

CIRANO

Centre interuniversitaire de recherche en analyse des organisations

Série Scientifique Scientific Series

98s-23

The Role of Organizational Justice in Pay and Employee Benefit Satisfaction, and Its Effects on Work Attitudes

Michel Tremblay, Bruno Sire, David Balkin

> Montréal Juin 1998

CIRANO

Le CIRANO est une corporation privée à but non lucratif constituée en vertu de la Loi des compagnies du Québec. Le financement de son infrastructure et de ses activités de recherche provient des cotisations de ses organisations-membres, d'une subvention d'infrastructure du ministère de l'Industrie, du Commerce, de la Science et de la Technologie, de même que des subventions et mandats obtenus par ses équipes de recherche. La *Série Scientifique* est la réalisation d'une des missions que s'est données le CIRANO, soit de développer l'analyse scientifique des organisations et des comportements stratégiques.

CIRANO is a private non-profit organization incorporated under the Québec Companies Act. Its infrastructure and research activities are funded through fees paid by member organizations, an infrastructure grant from the Ministère de l'Industrie, du Commerce, de la Science et de la Technologie, and grants and research mandates obtained by its research teams. The Scientific Series fulfils one of the missions of CIRANO: to develop the scientific analysis of organizations and strategic behaviour.

Les organisations-partenaires / The Partner Organizations

- •École des Hautes Études Commerciales
- •École Polytechnique
- McGill University
- •Université de Montréal
- Université du Québec à Montréal
- Université Laval
- •MEQ
- MICST
- •Banque Nationale du Canada
- •Bell Québec
- Fédération des caisses populaires Desjardins de Montréal et de l'Ouest-du-Québec
- •Hydro-Québec
- Industrie Canada
- Microcell Labs inc.
- •Raymond, Chabot, Grant, Thornton
- •Scetauroute
- Société d'électrolyse et de chimie Alcan Ltée
- Téléglobe Canada
- Ville de Montréal

Ce document est publié dans l'intention de rendre accessibles les résultats préliminaires de la recherche effectuée au CIRANO, afin de susciter des échanges et des suggestions. Les idées et les opinions émises sont sous l'unique responsabilité des auteurs, et ne représentent pas nécessairement les positions du CIRANO ou de ses partenaires.

This paper presents preliminary research carried out at CIRANO and aims to encourage discussion and comment. The observations and viewpoints expressed are the sole responsibility of the authors. They do not necessarily represent positions of CIRANO or its partners.

ISSN 1198-8177

The Role of Organizational Justice in Pay and Employee Benefit Satisfaction, and Its Effects on Work Attitudes^{*}

Michel Tremblay[†], *Bruno Sire[‡]*, *David Balkin[§]*

Résumé / Abstract

Cet article a pour but d'apporter un éclairage complémentaire en ce qui concerne la justice organisationnelle dans le domaine de la rémunération. On y fait état de recherches réalisées auprès de six cents salariés appartenant à trois organisations canadiennes différentes. Les résultats révèlent que les salariés dissocient bien la satisfaction à l'égard du salaire, de la satisfaction à l'égard des avantages sociaux. Ils montrent également que les perceptions de justice distributives permettent de mieux prédire la satisfaction à l'égard du salaire que les perceptions de justice procédurales. Le résultat est inverse en ce qui concerne la satisfaction à l'égard des avantages sociaux : les perceptions de justice procédurales sont de meilleurs prédicteurs que les perceptions de justice distributives. Ils montrent enfin que la perception de justice distributive concernant les salaires joue un rôle plus important que la justice procédurale dans la satisfaction à l'égard du travail et à l'égard de l'entreprise.

The objective of our study is to provide a complementary approach with regard to organizational justice in the domain of compensation. It presents research undertaken on a sample of six hundred employees in three different Canadian organizations. The results reveal that employees distinguish clearly between pay satisfaction and benefit satisfaction, and that distributive justice perceptions are better predictors of pay satisfaction than procedural justice perceptions. This result is reversed for employee benefit satisfaction: procedural justice perceptions are better predictors than distributive justice perceptions. Lastly, the results show that distributive justice perceptions with regard to pay play a more important role than procedural justice in job satisfaction and satisfaction with the organization.

Mots Clés : Justice organisationnelle, satisfaction du salaire, satisfaction des avantages sociaux, attitudes au travail

Keywords : Organizational justice, pay and benefit satisfaction, work attitudes

^{*} Corresponding Author: Michel Tremblay, CIRANO, 2020 University Street, 25th floor, Montréal, Qc, Canada H3A 2A5 Tel: (514) 985-4000 Fax: (514) 985-4039 e-mail: tremblam@cirano.umontreal.ca

[†] École des Hautes Études Commerciales and CIRANO

[‡] Université de Toulouse

[§] University of Boulder

Introduction

The performance of a business is often related to the commitment of its employees to collective values, which itself is a prerequisite for cooperative behaviour. Among the factors likely to improve individual commitment, the perception of justice, is clearly one of the values to which employees are the most sensitive. Research into justice in the workplace has emphasized two aspects: distributive and procedural justice. Distributive justice seeks to explain how individuals react to the amount and form of compensation they receive. Procedural justice, on the other hand, examines the reactions of individuals to the procedures used to determine compensation. Distributive justice focuses on "ends", procedural justice on "means" (Sweeney & McFarlin, 1993).

It is difficult to fully understand justice in the workplace without taking these two approaches into consideration. Several studies have shown that each form of justice has its own determinants and independent effects. For example, it has been demonstrated that distributive justice perceptions have a greater influence over attitudes towards the results of decisions, and process justice perceptions are more useful for predicting attitudes towards institutions. However, the universality of this rule is not absolute, and it would seem that the role of justice varies according to organizational context and types of rewards (Greenberg, 1996).

In connection with compensation, Heneman and Schawb (1985) have shown that pay satisfaction is a multidimensional construct, and that the antecedents and consequences of pay satisfaction can vary according to the various dimensions of compensation. According to Heneman and Schawb, compensation should be viewed in five dimensions: pay level, pay increase, pay structure, employee benefits and pay administration. The validity of these dimensions has been examined in several studies (Carraher, 1991; Scarpello et al., 1988; Mulvey et al., 1992; Judge & Welbourne, 1994), and the results are inconsistent as regards the number of dimensions. On the other hand, it seems that satisfaction with pay level and employee benefits has sound psychometric properties and that these dimensions are impermeable to organizational context. The studies of organizational justice have, for their most part, been limited to considerations of the pay level and pay increase dimensions in the American context . This is surprising when one considers the growing importance of employee benefit costs in overall employee compensation packages (Tremblay, Sire & Pelchat, 1998). Our research is thus aimed at achieving two main objectives: (1) assessing the influence of organizational justice on employee benefit satisfaction and pay satisfaction in a French cultural context; and (2), examining the influence of organizational justice and compensation satisfaction on attitudes towards the job and the organization.

