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Joseph Lanfranchi*, Mathieu Narcy**¹

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Abstract

The goal of our paper is to analyze the differences in terms of effort sensitivity to monetary incentive schemes between nonprofit and for-profit salaried workers. Nonprofit organizations being more likely to be devoted to social missions, nonprofit workers would be more pro-socially motivated in their job than their for-profit counterparts. Therefore, monetary incentives like performance pay would be less effective in inducing effort in the nonprofit sector as nonprofit workers are ready to donate labour to their employers. Using workers' stated sensitivity of effort to current and hypothetical use of monetary incentives, we find a significantly higher sensitivity of effort in the for-profit sector using linear and ordered probit estimation. To account for the voluntary selection in sector, we apply an instrumental variable estimation technique and the findings confirm the existence of a positive correlation between unobserved variables explaining sector choice and the unobserved variables determining the sensitivity of effort to actual or hypothetical monetary incentives. Finally, using another econometric methodology based on the idea of omitted variable bias, we are able to conclude that the relative ineffectiveness of monetary incentives in the nonprofit sector is more likely to be due to the intrinsic motivation of nonprofit workers than to any other workers' personality trait like pessimism or optimism that could differ between the two sectors.

Keywords: pro-social motivation, effort, incentives, nonprofit organizations

JEL Code: J33, M12, M52, L31

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1. Introduction

In the traditional economics paradigm, individual utility is alleged to decrease with the extent of effort at work and therefore effort may be obtained from workers by means of monetary compensation. However, the growing influence of psychological theories of individual motivation has engendered a new realm of theoretical and empirical research in which the motivators of employees are far more diverse and complex than the simple monetary component. Among these, intrinsic satisfaction derived from working in particular types of firms and jobs or more specifically from carrying out some specific tasks would be one powerful source of employees' motivation.

According to WEISBROD (1988), the origin of nonprofit organizations can be traced in the need for complementing the supply of collective goods and services by the state. Choosing to work voluntarily in these organizations, customarily devoted to the production of general interest services in sectors like education, health and care, would reveal what FRANÇOIS and VLASSOPOULOS (2008) names pro-social motivation at work. This is a type of intrinsic motivation, that is a motivation that does not depend on extrinsic rewards but on the participation to an activity valuable per se. Therefore, nonprofit organizations being more likely to be devoted to social missions, nonprofit workers would be more intrinsically motivated in their job than their for-profit counterparts.

Differences in the extent of pro-social preferences of workers would be likely to influence both the nature and the design of the incentive schemes usually devoted to the management of employees' effort. Indeed, when employees already experience high levels of utility from the intrinsic contents and goals of their jobs, their employer may expect to obtain the required level of work effort while fuelling their motivation through job design and/or using low-powered monetary incentives. The goal of our paper is to empirically investigate the degree of effectiveness of monetary incentive schemes when workers are likely to experience pro-social motivation from their employment relationship. More precisely, we will analyze the differences between nonprofit and for-profit salaried workers in terms of effort sensitivity to monetary incentive schemes. This study belongs to a growing field of research concerning the differences in work motivation in for-profit and nonprofit sectors.

Under this assumption, at least two predictions can be made about the human resources strategies of nonprofit firms and the behaviour of their employees. First, labour donation theory postulates that the production of social benefits will act as a reward for pro-socially motivated employees who would therefore be ready to accept lower wages and/or to offer higher effort at work (PRESTON, 1989)². For

² A large body of conflicting evidence has been obtained in various countries about the extent of the wage differentials between nonprofit and for-profit sectors (see RUHM and BORKOSKI, 2003 for a summary of empirical findings). However, to our knowledge, direct comparison of effort levels in the two sectors has been specifically studied in two papers only: GREGG et al.(2008) present evidence of higher level of uncompensated overtime hours in the British nonprofit and public sectors while LANFRANCHI and NARCY (2010b) show that

this reason, high-powered monetary incentives designed to improve employees' performance would be less necessary in the nonprofit sector. The theoretical model proposed by BESLEY and GHATAK (2005) demonstrates that for the same contractual level of sensitivity of performance pay to observed performance, workers with higher pro-social motivation will supply higher effort. Then, as performance pay is costly for the employer, he will decrease its amount at the optimum.

Second, intrinsic and extrinsic motivators are not necessarily perfect substitutes to each other. As pro-social motivation is largely built on self-determination of employees, psychological theory has put forward that it is likely to be crowded out by the use of extrinsic incentives like performance pay or close monitoring (DECI and RYAN, 1985). Therefore, we should empirically observe that nonprofit employees' effort is less likely to be sensitive to the use of performance based incentives.

The database used in this paper enabled us to investigate this prediction directly. The empirical analysis is based on a survey designed in the EPICURUS European project to investigate the link between work patterns and job satisfaction. This dataset is well suited for the purposes of our research as it contains stated behaviour reported by the workers about the link between incentive schemes and effort. First, respondents are asked to report on a discrete scale the sensitivity of their actual effort to the use of monetary incentive schemes. Second, they also report what the sensitivity of their effort would be if supplementary monetary incentive scheme was implemented by their employers. Consequently, we are able to compare the relative effectiveness of real and hypothetical monetary incentive schemes according to the nature of the employer.

