costs have to be multiplied by the number of additional years of study needed to ensure that the target group obtain an upper secondary education diploma. It is therefore likely that this strategy will turn out to be considerably more expensive than the activation strategy. On the other hand, the literature suggests that over time this investment generally results in a net gain for the community (Nicaise, 1996; Bollens, 2004) - though no precise figures can be given here.

5 General Conclusion

This paper develops a dynamic simulation model to evaluate the short and long-term effects of various policy options on poverty. The model used is a joint Markov model for employment and

poverty, which takes account of the endogeneity of the initial conditions. It also corrects for the endogeneity of the education levels attained.

The paper also evaluates three strategies for combating poverty: full minimum protection through the guaranteed minimum income (the key strategy of the traditional welfare state), an activation programme (the typical instrument of the active welfare state) and finally the promotion of minimum qualifications among specific target groups (prescribed by the knowledge society paradigm).

Where the first strategy increases the risk of poverty in the longer term, the second has a strong favourable - though predominantly short-lived - effect, while the third strategy delivers a modest but lasting effect. This latter finding deserves extra emphasis: schooling reduces long-term poverty more than welfare-to-work programmes. Yet evaluation of the Belgian National Action Plans (NAPs) for Social Inclusion reveals that much more emphasis is placed on welfare-to-work: half the measures are concerned with creating employment, compared with only one tenth focusing on education and lifelong learning. Moreover, the measures relating to education are more fragmented and hardly seem to tackle the root causes of the problems (Nicaise, 2005). It would therefore seem appropriate to develop the theme of education and lifelong learning further in the next NAP.

Overall, however, at first sight the net impact of all three strategies appears to be limited. This has to do with the criterion used to measure that impact (difference in long-term risk of poverty in relation to the total number of initially poor). There is a significant deadweight effect here: a great many individuals escape from poverty in the long term even without the use of additional government measures. If this deadweight effect is left out of consideration, the net effect of the three strategies proves to be much greater, though the relative effectiveness of the different strategies does not change.

The term deadweight is in reality somewhat misleading: the fact that people (fortunately!) escape from poverty is not a chance event, it is attributable at least in part to a whole battery of existing measures designed to prevent and combat poverty.

It is worth noting that our simulation model, if appropriately adjusted, can also be used for a range of other applications: for example, to study the effects of interventions in the labour market, in the social security system, in family policy, cultural policy, etc.

References

[1] For all references see De Blander, R., Nicaise, I. (m.m.v. Van den Broeck, G.) (2005), *Maatschappelijke keuzen, structurele armoede en sociale kost*, Leuven, HIVA.