The influence of organizational justice on pay and benefit satisfaction

The relation between the perception of distributive justice and pay satisfaction has been the principal focus of researchers. The model most often quoted in the literature to explain the effects of distributive justice is Adams' theory (1965), according to which individuals assess pay justice by comparing their contributions and compensation to those of other individuals, termed "referents". Although a large number of taxonomies have been proposed (Blau, 1994), it seems that pay satisfaction is linked to distributive justice perceptions (Oldham et al., 1986; Ronen, 1986; Sweeney, 1990; Summers & Hendrix, 1991; Berkowitz et al., 1987; Folger & Konovsky, 1989 ; Martin & Benett, 1996) and that it varies according to classes of referents (Scholl et al., 1987; Summers & DeNisi, 1990; Dyer & Thériault, 1976; Capelli & Sherer, 1988; Tayler & Vest, 1992; Blau, 1994).

Most of these studies have relied on measurements of pay equity perception, and general measurements of pay satisfaction. As far as we know, the effect of distributive justice perceptions regarding employee benefits on employee benefit satisfaction has rarely been examined. The work of Greenberg (1996) on justice has shown that the theory of equity can apply to a range of elements; it is therefore possible, as suggested by Carraher et al. (1992), that employee benefit equity, like pay equity, can influence satisfaction with compensation. To our knowledge, only three studies have tested the impact of distributive fairness on benefit satisfaction. Williams (1995) found a positive relationship between benefit standard comparisons and benefit level satisfaction. Individuals who rated their current level of benefit coverage as being better than the coverage of others were more satisfied. For their part, Davis and Ward (1995) found evidence that employee perceptions of distributive justice are important predictors of benefit satisfaction. Finally, Martin and Bennett (1996) observed a significant causal link between distributive justice and benefit satisfaction. The research evidence suggests the following hypotheses:

H-1 There exists a positive relationship between distributive justice regarding pay and pay satisfaction.

H-2 There exists a positive relationship between distributive justice regarding benefits and employee benefit satisfaction.

To understand why individuals react in one way or another to unfair

treatment, we must look at a second form of fairness in organizational matters; procedural justice. Procedural justice is concerned with individual reactions to the process used to establish reward. Research on this question has shown that employees are able to make a clear distinction between « the ends» and «the means» (Thibault & Walker, 1975; Sheppard & Lewicki, 1987; Dailey & Kirk, 1992) and that these two notions have independent effects (Alexander & Ruderman, 1987; Folger & Kovosky, 1989; Sweeney & McFarlin, 1993; Scarpello & Jones, 1996; Martin & Bennett, 1996).

Two procedural components seem to be relevant from the compensation standpoint, i.e., degree of control over the process leading to pay-related decisions, and degree of control over compensation decisions. Some authors have shown that control over the process and decision-making, for example, by giving employees the opportunity to choose a desired compensation form, to participate in the design of a compensation system, to voice the results of compensation decisions, or to receive accurante information, can produce a strong sense of process justice and a more positive attitudes to the results and the organization (Folger & Bies, 1990; Leventhal, 1980; Lind & Taylor, 1988; Sheppard et al., 1992; Greenberg, 1996)

Early studies testing the effect of process components in the field of compensation showed that perceptions of procedural justice explained a large portion of the variance in pay satisfaction (Dyer & Thériault, 1976; Weiner, 1980). Similary, Jenkins & Lawler (1981) found a link between involvement in compensation decisions and pay satisfaction. Folger and Konovsky (1989) also found a positive and significant link satisfaction and the existence of an appeal process in the determination of pay increases. More recently, Martin and Bennett (1996) found a weak, but significant relationship between procedural justice regarding pay and pay satisfaction.

However, the influence of process justice on employee benefit satisfaction has yet to be clearly demonstrated. To our knowledge, only the studies of Mulvey (1992), Martin and Bennett (1996) and Tremblay, Sire and Pelchat (1998) have evaluated the links between procedural justice and employee benefit satisfaction. Mulvey (1992) found that the possibility of appealing pay-related decisions and constancy in the application of pay policies were positively linked to employee benefit satisfaction. The study by Tremblay et al. (1998) established a link between the level of involvement in decisions (procedural justice) and employee benefit satisfaction. This study, however, also found that employee benefit satisfaction was based more on an accurate benefit communication program (interpersonal justice) than on involvement in decisions and the choice of employee benefits. For their part, Martin and Bennett (1996) found a weak, but significant relationship between procedural justice regarding benefits and benefits satisfaction.

All these studies point to the conclusion that justice perceptions derive not only from the level of involvement in the process, but also from the degree of control over making the decisions that produce results. Allowing employees to choose their mode of compensation increases their sense of control and the likelihood of meeting their needs, thereby raising the level of satisfaction (Farh, Griffeth & Balkin, 1991). It is thus possible to conclude that a sense of procedural justice has an influence on pay and benefit satisfaction.

H-3 There exists a positive relationship between procedural justice regarding pay and pay satisfaction.

H-4 There exists a positive relationship between procedural justice regarding benefits and employee benefit satisfaction.

The consequences of organizational justice and compensation satisfaction

Justice perceptions with regard to pay have consequences on other elements in the work relationship. A sense of pay equity can increase employment and job satisfaction (Ago et al., 1993; Witt & Nye, 1992; Berg, 1991; Summers & Hendrix, 1991; Moorman, 1991; Covin et al., 1993 ; Sweeney & McFarlin, 1997) and satisfaction with the organization (Alexander & Ruderman, 1987; Ronen, 1986).

Additional research has also led to the conclusion that procedural justice regarding pay provides a better explanation of satisfaction with institutions and loyal behaviour than does distributive justice (Alexander & Ruderman, 1987; Folger & Konovsky, 1989; Scarpello & Jones, 1996; Martin & Bennett, 1996; Sweeney & McFarlin, 1997). More specifically, confidence in management and authorities seems to be based more on process justice than on results justice.

