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## **Job performance and job satisfaction: an integrated survey**

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### *Abstract*

The empirical evidence from the econometrics of self-reported job satisfaction and from organisational psychology on job performance confronts economic theory with some puzzling results. Job performance is found to be positively correlated with job satisfaction, whereas effort is assumed to be a disutility in the theory. Economic incentives are not found to be the main motivations of job performance; in some cases, indeed, they are even counterproductive. Interest in the job is found to account better for job satisfaction. This paper proposes an integrated approach to these issues by (i) conducting an interdisciplinary critical survey, (ii) proposing a simple economic framework within which to explain the puzzles. The key idea behind this framework is that intrinsic motivations and self-esteem help explain both job satisfaction and job performance. The employer can thus adopt other, more friendly actions, besides using incentives and controls to enhance performance by employees.

*JEL classification:* A12, D23, J28, L31, O31

*Keywords:* job performance, job satisfaction, intrinsic motivations

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## 0. Introduction

Workers' performance and satisfaction on the job is studied by different lines of inquiry and in different disciplines. However, cross-referencing is occasional, and the results are not always consistent. In particular, empirical studies on job performance and satisfaction produce results puzzling for economic theory, which instead concentrates on workers' job effort and utility. In fact, job satisfaction has recently attracted increasing attention from applied economists, mainly because the self-reported data have been validated by a number of tests.<sup>1</sup> The evidence yielded by this line of inquiry is puzzling because monetary compensation and incentives for job effort do not prove to be of primary importance for job satisfaction in cross-section studies, whereas interest in the job does so. In time-series analysis, job satisfaction does not increase; or it even decreases in some developed countries, despite their overall economic growth.<sup>2</sup>

Research in experimental psychology yields another puzzling result: material incentives often appear to have perverse effects on task performance. According to this research, these effects are due to the fact that extrinsic motivations for an external reward are able to crowd out intrinsic motivation, which is the pursuit of enjoyment by doing an activity for its own sake. Also these results have attracted interest from economists, who have found some confirmation for them in the workplace (Frey 1997; Weibel et al. 2007).

Other empirical studies in psychology and economics have found that workers' job performance, often measured by their supervisors' evaluations, is positively related to job satisfaction, although the correlation does not appear very close. In particular, some psychologists show that if satisfaction regards workers' lives as a whole, then job performance is positively and closely correlated with it. Instead, according to economic theory, workers extract utility, which can proxy satisfaction, from the economic incentives provided by firms in exchange for work effort, which is a disutility for the workers, but profitable for firms.

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<sup>1</sup> Validation has been empirically provided in the case of satisfaction with life as a whole and happiness (Clark et al. 2007; Kesebir & Diener 2008; and Konow & Earley 2003).

<sup>2</sup> This lack of correlation between job satisfaction and monetary compensation is a particular version of the so-called Easterlin paradox, which concerns happiness and per-capita income (Frey 2008; Layard 2005; Bruni & Porta 2005).

Hence a comprehensive analysis of the different lines of inquiry pursued, and of the contributions made by the various disciplines involved, would be fruitful. This paper attempts to take a step forward in this direction by conducting an interdisciplinary survey, so as to highlight and evaluate the above-mentioned puzzles, and by proposing a simple economic framework within which to explain them.

The endeavour to explain the positive but not-very-close correlation between job satisfaction and job performance, by considering the roles of economic incentives among other factors, suggests that two independent lines of argument should be followed. In the first it is argued that job performance causes job satisfaction. The individual – according to organisational psychologists and some authoritative economists – earns a psychic reward from work which may offset the disutility deriving from work effort. The second line of argument conversely links job satisfaction with job performance by introducing happiness as a mediating variable, since happiness both synthesises the various life domain satisfactions and affects overall performance.

The paper therefore attempts to integrate the literature on job satisfaction with that on job performance, and the economic literature with that of organisational psychology. However, it also conducts a survey intended to indicate possible solutions for the problem raised, rather than for providing a complete list of references on the topic.

The paper is organized as follows: Section 1 illustrates the main issues raised by a cross-survey of the literature; Section 2 is devoted to the growing econometric literature on job satisfaction; Section 3 considers the results of research, both economic and psychological, on job performance; Section 4 concentrates on the evidence concerning the link between job performance and job satisfaction, while Section 5 concentrates on the evidence for the reverse link from job satisfaction to job performance; and Section 6 provides an economic framework for an integrated analysis. Brief remarks conclude the paper in Section 7, while the Appendix contains a synoptic table of the empirical references.

## 1. Setting the issues

There is an abundance of empirical studies on job performance and job satisfaction in the economic and organisational psychology literature. They adopt different methods and very different datasets;<sup>3</sup> they often focus on either job performance or job satisfaction, and they sometimes extend their analysis to several other aspects as well. A synthetic scheme with which to organise individual studies around the main issues would thus be useful.

The following flow-chart will be referred to throughout the paper. The key variables usually considered in studies are represented by means of symbols in boxes, and the links by means of arrows ( $\rightarrow$ ) between them. The presumed causation is represented by the direction of the arrows with an implicit positive sign if not otherwise marked (see Fig. 1). The representation depicts an individual working in a job as an employee.

