Summary

The Research and Documentation Centre of the Dutch Ministry of Justice (abbreviated to WODC in Dutch) has asked ECORYS (1) to create, in anticipation of effectiveness studies yet to be conducted, a prototype of a generally applicable CBA computation model for the economic assessment of judicial interventions, (2) to illustrate the model's applicability by specifying and explaining it using a case as example (for which no effectiveness analysis is available yet), and (3) to take the 'SOV' measure appropriate for penal interventions for dealing with criminal hard drugs addicts in the Netherlands as a starting point.

Implementation of the above research tasks has resulted in general and specific findings as summarised below.

Cost-effectiveness analysis versus cost-benefit analysis

To assess a judicial intervention on an economic basis, either a cost-effectiveness analysis (CEA) or a cost-benefit analysis (CBA) can be used. As a rule, a CEA is easier to implement than a CBA, as only two of the three primary tasks (i.e. determining effectiveness and quantification of costs and benefits, ignoring the monetarisation of benefits) need to be performed. However, when used for an intervention where the participants are characterised by a wide range of offences, implementation of a CEA also has its drawbacks. Although costs can be calculated and an effect study performed, the question remains how the different crimes are to be weighted to arrive at an unequivocal cost effectiveness criterion. Determining (by estimation) the monetary value of these effects is a useful method for doing so.

Prototype of a CBA computation model

1. Both a zero and a project alternative are defined and included in the model (based on the fact that effectiveness studies in WODC format use a zero alternative, i.e. the current policy of imposing a sentence). The costs of the zero and project alternatives are compared, with the effects of the project alternative – as opposed to the zero alternative – being taken from other studies.

2. The approach opted for takes account of the perspectives of the victim, the Ministry of Justice, other government authorities including the police, and society, but not that of the perpetrator.

3. As the perpetrator's perspective is excluded, at least for the time being, transfers from legal to criminal circles (e.g. via car theft) are considered losses and, consequently, social costs. Damages paid by insurers are considered a redistribution of value, from insured parties to victims. The resources used for the paperwork concerning policies and claims (that is, the transaction costs) represent opportunity costs for society, equalling the value of the resources lost by not implementing the next best alternative.

4. In order to determine costs saved in response to, in anticipation of, or as a direct result of crimes, the different forms of crime have been aggregated into eight categories[1]:
   - violent property offences;
   - non-violent property offences;
   - offences under the Opium Act;
   - aggression;
   - sex offences;
   - offences under the Road Traffic Act;
   - other offences;
   - murder and manslaughter.

   Based on the average costs of a crime representative of each of these forms of crime, on the one hand, and the change in the number of crimes calculated, on the other, cost savings resulting from the use of a certain intervention are calculated.

   First of all, the effect of an intervention on the intervention subjects is calculated and the offence profile of the participants and non-participants in the programme determined. As expected, the offence profile after completion of the programme differs from the profile prior to it. Data on both offence profiles and the costs per offence together form the basis for determining the benefits in terms of costs saved per offence, given the effects of the intervention.

5. The period for which the costs and benefits will be considered has been set at five years. Where the length of zero and project alternative differs, such differences will be included in determining the benefits.

Fictitious results of calculation of the SOV case

Not all inputs are based on studies. The effectiveness figures in particular are fictitious, as studies are still ongoing and no interim results are reported. As such, the realistic value of the results is not very high at the moment.

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[1] In accordance with Wartna, B.S.J. & N. Tollenaar. *Bekenden van Justitie; een verkennend onderzoek naar de 'veelplegers' in de populatie van vervolgde daders (Old friends of the judiciary, an exploratory study of recidivists in the population of prosecuted perpetrators)* , WODC recidivism studies 216: The Hague, 2004.

Based on the largely fictitious assumptions described for the SOV case, the net cash value of the project is positive compared to the zero alternative (i.e. imposing a prison sentence).

The sensitivity analysis shows that the results are sensitive primarily to the duration of the intervention (the subject is in prison and cannot reoffend), the effect period considered, and the assumptions concerning the change in the average number of offences per individual. As indicated above, these findings are not very useful given the inclusion of partially fictitious figures.

General applicability

The prototype of the computation model that has been developed can be applied to other types of judicial interventions as well. It is a general model that can be used in a case-specific way. It incorporates different options so that different input can be selected for each case. In addition to the intervention to be calculated (the project alternative), these variation options include the zero alternative with which an intervention is compared, the duration of the zero and the project alternatives, the composition of the offence categories, the subjects' offence profile and the effects per intervention to be included (detailed or aggregated). A sensitivity analysis can be performed to determine the impact of a variation in input.

Moreover, the analysis structure used is internationally accepted and is in line with the structures used by the Home Office in the UK and the Washington State Institute for Public Policy in the US.

Points for attention

Apart from the strong points referred to above, there are also three points that merit attention: the design of the effectiveness study, the availability of relevant data to enter into the model and the non-linearity between crimes prevented and costs avoided.

The most important item is the design of the effectiveness studies to be performed. The model design specifies several requirements these studies should meet. These requirements must be met to make full use of the computation model. As we know now, the prevalence and frequency of recidivism with respect to each judicial behavioural intervention will be measured in the future. Once this data is available, the frequency of recidivism in particular can be used to determine the damage prevented by the intervention.

The second point of attention involves the availability and synchronisation of data. As it turned out, there is insufficient data in the Netherlands to completely fill the model now

completed, while data collected by Statistics Netherlands and data collected by the WODC is not based on the same classification of damage per offence[2].

The third item, then, concerns the relationship between crimes prevented and costs avoided. A decrease in crime need not necessarily be associated with a proportional decrease in the costs incurred by the Ministry of Justice and the police. A decrease in crime may result primarily in a reduction of costs for the victims, without this producing a proportional reduction in the costs incurred by the Ministry of Justice and the police. The current prototype, however, is based on linearity. In our opinion, determining the degree and forms of non-linearity in this relationship is another point that merits attention.

Possibilities and impossibilities

In the CBA computation model, determining the effectiveness of an intervention is exogenous. This means that effectiveness itself (i.e. ignoring any correction factors) must be calculated outside of the CBA computation model. The CBA calculation model in its current state is not a comprehensive model for calculating the effectiveness or the costs and benefits of a certain intervention. In the CBA computation model, the costs and benefits and the net cash value of an intervention are calculated on the basis of exogenously determined effectiveness data.

The CBA computation model enables the user to calculate several interventions; an intervention can be compared with a certain zero alternative to determine the annual costs and benefits as well as the net cash value of the intervention. It is not possible to compare a single intervention with a variety of zero alternatives in a single run, or to compare different interventions in a single run. It is possible, however, to calculate various combinations of interventions and zero alternatives and then compare the results by running the model more than once. In other words, to compare different interventions, the computation model must be filled and run several times.

Users can specify/enter any of the following aspects:
1. the intervention to be calculated;
2. the zero alternative with which the intervention is compared;
3. the duration of the zero and project alternatives;
4. the horizon of effect determination;
5. the offences or offence categories considered;
6. the number of participants in an intervention;
7. the effects per intervention and offence type to be included (specific or aggregated);
8. the costs of the intervention;
9. the costs per type of offence;
10. the dark number per type of offence;
11. the recidivism frequency per type of offence in the zero alternative;
12. recidivism frequency per type of offence in the zero alternative.

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[2] The classification of different offence types is similar.

These aspects together eventually determine the net cash value of the intervention. A sensitivity analysis can provide insight into the degree to which each of these aspects contributes to the final result and how sensitive the result is to variations in the different aspects.