Other work has concentrated on the relation between procedural justice perceptions and job satisfaction, producing divergent conclusions. Ruderman and Alexander (1987), Moorman (1991) and Sweeney and McFarlin, (1997) have observed that employment/job satisfaction is better explained by process justice, while Dailey and Kirk (1992), like Lowe and Vodanivich (1995), found a closer relation between distributive justice and employment/job satisfaction. None of these studies, however, assessed the influence of

procedural justice based on employee benefit satisfaction. From our knowledge, only Martin and Bennett (1996) have evaluated the individual role of process justice regarding benefits. Their study revealed that process fairness has a significant and direct effect on organizational commitment, and this effect is stronger than distributive fairness. Since employee benefit policies sometimes referred to as organizational membership rewards are above all designed to promote long-term attitudes and behaviour (such as faithfulness, loyalty, and assiduity) rather than short-term outcomes (such as work performance), it is possible that a strong sense of justice with regard to employee benefits has a greater influence over attitudes towards the employer and work than the perception of pay equity. Thus, the following hypotheses are proposed:

H-5 Distributive and procedural justice regarding pay are positively linked to satisfaction with the organization and job satisfaction.

H-6 Distributive and procedural justice regarding benefits are positively linked to satisfaction with the organization and job satisfaction.

H-7 Relative to organizational justice with pay, organizational justice with employee benefits will be a stronger predictor of organization and job satisfaction.

Theoretical models (such as those of Lawler, 1971 and Deckop, 1992) are generally based on the idea that pay satisfaction has an influence over workplace attitudes and behaviour. However, relatively few studies have examined this question. Their findings have shown that pay satisfaction can affect the desire to join a union (Weiner, 1980), employment and job satisfaction (Summers & Hendrix, 1991; Reid & McGhan, 1987; Covin et al., 1993; Tremblay & Roussel, 1998), satisfaction with the organization and with supervision (Covin et al., 1993; Tremblay & Roussel, 1998); absenteeism (Weiner, 1980; Covin et al., 1993), staff turnover (Covin et al., 1993) and extra- and intra-role behaviour (Lee, 1995; Covin et al., 1993).

The influence of employee benefit satisfaction has generated even less research. The study of Covin et al. (1993) suggests that benefit satisfaction can have a favourable influence over a range of workplace attitudes and behaviour. Carraher et al. (1992) have studied the effect of employee benefit satisfaction on workplace behaviour. However, only the variable intent to be absent was tested. These considerations have led us to formulate the two following hypotheses:

H-8 Pay satisfaction has a positive influence over attitudes to the job and the organization.

H-9 Employee benefit satisfaction has a positive influence over attitudes to the job and the organization.

Methodology

Population

The data for this study were collected from three Canadian organizations: an insurance company, a beverage manufacturing firm and a university. The insurance company has a traditional employee benefit system, whereas the other two have introduced flexible benefit systems. A total of 285 individuals responded to the survey, representing 42.4% of the target population. The socio-demographic profile of the respondents was as follows: 63% were female, 30% were university graduates, their average age was 37 and their average seniority in the job concerned was 7 years.

Measurement of variables

Distributive justice perceptions were measured using the instrument designed by Tremblay, St-Onge and Toulouse (1997). Distributive justice with regard to pay and employee benefits was broken down into justice based on needs, internal equity (immediate supervisor and colleagues) and external equity (other organizations). For each of these referents, respondents were asked to locate their pay and benefits on a 7-point scale (-3= considerably less, 0= more or less the same, +3 = considerably more). A factor analysis was performed to ascertain whether the referents represented distinct concepts. The employee benefits equity measure obtained a Cronbach alpha = 0.70, and the pay equity measure, a Cronbach alpha = of 0.74.

Procedural justice was measured using three elements: involvement, communication, and the possibility of choosing employee benefits. The first element was measured to assess the degree of justice with respect to employee involvement in decisions relating to pay level and employee benefits. Respondents were asked to indicate, on a scale of one to five (1=others make the decisions, 3= equal contribution to the decision process, 5= the decision is entirely up to me), their actual level of involvement in decision-making related to pay and benefits. Communication was measured by an indicator relating to the quality of the employee benefit information received. This items was measured using a 5-point scale from «highly unsatisfactory» (1) to

«highly satisfactory» (5). To measure the flexibility or degree of choice of employee benefits, we compared the organization that had no flexibility (assigned the code "0") with the two organizations with flexible systems (assigned the code "1").

To measure *benefits satisfaction*, we drew on the work of Lust and Danehower (1992). In accordance with their instrument, the satisfaction concept was broken down into two dimensions: satisfaction with the cost of employee benefits, and satisfaction with the quality. The first dimension was measured using four indicators, the second using three. The two dimensions, after analysis, did not seem to be independent. However, the degree of internal consistency for both items was very satisfactory, with a Cronbach alpha = 0.87. *Pay satisfaction* (alpha = 0.74, six items), *organization satisfaction* (alpha = 0.70, 12 items) and job satisfaction (alpha = 0.79, 14 items) were measured using the Managerial Scale of Warr and Routledge (1969).ince individual difference variables can influence perceptions, we introduced the following control variables into the first stage of the hierarchical regression: sex, age, number of dependents, level of education, seniority, pay level and proportion of employee benefits in the overall compensation package.

Statistical analysis

We carried out hierarchical regression analyses to assess the share of explained variance (Cohen & Cohen, 1983). For the employee benefit and pay satisfaction models, we introduced control variables in first stage , benefit-related distributive justice in second stage, benefit-related process justice in the third stage, pay-related distributive justice in the fourth stage and pay-related process justice in the fifth stage. The same procedure was followed for the job satisfaction model, except that we introduced benefit (stage 6) and pay satisfaction (stage 7). For the organization satisfaction model, we introduced all above variables and job satisfaction (stage 8). To examine the incremental variations in satisfaction measures explained by the predictors, we used usefulness analysis (Darlington, 1968). Several combinations of variable inputs were tested in order to examine the contribution of the independent predictors.

Results

Table 1 shows the means, standard deviations and correlation matrix of the variables studied. Inspection of the correlations shows there is no

multicollinearity. It should be noted that there is significant but a *low* correlation (r=.22) between pay satisfaction and employee benefit satisfaction. This result suggests that these two compensation dimensions are perceived relatively independently.

Table 2 sets out the results of the regressions. In connection with hypotheses 1 and 2, which concern the influence of distributive justice on employee benefit satisfaction and pay satisfaction, when the influence of demographic variables has been taken into account, distributive justice accounts for 10% (F=4.5, p<.01) of employee benefit satisfaction and 26% (F=22.9, p<.001) of pay satisfaction. It can be seen that, according to the specifications of the model, perceptions of employee benefit equity with respect to needs ((β 2=0.23, p<.01) is the only facet of equity significantly related to benefit satisfaction. For pay satisfaction, results show that all comparison standards, that is to say, external equity (β 2=0.27, p<0.01), needs equity (β 2=0.28, p<.01), colleagues (β 2=0.16, p<.05) and superior equity (β 2=0.13, p<.05) are significantly related to this facet of satisfaction.

