Mikael Skou Andersen (AU): The futurity of climate mitigation co-benefits: valuing statistical lives or life-years ?

Epidemiological research indicates that chronic air pollution mortality results from elevated exposures over a longer time-period, whereby the risk moments become separated from mortality impacts. With improved pollution control the survival curve of the individual is shifted upwards, increasing not only the expected life time, but also the number of remaining years in more healthy conditions. Conversely less healthy years and shorter lifetime will be associated with higher exposures.

Still, the futurity of impacts is a main reason why the appropriateness of VSL (value of statistical life) has been called into question (OECD, 2006:216). The concerns with VSL can be summarized as follows; a) Future risks may not affect everyone alive today, making age a relevant parameter, b) The individual's future vulnerability might change as compared to the present situation, c) There might be an element of latency involved during the time-lag from exposure to effect.

Since the VSL is computed from the average of the WTP expressed by citizens living presently we may achieve different results for future risks, affecting only those who will remain alive when the impacts can be expected to occur. Transferring a VSL from immediate risks to future risks will involve some element of overestimation, depending on how far into the future such risks can be expected to occur.

A further element of futurity is involved in that although the individual might be more at risk later in life when impacts can be expected, as reflected in the declining survival curve, there is also an element of change and uncertainty involved. Younger people might expect to have moved out of polluted city centers, or to have taken other measures whereby risks can be circumvented, causing lower WTP to be expressed for future risks as compared to present risks.

Finally the presence of latency extends the time-horizon, adding a further time period beyond a future exposure period. Latency periods are often not well understood but can be fairly long, for asbestosis as long as between 30 and 45 years. Uncertainty about the futurity of risk has in several studies been found to result in lower WTP's for risk reductions as compared to risks which are more immediate (OECD, 2006:203).

OECD's manual on Cost-benefit analysis and the environment on this basis cautions against the use of VSL for future risks and suggests reserving it for immediate risks (OECD, 2006). The manual puts emphasis on the role of age for this advice, but it emphasizes age in a different way than it has conventionally been discussed in the literature on VSL. OECD's manual highlights the futurity of risks and places the importance of age in this context, which is a different approach. It is from this perspective that it recommends to reserve VSL for acute mortality and apply VOLY for chronic mortality.

The difference between applying VSL and VOLY metric for costing of air pollution mortality is significantly more modest than the impression one could get from publications addressing the issue in more abstract and theoretical terms. It is not appropriate to compare the value assigned to a single life year with VSL. In view of an average loss of about 12 life years per victim under the distributed lag structure in a standard air pollution risk scenario and considering the official EU discounting recommendation for the pure rate of time preference we see a relationship between VOLY metric and VSL metric of merely 1:2½.