The paper is organized as follows. A discussion of the theoretical and empirical rationale for the relative effectiveness of monetary incentive schemes in for-profit and nonprofit sectors is presented in section 2. Section 3 is devoted to the description of the dataset while section 4 presents our detailed econometric strategy. Finally, section 5 reports our empirical results using OLS, ordered probit and instrumental variable estimators of the difference of employee's sensitivity to incentives between nonprofit and for-profit sectors. Section 6 discusses the reliability of these results while section 7 concludes.

2. Monetary incentives systems and work motivation

The standard economist' view of the management of work motivation has been traditionally founded on the assumption that employees were reluctant to offer a high level of effort. Therefore, it is necessary for managers to design incentive schemes when the level of effort is not verifiable. The techniques that firms may use to manage effort towards the desired level fall into two broad categories: monitoring (of the chosen rhythm of work, of the task realization, of working times and

French nonprofit workers not only accept lower wages than for-profit workers but are also significantly less absent at work.

absenteeism) and monetary incentives, mainly based on objective performance at the individual or collective level or subjective evaluation of employee's merit.

These incentives mechanisms lie systematically on elements extrinsic to the job. However, psychological studies have consistently demonstrated the power of intrinsic motivators in the realization of working tasks (DECI and RYAN, 1985). Hence, a new realm of economic studies has questioned how the presence of intrinsic motivation may be a substitute to extrinsic motivators or if these two sources of workers' involvement are compatible. The goal of this section is to review the theoretical rationale of the relative effectiveness of monetary incentives in nonprofit and for-profit organizations and to present the related empirical evidence.

2.1. Theoretical rationale for monetary incentives in nonprofit organizations.

In the case of a hard but non observable work effort, the resulting incentive problem can be solved by making the employee's compensation dependent of a signal of his performance correlated with the realized effort. Principal-agent literature has extensively studied, both theoretically and empirically, the work situations where the various monetary incentive schemes (piece rate, individual or collective bonus, profit sharing and stock option) are likely to be efficient. PRENDERGAST (1999) reviewed at length this literature; he concludes in favour of the efficiency of incentive schemes but also raises some of the risks associated with these.

Here, we emphasize two sorts of risks associated with a careless use of incentive systems. The first would be to neglect the nature of the mission of the employer and to import naively performance bonuses proved to be efficient in a for-profit context. Public and private nonprofit organizations producing collective goods with social benefits are likely to attract workers intrinsically motivated to undertake a pro-social behaviour. BESLEY and GHATAK (2005) show that such form of motivation may act as a full substitute for the use of monetary incentives or at least reduce their importance in total compensation. Therefore, the effort chosen by the worker driven by pro-social motivation will be higher than the one chosen by the worker driven by pecuniary motivation while the performance bonus in his total compensation is lower. In this model, the reduced use of monetary incentives only relies in the idea that in order to achieve an optimal level of effort, the need of the extrinsic monetary incentives is reduced by the presence of intrinsic motives of performance³.

A second risk would be to crowd out the existing but fragile intrinsic motivation of the employees while introducing extrinsic motivators. FREY (1997) proposed a modelled architecture to evaluate the

³ Auriol and Brilon (2009) extends the model of Besley and Ghatak incorporating a third category of agents, the individuals who "derive pleasure from some form of destructive or anti-social behavior". In the presence of such potential incumbents in the nonprofit sector, nonprofit employers will still benefit from superior motivation of pro-social workers and have lower recourse to monetary incentives. However, they will also need to increase their degree of monitoring of effort and/or their applicant screening investment.

consequences on the employee's productive behaviour of the use of extrinsic and intrinsic motivators. Basically, employees chose their investment in effort comparing its relative benefits and costs. The implementation of any extrinsic motivator drives two effects: a disciplining effect decreasing the marginal cost of effort or increasing its marginal benefit and a crowding-out (resp. crowding-in) effect on intrinsic motivation increasing (resp. decreasing) the marginal cost of effort or decreasing (resp. increasing) its marginal benefit. Therefore, according to the form of the extrinsic motivator and the sources of the intrinsic motivation, the total effect on effort of the use of extrinsic motivator will vary. It is therefore necessary to expand the basic assumptions about behavioural reactions of employees to various incentive systems to fully understand when their efficiency is at its maximum. According to the theory of cognitive evaluation (DECI and RYAN, 1985), the feeling of self-determination is central to maintain the intrinsic motivation of individuals while external intervention seeking to control their behaviour would finally decrease it. Frey therefore concludes that the more the compensation is based on performance, the more the effort at work is perceived as controlled resulting in a reduction in intrinsic motivation.