In connection with hypotheses 3 and 4, which concern the relation between procedural justice and compensation satisfaction, when the influence of demographic and distributive justice variables has been taken into account, the process justice variables related to benefits add an extra 24% (F=18.1, p.<. 01) to employee benefit satisfaction, but process justice related to pay has no significant influence on pay satisfaction. Our results reveal that communication has the greatest effect on employee benefit satisfaction (β 2=.50, p<0.001).

Hypotheses 5, 6 and 7, which concern the relation between organizational justice variables and job and organization satisfaction, are only partially confirmed. The contribution of employee benefit fairness predictors to job satisfaction is negligible, flexibility of benefit plan is the only component of organizational justice that has influence on job satisfaction... The contribution of pay-related organizational justice to job satisfaction is also not significant. The only component of distributive justice regarding pay that has a significant influence on job satisfaction is the perception of external equity. With respect to the explanatory model for organization satisfaction, the predictive power remains low (R^2 = 0.28, p<.001). However, our results show that distributive justice related to pay has a significant incremental power (add 9%, F=3.1, p<.05) on satisfaction with organization. Perception of superior equity is the only facet of distributive justice that has a influence on organization satisfaction ((β 2=.16, p<0.05).

Lastly, in connection with hypotheses 8 and 9, which concern the relation

between pay and employee benefit satisfaction and job and organization satisfaction, neither of these two facets of compensation satisfaction has a significant influence. Although we formulated no hypothesis about the influence of job satisfaction on organization satisfaction, our analysis show it to be a strong predictor ($\beta 2$ =0.49, p<.001).

Table 3 presents the results of the usefulness analysis, which shed some light on the preceding observations. First, concerning employee benefit satisfaction, the analysis provide a clear demonstration of the contribution made by process justice. Once all other predictors of this model have been taken into account, process justice accounts for over 23% of explained variance. Second, pay satisfaction is much more influenced by distributive rather than by process justice ($R^2 = 0.31$ vs .01). Third, no compensation-related justice or satisfaction variables seems to make much of a contribution to job satisfaction, which seems to be best explained by demographic variables. Four, the analysis carried out for organization satisfaction show that distributive justice (pay and benefits) makes a greater contribution than process justice ($R^2 = 0.08$ vs .01). Our results reveal that organizational justice variables have a significant independent contribution to organization satisfaction after we have taken into account the effect of demographic variables, pay and benefits satisfaction. Usefulness analysis shows that the components of organizational justice explain far better the satisfaction with the organization than satisfaction with pay and benefits ($R^2 =$ 0.13 vs 0.01)

Discussion

The results of this study suggest that, (1) pay satisfaction and employee benefit satisfaction are separate constructs that possess their own sets of predictors; (2) the distributive and procedural justice dimensions must be present if attitudes towards compensation are to be properly understood; and (3) the perceptions of organizational justice and compensation satisfaction can independently influence attitudes toward the organization.

Like several previous studies, we observed that pay satisfaction is influenced by distributive justice, and that the latter is a better predictor of pay satisfaction than procedural justice. For benefits satisfaction, as we have shown, the logic is reversed. Contrary to the results of Martin & Bennett (1996), in our study benefits satisfaction is influenced more by process justice than by results justice. Procedural justice provides a better explanation of employee benefit satisfaction than distributive justice, and this dimension of compensation satisfaction is strongly influenced by communication quality. In this respect, our results corroborate those obtained by Mulvey (1992). Our results, together with that of Mulvey (1992), confirm the relevance of communication in the field of employee benefits management. Difference with Martin & Benettt (1996) results may be due in part to manner in which process justice has been operationalized. In our study we used the presence of three specific components to measure process justice rather than a global evaluation of this justice.

In respect to compensation satisfaction, as in several previous studies (such as Capelli & Sherer, 1988; Scholl et al., 1987; Blau, 1994; Summers & DeNisi, 1990; Ronan, 1986; Tremblay et al., 1997), we demonstrated the relevance of external comparisons. However, perhaps not enough attention has been paid to the role of needs justice. The work of Dornstein (1991) and Tremblay et al. (1997) showed that needs are a relevant component of employees' perceptions of justice. Our research reveals that this form of distributive justice is as important as external equity in terms of pay satisfaction. The fact that our study used a mainly female sample, whose wages fall into the lower pay brackets, perhaps explains why needs justice turned out to be an important determinant of pay satisfaction. In the area of employee benefits satisfaction, our results fail to identify the dominant referents. As the employee benefit package does not differ within a job category, and differs only marginally from that of adjacent categories (such as immediate supervisors), and that external comparisons are a more complex exercise in case of benefits than pay, that may explain why distributive justice fails to predict benefit satisfaction.

Our study was also designed to isolate the influence of justice and pay satisfaction on job and organization satisfaction. Contrary to previous studies, we found a mitigated relationship between distributive justice perceptions and job satisfaction. Our findings suggest that there is a closer link between process justice and job satisfaction than between distributive justice and job satisfaction. This finding supports some earlier studies (ex: Alexander & Ruderman, 1987; Moorman, 1991; Sweeney & McFarlin, 1997), who found that process justice was a better predictor of employment satisfaction than distributive justice. More specifically, our results show that adoption of flexible benefits and participation in pay program seem to enhance the job satisfaction. Furthermore, like Summers and DeNisi (1990), we found that pay satisfaction was a better predictor of job satisfaction than distributive justice. However, it is difficult to draw any conclusions about job satisfaction. These inconclusive results may be explained in part by the methodology used : whether or not the models include the two forms of justice in respect to pay and benefits, whether or not they include pay and benefit satisfaction, and whether job satisfaction or employment satisfaction is measured.

On the other hand, some interesting results concerning organization satisfaction were obtained. First, contrary to some other researches, our results suggest that distributive justice regarding pay and benefits provide a better explanation of satisfaction with organization than does process justice. One explanation of this divergent result with other studies may be in operationalization of measures. For pay and benefits, we used four specific measures of distributive justice rather than a global measure of distributive justice and compensation satisfaction. It is interesting to point out that the only measure significantly related to organization satisfaction is perception of equity with respect to immediate supervisor for pay and benefits. This finding suggests that unfairness regarding distribution of rewards regarding exempt employees in comparison with distribution in non-exempt employees may influence attitude toward authorities or institution as strongly as that unfairness procedures. Second, our usefulness analysis indicates that perception of organizational justice (distributive and process) is a better predictor of organization satisfaction than satisfaction with pay and benefits (13% vs 1%). This finding suggests that organizational justice may influence confidence in management or organization independently whether employees are satisfied or not with the policies of compensation.

