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Effects of Prepaid Monetary Incentives on Mail Survey Response Rates and on Self-reporting about Delinquency – Empirical findings

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Résumé

Effets des incitations monétaires prépayées sur les taux de réponse aux enquêtes par courrier et sur l'auto-déclaration de la délinquance – Les résultats empiriques : Nous avons mené une expérimentation méthodologique afin de déterminer si les taux de réponse aux enquêtes par courrier peuvent être influencés par les incitations monétaires. Avec de telles incitations, on s'attend à un taux plus élevé de réponse, comme prédit par les théories d'échanges sociaux et la théorie de l'utilité subjective attendue. Cela est particulièrement vrai dans une enquête sur les comportements délinquants du répondant, car les incitations prépayées sont susceptibles de renforcer la confiance envers le chercheur. Dans le cas d'enquêtes où l'argent est promis une fois le questionnaire retourné, nous prévoyons des taux de réponse plus faibles. Les résultats empiriques confirment clairement nos hypothèses, même si les mécanismes sociaux de réciprocité qui sous-tendent le comportement de réponse ne peuvent pas être observés directement. Notre analyse montre également que les incitations monétaires n'encouragent ni des réponses socialement souhaitables, ni des effets de parrainage qui pouvaient provoquer une surdéclaration de délinquance. Enfin, nos résultats ne montrent aucune variation systématique concernant des caractéristiques socio-structurelles et des corrélations avec la délinquance.

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Abstract
We carried out a methodological experiment to investigate whether mail survey response rates can be influenced by monetary incentives. Prepaid monetary incentives are expected to elicit higher response rates, as predicted by social exchange and subjectively expected utility theory. This is true especially in a survey on the respondents' delinquent behaviour, since prepaid incentives are likely to strengthen the respondents' trust towards the researcher. For surveys in which money is promised once the questionnaire is returned, we expect the response rates to be lower. The empirical findings clearly support our assumptions, even if the social mechanisms of reciprocity which underlie response behaviour cannot be observed directly. Our analysis also shows that monetary incentives evoke neither desirability, nor sponsorship effects which would cause overreporting of delinquency. Finally, our results show no systematic variation regarding socio-structural characteristics and correlates of delinquent behaviour.

Mots clés
Délinquance, Enquête par courrier, Incitation monétaire, Taux de retour, Théorie du choix rationnel

Keywords
Delinquency, Mail Survey, Monetary Incentive, Rational Choice, Return Quota

Surveys in which the respondents are asked to report their illegal and thus delinquent behaviour are faced with two main problems. Firstly, they are faced with methodological issues of how to make respondents participate (voluntarily) in the survey. Secondly, it should be ensured in some way that the responses the researchers receive are valid and reliable (Hindelang et al., 1979). Since the respondents are asked rather intimate and uncomfortable questions, special precautions have to be taken to ensure confidentiality. Such precautions are essential, especially for surveys on unlawful behaviour for which respondents might expect negative sanctions (Porst, 2001; Mehlkop and Becker, 2007).

A *mail survey* is considered to be particularly suitable for gathering valid and reliable data on criminal behaviour (Sudman and Bradburn, 1982; Becker and Mehlkop, 2006). Mail surveys are often perceived as less obtrusive than other survey methods. Moreover, absolute anonymity is warranted and interviewer bias is ruled out (Klein and Porst, 2000). This assumption is supported by various empirical studies. Sudman and Bradburn (1982: 42–44), for instance, show that mail surveys are most likely to yield true responses to questions on criminal behaviour. For delicate questions, social desirability effects occur less often in mail surveys than when using other techniques of data collection (Krysan et al., 1994). Thus, when dealing with delicate questions, the quality of these data seems to be higher, too (De Leeuw, 1992: 77). Additionally, from the perspective of rational choice and exchange theory, it is assumed that monetary incentives for the respondents can increase the response rate (e.g., Dillman, 2000).

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These insights have encouraged us to carry out a methodological experiment prior to the main *mail survey on criminal behaviour of adult citizens in Bern* (Switzerland). The research questions of this methodological experiment were whether or not monetary incentives significantly increase the response rates, how these incentives should be presented to the participants of the survey and, finally, whether or not monetary incentives affect the quality of responses on the propensity for delinquency and the prevalence of criminal behaviour.

It has to be stressed that, for the German-speaking part of Europe, there (still) is little insight into the effects of prepaid incentives on response rates and on the quality of self-reports. The present study aims to contribute to a better understanding of these effects and to fill the gap in this field of research. In particular, we will test the following four hypotheses. Firstly, we expect that respondents who receive monetary incentives are more likely to participate than respondents who do not receive any incentives at all. Secondly, we assume that prepaid money is more effective than promised money for actually returned questionnaires. Thirdly, monetary incentives should affect the response rate but not the respondent's propensity for true answers about their own criminal behaviour. Fourthly, prepaid monetary incentives have the same effects on the response rate for all social groups within the population (no sample selection bias). In the following section, we will briefly touch upon models of theoretical explanations and empirical findings regarding the efficacy of monetary incentives in mail surveys that motivated these four hypotheses. The third section is concerned with the outline, the data, and our experimental design. Subsequently, we will present our results in section four before we turn to a final discussion of our findings in the concluding fifth section.

