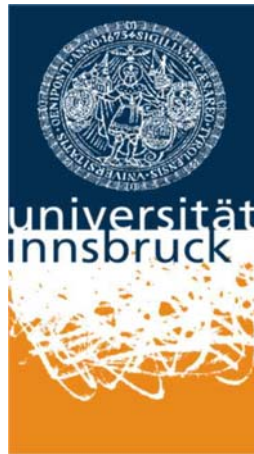University of Innsbruck

# Working Papers
# in
# Economics and Statistics

**The overprotective parent - Bureaucratic agencies
and natural hazard management**

Paul Raschky

2007-03

# The Overprotective Parent - Bureaucratic Agencies and Natural Hazard Management

Paul A. Raschky*

March 27, 2007

**Abstract**

Due to the public good character of protective measures against natural disasters events, their allocation is very often in the realm of bureaucratic and expert agencies. Based on the economic theory of bureaucracy the behavior of a bureau providing the good "protection against natural hazards" is analysed. The existing model is extended by further institutional constraints accounting for societal controll mechanisms. The main proposition is that the allocation of protective measures through natural-hazard-management-agencies does also result in cost and allocative inefficiencies, however, the amount of allocative inefficiencies is relatively higher as compared to a normal bureau. This is mainly due to the potential of blame-shifting from politicians to bureaucrats. The considerations made in this paper can help to design a more efficient institutional framework in societal natural hazard management.

# 1 Introduction

Hurricane "Katrina" in New Orleans, the earthquake in Kashmere in 2005 or the Tsunami in South-East-Asia in 2004 are just a few examples that reveal our society's vulnerability against natural disasters. Up to a certain degree, protection against natural hazards is possible. Structural measures such as dykes or avalanche barriers physically reduce the impact of natural hazards. Hazard-zone mapping identifies areas that are potentially affected by flooding or land-slides. Such maps can be used to prevent people from settling down in hazard-prone areas or induce them to build safer houses. Early warning systems in combination with proper information channels can identify upcoming hazards and organizational measures such as evacuations can at least reduce or prevent human losses (e.g. Tsunami warning system). Insurances provide a possibility to transfer the financial risks of extreme events and provide incentives for risk-adequate behaviour given that insurance premiums reflect the natural hazard risk. Under the consideration that a) according to research on the effects of climate change an increase in the frequency of extreme weather in the near future is likely (e.g. IPCC 2001) and b) public funds in general and for natural hazard management in particular are limited, society needs an instititional framework and decision processes that ensure the efficient allocation of these limited funds.

Although a certain demand for the good "protection against natural hazards" exists, it is very often under- or sometimes oversupplied. The public good characteristics of certain protective measures as well as imperfections on the market for disaster insurance (e.g. Jaffee & Russell 2003) can be seen as explanations for state intervention in this area. It can be observed that due to the complexity and the riskiness of the task, decision-making power over the allocation of these protective goods and services is very often delegated from politicians to bureaucrats or expert agencies. Such a delegation could provide the ground for inefficiencies due to principal-agent-problems and resulting organizational slack and over-supply of protection against natural hazards. This paper provides a positive analysis of the behavior of natural

hazard management agencies (NHM-agencies) and makes suggestions for the design of alternative societal decsion mechanisms.

Section 2 provides a short introduction to the economic theory of bureaucracy and an overview of the relevant literature. In section 3, this theory is enlarged by a focus on agencies responsible for the provision of the good "protection against natural hazards". Based on this, a formal model is developed in section 4, comparing the behavior of a normal agency and a NHM-agency. Section 5 presents concluding remarks and suggestions for future research.