Limitations and conclusion

Although this research, carried out in a french-speaking context, produced some interesting results and corroborated many studies in the field, some of its limits must nevertheless be mentioned. First, since the study is based on a limited number of employees working in three organizations on a specific date, the results obtained have limited generalizability. Second, we used single items to measure several variables. This may have influenced the reliability of those variables. On the other hand, the pattern of results obtained from these single-item measures across the three samples was generally consistent. Third, the research design was cross-sectional, and it is thus not possible to infer a causal relationship. Fourth, all variables, both independent and dependent, are derived from the same questionnaire. This raises concerns about shared variance due to a common measurement method. No statistical technique provides proof of causation. Fifth, although the influence of certain variables in compensation packages were controlled, including wage levels and proportion of benefits in total compensation, we were unable to control the effect of the real cost of employee benefits.

Beyond these important limitations, further research in the same vein is needed. Research similar to ours, but using a different sub-population would be extremely useful. It would be interesting to see whether public and private employees react in similar ways, if shop-floor workers react differently than managers, and if work attitudes and behaviors of unionized employees are influenced in the same manner as non-unionized ones. Recent findings (Scarpello & Jones, 1996; Sweeney & McFarlin, 1997) suggested that several demographic variables moderate the relationship between justice perceptions regarding pay and work- attitudes and behaviors. It would be useful to examine if the findings can be generalize to the benefit dimension. Also, as Scarpello & Jones (1996) point out, we know very little about principles or rules that individuals use to classify pay procedures as fair or unfair, it is more true in the case of benefits. Finally, as we pointed out before, future research must pay attention to relationships between organizational justice, pay and benefit satisfaction, and attitudes and behaviors at work.

This research has several implications for managers concerned with the effeciency of compensation costs and the attitudes of the workforce. First, our findings suggest that process justice is a better predictor of benefits satisfaction than distributive justice. Like Martin and Bennett (1996) point out, the economic costs of acting in a procedurally fair manner—involving employees in the process related to benefits (ex : survey),-- giving employees the possibility to choose their own benefit package (ex : flex plan),--informing

employees adequately about their benefits—administrating the individual claims on a timely basis—are minimal in comparison with distributive fairness. Managers must also be aware that efficiency in managing the benefits process enhances not only satisfaction with this facet, but also satisfaction with the job itself. On other hand, organisation must not underestimate the impact of distributive justice and satisfaction related to pay. A good benefit package administered correctely will not produce the expected attitudes and behaviors if employees perceive that the procedures or outcomes of pay decisions are unfair.

	Table 1	
Means, Standard Deviations and	Correlations Between	Variables (N=285)

	Mean	S.D	1	2	3	4	5	6
1. Benefit satisfaction	20.4	5.2	-					
2. Pay satisfaction	11.1	4.6	0.22					
3. Job satisfaction	34.1	8.0	0.01	0.28				
4. Firm satisfaction	26.0	6.8	0.08	0.29	0.40			
Distributive justice regarding benefits	20.0	0.0	0.00	0.2)	0.40			
5. Superior	3.6	.76	0.14	0.16	0.08	0.13		
6. Colleagues	4.0	.46	0.15	0.26	0.03	0.10	0.39	
7. External	4.3	1.1	0.33	0.21	0.04	0.12	0.31	0.40
8. Needs	3.8	.77	0.32	0.23	0.03	0.07	0.35	0.41
Distributive justice regarding Pay								
9. Superior	3.8	1.1	0.22	0.29	0.04	0.15	0.04	0.16
10. Colleagues	3.7	1.0	0.10	0.49	0.13	0.13	0.21	0.40
11. External	3.8	1.1	0.16	0.54	0.22	0.20	0.21	0.25
12. Needs	4.7	.80	0.28	0.39	0.10	0.21	0.17	0.20
Process justice regarding Benefits								
13. Participation	2.1	1.3	0.06	0.04	0.08	0.08	0.20	0.10
14. Flexibility	0.8	0.4	0.20	0.01	0.08	0.17	0.05	-0.02
15. Communication	3.0	1.8	0.58	0.15	0.01	0.11	0.06	0.17
16. Process justice regarding pay	1.3	0.6	0.10	0.07	0.13	0.11	0.05	0.04

(1) 0.14 < r < 0.16, p < 0.05; 0.16 < r < 0.18, p < 0.01;

r >0.18, p < 0.001

7 8 9 10 11 12 13 14 15 16 0.46 0.18 0.14 _____ 0.16 0.26 0.16 _____ 0.45 0.31 0.25 0.37 _____ 0.11 0.19 0.28 0.24 0.21 _____ 0.09 0.07 0.15 0.01 0.11 0.17 -0.10 0.04 0.05 0.01 0.18 0.05 -0.14 0.23 0.15 0.17 0.13 0.16 0.17 0.10 0.10 0.01 0.04 0.01 0.01 0.03 0.06 0.18 0.10 0.26

 Table 1 (cont'd)

 Means, Standard Deviations and Correlations Between Variables (N=285)

 $(1) \quad 0.14 < r < \! 0.16, \, p < 0.05; \qquad 0.16 < r < \! 0.18, \, p < 0.01; \qquad r > \! 0.18, \, p < 0.001$

Table 2							
Results of the regression analysis Between the Determinants and							
Satisfaction Outcomes (1)							

Satisfaction :	Benefits					Pay				
	β1	β2	R ²	•	F	β1	β2	\mathbf{R}^2	۸	F
Control variables			.06	.06	1.7			.13	.13	4.1***
Distributive/Benefits			.16	.10	4.5**			.21	.08	4.72***
Superior	.02	.06				.11	.08			
Colleagues	.05	.01				.09	.03			
External	.15	.04				.12	.01			
Needs	.25*	.23*				.18*	.02			
Processus / Benefits			.40	.24	18.1**			.22	.01	.56
Participation	.03	.01				.02	.07			
Flexibility	.06	.06				.01	.01			
Communication	.50***	.50***				.09	.07			
Distributive / Pay			.42	.02	1.4			.48	.26	22.9***
Superior		.10				.19**	.13*			
Colleagues		.11				.37**	.16*			
External		.06				.50**	.27**			
Needs		.03				.49**	.28**			
Process / Pay		.07	.42	.00	.50	.02	.01	.48	.00	.34
Benefits Satisfaction										
Pay Satisfaction										
Job Satisfaction										
R2	.42					.48				
R ajusted			.34					.42		

(1) $\beta 1$ represents standardized regression coefficients at his stage of introduction; $\beta 2$ represents standardized regression coefficients in the final model.