State of Research and Theoretical Background

If both individual studies as well as meta-analyses of various studies are considered, the most unambiguous results and unanimous interpretations can be found in the most recently conducted experiments (Singer, 1998): response rates for mail surveys are higher if questionnaires are accompanied by monetary incentives rather than if no money is enclosed (Armstrong, 1975: 111; Kanuk and Berenson, 1975; Yu and Cooper, 1983; Church, 1993; Harkness et al., 1998; Jobber et al., 2004: 21). However, there does not seem to be an apparent, linear relationship between the amount of prepaid money and the response rate. In other words, the willingness to participate in a mail survey does not increase infinitely in correspondence to larger amounts of money (Linsky, 1975: 96–98; Heberlein and Baumgartner, 1978; Goyder, 1982; Yu and Cooper, 1983; Yammarino et al., 1991; Singer et al., 1998). What seems crucial to achieving enhanced response rates is that the respondent receives the monetary incentive immediately upon first contact and as an unconditional prepayment (Armstrong, 1975: 116; Furse and Stewart, 1982; James and Bolstein, 1992: 442–443; Church, 1993: 75). If the money is merely promised upon the successful return of the completed questionnaire, the response rate is often significantly lower than if the incentive was enclosed as a prepayment and, in fact, some studies suggest that response rates are even lower for surveys with promised money than for surveys where respondents receive no incentive at all (Church, 1993; Diekmann and Jann, 2001). Apparently, post-payment that is merely *promised* – irrespective of its amount – is not perceived

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as a sufficient incentive to motivate the respondents to participate in the survey (Armstrong, 1975: 113; Schewe and Cournoyer, 1976: 105; James and Bolstein, 1992: 451). It is equally ineffective to provide the respondents with the chance to win a lottery prize or to promise a charitable donation on behalf of the respondent upon completion of the questionnaires (Furse and Stewart, 1982; Hubbard and Little, 1988; Warriner et al., 1996; Stadtmüller and Porst, 2005).

At first glance, it seems plausible that prepaid incentives would cause a systematic sample bias or that the quality of answers, and thus the data quality, could be affected (for instance, due to effects of social desirability or sponsorship). However, empirical results are inconsistent. James and Bolstein (1992), for example, found only minor effects of prepaid monetary incentives on the social structure of the realized sample. Nederhof (1983), on the other hand, shows that the use of prepaid monetary incentives leads to an overrepresentation of the lower social classes and the less-educated. Gelb (1975) arrives at another conclusion: in her survey, the fifty-cent prepayment (US$) elicits higher response rates for the middle classes while the lower classes are more likely to respond to promised post-payments. According to Gelb (1975), the class bias of the sample seems to increase in correspondence to an increase in the prepaid amount.

However, Nederhof (1983) discovered that material incentives do not cause biased responses. Rather, they contribute to a better quality of self-reporting because the respondents are encouraged to make an extra effort and are motivated to fill in the questionnaire carefully and completely. McDaniel and Rao (1980), and Darven et al. (2003) report similar findings. Prepaid monetary incentives not only enhance response rates, but also increase response quality: the respondents answer more precisely and comprehensively (James and Bolstein, 1990).

Why would prepaid monetary incentives lead to an increased response rate? Usually, the explanation for the efficacy of this strategy to increase the mail survey response is sought in the theory of rational choice. The basic idea of rational choice theory is that patterns of behaviour in societies reflect the choices made by individuals as they try to maximize their benefits and minimize their costs. One of the assumptions of rational choice theory is that an individual actor has the cognitive ability and the time to weigh any choice against any other choice. As a starting point for all interpretations, it is assumed that the respondents base their decision to participate in a (written) survey on the evaluation of advantages (benefit) and disadvantages (costs and effort). Individuals are willing to participate in a survey only if the expected benefits exceed the expected costs (Esser, 1986; Porst, 2001).[1] Hence, by minimizing the respondent's costs and maximizing the benefits, the researchers are able to motivate a (potential) respondent to complete and return the mail questionnaire. Dillman (2000), in particular, pointed out repeatedly that, by supplementing the respondent's intrinsic motivation with extrinsic incentives (in the form of prepayments), the expected survey benefits will increase. This is the case especially in mail surveys where the respondent is asked to complete a (often quite comprehensive) questionnaire in private and without an encouraging interviewer's help. To raise the benefits expected for this kind of survey, extrinsic incentives seem to be a necessity (Singer, 1998: 9; Hill and Willis, 2001: 416; Mehlkop and Becker, 2007: 21).

Furthermore, the theory of "bounded rationality" (Simon, 1982) arises from a revision of strict rational choice theory, based on the idea that individuals are only partly

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rational (i.e., they seldom collect all the available information for all the possible choices). Therefore, bounded rationality postulates that many individuals in an interview situation are rather indecisive because they are unable estimate to discount the costs and benefits accurately due to missing or incomplete information. In a survey on delinquency, in particular, where the respondents are uncertain about whether to report their criminal behaviour or not, the proportion of indecisive individuals is probably rather large (Becker and Mehlkop, 2006: 205; Mehlkop and Becker, 2007: 6). Thus, material rewards are important, firstly, because they fuel the respondents' extrinsic motivation to the threshold where it surpasses their indecisiveness. After all, it is easier to refuse participation in a self-administered survey than in a survey where an interviewer is present. For the respondent to participate, some kind of benefit is required: benefit guaranteed in the form of additional material incentives. Secondly, prepaid monetary incentives compensate for costs (i.e., time to complete the questionnaire). Unconditional prepayments, in particular, seem to be able to persuade indecisive (or initially unwilling) individuals to participate and thus enhance the response rate (Mehlkop and Becker, 2007: 6, 8). By offering compensation for the expected costs, the respondent's cost–benefit calculation is affected, which can lead to a decision in favour of the benefits of participation (Hill and Willis, 2001: 416; Riphahn and Serfling, 2002: 8). Hence, the intended consequence of this pecuniary arrangement is to reach an increased response rate. However, drawbacks from incentives might be also possible. Frey (1997: 23) refers to a psychological mechanism that explains why monetary incentives can sometimes cause unintended consequences: when an external intervention undermines a person's intrinsic motivation, this is perceived as irrespective and unappreciative of that individual's motives. As a consequence, the individuals minimize their effort based on this devalued self-evaluation. It can therefore be hypothesized that promised incentives result in unit non-response.