The crowding-out effect can also be rationalized in the context of imperfect information. First, if worker and employer have unequal information, the implementation of monetary incentives may lead the former to reassess his beliefs about his quality or about the nature of his job (BÉNABOU and TIROLE, 2003). Interpreting the use of monetary rewards as a signal that the task is more difficult or that his expected productivity is lower, then his motivation will be weakened and so his effort. Second, true information is not necessary to trigger a decrease of the agent's intrinsic motivation as a signal of distrust may also imply the same consequence. For example, if the salaried worker of the nonprofit sector hypothesizes that his employer shares the same values, ideology or goals to serve the society, then the use of incentives can be perceived as a signal of distrust from the employer. HEROLD (2010) shows that when trust is an important dimension of the employment contract, it may be optimal for the principal to leave the contract incomplete and do not use any incentives based on performance. Finally, if nonprofit worker obtains good reputation from participating to activities creating social benefits, this reputation may be spoiled by the perceived change in the value of his investment caused by the pecuniary award (BÉNABOU and TIROLE, 2006). Consequently, using performance payments should be less effective at inducing work effort in nonprofit organizations if workers' motivation to contribute is partly based on self-image concerns.

Furthermore, the promise to receive a wage superior to the one earned by fellow workers could affect effort in a different way in nonprofit and for-profit sectors. FEHR and SCHMIDT (1999) propose a theoretical model where individuals show aversion to wage inequity, negative as positive. Negative inequity aversion refers to a situation where individuals dislike to being in a worse situation than their peers. Positive inequity aversion is the dislike to being better off than their peers. This aversion rests on a sort of guilt feeling if the worker feels himself as overpaid. If participation to the nonprofit sector

is a signal of altruistic motives, benefiting from a higher compensation than similar workers could induce a lower effort donation from nonprofit workers than from for-profit workers.

2.2. Empirical evidence

There is a relatively small body of empirical literature on the effect of monetary incentives on pro-social motivation in the labour market. The first set of evidence deals with the limited use of monetary incentives in nonprofit organizations. Both ROOMKIN and WEISBROD (1999) and BALLOU and WEISBROD (2003) confirm that for-profit hospitals are more likely to implement performance pay for their managers and CEOs than nonprofit ones. Also, DEVARO and BROOKSHIRE (2007) found significant evidence that promotions based on productive performance are less likely in nonprofit than in for-profit firms.

There is also some empirical evidence in support of the idea that workers engaged in pro-social activity cut in their effort when monetary incentives are implemented. FREY and GÖTTE (1999) show evidence of such crowding effect for volunteers who chose to cut in their working hours when rewarded. CARPENTER and KNOWLES MYERS (2010) find that volunteer firefighters are driven by altruistic and social reputation concerns but that the effect of small monetary incentives lessen with such image motivation. Public service motivation is another form of pro-social motivation for public sector workers. In a detailed study of the motivators of work in the British public sector, GEORGELLIS et al. (2010) have found that public sector workers self select themselves on the basis of the attraction of intrinsic motivators. Furthermore, but only in the higher education sector and National Health Service, implementation of extrinsic monetary rewards deters the applicants to accept public sector employment. Finally, DECKOP and CIRKA (2000) provide a direct test of the crowding out of pro-social motivation in the nonprofit sector. They find evidence that the introduction of a merit pay system in a private nonprofit college lead to a significant decrease in intrinsic motivation for employees initially highly intrinsically motivated.

Some supplementary evidence can also be obtained from experimental studies. Using the stated preferences of nonprofit and for-profit workers towards attributes of hypothetical job offers in the context of a discrete choice experiment, LANFRANCHI and NARCY (2010a) find evidence that, contrarily to for-profit workers, non-profit workers do not value explicit contractual arrangements where high effort is exchanged against job security. They conjecture that the likely convergence of interests between intrinsically motivated workers and their employer implies that the former do not experience supplementary utility from an explicit demonstration of loyalty from the latter. On the contrary, the explicit loyalty offer crowds out the intrinsic motivation of nonprofit workers because it acts as an extrinsic control that changes the perception of the contract. In the lab, a recent experiment by FEHRLER and KLOSFELD (2010) display evidence that the results of Besley and Ghatak summarized

above are not confirmed. In a first step, the subjects were supposed to pick up from a list of 11 non governmental organizations (NGO) for which they can generate a donation proportional to their chosen effort. These subjects were employed on the basis of a piece rate contract. In a control group, subjects generated a donation to a randomly chosen (and unknown) student of the University of Zurich. The results of the experiment show that there is no supplementary donated effort in the group of the subjects matched with a non governmental organization. It is however worth to note that the subjects were not able to adopt a perfectly selfish behaviour and refuse to be paired with a NGO. Therefore, it is possible that these results are also driven by a large proportion of subjects with a low pro-social motivation.

Finally, the influence of wage equity on sustaining nonprofit workers' effort has been supported by two studies. First, LEETE (2000) suggests that status and wage differentiation that enhance extrinsic motivation may well be incompatible with maintaining intrinsic motivation. Empirically, she found significant evidence that within occupation wage dispersion is significantly lower in the nonprofit sector. Also, PENNERSTORFER and SCHNEIDER (2010) find that nonprofit organizations exhibit smaller internal wage dispersion particularly when they employ a significant share of volunteers.

3. Data and descriptive evidence

The statistical source is a broad survey designed in the context of the European project EPICURUS to investigate the relationships between work patterns and well-being. The questionnaire has been carried online in six countries, namely Denmark, Finland, France, the Netherlands, Spain, and United Kingdom, and by direct interviews in Greece in August and September 2004. Restrictions both in terms of costs and time of realization of the survey limited the size of the sample in each country⁴. Given that the number of observations had to be limited, it was also important to agree on a homogenous group of individuals. Our survey sample includes 5 463 salaried workers whose employment is the main activity (excluding students), employed in all industries except agriculture and fishery, between age of 18 to 65, with a maximum educational level of 4 in the ISCED International Classification of 1997.