+ p(.10) * (p<.05) ** (p<.01) *** (p<.001)

Satisfaction :	Job Itself				Organization					
	β1	β2	\mathbf{R}^2	۸	F	β1	β2	\mathbf{R}^2		F
Control variables			.23	.23	5.8***			.07	.03	1.2
Distributive/Benefits			.24	.01	.39			.11	.04	1.3
Superior	.01	.01				.15	.22*			
Colleagues	.05	.07				.01	.07			
External	.07	.10				.09	.06			
Needs	.05	.02				.01	.11			
Processus / Benefits			.27	.03	1.4			.13	.02	2.1+
Participation	.10	.15			-	.08	.10			
Flexibility	.20*	.16+			-	.13	.07			
Communication	.05	.15				.05	.03			
Distributive / Pay			.29	.02	0.8			.22	.09	3.1*
Superior	.05	.01				.24*	.16*			
Colleagues	.17	.01				.10	.02			
External	.17	.21*				.20*	.03			
Needs	.02	.03				.28*	.18			
Process / Pay	.19*	.16+	.31	.02	3.4+	.19+	.10	.24	.02	1.6
Benefits Satisfaction	.20*	.20+	.34	.03	3.6*	.09	.16	.24	.00	.59
Pay Satisfaction	.02	.02	.34	.00	.36	.16	.12	.26	.02	1.01
Job Satisfaction						.47***	.49***	.41	.15	25.8***
R2			.34					.41		
R ajusted	.20			.28						
F			2.5**	**			3	8.2.***		

Table 2 (cont'd) Results of the Regression Analysis Between the Determinants and Satisfaction Outcomes (1)

(1) $\beta 1$ represents standardized regression coefficients at his stage of introduction; $\beta 2$ represents standardized regression coefficients in the final model.

+ p(.10) * (p<.05) ** (p<.01) *** (p<.001)

Table 3 Usefulness Analysis

	Satisfaction outcomes					
(demographic variables included in the equations)	Bei	nefits	I	Pay		
	R ²	F	R ²	F		
Distributive. (Benefits.) Beyond Process (Benefits.)	0.02	1.5				
Process (Benefits) Beyond Distributive (Benefits)	0.23	18.3***				
Distributive (Ben.), Process (Bene) Beyond Distri (Pay), Process (Pay)	0.30	10.3***				
Distribitive (Pay), Process (Pay.) Beyond Distr (Ben.), Process (bene)	0.04	26*				
Distributive (Pay) Beyond Process (Pay)			0.31	28.1***		
Process (Pay) beyond Distributive (Pay)			0.03	8.0**		
Distr (Pay), Process (Pay) Beyond Distr (Benefits), Process (Benefits)			0.28	20.7***		
Distr (Bene), Process (Bene) beyond Distr (Pay), Process (Pay)			0.01	0.62		
Distributive (Pay/Benefits) Beyond Process (Pay/Benefits)						
Process (Pay/Benefits) Beyond Distributive (Pay/Benefits)						
Distribu (Pay/Ben), Process (Pay/Ben) Beyond Satisfaction (Pay/Ben.)						
Satisfaction (Pay/Ben) Beyond Distribu (Pay/Ben), Process (Pay/Ben)						
Distributive (Pay/Benefits) Beyond Process (Pay/benefits)						
Process (Pay/Benefits) Beyond Distributive (Pay/Benefits)						
Organizational Justice (Pay/Ben) Beyond Satisfaction (Pay/Ben)						
Satisfaction (Pay/Ben) Beyond Organizational Justice (Pay/Ben)						
Justice, satisfacttion (Pay/Ben) Beyond Job satisfaction						
Job satisfaction Beyond all other variables						

* (p<.05)

** (p<.01)

*** (p<.001)

Table 3 (cont'd) Usefulness Analysis

	Satisfaction outcomes						
(demographic variables included in the equations)	Job	itself	Organ	ization			
	\mathbf{R}^2	F	\mathbf{R}^2	F			
Distributive. (Benefits.) Beyond Process (Benefits.)							
Process (Benefits) Beyond Distributive (Benefits)							
Distributive (Ben.), Process (Bene) Beyond Distri (Pay), Process (Pay)							
Distribitive (Pay), Process (Pay.) Beyond Distr (Ben.), Process (bene)							
Distributive (Pay) Beyond Process (Pay)							
Process (Pay) beyond Distributive (Pay)							
Distr (Pay), Process (Pay) Beyond Distr (Benefits), Process (Benefits)							
Distr (Bene), Process (Bene) beyond Distr (Pay), Process (Pay)							
Distributive (Pay/Benefits) Beyond Process (Pay/Benefits)	0.05	1.5					
Process (Pay/Benefits) Beyond Distributive (Pay/Benefits)	0.03	18					
Distribu (Pay/Ben), Process (Pay/Ben) Beyond Satisfaction (Pay/Ben.)	0.08	1.2					
Satisfaction (Pay/Ben) Beyond Distribu (Pay/Ben), Process (Pay/Ben)	0.01	12					
Distributive (Pay/Benefits) Beyond Process (Pay/benefits)			0.08	2.1*			
Process (Pay/Benefits) Beyond Distributive (Pay/Benefits)			0.01	1.4			
Organizational Justice (Pay/Ben) Beyond Satisfaction (Pay/Ben)			0.13	2.05*			
Satisfaction (Pay/Ben) Beyond Organizational Justice (Pay/Ben)			0.01	0.84			
Justice, satisfacttion (Pay/Ben) Beyond Job satisfaction			0.15	1.9*			
Job satisfaction Beyond all other variables			0.14	25.1***			

* (p<.05)