From the theoretical viewpoint of *strict rationality*, one could assume that the response rates for a group with prepayments and a "no incentive" group would be the same since the respondents are free simply to keep the prepayment without returning the service; namely, to complete and return the questionnaire (Diekmann and Jann, 2001).[2] Although monetary incentives in an anonymous survey affect the respondents' cost–benefit calculation, there is no fear of sanctions if the money is kept without returning the service. While the use of prepayments might not enhance the response rate, the promise of post-payments as compensation for the respondents' efforts should prove to be more effective: the hypothesis of strict rationality predicts that the response rate will increase if rewards are promised as opposed to enclosed straightaway (Diekmann and Jann, 2001: 21). As was shown already, however, this hypothesis of strict rationality could not be confirmed by empirical findings.

The *hypothesis of reciprocity*, an approach rooted in exchange theory, might provide a solution to the explanatory problem (Dillman, 2000). The reciprocity hypothesis can easily be incorporated into an elaborated version of the rational choice theory, such as the *theory of subjectively expected utility* (SEU), because exchange theory is also based on the premise of individual cost–benefit calculations (Homans, 1961). A pen-and-paper interview is understood as a type of social exchange (Esser, 1986). To establish such an exchange successfully, two conditions have to be met. On one hand, both the social

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researcher and the respondent have to have good reason to think that they can both profit from the exchange. However, on the other hand, their preferences and needs must be distinct: obtaining information versus answering interesting questions. The different levels in expertise encourage the respondent to complete the questionnaire, and the unconditioned monetary gift appeals to respondents' compliance. In this sense, it seems that the respondent is not lured by the monetary incentive *per se* since the money could simply be kept without any service in return. From the perspective of reciprocity, the prepayment helps to initiate the social exchange between researcher and respondent. To the respondent, the monetary incentive represents a "symbol of trust" and invokes a feeling of social commitment. The respondent develops the desire to cooperate with the researcher and to participate in the interview (Dillman, 2000). However, to prevent this social exchange from being perceived as an economic exchange, the amount of prepaid money should be adequate. It should be no more than the equivalent value of the respondents' effort (Stadtmüller and Porst, 2005).[3] The mere participation in the interview is perceived as an additional benefit because it satisfies the respondent's so-called norm of reciprocity. This type of socio-cultural norm is a strong normative standard leading individuals to strive to repay *favours* freely given (voluntarily offered compensations) (Gouldner, 1960; Mauss, 1990). It is assumed that this socio-cultural norm is ubiquitously distributed within the population; i.e., prepaid monetary incentives have the same effects on all social groups (Reuband and Blasius, 1996: 307). Accordingly, the prepaid incentive should therefore not be labelled as an adequate remuneration for the respondents' participation in the interview (Arzheimer and Klein, 1998: 8; Groves et al., 2000). The monetary incentive also should not be too valuable because otherwise the respondents feel that they are not able to deliver an adequate payback and break off the exchange relationship. An incentive with an adequate amount fuels participation and is perceived by the respondent as a plus. At any rate, it is not considered a drawback (Schnell, 1997: 251). Given these assumptions of reciprocity, a post-payment could show adverse effects. The reason for this is that the promised gift is perceived by the respondents as a "symbol of distrust" or as the initiation of an economic exchange (i.e., monetary compensation for providing answers) (Fox et al., 1988).

Of course, if a norm of reciprocity applies, we would also expect there to be threatening sanctions in cases of non-compliance, since sanctions are an explicit part of the definition of norms (Coleman, 2000: 948-949). However, the participation in social scientific surveys is voluntary and the researchers have no means of sanctioning non-cooperation. Therefore, Blau (1964) suggests in his exchange theory that reciprocity (in this case) is not enforced by sanctions alone. Rather, reciprocity emerges because of the individuals' interest in the profits of mutual social exchange relationships. To establish such a social exchange, duties have to be fulfilled. As Blau (1964) points out, a person who does not respond to the favours freely given becomes dependent on the sponsor (because she "owes" something to the researchers). To avoid such dependency, which brings disadvantages rather than advantages, the respondent strives to return the service as a reaction for receiving a free "gift" from the researcher. It is in the best interest of the respondent to cooperate with the interviewer.

Since it is impossible to ensure repayment in a mail survey, this form of social exchange requires a certain amount of trust between the interviewer and the respondent.

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At first, this exchange only requires a minimal amount of trust because the initial investment only bears minor risks. To benefit from the exchange, the respondent must comply with the "starting mechanism": the implicit requirement to be a cooperative respondent (Gouldner, 1960). In cases where the researcher and the respondent have not had the chance to establish common norms, goals, or survey expectations, the respondent's main motivation to participate in the survey is the conviction that this social exchange will yield benefits. In this approach, which implicitly incorporates rational choice into social exchange theory, the respondent's motivation to participate in the survey relies on the benefits of participation, such as social appreciation, expression of individual opinion, reinforcement of social identity, support of social science, or plain interest in the survey issue (Esser, 1986).

Experimental Design

The present experiment was conducted in the Swiss capital, Bern, as part of a main project on the determinants of criminal behaviour. From a random sample of 4,000 addresses (18- to 65-year-old residents) drawn from the Bern register of residence, we randomly sampled 510 addresses and split them into 3 groups of 170 individuals each.

The *first experimental group* (EG 1) received a questionnaire (88 questions on 20 pages; machine-readable layout; photo of the Swiss parliament on the cover; a short guide on how to fill in the questionnaire), 10 Swiss francs enclosed as a bill, and a cover letter which read as follows: "To thank you for your collaboration, please find enclosed 10 Swiss francs. We look forward to your response and would like to thank you in advance for your interest and your cooperation".[4]

The *second experimental group* (EG 2) was promised 10 Swiss francs as a reward for the completed questionnaire if they mailed back the (enclosed) reply card: "Upon reception of your reply card, we will send you 10 Swiss francs to thank you for your cooperation. If you return the postcard, we will know that you have participated in the survey, but we will not be able to identify the questionnaire you have completed. You can rest assured that your anonymity is guaranteed. Your address will be deleted after we have mailed the 10 Swiss francs to you".