In order to perform a strict comparison between nonprofit and for-profit firms within the private sect, we have chosen to exclude all civil servants and employees of public owned firms to perform or. Second, we have constrained our analysis to services sector as nonprofit organizations only move in this part of the economy. Considering sensitivity of work effort in similar industries circumvents the

⁴ The number of respondents in each country was respectively 1,011 in Denmark, 331 in Finland, 1,008 in France, 800 in Greece, 1,007 in the Netherlands, 304 in Spain and 1,002 in the United Kingdom.

risk of comparisons between different types of jobs and work organization in firms. *In fine*, our sample of study contains 2 904 employees, 335 in the nonprofit sector and 2 569 in the for-profit one.

This data base contains both objective information about the individual respondent, his household and his past and current work situation and subjective information like opinions about various domains on both job and life. Among the latter, two particularly original questions are interesting to assess the motivational roots of nonprofit and for-profit employees. First, individual respondent is asked to assess how his effort is sensitive to the actual use of monetary incentives. Second, he is then asked to assess how he would react in terms of work effort if his employer was using hypothetical monetary incentives. The sensitivity of employees' effort to current and hypothetical monetary incentives is evaluated on an ordinal scale from 1 (very unimportant) to 5 (very important).

The stated impact of the current monetary incentives on employees' effort is higher for the for-profit employees than for the nonprofit ones with an average rating of 3.8 compared to 3.3. This impact is also higher when we consider the impact of hypothetical monetary incentives – 3.9 for for-profit employees versus 3.2 for nonprofit ones. These two differences significant at 1% level seem consistent with the view that nonprofit employees are driven by a superior pro-social motivation than their for-profit counterparts. However, this preliminary evidence is limited. In fact, the observed differences of evaluations may be the result of significant differences between the nonprofit and for-profit jobs. More particularly, the possible differences in the current incentives practices established by nonprofit and for-profit employees may broadly explained the lower sensitivity of nonprofit workers effort to current and hypothetical monetary incentives. Fortunately, the used dataset describes in detail the characteristics of the job (working conditions, work organization, work intensity...) but also actual incentive systems like the degree of latitude and autonomy, the extent of monitoring of the workforce, chances of promotion, merit pay, use of monetary bonus. To our knowledge, such detail information in dataset is quite rare. Hence, these extended controls variables authorize a comparison between the nonprofit and for-profit sectors as close as possible to the *ceteris paribus* assumption. Indeed, the differences of evaluation of the efficiency of incentive schemes may be due to the variety of the recourse of various compensation policy and/or work organization.

The Table 1 below displays significant evidence that for-profit and nonprofit workers are not usually subject to the same type of incentives practices. This table reports descriptive statistics by sector of various job characteristics, likely to affect the level of effort of employees and, therefore, their evaluation of the efficiency of monetary incentives. For-profit workers are significantly more likely to experience the use of performance pay as they are 23.3% declaring that they could receive extra payments like bonus or stock options and 7.9% that they receive merit pay against respectively 5.3% and 3.3% of the employees in the nonprofit sector. Nevertheless, nonprofit workers are more likely to perceive an end-of-year bonus. The workers' evaluation of their probability of being promoted is significantly higher among for-profit workers than among nonprofit ones. Autonomy is

higher for the nonprofit workers because they are given more latitude to put their own ideas into practice at work.

Table 1: Current incentive methods in the nonprofit and for-profit sectors Variables

Variables	Nonprofit sector	For-profit sector
<i>Supplementary Monetary Premia:</i>		
End-of-year bonus ***	36.72	19.62
Extra payments such as bonuses or stock options ***	5.37	23.43
Merit pay***	3.28	7.86
<i>Probability of being promoted:</i>		
Very probable *	4.19	6;70
Probable ***	14.67	24.23
Improbable ***	48.20	35.01
Very improbable	29.04	28.11
Doesn't know	4.19	5.96
<i>Control and autonomy :</i>		
No one controls your work	8.06	7.47
Put your own ideas into practice at your work (nearly always frequently)***	60.60	54.07
N	335	2 569

Source: European Commission, Epicurus Survey 2004

Note: Frequencies are significantly different in the two sectors at: *** 1%, ** 5%, * 10%.

4. Econometric strategy

4.1. Ordered probit model and COLS transformation

In order to estimate the evaluation by employee i of the efficiency of incentive schemes on work effort, we can write the following model:

$$E_i^* = \alpha' NP_i + \beta' X_i + \varepsilon_i \quad (1)$$

where E_i^* is a continuous latent variable measuring the effect of actual and hypothetical incentive schemes on levels of effort. However, the true value of this variable is unobservable and we only observe the evaluation E_i such that $E_i = f(E_i^*)$, reported on a discrete 1-5 scale. NP_i measures if the employee belongs to the nonprofit sector. The vector X includes a lot of observable workers and job characteristics. ε_i is a normal random term supposed to be distributed as a normal function with null mean and variances $\sigma_{\varepsilon_i}^2$. The significance of estimated parameter α reveals a difference of evaluation of efficiency of a given incentive scheme between nonprofit and for-profit employees, controlling for identical characteristics X .