# 2 Discretionary behavior of bureaus

The economic theory of bureaucracy goes back to the work by Cyert & March (1963), who describes the phenomenon of organizational slack as rents that are generated through discretion by managers of a firm. Niskanen (1971), Migué & Bélanger (1974) and Breton & Wintrobe (1975) applied this idea to bureaus. Beside the task to provide the public good or service an agency was created for, bureaucrats have certain freedom to acquire rents in the form of discretionary profits. These undesired expenses could include additional equipment, employees or the discretion to award supplier contracts to companies with the best informal relations rather than the company with the most competitive offer. In particular, the propositions made by Niskanen's modell have been applied empirically by various scholars (e.g. Grosskopf & Hayes 1993, Ott 1980). An econometric study by Kress (1989) with data on Colleges in California, confirmed Niskanen's hypothesis that bureaucrats maximize both formal and informal output. However, the author did not find any evidence that the bureaus tend to oversupply their service.

According to Migué & Bélanger (1974) bureaucrats will choose that point on their budget line where the marginal rate of substitution between formal output and other expenses equals the slope of their budget line. In opposition to the conclusions by Niskanen (1971) the bureaucrat will produce a level of output somewhere between profit maximization and output maximization. This means that if the bureaucrats receive any utility from other expenses, they will not produce maximum output. The authors further conclude that

the inefficiency of bureaus does not necessarily stem from oversupply, but from bureaucrats enjoying discretionary power. Duizendstraal & Nentjes (1994a) add two points of critique to Migué & Bélanger (1974)'s model. Firstly, the conclusion that an increase in demand for the public service will increase the relative expenses does not hold under the assumption made in the model. Secondly, Migué & Bélanger (1974) did not make assumptions concerning the institutional framework the bureau is embedded in. In a further paper Duizendstraal & Nentjes (1994b) incorporated this second point of critique in their model of non-profit organisations by analysing the manager's behavior under four different subsidy regimes. In the following section the focus shifts from the general model of bureaus and non-profit-organizations on the the particular case of NHM-agencies.

## 3 Natural Hazard Management Agencies

Agencies or bureaus responsible for the provision of the good and service protection against natural-hazards (e.g. the FEMA and the US Army Corps of Engineers in the U.S., the BUWAL in Switzerland or the WLV in Austria) feature similar characteristics as the standard model bureau. The notation "formal output" and "informal output" by Duizendstraal & Nentjes (1994b) also apply to NHM-agencies. The formal output is basically the good or service "protection against natural hazards" e.g. dykes, hazard zone maps or the distribution of information, where informal output includes additional staff or equipment. Certain NHM-tasks clearly demand experts and their-knowledge e.g. identification of hazardous areas, estimates on the occurence probability, as such tasks that can hardly be accomplished by politicians or citizens. However, this paper is concerned with allocation of goods and services through an agency (instead of politicians or directly by citizens) that goes beyond the sole provision of this information. The goods and services of interest are constrained to protective measures with a medium to long run perspective such as structural measures (e.g. constructions or protective forests), organizational measures (e.g. zoning and building codes) and adaptive strategies. Short term adaption instruments(e.g. road blocks, tem-

porary evacuation) or risk transfer mechanism (e.g. ad-hoc financial relief, catastrophe funds) are cancelled out in this analysis.

Numerous scholars have already applied public-choice theory of bureaus on NHM-agencies. For example Shughart II (2006) points out that the US Army Corps of Engineers, responsible for the construction and maintenance of protective measures of various kinds, "[...] is famous for pork barrel and cost overruns (p. 40)". Beside discretionary behaviour bureaus dealing with low-probability-high-loss-events in general and NHM-agencies in particular show ver distinct features from a public-choice perspective. Sobel & Leeson (2006) define two types of errors of public bureaus responsible for risky tasks that can lead to an inefficient provision of public goods and services: Type-one-errors occur if agencies are too under-cautious. For example a NHM-agency fails to build a protective barrier or maintain an existing one that might have saved a village from an avalanche. If a type-one error occurs and becomes visible to the media and the public the consequences for the responsible agency can be severe. In connection with the flood disaster following hurricane "Katrina" Shughart II (2006) points out that bureaucrats seemed to have neglected less visible infrastructure projects and maintenance work on existing infrastructure. The public outrage about sluggish maintenance of existing levees was immense.