The *control group* (CG) merely received a questionnaire and a cover letter, but no monetary incentive at all.

To identify the three groups, each questionnaire contains an identification number, a three-digit number indicated at the top of each page. This number indicates to which group the questionnaire belongs. Apart from this three-digit ID number, each page contains an additional ten-digit number necessary for the scanner software. We informed the respondents that the questionnaire is read electronically and that the numbers on the questionnaires facilitate successful processing but do not reveal the respondent's identity. There was only one single respondent who complained about that by cutting off the ID numbers from the returned questionnaire.

The survey was conducted between 6 March and 21 March, 2006. Because we were interested in the immediate effect of monetary incentives only, we did not totally adhere to the *tailored design method* (TDM) suggested by Dillman (2000). Precisely, we did not use real stamps, real signatures on the cover letter, or a prenotice letter. These elements of the TDM have not turned out to be effective (Reuband, 2001) anyway. The

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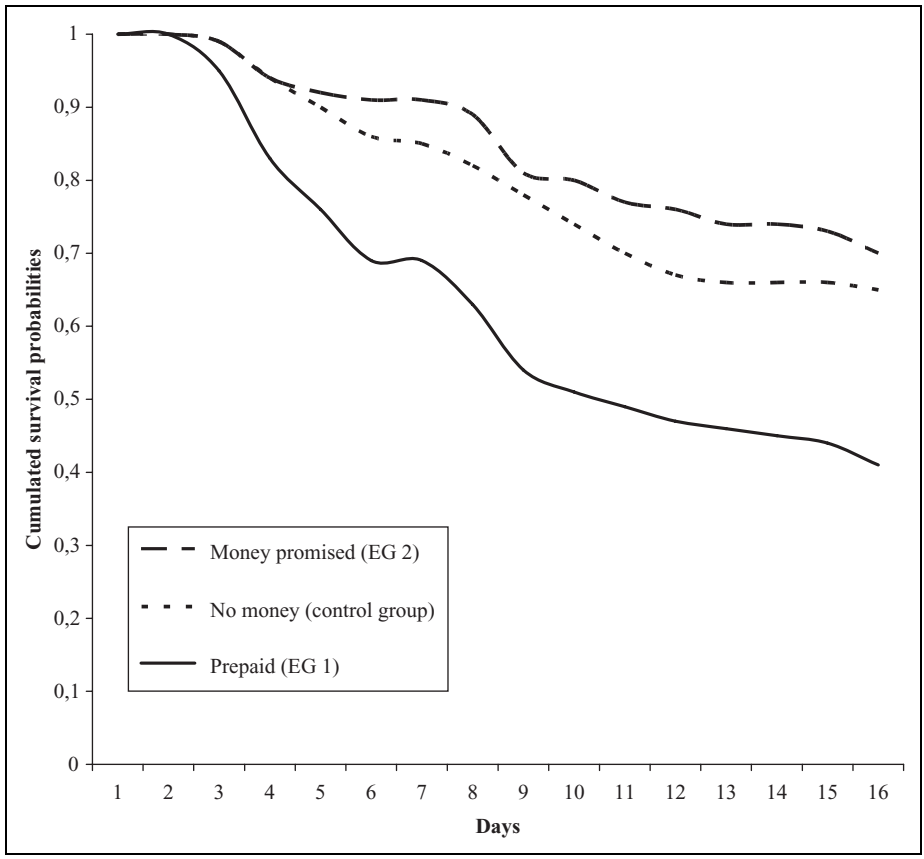

Figure 1. Probabilities of survival by type of monetary incentive

questionnaire was sent via priority mail, which is the fastest possible postal mailing in Switzerland (next-day delivery). The respondents were asked to mail the completed questionnaire back in the pre-stamped envelope that was enclosed.[5] To improve the questionnaire, we ran two cognitive pre-tests and an online survey with Bern students (Becker et al. 2007). Furthermore, the layout of the cover letter and the questionnaire were designed according to the recommendations of Dillman (2000), Porst (2000, 2001), and Stadtmüller and Porst (2005). Evidently, the respondents felt assured of absolute anonymity, and they seemed to understand the function of the identification numbers and the indices for the scanner software printed on the questionnaire. Last but not least, we appealed to the respondents' willingness to cooperate and emphasized that their participation constitutes a valuable contribution to public and scientific interest.

Empirical Results

Indeed, we found that there is a significant relationship between the use of monetary incentives and the return of completed questionnaires (Table 1). This confirms

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Table 1. Response rates of a mail survey on criminal behaviour by type of monetary incentive (time interval: 16 days)

	Gross sample	*Neutral failures*	*Net sample*	*Refusal*	*Response*	*Response rate (%)*
Control group	170	3	167	102	65	38.9
EG 1: prepaid	170	5	165	61	104	63.0
EG 2: promised	170	5	165	109	56	33.9
Total	510	13	497	272	225	45.3

Lambda = 0.181

Table 2. Response rates by type of monetary incentive (odds ratios)

	Model 1 Binary logistic regression	*Model 2 Cox regression*
Control group	1	1
EG 1: prepaid	2.675***	2.039***
EG 2: promised	0.806	0.821
Pseudo-R^2 (McFadden)	0.047	0.013
N	497	497

*** $p \leq 0.001$

hypothesis 1. Without sending out reminders, we achieved an overall response rate of approximately 45 percent. As predicted in our hypothesis 2, the response rate for the first experimental group (EG 1), which received a 10-franc prepayment, was the highest (63 percent) – followed by the control group with no monetary incentive (39 percent). The response rate was lowest for the second experimental group (EG 2). The strategy to increase the response rate by promising money upon the return of a completed questionnaire turned out to be the least effective. It is unlikely that there were any attempts at fraud because we received back more questionnaires than reply cards from the second experimental group.[6]