The explained variable is an ordered variable and the empirical model (1) would therefore be estimated using ordered probit model. However, the estimation method used below is not consistent with the use of ordered variables. Consequently, we have chosen to transform the discrete reported evaluations of the efficiency of incentive schemes on work effort E_i into values denoted \bar{E}_i measured on the real axis. This transformation requires that the transformed values preserve the ranking of the original evaluations.

For this purpose, we use the Cardinal Ordinary Least Squares method (COLS) introduced by van Praag and Ferrer-i-Carbonell (2004, Chapter 2). Considering the discrete scale 1-5, we assume that any discrete value taken by our observed variable E_i represents a transformation of E_i^* originally belonging to one of the intervals $[1,1.5]$, $]1.5,2.5]$, ..., $]4.5,5]$. If the scale is then linearly transformed into the 0-1 scale, we can construct our new variable \bar{E}_i for each one of the five possible values using the following formula:

$$\bar{E}_i = E(E_i^* | \lambda_{n-1} < E_i^* < \lambda_n) = \frac{\phi(\lambda_{n-1}) - \phi(\lambda_n)}{\Phi(\lambda_n) - \Phi(\lambda_{n-1})} \quad (2)$$

where the $\lambda \in \{0, 0.125, 0.375, 0.625, 0.875, 1\}$ and $\phi(\cdot)$ and $\Phi(\cdot)$ represent the normal density and distribution functions respectively. The new dependant variable \bar{E}_i of our model is the conditional mean of E_i^* . Our econometric model (1) is then rearranged as follows:

$$\bar{E}_i = \alpha' NP_i + \beta' X_i + \varepsilon_i \quad (3)$$

and can be estimated using conventional linear methods. Moreover, Ferrer-i-Carbonell and Frijters (2004) have shown that the estimated coefficients obtained with the COLS method are identical to the coefficients obtained with ordered probit model, up to a multiplying positive factor.

However, workers may self-select into the nonprofit sector according to the higher pro-social motivation. Consequently, there is also a potential bias due to a selection on unobserved characteristics and the variable NP_i in the equation (3) is presumably endogenous. To address the issue of selection bias, we consider instrumental variables approach using the COLS variables.

4.2. Instrumental variable estimation

To account for the selection on unobservables, we propose to apply an instrumental variables procedure described by WOOLDRIDGE (2002). Initially, we estimate the choice of the nonprofit sector by regressing NP on the sets of included instruments X and excluded instruments Z using a probit model:

$$P(NP_i = 1|X, Z) = \delta_1' X_i + \delta_2' Z_i + \mu_i \quad (10)$$

Then, we predict the probability to belong to the nonprofit sector:

$$\hat{\Phi}_i = \Phi(\hat{\delta}_1' X_i + \hat{\delta}_2' Z_i) \quad (11)$$

Finally, the outcome E is estimated by Instrumental Variables using this predicted probability as the single excluded instrument ($\hat{\Phi}_i$) together with the set of included instruments (X_i). It is important to note that $\hat{\Phi}_i$ is not used as a direct regressor but that the first step of the IV procedure is the usual linear projection of our endogenous regressor NP onto all the exogenous variables:

$$\hat{NP}_i = \gamma_1' \hat{\Phi}_i + \gamma_2' X_i + v_i \quad (12)$$

According to Wooldridge, this method is robust to the misspecification of the first-stage probit model (10) and the IV estimator is efficient if $Var(\varepsilon_i) = Var(\varepsilon_i|X, Z)$.

5. Results

5.1. Ordered probit and COLS estimates

The first two columns of Table 2 report ordered probit and COLS estimates of the effect of working in the nonprofit sector on the sensitivity of effort to current and hypothetical monetary incentives. The control variables are presented in Table A1 of the appendix. They include workers characteristics (age, gender, marital status, level of education, seniority, the fact that the employee exert a supplementary job) and job characteristics (monthly wage, occupational indicators, number of contractual weekly working hours, number of overtime hours, having a permanent contract, size of the firm, a dummy measuring the access to training during the year, having a stressful job, having a repetitive job, degree of work intensity, working in the team, quality of relations with the boss and with the colleagues). The variables presented at the bottom of Tables A1 are the job characteristics described into Table 1 and hypothesized to affect the level of effort of employees. We can observe that ordered probit and COLS estimates give qualitatively similar evidence.

The results highlight the significantly lower impact on effort of the current and hypothetical monetary incentives for nonprofit employees. Spurred on by a more intrinsic motivation, they are less sensible to the pecuniary rewards. Furthermore, the introduction of monetary incentives would not increase their effort as much as it would for for-profit employees. This finding can be seen as an evidence of a sort of crowding out effect of their intrinsic motivation

Table 2: The effect of working in the nonprofit sector on the sensitivity of effort to current and hypothetical monetary incentives

	oprobit	COLS	IV
Current monetary incentives	-0.185** (0.082)	-0.185** (0.078)	-0.138 (0.199)
Hypothetical monetary incentives	-0.368*** (0.083)	-0.338*** (0.072)	-0.226 (0.184)

Source: European Commission, Epicurus Survey 2004.