Type-two-errors result from an agency's over-cautiousness. For example Peltzman (1973) estimates that the negative effects of not approved drugs by the U.S. Food and Drug Association (FDA) (trying to avoid the risk deaths by an approved but unsafe drug) outweigh the potential costs of ineffective or risky drugs permitted.[1] The problem is that inefficencies from type-two errors are less identifiable and visible. The installation of one additional avalanche barriers on an already secured hazard prone slope will possibly not be regarded as a waste of tax-money as "... you can never know what happens!"[2]. The reason why agencies might commit type-two-erros is basically that they do not want to be considered to commit a type-one-error.

---

[1](Mueller 2003) gives a comprehensive overview of empirical studies on risk-avoiding bureaucrats.

[2]Depending on the institutional design of the subsidy regime

4

In other words, bureaucratic agencies have an incentive to be over-cautious and provide too much of their service because they do not want to be made responsible for disastrous events and the consequences for society.

In general, politicians tend to delegate the more unattractive but necessary tasks to other institutions or bureaus and keep "safer" tasks. For example Vaubel (1986) used this "dirty-work hypothesis" to explain international relations. He argues that national politicians try to transfer these tasks to international organisations (e.g. IMF) or supra-national political entities (e.g. EU). This might also apply to policies involving low-probability-high-loss events in general. Politicians shift the tasks related to natural hazard management - which is necessary however unattractive regarding the posssibility of catastrophes - and leave the risk of being punished by the public (and the voters) for "bad luck" to the bureaucrat. Through this process of blame shifting the bureaucrat ends up as the scapegoat. The issue of shifting blame for threatening events has so far only been rarely adressed in political sciences and political economy and has received some attention within psychology by Tennen & Affleck (1990).

Basically there are two opposite considerations to blame-shifting: First, more risky tasks are also linked to greater rents. Second, shifting blame of unpopular but more efficient (but hard to communicate within day-to-day-politics or influenced by well-organized interest groups) tasks could also be welfare improving. Regarding the issue of natural hazard events politicians very often keep the post-event part of risk-management (e.g. federal compensation of losses) under their control. An empirical analysis by Garrett & Sobel (2003) on governmental assistance after natural catastrophes in the USA shows that FEMA's disaster expenditure is significantly higher in election years (around $140 million as compared to non-election years). They conclude that almost half of FEMA disaster payments are politically motivated. Discretionary *rubber boots politics*[3] are highly visible and accountable and therefore a preferable mean for politicians to gain votes. Schwarze & Wagner

---

[3] After natural catastrophes, politicians very often enter the disaster areas, wearing rubber boots, and promising immediate and unbureaucratic financial assistance to the victims.

(2004) analyse the effects of the governmental ad-hoc assistance ("Schroeder-rule") after the flooding in Germany 2002 and its effect on federal election results. On the opposite, unpopular preventive measures (e.g. structural measures at rivers that have negative impacts on the river's eco-system, the extension of hazard zones) are very often transfered to bureaucrats. Stricter building codes or road blocks are rather accounted to the agency responsible for checking the compliance than to politicians who actually issued the law. The possibility of becoming the scapegoat of last resort creates incentives for the NHM-agencies to undertake actions that minimize this risk. The potential risk of being subject to a public backlash accompanied by a loss in prestige, funds or even the position can be seen as an institutional constraint a NHM-agency faces. The work by Duizendstraal & Nentjes (1994a) already pointed out the importance of this institutional constraints in the analysis of bureaucratic behaviour. Hence, this paper now tries to extend the model of Duizendstraal & Nentjes (1994b) by control mechanisms an agency faces.

# 4    The model

The purpose of this model is twofold: In the first step the model by Duizendstraal & Nentjes (1994b) will be extended by an institutional variable accounting for a probable control through an auditing board, that might reveal organizational slack. This analyses the behavior of an "ordinary" agency or non-profit organization, for example an infrastructure agency that provides street lighting.

In a second step, the model will be extended to analyse the behavior of a NHM-agency. Here we can assume an agency responsible for natural hazard management including hazard zone mapping and the installation of avalanche and torrent barriers. Regarding the subsidy framework, the model assumes a lump-sum regime. Infrastructure agencies in general, and NHM-agencies in particular mainly act under a lump-sum subsidy regime.