To asses the impact of the prepaid and promised monetary incentives on the willingness to participate in the survey, we utilized a binary logit regression. The dependent variable is whether or not the questionnaire had been returned. The independent variables are two binary coded variables of the membership in EG 1 or EG 2, while membership in the control group is the reference category. Respondents who have received prepayments are twice as likely to return the questionnaire as respondents with no incentive (Table 2, Model 1). We also utilized a semi-parametric Cox regression (Table 2, Model 2), which is a method for investigating the effect of a variable (the prepaid incentive) upon the time a specified event (the return of the completed questionnaire) takes to happen. Given the (unstandardized) regression coefficient, it has to be emphasized that the response rate of the prepaid respondents is (2,039-1) . 100 = 104 percent higher *per time unit* than the response of the control group. The response rate of the respondents who were promised money upon the return of their questionnaire is lower than that of the control group, but not significantly lower.

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As a first result, we can already say that our experiment provides empirical support for our hypotheses 1 and 2, which are based on social exchange theory and the theory of subjectively expected utility. Conversely, the assumption of strict rationality does not correspond with our empirical results.

According to our findings, the employment of prepaid monetary incentives to increase survey response rates is not only effective, but should also prove to be more cost-efficient than other strategies and techniques: the higher the number of early responses, the smaller the number of respondents who have to be reminded to complete and return the questionnaire which reduces costs for follow-up procedures. Remember that reminding procedure costs consist not only of the price of an additional letter and a stamp, but also the costs of printing additional questionnaires and the working time for organizing the reminders.

If we look at the survival rates representing the relative percentages of respondents who, at given points in time, have not yet returned the questionnaire (Blossfeld and Rohwer 1995), we see that the figures confirm our previous assumptions (Figure 1). The returns of the group of respondents with prepayments are faster than those of the remaining groups (no money/promised money). In other words, prepayments seem to accelerate the return of questionnaires. The prepayment group took five days, the control group nine days, and the remaining group (promised money) took 11 days to return successfully a quarter of the questionnaires. According to tests, such as the *log-rank test* or the *Wilcoxon test*, these differences in response time between the groups are statistically significant. It is possible to calculate the median of nine days only for the respondents who received a 10-franc bill as a prepayment. We will discuss the relationship between prepaid incentives, reciprocity, and the *immediate* returning of completed questionnaires in the concluding section.

The results so far are unambiguous: the least efficient and least effective method to motivate respondents to cooperate in mail surveys is the promise of money. Nevertheless, our results support the findings of Harkness et al. (1998). The evaluation of response time indicates that the use of prepaid monetary incentives can minimize organizational efforts and costs for follow-up procedures (even for follow-ups for respondents who are willing to participate but have not yet responded).

In the third hypothesis, we claimed that (prepaid) monetary incentives will increase the response rate but will not affect the respondent's truthfulness about their delinquent behaviour. In the questionnaire we asked the respondents about their propensity and prevalence of criminal behaviour, such as shoplifting, tax fraud, insurance fraud, or fare-dodging. The phrasings of the propensity for delinquency were: ''Could you imagine taking items in a shop without paying for them?'', ''Could you imagine giving false information in your tax declaration in order to save money?'', ''Could you imagine giving false information to your insurance company in order to receive an illegal refund?'', and ''Could you imagine using public transportation without paying for it?''. The phrasing of the prevalence of delinquency was: ''Did you ever commit one of these offences?'' Then the four offences were listed. For all these questions the respondents could choose between ''Yes'' or ''No''.

In Table 3, we list the share of the respondents in each group who have admitted to intending to commit a crime and the share of the respondents who have already committed the offence. We also list the item non-response.

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Table 3. Propensity and prevalence of delinquency. (Percentage of respondents that would commit an offence or already committed an offence)

	Shoplifting	*Tax fraud*	*Insurance fraud*	*Fare dodging*
		Propensity for delinquency		
% of EG 1(prepaid incentive)	4.8	20.2	19.2	37.5
% of EG 2 (promised incentive)	7.1	23.2	32.1	39.3
% of Control group (no incentive)	10.8	36.9	21.9	54.0
% Missing	11.6	11.1	11.6	12.4%
		Prevalence of delinquency		
% of EG 1(prepaid incentive)	22.8	69.6	2.6 (n = 2)	3.8 (n = 3)
% of EG 2 (promised incentive)	37.5	57.1	10.7 (n = 6)	1.8 (n = 1)
% of Control group (no incentive)	34.4	74.9	9.4 (n = 6)	12.5 (n = 8)
% Missing	11.6	11.6	11.6	11.6

Table 4. Propensity for delinquency (odds ratios, binary logistic regression)

	Shoplifting	*Tax fraud*	*Insurance fraud*	*Fare-dodging*
Control group	1	1	1	1
EG 1: prepaid	0.6	0.6	1.2	0.9
EG 2: promised	0.6	0.5	1.7	0.6
Pseudo-R^2 (McFadden)	0.009	0.013	0.007	0.010
N	199	200	199	197

Given the research question, we will not comment on the actual proportion of (potential) offenders. We just want to mention that other self-reports on shoplifting and tax fraud from the US (Tittle et al., 2003: 350; Welch et al., 2006: 1614) and Germany (Kroneberg et al., 2010: 13; Torgler, 2003: 509-511) reveal a similar pattern. The item non-response for both intended and already committed delinquency is quite low (about 12 %) and the missing values occur randomly for all the groups (control group and experimental groups, details available on request). For that reason, we will not consider these missing values any further. To estimate the effect of the prepaid or promised incentive to report delinquent behaviour, we applied binary logit regressions. In each model documented in Tables 3 and 4, the dependent variable is the respondent's intentions to commit a crime or the respondent's prevalence of criminal behaviour. Persons of both experimental groups seem less inclined to commit shoplifting, tax fraud, or fare-dodging, but are more likely to commit insurance fraud (Table 4). However, in line with hypothesis 3, belonging to a certain group has no statistically significant effect on the propensity for delinquency. Since the three groups that are compared are randomly sampled, the chances of deviations from "true values" are equally probable. Monetary incentives (both prepaid and promised) do not cause a systematic overreporting of delinquency invoked by effects of social desirability or sponsorship effects.