Note: The control variables are those presented in Table A1 of the appendix. Standard errors are in parenthesis. Significant at ***1%, **5% and *10% levels.

5.2. Results from the IV estimation

Following the IV procedure proposed by WOOLDRIDGE (2002), we first estimate the choice of nonprofit sector in order to predict the probability to belong to this sector. The probit estimation of the likelihood to work in the nonprofit sector is given in Table A2 from the appendix. The effect of excluded variable Z is presented at the bottom of Table A2. We propose one single instrumental variable in Z. This instrument measures the worker's reported level of housing satisfaction on a scale

from 0 to 10⁵. In fact, the advantage of this variable comes from the fact that it belongs to a domain of life that is not directly related with the personal experience of the individual at the workplace. Therefore, we are more convinced that the reported level of dwelling satisfaction is unlikely to be correlated directly with the sensitivity of effort to monetary incentives. This variable is found to influence negatively and significantly the nonprofit sector choice.

The third column of Table 2 report the IV estimates of the effect of working in the nonprofit sector on the sensitivity of effort to current and hypothetical incentives schemes. Taking into account the voluntary selection of the workers in the nonprofit sector does not contradict the message of our original results. Using the probit fitted probability to belong to the nonprofit sector as an instrument produces a smaller and especially nonsignificant effect of belonging to the nonprofit sector on the sensitivity of effort to monetary incentives, this being true for both current and hypothetical use of these. Therefore, these findings seem to confirm that there is a significant correlation between unobservable determinants of sectoral choice and of effort response to extrinsic incentives. These results remain in line with the hypothesis of pro-social motivation of nonprofit workers.

Not surprisingly in the context of the Wooldridge procedure, the chosen instrument for *NP* - the predicted probability of belonging to the non profit sector - passes the Lagrange Multiplier version of the Anderson canonical correlation test and the Cragg-Donald (1993) Wald test for under identification. Identically, the F-test version of the Cragg-Donald Wald statistic confirms that this predicted probability is not a weak instrument⁶.

6. Discussion of the results

One question raised by the results presented in the previous section is that nonprofit workers may be different from for-profit workers in their sensitivity to the disciplinary effects of payment incentives for another reason than pro-social motivation. In such a case, the estimated effect of working in the nonprofit sector would not reveal a higher level of pro-social motivation but some other personality differences between the two populations of workers. Therefore, in this section we will try to address this ambiguity using another estimation methodology.

Our idea is to control for some unobservable trait, like pessimism or optimism but distinct of pro-social motivation, that would affect the subjective evaluation of economic situations by the two groups of workers. If the inclusion of such a psychological characteristic explains the difference between the

⁵ This discrete variable has been transformed using the COLS transformation method described above.

⁶ Note that, however, it does not exist proper test for evaluate the validity of the excluded variable in *Z* in the first step. In order to assess if the introduction of this variable improves the quality of the model for nonprofit sector choice, we did estimate an IV model with the *Z* variable as the proper instrument of the participation to the nonprofit sector *NP*. In this case, the underidentification tests do not reject the hypothesis that the instrument is correlated with the endogenous regressor *NP*.

sensitivity of effort to payment incentives between nonprofit and for-profit workers, this would raise doubts on our interpretation of previous results in terms of pro-social motivation. Furthermore, if we can control for another indicator that could capture for both this psychological trait and the unobserved intrinsic motivation at work, we will be able to assess if the latter is the main determinant of the lower sensitivity of effort to payment incentives in the nonprofit sector.

To find such indicators, we follow a method originally proposed by van PRAAG et al. (2003) in a different context. The procedure goes as follows. First, we will take advantage of the evaluations by the respondents of their satisfaction with certain aspects of their life, known in the literature as life domain satisfactions (LDS). In the EPICURUS data set, the following domains of life are distinguished: job, household income, house, health, the amount of leisure time, the way in which you spend your leisure time, social life, environment, and family life. These life domain satisfactions are estimated using the COLS technique and from these regressions the error terms measuring the unexplained part of the satisfactions are evaluated⁷. Then an error covariance matrix is created and using the first principal component of the error covariance matrix, we generate a new variable f_2 , which capture the unobserved part that is common to all the error terms. This variable is thus capturing the unobserved individual characteristics that are common to all partial life domain satisfactions, such as optimism and intelligence for example, but not intrinsic motivation at work.

Second, we repeat the same procedure with the workers' evaluations of 14 job domains satisfactions (promotion prospects, total pay, relations with boss, security of your job, use of own initiative, the work itself, total working hours, hours when you work (e.g. shift work, night work), employer's behaviour, work load, work tension, level of job stress, and physical risk). Therefore, we generate another factor called f_1 which captures the unobserved part common to all unexplained part of the job domain satisfactions⁸. This second variable will not only measure individual traits like optimism that interferes with subjective evaluation but also the intrinsic motivation at work. If nonprofit workers derive specific utility from participating to the production of goods and services devoted to increase social benefits, they should report higher levels of job domains satisfactions than their for-profit counterparts.