## 4.1 The behavior of an ordinary agency

The agency's utility function is given by:

$$U = U(x_1, x_2) \tag{1}$$

where $x_1$ accounts for the amount of formal infrastructure output, in our case street lighting and $x_2$ describes the amount of fringe benefits, such as expensive office equipment or the placing of the contract to "related" companies that deliver input factors at higher prices.

The agency's cost function is

$$C = C_1(x_1) + C_2(x_2) + \theta(Z(x_2)). \tag{2}$$

The term $\theta(Z(x_2))$ reflects the institutional constraint of an auditing processes that the agency might be subject to, with $Z'_{x_2} < 0$, $Z''_{x_2} = 0$ and $0 < \theta < 1$. Depending on the general institutional design, such an audit takes place in a constant manner e.g. yearly or by random testing. Depending on the design, the $\theta$ can be considered as the probability that the auditing court reveals the extend of the organizational slack within the agency or the probability that a random auditing, with the certain outcome that slack is revealed, takes place. In comparison to the work by Banks (1989) and Banks & Weingast (1992) the control technology and thus the auditing costs are assumed to be fixed. $Z(x_2)$ describes the extent of disciplinary measures depending on the amount of organizational slack. This could be for example the introduction of more formalized control measures resulting in a loss of discretionary freedom and additional work or even the lay-off of employees or the management.

The total revenue $R$ from charges for $x_1$ is

$$R = p(x_1) \times x_1, \tag{3}$$

where $p' < 0$ and $R' < 0$.

The agency maximizes its utility (1) under the constraint

$$S + R = C_1 + C_2 + \theta\left(Z_2\right), \tag{4}$$

and under the constraints (2), (3). $S$ accounts for the lump sum subsidy from the government. Under these constraints the agency's budget constraint is

$$x_2 = \frac{S + R - C_1}{c_2 + \theta\left(z_2\right)}, \tag{5}$$

where $c_2$ and $\theta\left(z_2\right)$ account for the average costs of informal expenses described by the average cost of $x_2$ and the average expected costs of a potential audit $z_2$. The agency's budget constraint is represented by function $E^l$ in figure 1. The infrastructure agency's budget constraint is set in comparison to the budget constraint derived by Duizendstraal & Nentjes (1994b), $E$. In their model the agency's indifference curve touches the budget constraint at point $A$ and an amount $x_1$ of the formal output and an amount $x_2$ of other discretionary output are made. The obvious effect of the introduction of the term $\theta\left(z_2\right)$ is an increase in the costs for other discretionary output relatively to formal output and a substitution effect towards more formal output. The infrastructure agency in this model, thus produces at point $B$ an amount $x_1^l$ of street lighting and $x_2^l$ of other discretionary output.

The Lagrangian function for the normal agency's problem is:

$$\begin{aligned} L\left(x_1, x_2\right) = {} & U\left(x_1, x_2\right) \\ & + \lambda\left[S + R\left(x_1\right) - \left(C_1\left(x_1\right) + C_2\left(x_2\right) + \theta\left(Z\left(x_2\right)\right)\right)\right] \end{aligned} \tag{6}$$

The first order conditions are:

$$U_{x_1} + \lambda\left[R_{x_1} - C_1'\right] = 0 \tag{7}$$

$$U_{x_2} + \lambda\left[-\left(C_2' + \theta\left(Z_{x_2}\right)\right)\right] = 0 \tag{8}$$

Combining (7) and (8) results in the marginal rate of substitution between formal output $x_1$ and other expenses $x_2$.

$$-\frac{U_{x_1}}{U_{x_2}} = \frac{R_{x_1} - C_1'}{C_2' + \theta\left(Z_{x_2}\right)} \tag{9}$$