Similarly, differences regarding self-reports on already-committed crimes are not significant for the three groups (Table 5). The prepaid respondents are less likely to report

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Table 5. Prevalence of delinquency (odds ratios, estimated by binary logistic regression)

	Shoplifting	*Tax fraud*	*Insurance fraud*	*Fare-dodging*
Control group	1	1	1	1
EG 1: prepaid	0.6	0.3	0.3	0.9
EG 2: promised	1.1	0.1	1.2	0.5
Pseudo-R^2 (McFadden)	0.016	0.076	0.046	0.013
N	199	199	199	199

* $p \leq 0.05$

illegal actions in the past than the respondents of the two remaining groups. However, these effects again are not significant. Therefore our hypothesis that monetary incentives do not cause an overreporting of crimes is confirmed for the propensity as well as the prevalence of criminal behaviour.

Further analyses show that other characteristics associated with delinquency, such as being respectful of the law and property rights, or being material-oriented, do not vary for the control and the experimental groups (Becker et al., 2007: 148-151). Preliminary analyses of the data provide evidence that both the propensity for and the prevalence of delinquency correlate with the individuals' acceptance of social norms (property rights, reciprocity etc.). Persons who have internalized these norms are less inclined to engage in delinquent behaviour. Since there might be a correlation between delinquency and non-response, we discuss these assumptions in some detail.

From the perspective of frame selection theory (Esser, 2001) and the interrelated Weberian type of value-rational action theory (*wertrationales Handeln*), persons who have internalized certain norms do not contemplate their delinquent behaviour. Rather, they delete illegal activities from the set of alternative actions altogether (see Becker and Mehlkop, 2006; Kroneberg, 2007; as well as the detailed discussion in the concluding section) and only process legal courses of action in an *automatic–spontaneous mode*. Reversely, it is also possible that delinquent individuals, who are confronted with reciprocity because of the prepayments, are more likely to keep the money without returning the questionnaire. For persons who have internalized the reciprocity norm, however, the activation of the cognitive frame is inevitable upon reception of the prepaid incentives: the money is considered to be an unconditional favour in advance and triggers the activation of the ''service in return'' frame. Persons who have not internalized the norm of reciprocity evaluate the costs and benefits of survey participation and the value of the incentives. Due to a lack of data, it cannot be confirmed directly whether or not delinquent persons are more likely to keep prepayments without participating in the survey. For this purpose, we would have had to collect information on non-respondents. With regard to the received responses, however, our findings are unambiguous: there is no evidence that monetary incentives lead to biased data on the respondents' propensity for and prevalence of delinquency.

Even if monetary incentives do not result in systematically biased responses on delinquency, the significant differences in response rates dependent on the experimental stimulus might lead to a sample selection bias. It is of interest to establish whether or not the social structure of EG 1 differs from the other two groups with regard to

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Table 6. Sample selectivity due to monetary incentives (odds ratios, multinomial logistic regression; reference category: no incentive)

	Prepaid	*Promised*	*Prepaid*	*Promised*	*Prepaid*	*Promised*
Model	*1*		*2*		*3*	
Individual characteristics						
Age	1.0	1.0				
Male	1	1				
Female	1.2	1.1				
Foreigner	1	1				
Swiss native	0.8	0.9				
Low educational level	1	1				
Intermediate educational level	1.3	0.3				
High educational level	1.6	0.7				
Working class	1	1				
Middle class	0.7	1.9				
Upper class	0.5	0.5				
Attitude towards ...						
Contribution to public interest			0.9	1.2		
Protection of property rights			0.7	0.7		
Immoral enrichment			1.5	1.0		
Law-abiding behaviour			0.9	1.3		
Negative appraisal of ...						
Shoplifting					0.8	1.2
Insurance fraud					1.1	0.6*
Fare-dodging					1.1	1.5*
Tax fraud					0.9	1.3
Pseudo-R^2 (McFadden)	0.041		0.025		0.026	
N	194		200		199	

* $p \leq 0.05$

socio-structural characteristics and other correlates of delinquency. If this were indeed the case, it would cause difficulties for the interpretation of the collected data. In our fourth hypothesis, we assumed that presenting monetary incentives will not lead to a sample selection bias because these prepayments will have the same effects on all social groups. It might be the case that the respondents of EG 2 (promised monetary incentives) answer in a way that they expect to be desired by the scientists in order to present themselves as "good respondents" and, therefore, "worthy" of receiving the money. In Table 6, we regressed membership in EG 1 and EG 2 on a set of socio-structural variables and attitudes toward social norms and criminal behaviour. The respondents from the Control Group are the group of reference.

However, an examination of this issue is not free of obstacles. Firstly, the population's distribution of attitudes and morals towards delinquency is unknown, which makes it impossible to assess the amount of deviation of our sample. However, this is irrelevant to our problem, since we are interested in comparing the variations between our three experimental groups only. Secondly, the distribution of the structures in our subsamples – i.e., the control group and the experimental groups – is unknown too.

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From the viewpoint of sample theory, we can merely assume that there are no systematic differences between the groups because the subsamples were drawn randomly. Thirdly, we are faced with an additional problem, namely our study implies that the control group constitutes the group of reference and that it is "representative" of the population (Pötter and Rendtel, 1993). In the light of this problem, the following analyses should be considered exploratory and should not be confused with so-called "representativity studies".

