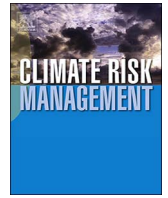


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Valuing the reduction of floods: Public officials' versus citizens' preferences



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ABSTRACT

This paper analyses the preferences of public officials and citizens related to the impacts of floods in the Gothenburg region in Sweden. Citizens and public officials in the flood-prone region answered identical choice-experiment surveys characterized by the negative impacts of floods: property damage, traffic disturbances, and water supply security. By having citizens and public officials respond to identical surveys, it was possible to analyse whether and, if so, how priorities and monetary valuation differed in respect of the different negative effects of floods. The overall finding is that public officials' and citizens' preferences seem to converge, and that both citizens and public officials are willing to pay to reduce flood-related costs. Public officials have similar priorities to citizens, in that security of drinking water provision was given priority over property damage, while traffic disturbances were ranked lowest. In terms of their respective willingness to pay to avoid the negative impact of floods, public officials were willing to pay more than citizens to pay for securing the drinking water supply and for restoring damaged property, though these differences were not substantial. There are, however, some differences in preference between citizens and public officials: the latter preferred not to spend anything to reduce traffic disturbances caused by floods, whilst citizens were willing to do so. These results imply that decisions made within the public sector will not come to differ substantially from citizens' preferences.

1. Introduction

In the light of climate change, with predicted increases in precipitation and flood risk in many parts of the world – including Sweden (IPCC, 2014), decisions made by governments today will affect the costs associated with floods faced by citizens tomorrow. Since citizens will have to bear the consequences of these decisions, it is reasonable that the decisions reflect citizens' preferences. The aim of this paper is to analyse the preferences of public officials and citizens with regard to the impacts of floods. The methodology employed is the choice experiment (CE), which enables several aspects of flooding to be researched. By letting citizens and public officials in the flood-prone region of Gothenburg, Sweden, face identical CEs regarding the negative impacts of floods, possible differences in prioritisation of these negative effects can be analysed. In this CE, the negative impacts of floods are attributed to property damage, traffic disturbances and water supply security.

Addressing the issue of flood risk in the Gothenburg region is important in order to limit the future costs caused by floods. Flood risks are expected to increase more than the national average (Swedish Civil Contingencies Agency, 2011), which implies that further investments in flood-risk-reducing measures need to be made. Although such measures have already been taken in the region,

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including the regulation of rivers, the Municipality of Gothenburg is now also considering constructing a large-scale movable barrier off the coast of Gothenburg (SWECO, 2015).

When decisions are taken by public officials on investments made with public funds, it is important that such decisions correspond with the preferences of the citizens. If social choice aims at maximising welfare, policymakers should choose policies that generate the maximum net benefits for society as a whole. To distinguish between the welfare offered by different options and reach efficient decisions, a prerequisite is having knowledge about the costs and benefits associated with measures aimed at, for example, reducing the negative impacts of flooding. This measure of benefits (together with the costs) underlies the concept of *economic efficiency*. The costs are usually known, although with some degree of uncertainty; however, the expected benefits are generally non-monetary and are unknown. By estimating the valuation of the benefits of reducing the negative effects of floods, which is the focus of this paper, it is possible to compare the benefits with their associated costs. The non-priced benefits are defined by individuals' preferences, and even though the measurement of benefits is operationalized through money, its conceptual basis is utility. Thus, at the very heart of the concept of *economic value* lies the human well-being that goods and services provide to individuals. Thus, if the aim is to maximise social welfare as defined above, the aggregation of individuals' preferences for the goods and services in question should be taken into account when officials take decisions.