Using these two factors, we have successfully estimated two versions of our econometric model (3) supplemented respectively with factors f_1 and f_2 , therefore controlling for two distinct sources of individual heterogeneity.

The results are reported in Table 3 below. The first row gives previous the COLS estimation of the nonprofit dummy and serves as a benchmark. The next two rows displays the estimated values of the

⁷ The explanatory variables include individual characteristics like marital status, age, gender, education levels, number of children under 16 years of age, household income, household ability to save money from regular income.

⁸ The determinants of job domains satisfactions include the same set of explanatory variables as the one presented in tables A1 and A2.

coefficients associated with the dummy nonprofit and respectively factor f_1 and f_2 . Finally, in the last three rows, we report the results of the estimations when the nonprofit dummy is interacted with the supplementary factor.

Table 3: Sensitivity of effort to actual and hypothetical payment incentives, controlling for two distinct sources of unobserved worker heterogeneity.

	f_1 ($i=1$)		f_2 ($i=2$)	
	Actual	Hypothetical	Actual	Hypothetical
Nonprofit	-0.185** (0.078)	-0.338*** (0.072)	-0.185** (0.078)	-0.338*** (0.072)
Nonprofit	-0.103 (0.085)	-0.247*** (0.078)	-0.178** (0.078)	-0.331*** (0.072)
f_i	-0.034* (0.021)	-0.005 (0.019)	-0.046** (0.020)	-0.013 (0.019)
Nonprofit	-0.097 (0.085)	-0.243*** (0.078)	-0.186** (0.078)	-0.336*** (0.073)
f_i	-0.021 (0.022)	0.009 (0.020)	-0.037* (0.021)	-0.010 (0.020)
nonprofit \times f_i	-0.137** (0.069)	-0.140** (0.064)	-0.084 (0.064)	-0.038 (0.062)
Effect of f_i in nonprofit sector	-0.158** (0.066)	-0.131** (0.064)	-0.121** (0.061)	-0.048 (0.059)

Note: Standard errors are in parentheses. Significant at ***1%, **5% and *10% levels.

When factor f_1 is controlled for, the effect of the nonprofit dummy on the sensitivity of effort to actual payment incentives disappears, showing that the difference between the two groups of workers is totally explained by the supplementary factor, that is a combination of individual characteristic common to all domain satisfactions, like pessimism, and of intrinsic motivation at work. We cannot from this first set of results discriminate between these two likely influences. However, when we look at the results in column three, we notice that the introduction of factor f_2 that does not include the element of intrinsic motivation at work does not eliminate the difference of effort sensitivity between nonprofit and for-profit workers. Hence, this supplementary evidence seems to back up our previous interpretation of the lower efficiency of incentive payments in nonprofit sector due to pro-social motivation. Also, as further evidence, it is interesting to note that the effect of factor f_1 is significantly negative in this sector only.

When we examine the determinants of the sensitivity of effort to the hypothetical use of supplementary incentive payments, the results tell a quite similar story. First, the introduction of factor f_1 does not totally eliminate the effect of the nonprofit dummy but significantly reduce its magnitude. Yet again, the influence of f_1 is only significant for the nonprofit workers corroborating our

interpretation in terms of their superior intrinsic motivation⁹. Once more, the inclusion of factor f_2 , which is not supposed to be correlated with the motivation at work, modifies only marginally the extent of the difference of sensitivity of effort between the two groups of workers.

This econometric procedure shows that the relative inefficiency of payment incentives in the nonprofit sector is a robust phenomenon that cannot be explained by non-work psychological differences between nonprofit and for-profit workers.

7. Conclusion

In this paper, we analyzed how effective monetary incentives are in nonprofit and for-profit sectors. Evidence on this topic is hard to assemble as data sources containing information about both incentive schemes and the way employees of both sectors react to their implementation are rare. The novelty of our approach lies in the use of stated declarations of employees concerning the impact on their effort of current and hypothetical monetary incentives.

The results reveal that according to their higher pro-social motivation the effort of nonprofit workers is significantly less sensitive to current and hypothetical monetary incentives than the one of their for-profit counterparts. To exhibit these results, our empirical strategy has been performed in three steps.

First, neglecting the fact that workers may self-select into the nonprofit sector according to the higher pro-social motivation, we ran an OLS regression. The OLS estimates highlight a significantly lower impact on effort of current and hypothetical monetary incentives for nonprofit workers.

Second, to address the issue of selection bias, we considered the instrumental variables approach described by WOOLDRIDGE (2002). Taking account the selection on unobservables makes the effect of belonging to the nonprofit sector non significant on the sensitivity of effort to current and hypothetical monetary incentives. Consequently, there are some unobserved variables influencing simultaneously and in the same way the sector choice and the sensitivity of effort. Among these unobserved variables, there is the workers' pro-social motivation. Therefore, this result remains in line with the hypothesis of higher pro-social motivation of nonprofit workers. However, these unobserved variables may also reflect some other personality differences between nonprofit and for-profit workers.