First of all, there are no significant effects of age, gender, nationality, education, and social class on the sample selectivity (Model 1 in Table 6).[7] This also holds true for the respondents' evaluation of values, norms, and behaviour such as the contribution to common good, respect of property rights, disdain of egoism, or propensity for law-abiding behaviour (Model 2 in Table 6).

Different results were found for selected delinquent activities, such as shoplifting, insurance fraud, fare-dodging, or tax fraud (Model 3 in Table 6). On one hand, if compared with the control group without incentives, the respondents with promised incentives are more likely to consider insurance fraud as relatively harmless. On other hand, these groups tend to disapprove more strongly of fare-dodging than the control group. For the group with prepayments, the moral appraisals of delinquency do not differ significantly from those found in the control group.

Thus, we come to the following preliminary conclusion: if monetary incentives were indeed more likely to cause selective sample responses, this would only be true for cases where the incentive is promised upon the successful return of the completed questionnaire. Prepaid incentives, however, do not result in biased samples. These findings also hold true for several other items such as deprivation, anomie, or psychological dispositions (i.e., spontaneity, risk-taking, empathy, egocentricity, sublimation), which for reasons of redundancy will not be discussed in more detail. Taken together, these results also confirm our fourth hypothesis.

Conclusions

The research topic of our methodological experiment has been to investigate empirically whether or not the response rate of mail surveys on a sensitive and delicate issue such as delinquency (shoplifting, tax fraud, fare-dodging, or insurance fraud) can be enhanced by the use of material incentives. To test our hypotheses, we have formed three groups: the first experimental group received 10 Swiss francs in bills along with the questionnaire, the second group was promised 10 Swiss francs upon completion and return of the questionnaire in due time, and the third group, the control group, received no incentive at all.

In hypothesis 1 it is assumed that respondents who receive monetary incentives are more likely to fill out and return the questionnaire than respondents who do not receive any incentives. This hypothesis could be confirmed partly since only prepayments do have a positive effect while promised money is neither effective nor efficient at all (which is in line with hypothesis 2). Without any follow-up procedures, two-thirds of the *prepaid* respondents completed and returned the questionnaire within a period of two weeks. Combined with two follow-up reminders as suggested by the tailored design method by Dillman (2000), we would expect to reach a satisfying response rate and

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a less-biased sample (hypothesis 4). Perhaps this speculation is rather optimistic.[8] The individuals' sentiment of reciprocity may fade in time. Therefore, for some respondents, a reminder might not successfully revive the feeling of reciprocity, which results in a lower response than expected.

Apparently, there are no unintended impacts on response behaviour as proposed by hypotheses 3 and 4. We did not observe that social desirability caused by monetary incentives led to a systematic overreporting of delinquency or crimes in the past or future intents, confirming hypothesis 3. Moreover, there is no correlation between refusing to answer questions on delinquency and obtaining monetary incentives. Similarly, there is no indication that *prepaid* incentives result in selective sample responses (hypothesis 4).

In the light of these results, the theoretical assumptions have to be revisited. The theory of strict rationality postulates that the advance payment will not contribute to an increased response rate because rational individuals will simply keep the prepayment without providing any service in return. On the contrary, respondents who are promised money upon the return of the questionnaire may be inclined to put in extra efforts so as actually to attain the promised amount of money. In this case, the promise of monetary incentives would have a positive effect on mail survey response rates. Our empirical study shows, however, that the contrary is the case: prepaid respondents are more likely to complete and return the questionnaires than respondents who are merely promised money upon completion of the questionnaire. The response rate for the latter group is often even lower than that of the control group with no incentive.

These results reveal that the participation in a scientific mail survey must be accounted for by the theory of social exchange and the theory of subjectively expected utility as sophisticated versions of rational choice theory. From this point of view, prepayments are assumed to generate an obligation to reciprocate. The fulfilment of this obligation is perceived as a personal benefit and as proof that the respondent qualifies as a cooperative individual.

Apparently, an unconditional prepayment enhances the level of trust. In terms of the theory of frame selection (Esser, 1996; 2001; Kroneberg, 2007), prepaid money works as a trigger for an automatic-spontaneous mode of action: cooperation in return for the gift. Frame selection theory assumes a variable rationality of actors. If situations are framed by social expectations (i.e., social norms or reciprocity) about how to act within the given situation, then individuals perform in an automatic-spontaneous way in accordance with these expectations (as long as the social expectations are not in conflict with the actors' preferences). This frame is activated by significant symbols. In situations where clear social expectations are lacking or where symbols do not match the situation, actors perform in a strict rational and deliberating way. For persons who have internalized the reciprocity norm, prepaying with a 10-franc bill represents a significant symbol of reciprocity activating a cognitive frame that specifies that an adequate service in return is in order. This action, or return service, is referred to as a "habit" (Esser, 1991). Therefore, the questionnaire will be completed immediately, truthfully, and will be returned promptly. This cognitive frame of reciprocity, however, is not expected to be activated for persons who are merely given the promise of money because the mere promise of money does not entail reciprocity *per se*. Consequently, the cognitive frame of reciprocity is not operative. As discussed above, the promise of money is seen rather as an

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invitation to exchange: cash for completion of the questionnaire. The respondent can either accept or refuse participation in this exchange, but it does not trigger reciprocity. Hence, it is assumed that because the respective reciprocity frame is not activated, the respondents in experimental group 2 (''money promised'') are more likely to ponder the costs and benefits of participation than prepaid respondents. Accordingly, both the evaluation of action alternatives (i.e., participation or refusal) and the decision-making are not processed automatically and therefore will take longer for EG 2. The survival rate presented in Figure 1 provides indirect evidence of our ad-hoc interpretation: since the respondents in EG 2 have to mull over an adequate reaction to the questionnaire because of the inactive cognitive frame, they require more time to return the questionnaire. It should be noted that we have not tested this interpretation because we have not measured the pivotal mechanisms such as cognitive framing.