** (p<.01)

*** (p<.001)

References

- AGO, A.O., MUELLER, C.W., PRICE, J.L, «Determinants of Employee Job Satisfaction: An Empirical Test of a Causal Model», *Human Relations*, 1993, vol.46, n°.8, p.1007-1027.
- ADAMS, J. S., «Inequity in social exchange», In L. Berkowitz (Ed.), Advances in experimental social psychology, 1965, vol. 2, New York, Academic Press, p. 267-299.
- ALEXANDER, S. et M. RUDERMAN, «The Role of Procedural and Distributive Justice in Organizational Behavior», *Social Justice Research*, 1987, vol. 1, n° 2, p. 1401-1420.
- BERG, T. R., "The Importance of Equity Perception and Job Satisfaction in Predicting Employee Intent to Stay at Television Stations", *Group and Organization Studies*, 1991, vol. 16, n° 3, p. 268-284.
- BERKOWITZ, L., FRASER, C., TREASURE, P., COCHRAN, S., «Pay, Equity, Job Gratifications and Comparisons in Pay Satisfaction», *Journal* of Applied Psychology, 1987, vol. 72, N° 4, p. 544-551.
- BLAU, G., «Testing the Effect of Level and Importance of Pay Referents on Pay Level Satisfaction», Human Relations, vol.47, n°.10, 1994, p.1251-1268.
- CAPELLI, P., SHERER, P.D., «Satisfaction: Market Wages & Labor Relations: An Airline Study», *Industrial Relations*, 1988, vol.27, n°.1, p.56-72.
- CARRAHER, S.M., "A Validity Study of Pay Satisfaction Questionnaire (PSQ)", Educational and Psychology Measurement, 51, p.491-495, 1991
- CARRAHER, S.W., HART, D.E., BUCKLEY, R.M., SAWYER, J.E., "Organisational Implications of Employees Attitudes Toward Benefits", Paper Presented at 1992 Academy of Management Meeting, 20.p
- COHEN, J., COHEN, P., "Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences., Hillsdale: Lawrence Erlbaum Associates, 2e editions, 1983, 545p.
- COVIN, T.J., KOLENKO, T.A., SIGHTLER, K.V., TUDOR, K.R., «Pay and Organizational Effectiveness: Empirical Evidence and Implications for Management Consultants», Academy of *Management Best Papers Proceedings 1993*, 53rd Annual Meeting, Atlanta, p.185-189.
- DAILEY, R. C. et KIRK, D.J. «Distributive and Procedural Justice as Antecedent of Job Dissatisfaction and Intent to Turnover», *Human*

Relations, 1992, vol. 45, N° 3., p. 305-317.

- DARLINGTON, R.B., "Multiple Regression in Psychological Research and Practice", *Psychological Bulletin*, 1968, 69, p.161-182.
- DAVIS, E., WARD, E., «Health Benefit Satisfaction in the Public and Private Sectors: The Role of Distributive and Procedurale Justice», *Public Personnel Management*, 1995, 24 (3), p.255-270.
- DECKOP, J.R., "Organizational and Career Pay Satisfaction, *Human Resources Management*, 1992, 2, p.115-129.
- DORNSTEIN, M., "Conceptions of Fair Pay: Theoretical Perspectives and Empirical Research", Praeger, 1991, 221p.
- DYER, L. et THÉRIAULT, R. «The Determinants of Pay Satisfaction», *Journal* of Applied Psychology, 1976, vol. 61, N° 5, p. 596-604.
- FARH, J., GRIFFIN, R., BALKIN, D., "Effect of Choice of Pay Plans on Satisfaction, Goal Setting, and Performance", *Journal of Organizationnal Behavior*, 1991, 12, p. 55-62.
- FOLGER & BIES 1990
- FOLGER, R. et KONOVSKY, M.A. «Effects of Procedural and Distributive justice on Reactions to Pay Raise Decisions», Academy of Management Journal, 1989, vol. 32, N° 1, p. 115-130.
- GREENBERG, J., *The Quest for Job Justice on the Job*, Sage Publications inc. 1996.
- HENEMAN, H.G. III, SCHAWB, D.P., "Pay Satisfaction: Its Multidimensional Nature and Measurement", *International Journal of Psychology*, 1985, 20, p.129-131
- JENKINS, D.G., LAWLER, E.E., «Impact of Employee Participation in Pay Plan Development», Organizational Behavior and Human Performance, 1981, vol.28, p.111-128.
- JUDGE, T.A., WELBOURNE, T., "A Confirmatory Investigation of the Dimensionnality of the Pay Satisafaction Questionnaire", *Journal of Applied Psychology*, 1994, 79, 3, p.461-466.
- LAWLER III, E. E., Pay and Organizational Effectiveness: A Psychological View, New York, McGraw-Hill, 1971.
- LEE, C., «Prosocial Organizational Behaviors: The Roles of Workplace Justice, Achievement Sriving, and Pay Satisfaction», *Journal of Business and Psychology*, vol. 10, n°.2, 1995, p.197-206.

- LEVENTHAL, G.S., «What Should Be Done With Equity Theory», in K.J. Gergen, M.S. Greenberg and R.H. Willis (eds), *Social Exchange: Advances in Theory and Research*, 1980, p.27-55, New-York, Plenium.
- LIND, E. A. et TYLER, T. R., *The Social Psychology of Procedural Justice*, New York, Plenium, 1988, 267 p.
- LOWE, R.H., VODANIVICH, S.J., «A Field Study of Distributive and Procedural Justice as Predictors of Satisfaction and Organizational Commitment», *Journal of Business and Psychology*, 1995, vol.10, n°.1, p.99-114.
- LUST, J., DANEHOWER, C., *«The Dimensionnality of Employee Benefit Satisfaction»*, Paper Presented at the 1992 Annual Meeting of the Academy of Management, 25 p.
- MARTIN, C.L. & BENNETT, N. « The Role of Justice Judgments in explaining the relationship between job satisfaction and organizational commitment ». Group & Organization Management, vol. 21, no. 1, March 1996, p. 84-104.
- MOORMAN, R. H., «Relationship Between Organizational Justice and Organizational Citizenship Behavior: Do Fairness Perceptions Influence Employee Citizenship», *Journal of Applied Psychology*, 1991, vol. 76, N° 6, p. 845-855.
- MULVEY, P., MICELI, M.P., NEAR, J.P., "The Pay Satisfaction Questionnaire: A Confirmatory Factor Analysis", *Journal of Social Psychology*, 1992, 132, p. 139-141.
- MULVEY, P., «Predicting Pay and Benefit Satisfaction: Can One Model Fit All Dimensions?», Paper Presented *at the 52nd Annual Meetings of Academy of Management*, Las Vegas, August 1992.
- OLDHAM, G. R. et al., "Relations Between Job Facet Comparisons and Employee Reactions". Organizational Behavior and Human Decision Processes, 1986, vol. 38, N° 1, p. 28-47.
- RIED, D.L., McGHAN, F., «An Equity Model of Staff Pharmacists' Job Satisfaction», Journal of Pharmaceutical Marketing & Management, vol. 1, n°.3, 1987, p. 3-23.
- RONEN, S., «Equity Perception in Multiple Comparison: A Field Study» Human Relations, 1986, vol., 39, N° 4, p. 333-346.
- SCARPELLO, V., JONES, F., «Why Justice Matters in Compensation Decision Making», Journal of Organizational Behavior, 1996, 17, p.285-299.