Furthermore, the notion of the *responsiveness* of administration in relation to citizens' preferences is central to most concepts of *democracy* (Arrow, 1963; Dahl, 1967; Lijphart, 1984; Sen, 1970). Due to the threat of electoral sanction, politicians are generally assumed to respond to public preferences. Flood risk management in Sweden can be described as a less developed and decentralised policy area, meaning that it is not a policy area that has been given that much attention nationally, and it is handled primarily by public servants at the local level (Ek et al., 2016). Although decisions regarding larger investments, i.e. those that go beyond municipal departments' budgets, are made by the politically elected municipal assemblies (Ch. 6, s. 7, *Local Government Act, 1990:900*), public officials hold significant influence since they are responsible for gathering the information on which the assemblies base their decisions. Since public servants do not answer to the general public directly, one cannot necessarily assume that the implementation of flood risk-management measures corresponds with citizens' preferences.

It is important to make a distinction about the role(s) of decision makers. The Swedish flood risk management decision-making process resembles a problem-solving task administered by public officials, with influences from expert recommendations about feasibility/technical judgements, but also from public officials using their own set of preferences in trying to devise the best course of action. Public officials also need information about citizens' preferences, since public officials' preferences do not necessarily align with citizens preferences. One tool that can be used to gain information on the citizens' preferences is Cost-Benefit-Analysis (CBA). In Sweden, however, the use of CBA as a decision-making tool has been limited to date (Rosén et al., 2008). Thus, public officials' central role in the decision-making process and the limited use of CBAs mean that such officials are likely to have a significant influence on public investments aimed at reducing flood risks. In order for citizen's preferences to be accounted for in this kind of decision-making process, there needs to be evidence that their preferences align with those of public officials, or otherwise there needs to be a place in the decision making process where citizen's preferences are explicitly evaluated and considered. It should be noted that consideration of citizen's preferences does not always mean they will be adopted, as preferences may reflect options that are not feasible.

Previous literature has further found that public officials' private preferences play an important role in decisions made within the public sector. There is evidence from the field of psychology (Nilsson et al., 2004), as well as political science (Lipsky 1980, Wilson 1989) that decisions made by officials within the public sector are greatly influenced by their private norms. Knowledge regarding the differences between the environmental values held by individuals and experts/public officials in the economics literature is limited. Carlsson et al. (2012), studied how public administrators and the general public prioritised risk reduction in relation to different public safety projects. Other research has focused on the differences in preferences regarding improvements in environmental quality (Carlsson et al., 2011), protection of the forest landscape (Nordén et al., 2015), and urban regeneration (Alberini et al., 2006). To the best of this author's knowledge, however, there are no similar studies focusing on preferences regarding flooding.

This paper contributes to the literature not only by analysing the potential differences between how citizens and public officials value flood risk management, but also by making a direct comparison of the preferences of the citizens and officials. The direct comparison is achieved by asking both citizens and public officials to answer the CE questionnaire as private individuals, which implies that both groups would be subject to equivalent budget constraints, thus enabling a direct comparison of preferences of the groups.¹ Previous studies such as those by Carlsson et al. (2011), Nordén et al. (2015) and Alberini et al. (2006) have used identical elicitation techniques and questionnaires for the different groups, but administrators/public officials were asked to answer as if they were decision-makers. This implies that the administrators/public officials were not asked to spend their own money and any differences in valuation may at least partly stem from an incentive compatibility issue (see Carson and Groves, 2007), for a more elaborate discussion on *incentive compatibility*). The only previous paper that, to the author's knowledge, has used a direct comparison is Rogers (2013), who performs a CE focusing on marine reserves in Australia, where both citizens and scientific experts were asked to answer the questionnaire as private individuals. Rogers' results show that there are differences in the two groups' preferences and valuations. Public officials' preferences have to my knowledge never been compared to the preferences of the public via a direct

¹ The measuring of officials and citizens preferences is not to be confused with the concept of *preference orderings*, which implies distinguishing between an individual's 'public' and 'private' preferences. Understandably, the public nature of the costs associated with floods may trigger the issue of respondents using their public rather than private preferences. Individuals may be choosing according to moral values about what individuals, in their role as citizens, think is right for the society as a whole, rather than how the environmental good affects their personal utility as a consumer. However, as argued by Sagoff (1988), such behaviour may be present in the sample of public officials as well as in the sample of citizens. Analysing preference orderings is, however, beyond the scope of the study reported here.

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