## 4.2 The behavior of a NHM-agency

The NHM-agency faces the same utility function (1) as the normal agency. However, here $x_1$ describes the amount of protective measures e.g. hazard zone maps in municipalities, avalanche barriers or surveillance activities. The NHM-agency faces the following revenue function:

$$R_n = p_n\left(x_1\right) \times x_1 - \pi(x_1) \times m. \tag{10}$$

The agency again receives a revenue $p\left(x_1\right) \times x_1$ from selling protective measures. In contrast to a normal infrastructure agency, its revenue also depends on the occurence of an LPHL event. After e.g. a natural disaster took place the affected citizens and, depending on the media coverage, the public as a whole make politicians at least partially responsible for this event. Due to the delegation of the task, the politicians have now the option to shift a certain amount or all of the blame to the agency. The likelihood that an amount of blame and related negative consequences, $m$, are shifted to the agency is $\pi$, where $0 < \pi < 1$. At this stage we assume that $x_1$ accounts for protective measures that influence the occurence probability of a LPHL-event, e.g. certain structural measures (avalanche barriers located at the potential incipient crack of an avalanche or surveillance activities). The agency can thus influence the expected amount of blame-shifting through the provision of formal output $x_1$. Therefore, the bureaucrats incorporate this *blame-game-premium* in their revenue function in order to insure themselves against negative consequences. In addition we assume that $m$ is a constant reflecting e.g. a liability process. Looking at flood hazards as an example: Given limited public finances and thus a limited budget for the NHM agency, the bureaucrats can only install dykes and other protective measures in some areas (and thereby reducing $\pi$), while other places are put on hold. If a flood

9

hits an unprotected area the number of protected places does not really matter, citizens and politicians will make the agency liable. This assumtption further accounts for the observation that, at least in the area of natural hazard management, agencies very often prefer visible (and budget-intensive) structural measures , that reduce the occurence probability rather than less visible (and very often less budget-intensive) measures (e.g. zoning, temporal evacuation or road blocks or the advice the purchase of an insurance).

For equation 10 we assume that $R_n = R$, showing that an LPHL-agency faces the same **total** amount of revenue. However, as $\pi' < 0$ the marginal revenue between a normal agency and an LPHL-agency differs, $R' < R'_n$. This revenue function flattens the NHM-agency's budget constraint and, after repeating the maximization steps, also changes the marginal rate of substitution. The graphical interpretation of the model again is represented in figure 1. $E^n$ is the LPHL-agency's budget constraint. Due to the assumption of potential blame shifting, a further substitution effect towards formal output, protection against natural-hazards, takes place. The NHM-agency produces at point $C$ an amount $x_1^n$ of formal output and an amount of $x_2^n$ of informal output.

**Proposition 1** *An agency or bureau responsible for the provision of the good "protection against natural-hazards" produces relatively higher allocative inefficiencies ($x_1$), but relatively lower cost inefficiencies ($x_2$) as a normal bureau.*