- SCARPELLO, V., HUBER, V., VANDENBERG, R., "Compensation Satisfaction: Its Measurement and Dimensionnality", *Journal of Applied Psychology*, 1988, 73, p. 163-171.
- SHEPPARD, B., LEWICKI, R., MINTON, J., Organizational Justice, Lexington Books, 1992, 227 pp.
- SCHOLL, R. W., COOPER, E.A. et McKENNA, J.F. «Referent Selection in Determining Equity Perceptions: Differential Effects on Behavioral and Attitudinal Outcomes», *Personnel Psychology*, 1987, N° 40, p. 113-124.
- SHEPPARD, B. H. et LEWICKI, R.J. «Toward General Principles of Managerial Fairness», *Social Justice Research*, 1987, vol. 1, N°. 2, p. 161-176.
- SUMMERS, T. P. et DeNISI, A.S. «In Search of Adams' Other: Reexamination of Referents Used in the Evaluation of Pay», *Human Relations*, 1990, vol. 43, N° 6, p. 497-511.
- SUMMERS, T. P. et HENDRIX, W.H. «Modelling the role of pay equity perceptions: A field study», *Journal of Occupationnal Psychology*, 1991, vol. 64, p. 145-157.
- SWEENEY, P.D., McFARLIN, D.B. « Process and outcome: gender differences in the assessment of justice ». Journal of Organizational Behavior, 1997, vol. 18, p. 83-98.
- SWEENEY, P. D. «Distributive Justice and Pay Satisfaction : A field Test of An Equity Theory Prediction», *Journal of Business and Psychology*, Spring 1990, vol. 4, N° 3, p. 329-341.
- SWEENEY, P.D., McFARLIN, D.B., «Workers'Evaluation of the »Ends" and the "Means": An Examination of Four Models of Distributice and Procedural Justice», Organizational Behavior and Human Decision Processes, 1993, vol.55, p. 23-49.
- TAYLER, G.T., VEST, M.J., «Pay Comparaisons and Pay Satisfaction Among Public Sector Employees», *Public Personnel Management*, vol.21, n°.4, 1992, p. 445-454.
- THIBAULT, J., WALKER, L. « Procedural justice: A psychological analysis ». Hillsdale, NJ: Erlbaum.
- TREMBLAY, M., ST-ONGE, S, TOULOUSE, J.M., "Determinants of Salary Referents Relevance: A Field Study of Managers", *Journal of Business* and Psychology, 1997, vol. 11 no. 4, p. 463-484.
- TREMBLAY, M., SIRE, B., PELCHAT, A., «A Study of the Determinants and

the Impact of Flexibility on Employee Benefit Satisfaction», *Human Relations*, 1998, forthcoming.

- TREMBLAY, M., ROUSSEL, P., "Modeling the Role of Organizational Justice: Satisfaction and Attitudes to Collective Action» Working Paper, CIRANO 1998, 28 p.
- WARR et ROUTLEDGE, «An opinion Scale for Study of Managers'Job Satisfaction» Occupational Psychology, 1969, vol.43, p. 95-109.
- WEINER, N. «Determinants and Behavioral Consequences of Pay Satisfaction: A Comparison of Two Models», *Personnel Psychology*, 1980, vol. 33, N° 4, p. 741-758.
- WILLIAMS, M.C., «Antecedents of Employee Benefit Level Satisfaction : A Test of a Model», *Journal of Management*, 1995, 21 (6), p.1097-1128.
- WITT, A.L., NYE, L.G., «Gender and the Relationship Between Perceived Fairness of Pay or Promotion and Job Satisfaction», *Journal of Applied Psychology*, vol.77, n°.7, 1992, p. 910-917.

Liste des publications au CIRANO *

Cahiers CIRANO / CIRANO Papers (ISSN 1198-8169)

- 96c-1 Peut-on créer des emplois en réglementant le temps de travail ? / Robert Lacroix
- 95c-2 Anomalies de marché et sélection des titres au Canada / Richard Guay, Jean-François L'Her et Jean-Marc Suret
- 95c-1 La réglementation incitative / Marcel Boyer
- 94c-3 L'importance relative des gouvernements : causes, conséquences et organisations alternative / Claude Montmarquette
- 94c-2 Commercial Bankruptcy and Financial Reorganization in Canada / Jocelyn Martel
- 94c-1 Faire ou faire faire : La perspective de l'économie des organisations / Michel Patry

Série Scientifique / Scientific Series (ISSN 1198-8177)

- 98s-24 Plafonnement objectif et subjectif de carrière, satisfaction et stress au travail / Alain Roger et Michel Tremblay
- 98s-23 The Role of Organizational Justice in Pay and Employee Benefit Satisfaction, and Its Effects on Work Attitudes / Michel Tremblay, Bruno Sire et David Balkin
- 98s-22 What Data Should Be Used to Price Options? / Mikhail Chernov et Eric Ghysels
- 98s-21 Using a Financial Training Criterion Rather than a Prediction Criterion / Yoshua Bengio
- 98s-20 Inférence fondée sur les statistiques des rendements à long terme / Cosme Vodounou
- 98s-19 Structural Change Tests for Simulated Method of Moments / Eric Ghysels et Alain Guay
- 98s-18 Managing the Risk of IT Outsourcing / Benoit A. Aubert, Sylvie Dussault, Michel Patry et Suzanne Rivard
- 98s-17 Learning Conditions in the Context of R&D and Development Projects: Empirical Evidence from a Research Centre / Mario Bourgault et Hélène Sicotte
- 98s-16 Assessing the Risk of IT Outsourcing / Benoit A. Aubert, Michel Patry et Suzanne Rivard
- 98s-15 Determinants of Desired Career Paths among Canadian Engineers / Michel Tremblay, Thierry Wils et Caroline Proulx
- 98s-14 Why Is the Bid Price Greater than the Ask? Price Discovery during the Nasdaq Pre-Opening / Charles Cao, Eric Ghysels et Frank Hatheway
- 98s-13 "Informal Thinkering": How Is It Important? / Pierre J. Tremblay
- 98s-12 Organize to Generate Innovation: Tools to Measure Technical Change, Productivity and Change-Generating Efforts / Pierre J. Tremblay
- 98s-11 Worksharing in Québec : Five Case Studies / Michael Huberman et Paul Lanoie
- 98s-10 Predictors of Hierarchical Success for Male and Female Canadian Managers / Denis Chênevert et Michel Tremblay
- 98s-09 Managerial Career Success in Canadian Organizations: Is Gender a Determinant? / Denis Chênevert et Michel Tremblay

^{*} Vous pouvez consulter la liste complète des publications du CIRANO et les publications elles-mêmes sur notre site World Wide Web à l'adresse suivante : http://www.cirano.umontreal.ca/publication/page1.html