In a third step, we tried to address this ambiguity using an estimation methodology based on the idea of omitted variable bias and generating an indicator which captures the intrinsic motivation at work. The results reveal that the higher pro-social motivation among nonprofit workers is a robust

⁹ We also replicate the construction of this factor excluding satisfaction with work load, work tension, job stress and physical risk that may not be influenced by intrinsic motivation. This robustness check did not change the qualitative nature of the results displayed in Table 3 above.

explanation to the differences of the sensitivity of their effort to current and hypothetical monetary incentives.

In summary, the nonprofit employees are more reluctant to react in a positive way to extrinsic motivator like pecuniary incentives. We may interpret these findings as an indirect evidence of their higher intrinsic motivation coming from their involvement in the production of the nonprofit sector. From that point of view, our study seems to confirm previous empirical analysis showing that nonprofit firms are less likely to implement performance premium, merit pay or promotion. Moreover, our analysis shows that the eventuality of specific pro-social motivation should be taken into consideration before exporting human resources management methods from one sector to another.

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APPENDIX

Table A1: COLS IV estimation of the sensitivity of effort to current and hypothetical monetary incentives

Variables	Current monetary incentives		Hypothetical monetary incentives	
	Coeff.	Se	Coeff.	Se
Constant	0.326	0.361	0.208	0.335
nonprofit	-0.138	0.199	-0.226	0.184
monthly wage (log)	-0.010	0.043	-0.011	0.040
age	-0.007***	0.002	-0.008***	0.002
weekly working hours (log)	0.092	0.076	0.139*	0.072
supplementary hours (log)	0.018	0.028	-0.013	0.026
female	0.115***	0.042	0.046	0.039
married	-0.060	0.048	-0.056	0.045
partner	-0.102*	0.054	-0.032	0.050
permanent contract	0.123**	0.059	0.128**	0.054
Upper secondary education	0.040	0.047	-0.069	0.043
lower secondary education	0.085	0.073	0.034	0.068
manager	0.012	0.083	-0.089	0.077
intermediary	-0.052	0.045	0.010	0.042
hired this year	0.066	0.070	-0.017	0.065
tenure less than 4 years	0.087*	0.052	0.033	0.048
tenure 11 to 15 years	0.019	0.080	0.059	0.075
tenure more than 16 years	0.031	0.075	-0.098	0.069
training in the year	-0.009	0.043	-0.042	0.040
two jobs	0.074	0.065	0.040	0.060
size10_24	0.087	0.062	0.121**	0.057
size25_99	0.106*	0.060	0.137**	0.056
size100_499	0.051	0.064	0.139**	0.059
size500	0.005	0.071	0.083	0.066
stressful job	-0.098**	0.038	-0.091**	0.035
repetitive job	-0.068**	0.034	-0.070**	0.031
work intensity	0.092***	0.024	0.100***	0.022
no teamwork	-0.006	0.051	-0.045	0.047
chance of promotion (cols)	-0.055*	0.031	-0.035	0.029
good relations with boss	-0.083	0.057	-0.076	0.052
good relations with colleagues	-0.051	0.049	-0.030	0.045
use of own ideas	0.034	0.043	-0.018	0.040
no work control	-0.052	0.074	-0.011	0.069
bonus or stock options	0.184***	0.052	-0.018	0.048
merit pay	0.233***	0.076	0.149**	0.071
end-of-year pay	0.167***	0.050	0.064	0.046
N	2 771		2 783	
R-squared	0.086		0.149	

Source: European Commission, Epicurus Survey 2004.

Note: The model also includes dummy variables for detailed service industries and countries. Se: Standard errors. Significant at ***1%, **5% and *10% levels.

Table A2: Probit estimation of the likelihood to work in the nonprofit sector

Variables	Coeff.	Se
Constant	-2.749***	0.803
monthly wage (log)	0.114	0.099
age	0.010**	0.005
weekly working hours (log)	-0.021	0.155
supplementary hours (log)	-0.287***	0.084
female	0.069	0.099
married	-0.021	0.106
partner	0.032	0.123
permanent contract	-0.469***	0.125
upper secondary education	0.101	0.103
lower secondary education	0.013	0.146
manager	0.263	0.183
intermediary	0.357***	0.098
hired this year	-0.219	0.186
tenure less than 4 years	0.114	0.118
tenure 11 to 15 years	-0.007	0.171
tenure more than 16 years	0.238	0.149
training in the year	0.250***	0.093
two jobs	0.011	0.145
size10_24	0.080	0.153
size25_99	0.278**	0.135
size100_499	0.334**	0.141
size500	0.512***	0.157
stressful job	0.041	0.095
repetitive job	0.225***	0.076
work intensity	-0.097*	0.055
no teamwork	0.025	0.109
chance of promotion (cols)	0.091	0.071
good relations with boss	-0.257**	0.117
good relations with colleagues	-0.019	0.105
use of own ideas	0.227**	0.096
no work control	0.071	0.166
bonus or stock options	-0.542***	0.146
merit pay	-0.080	0.197
end-of-year pay	0.110	0.107
Housing satisfaction (cols)	-0.117**	0.052
N		2 871

Source: European Commission, Epicurus Survey 2004.

Note: The model also includes dummy variables for detailed service industries and countries. Se: Standard errors. Significant at ***1%, **5% and *10% levels.

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