## 4.3   Changes in demand, budget and responsibility

After natural disasters occurred individuals are more sensibilised politicians tend to provide bureaucrats with additional funds and responsibilities. Kahneman, Slovic & Tversky (1982) described this pheonmenom as "availability bias". Individuals tend to put relative greater attention to certain risks that actually feature a rather low probability of occurrence, but have a bigger psychological (e.g. higher media-attention) and/or physical (e.g. a disaster happened within the region the individual lives in) presence. First, it is assumed that citizens' demand for protective measures increases, $p*' < 0$ and
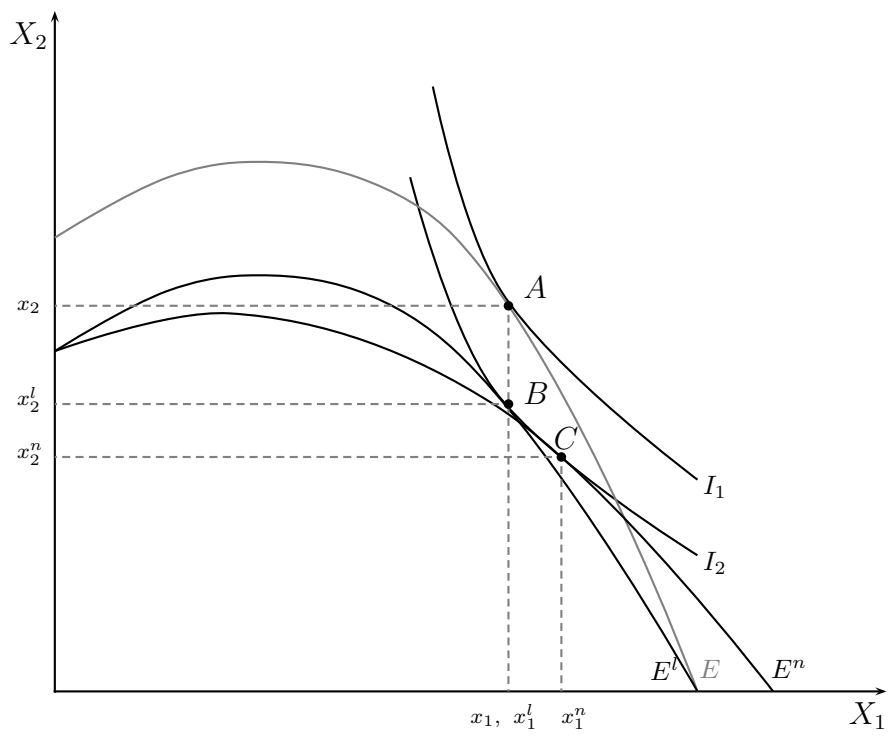
Figure 1: Budget and Output

$p*' < p'$ and second, that the government is increasing the lump-sum subsidy for the agency, $S* > S$. The increase in demand has effects on the $p(x_1) \times x_1$ part of the agency's revenue function, but no effects on the $\pi(m(x_1))$ part, the expected penalty from blame shifting. This leads to an increase in both cost and allocative inefficiencies. Depending on the relative increase of lump-sum subsidy, the allocative and the cost efficiencies might increase at the same level. An overreaction by the government and a relatively high increase of subsidies, could also result in a relatively higher increase of the cost-inefficiencies.

However, the shift of additional funds is very often related to the delegation of additional responsibilities and thus, a higher load of blame to be loaded on the agency if something bad happens. This would mean that the agency's blame-game premium would not only depend on the amount of protective measures installed, but also on the amount of subsidies received, $\pi(m(x_1, S))$. The agency's budget constraint is now flatter and the income effect would again increase both, cost and allocative inefficiencies, but the increase of allocative inefficiencies is relatively higher.

**Proposition 2** *An increase in lump-sum subsidies by the government and increased demand for protective measures, combined with an additional shift of responsibilities leads to a relatively higher increase of allocative inefficiencies (ceteris paribus).*

If the NHM-agency observes an increase in the frequency of natural disasters (e.g. a rise in extreme weather events through climate change) the probability $\pi$ will also rise. Keeping the demand and lump-sum subsidy constant, allocative inefficiency will also increase.

**Proposition 3** *An increase in the frequency of natural hazards results in additional allocative inefficiencies in the provision of protective measures by NHM-agencies (ceteris paribus).*

## 4.4 Results and implications

The results of this model show the effects of changes in the institutional environment on bureaus or agencies and in particular of an agency providing protection against low-probability-high-loss-events such as natural disasters. The introduction of an institutional variable accounting for a potential penalty related to the extend of organizational slack ($Z\left(x_2\right)$) triggers a substitutional as well as an income effect and increases the production of formal output $x_1$.

The results of the model suggest that in comparison to a normal agency, NHM-agencies tend to produce relatively more formal output and thus, induce relatively higher allocative inefficiencies on society. This might be due to the issue, that NHM-agencies are more likely to become the subject of blame-shifting from politicians. Another issue is related to a change in the occurrence probability of natural disasters or potential penalty.