Our results also confirm the findings of previous methodological experiments (Mehlkop and Becker, 2007) and show further that the use of prepaid monetary incentives is effective not only for studies on less touchy topics, but also for a mail survey on self-reported delinquency.

However, unless we have empirical proof that the theoretically assumed mechanisms, such as cost–benefit calculation or reciprocity, are indeed the main causes of a successful response, we cannot take for granted the validity of these theories (Hedström and Swedberg, 1998). Detailed knowledge of such processes and mechanisms does not serve methodological fetishism or scientific vanity (''We are right!'' or ''We knew it all along, of course!''). Rather, such empirically confirmed knowledge would provide us with insight into the causalities of survey response and would allow us to control the response rates. We would be able to increase the response rates further while keeping the social selectivity of the sample responses ? to a minimum. This cannot be achieved, however, by simply taking into consideration the socio-structural characteristics of non-respondents. Rather, we would need to collect detailed information on the reasons for/against cooperation from all the different types of respondents and non-respondents. Only with such detailed information would we be able to develop and implement adequate strategies and techniques to successfully encourage potentially less-cooperative respondents to participate, or even to turn non-respondents into respondents (Neller, 2005). As a desirable side effect, we might even observe a decrease in sample selection bias. After all, it is more important to keep sample selectivity at a minimum than to reach a maximal response rate (Pötter and Rendtel, 1993; Koch 1998).

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Notes

1. The individual benefits might be manifold: social recognition, compliance with norms of politeness, interest in the survey topic, a chance to express one's opinions, loyalty to official institutions, to be of assistance to science, and so forth. The costs, on the other hand, are a

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combination of opportunity costs of time, cognitive achievements, disclosure of personal information, publication of truthful answers to delicate questions, or fear of negative sanctions.

2. According to the restrictive version of rational choice theory, individuals always decide and act according to perfect rationality and as utility-maximizing individuals because they are well informed about possible alternative choices and their consequences. The theory of subjectively expected utility, on the other hand, proposes that individuals choose that particular action from a subjectively perceived and evaluated set of actions that they consider the most promising and beneficial. Because human beings are fallible, forgetful, and sometimes idle, and because their resources for collecting and processing information (e.g. time, cognitive skills, or opportunities) are limited, it appears to be more accurate to assume that human rationality is in fact bounded. This means that individuals analyze and evaluate social situations, alternative actions, and their consequences by means of heuristic cognitive models. As a result of these cognitive restrictions and social constraints, the individual's perception, evaluation, decision-making, and execution of action are governed by the principle of satisfaction rather than by perfectly optimal cost-benefit calculation.
3. A number of studies conducted in the USA and a large number of meta-analyses reported a curvilinear relationship between the amount of money and the response rate (Armstrong, 1975; Fox et al., 1988; James and Bolstein, 1992; Warriner et al., 1996). However, the research topics and designs differ and there is much variation regarding the studies' results on upper limit thresholds for prepayments. Consequently, it is not confirmed that the threshold value for a study on an uncontroversial topic also represents a valid threshold value for a study on a delicate issue. This is a question worth investigating in future methodological research on the effects of different amounts of monetary incentives. The theory of subjectively expected utility can provide an explanation for the curvilinear relationship between the amount of money and the response rate: an inappropriately large sum of money will alter the respondent's cognitive frame for the social definition of the interview situation (Esser, 1996). If the prepayment is too large, the respondent will no longer perceive the exchange as an act of goodwill but as an economic exchange. In our case, this socio-psychological explanation corresponds to the theory of reactance in which the respondents attempt to restore their freedom of choice either to participate or to refuse. If the incentive seems to be too important, the respondents are likely to refuse participation.
4. There is a good reason why we used the 10-franc bill. This is the lowest available amount as a bill. The light weight of the banknote minimizes the postage fees, which are usually quite considerable for priority mail. In a recent and similar methodological experiment in Switzerland, Diekmann and Jann (2001) had positive experiences with the 10 Swiss francs incentive. The idea of enclosing 10-franc telephone cards for public telephones, however, is no longer effective due to the wide diffusion of mobile telephones.
5. To avoid increased awareness of the survey issue (determinants of delinquency), we called this experiment a survey on "the quality of life and criminality in Bern". This theme also incorporated issues that were of interest to the Bern public in spring 2006. The warm-up section of the questionnaire included questions on the evaluation of the Bern police system and public security, personal victimization, everyday life, and attitudes towards social norms.
6. There were also unexpected observations: 5 of the 170 Bern respondents of the first experimental group returned the enclosed money along with an incomplete questionnaire. Eight cases dropped out of the study because either the address was incorrect or the respondent was deceased.

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7. However, this result does not inform us as to whether or not the social structure of the realized sub samples is consistent with that of the population. For example, we do not know if the realized sub samples are characterized by an education bias (Hartmann and Schimpl-Neimanns, 1992). Still, we can speculate that the social structure of the three sub samples is more or less comparable with that of the population.
8. The response rates of the main survey, which has been completed and evaluated in the meantime, show that our speculation was not too optimistic. We mailed out 3,000 questionnaires, and the percentage of neutral failures (respondents who moved or passed away) amounted to 5.2 percent. Exactly 2,230 out of 2,844 questionnaires were completed and sent back in due time, which amounts to a response rate of 78 percent. Remarkably, 41 respondents (almost 2 percent) returned the 10 Swiss francs along with their completed questionnaire. Almost 50 percent of the 624 non-respondents sent the money back. After the field time of the survey, we received 70 fully completed or incomplete questionnaires. Again, it is remarkable that 17 of these respondents returned the prepaid incentive of 10 Swiss francs. One person sent back twice the amount, namely 20 Swiss francs. The return of money because of non-participation conforms to both the theory of reciprocity and the exchange theory. In the latter approach, these non-cooperative respondents seek to avoid an undesired relationship of dependence towards the researcher who has provided them with a free gift.

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