In most economies the majority of protective goods and services are sovereign duty as they impact individual liberties. Up to a certain amount (even higher than the amount demanded by society) "protection against natural hazards" may cause similar allocative inefficiencies than high amounts of other infrastructure. After the installation of protective measures has reached a certain threshold, additional costs on society could arise, mainly induced by the limitations of individual liberties (e.g. hazard zones decrease areas available for settlement). The question that arises is how to reduce the cost and in particular the allocative inefficiencies. Basically, the public and politicians demand the expert knowledge of the agency. Therefore it might be necessary to limit the responsibilities of the agency to the provision of expert information about the frequency and spatial appearance of natural disasters. Then a number of alternative decision mechanisms could result in a more efficient allocation of protective measures:

First, the actual provision of protective measures could then be delegated to competitive administrative units (e.g. FOCJ for natural hazard management)(Frey & Eichenberger 1999). Second, another possibility is to put the decision on the allocation of protective measures into the hands of

13

the citizens via e.g. referenda. Third, participative methods could induce more transparency. Fourth, the allocation of protective measures could be regulated by an alternative allocation mechanism, such as a voucher system (Raschky 2005). Again it should be mentioned that, these alternative decision processes should be applied to natural hazard management with a medium to long term horizon (e.g. hazard zone mapping, technical measures, permanent evacuation) rather than short term strategies (e.g. temporary evacuation, roadblock) and catastrophe management.

# 5    Conclusion & Suggestions

This paper analyses the behavior of natural-hazard-management agencies and proposes that the provision of protective measures through bureaus results in relative higher inefficient oversupply than ordinary bureaus and that additional governmental funds and responsibilities for the agency might increase these allocative inefficiencies even at a bigger extend. The explanation for such a development is the phenomenon of blame-shifting from politicians to bureaus. Possible alternative decision mechanisms that could reduce these inefficiencies are presented as well. Given the hypotheses formulated in this paper a number of extensions are still necessary. Based on the analysis of liability processes, one can receive more detailed information about NHM-agencies' "blame-game premium". Such an analysis can then be used to analyse whether the "riskiness" of a task really affects the chances to be blamed for unwanted outcomes.

Another interesting question that arises is of normative nature: Which are the optimal societal decision mechanisms for the allocation of the good "protection against natural hazards"? Further analysis needs to be done concerning the issue how members of society will decide upon decision mechanisms for protection against LPHL-events at the constitutional table (behind a veil of ignorance).

A normative analysis of societal decision mechanisms could be of particular interest regarding the aspect of blame-shifting. The transfer of decision power for the allocation of the good "protection against LPHL-events" to a

direct democratic process would also shift the responsibility to the voters. This would mean that if the peoples' decision was "wrong" (e.g. a flood damaged an unprotected area) there is no political or bureaucratic identity that can be made responsible for. According to the propositions made in a recent paper by Buchanan (2005), "people are afraid to be free". He suggests, that individuals transfer tasks to others (or the state) in order to deny personal responsibilities. Taking this thought into account, a normative analysis of the optimal decision mechanism for the allocation of protection that would be chosen behind a veil of ignorance would be very fruitful.

# References

Banks, J. S. (1989), 'Agency budgets, cost information, and auditing', *American Journal of Political Science* **33**(3), 670–699.

Banks, J. S. & Weingast, B. R. (1992), 'The political control of bureaucracies under asymmetric information', *American Journal of Political Science* **36**(2), 509–524.

Breton, A. & Wintrobe, R. (1975), 'The equilibrium of a budget maximizing bureau', *Journal of Politicial Economy* **83**, 185–207.

Buchanan, J. M. (2005), 'Afraid to be free: Dependency as desideratum', *Public Choice* **124**, 19–31.

Cyert, R. M. & March, J. (1963), *A behavioral theory of the firm*, Prentice-Hall.

Duizendstraal, A. & Nentjes, A. (1994a), 'Migué and Bélanger on managerial discretion: a note', *Public Choice* **81**, 191–193.

Duizendstraal, A. & Nentjes, A. (1994b), 'Organizational slack in subsidized nonprofit institutions', *Public Choice* **81**, 297–321.

Frey, B. S. & Eichenberger, R. (1999), *The New Democratic Federalism for Europe*, Edward Elgar.

Garrett, T. A. & Sobel, R. S. (2003), 'The political economy of FEMA disaster payments', *Economic Inquiry* **41**(3), 496–509.

Grosskopf, S. & Hayes, K. (1993), 'Local public sector bureaucrats and their input choices', *Journal of Urban Economics* **33**, 151–166.

IPCC (Intergovernmental Panel on Climate Change) (2001), *Climate Change 2001: The Scientific Basis*, Cambridge University Press.

Jaffee, D. & Russell, T. (2003), Markets under stress: The case of extreme event insurance, *in* R. Arnott, B. Greenwald, R. Kanbur & B. Nalebuff, eds, 'Economics of an Imperfect World', MIT Press, pp. 35–52.

Kahneman, D., Slovic, P. & Tversky, A. (1982), *Judgement under Uncertainty: Heuristics and Biases*, Cambridge University Press.

Kress, S. E. (1989), 'Niskanen effects in the California community colleges', *Public Choice* **61**(2), 127–140.

Migué, J. L. & Bélanger, G. (1974), 'Toward a general theory of managerial discretion', *Public Choice* **17**, 27–47.

Mueller, D. C. (2003), *Public Choice III*, Cambridge University Press.

Niskanen, W. A. (1971), *Bureaucracy and Representative Government*, Aldine Alberton.

Ott, M. (1980), 'Bureaucracy, monopoly, and the demand for municipal services', *Journal of Urban Economics* **8**, 362–382.

Peltzman, S. (1973), 'An evaluation of consumer protection legislation: The 1962 drug amendments', *Journal of Political Economy* **81**(2), 1049–1091.

Raschky, P. A. (2005), An alternative allocation mechanism for public funds in natural hazard management, alps working paper series no. 5, alpS - Centre for Natural Hazard Management.

Schwarze, R. & Wagner, G. G. (2004), 'In the aftermath of Dresden: New directions in German flood insurance', *The Geneva Papers on Risk and Insurance* **29**(2), 164–168.

Shughart II, W. F. (2006), 'Katrinanomics: The politics and eocnomics of disaster relief', *Public Choice* **127**, 31–53.

Sobel, R. S. & Leeson, P. T. (2006), 'Government's response to hurricane Katrina: A public choice analysis', *Public Choice* **127**, 55–73.

Tennen, H. & Affleck, G. (1990), 'Blaming others for threatening events', *Psychological Bulletin* **108**(2), 209–232.

Vaubel, R. (1986), 'A public choice approach to international organization', *Public Choice* **51**(1), 39–58.

**University of Innsbruck – Working Papers in Economics and Statistics**
Recent papers

2007/05    **Paul Raschky:** Estimating the effects of risk transfer mechanisms against floods in Europe and U.S.A.: A dynamic panel approach.

2007/04    **Paul Raschky and Hannelore Weck-Hannemann:** Charity hazard - A real hazard to natural disaster insurance.

2007/03    **Paul Raschky:** The overprotective parent - Bureaucratic agencies and natural hazard management.

2007/02    **Martin Kocher, Todd Cherry, Stephan Kroll, Robert J. Netzer and Matthias Sutter:** Conditional cooperation on three continents.

2007/01    **Martin Kocher, Matthias Sutter and Florian Wakolbinger:** The impact of naïve advice and observational learning in beauty-contest games.

# University of Innsbruck

# Working Papers in Economics and Statistics

Paul Raschky

The overprotective parent - Bureaucratic agencies and natural hazard management

## Abstract

Due to the public good character of protective measures against natural disasters events, their allocation is very often in the realm of bureaucratic and expert agencies. Based on the economic theory of bureaucracy the behaviour of a bureau providing the good "protection against natural hazards" is analysed. The existing model is extended by further institutional constraints accounting for societal control mechanisms. The main proposition is that the allocation of protective measures through natural-hazard-management-agencies does also result in cost and allocative inefficiencies, however, the amount of allocative inefficiencies is relatively higher as compared to a normal bureau. This is mainly due to the potential of blame-shifting from politicians to bureaucrats. The considerations made in this paper can help to design a more efficient institutional framework in societal natural hazard management.