The symbols and their meanings can be listed thus:

$Y$  = contractual income, inclusive of labour compensation and specific economic incentives like promotions and fringe benefits;

$P$  = performance on the job;

$PI$  = effort, including fatigue and stress, i.e. job performance as input to work;

$PO$  = achievements, productivity, i.e. job performance as output from work;

$W$  = job satisfaction, which is usually, but not necessarily, self-reported;

$U$  = utility;

$S$  = reward based on identity or self-esteem;

$H$  = overall life satisfaction and happiness;

$X$  = extra-job determinants of happiness, including trait-like characteristics;

$Z$  = extra-economic variables, specifically:

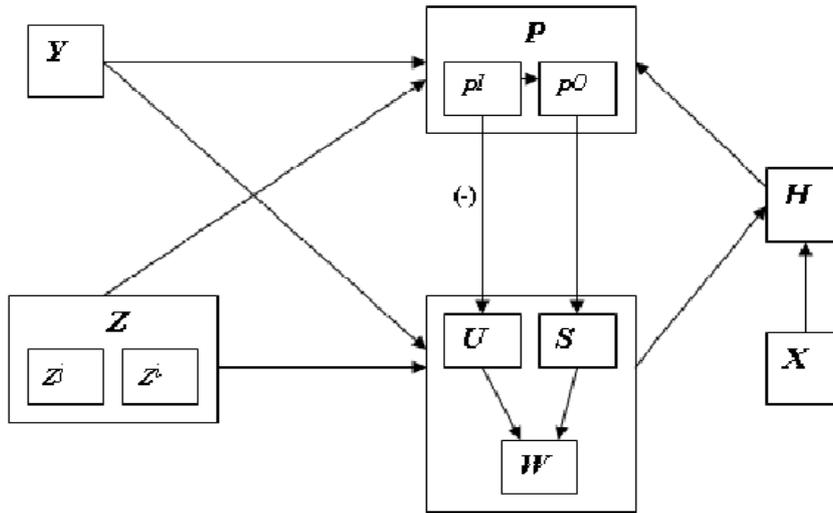
$Z^j$  = job characteristics,

$Z^i$  = individual characteristics.

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<sup>3</sup> For information on sampling and on the datasets used in the most recent works cited, see the Appendix.

Fig. 1. Key variables and key relationships



Examination of the different strands of research on job performance and job satisfaction highlights some key issues regarding the relationships among the above variables. These issues can be specified thus:

- I) The relationship between economic conditions and job satisfaction ( $Y \rightarrow W$ ), with respect to the relationship with it of other extra-economic and context variables ( $Z \rightarrow W$ ).

(I.1) Is the relationship between  $Y$  and  $W$  significant, relevant, and robust in both time series and cross-sectional studies?

(I.2) What other factors, whether characteristics of the job ( $Z^j$ ) or individual characteristics ( $Z^i$ ), emerge as important in relation to  $W$ ?

Economic theory would predict that the relationship  $Y \rightarrow U$ , which determines  $Y \rightarrow W$ , is positive and important, while leaving a minor systematic role to the other extra-economic and contextual variables. The empirical literature challenges these predictions.

- II) The relationship between economic conditions and job performance ( $Y \rightarrow P$ ), with respect to the relationship with it of other extra-economic and context variables ( $Z \rightarrow P$ ).

(II.1) What is the significance and relevance of the relationship between  $Y$  and  $P$ ?

(II.2) Is the relationship between  $Y$  and  $P$  positive, or it may be negative?

(II.3) What other factors, whether characteristics of the job ( $Z^j$ ) or individual characteristics ( $Z^i$ ), emerge as important in relation to  $P$ ?

Psychology studies report the puzzling result that the sign of the relationship between  $Y$  and  $P$  may be negative, and they explain this result as being due to the crowding-out of intrinsic motivations on the job by extrinsic motivations, like pay-for-performance.  $Z$ -factors seem to play a key role in this effect.

III) The relationship between job performance and job satisfaction:  $P \leftrightarrow W$ .

(III.1) Which is the sign, the significance, and the relevance of the relationship? Economics (e.g. agency and efficiency wage theories) assumes that the sign is negative, since  $P^I \rightarrow U \rightarrow W$ , where  $P^I \rightarrow U$  is a negative link, and where  $U \rightarrow W$  and  $P^I \rightarrow P^O$  are positive and implicit links. Organisational psychology usually finds a positive sign.

(III.2) Which is the direction of the causality? Is it a direct or a mediated causality? The argument for  $P$  as causing  $W$  is that achievements give a sense of satisfaction, and even a good mood. The argument for the reverse causation of  $W$  on  $P$  is that a sense of well-being produces greater concentration and perseverance.

The literature comprises two independent lines of research for dealing with these issues. The first argues that  $P$  causes  $W$  through two links, but with opposite sign, as represented in Fig. 1. In the second line it is argued that  $W$  causes  $P$  through the mediation of  $H$ .

These issues are interrelated, and it is unusual for one issue to be studied at a time, or as the main focus of analysis. The literature on the matter is therefore wide-ranging, interdisciplinary, and articulated into various lines of inquiry. Consequently, when the empirical results are presented below, the concern will be more to organise them clearly according to the above scheme than to provide a detailed and complete account of the existing literature.

Sections 2 and 3 will examine the results from the literature which aid understanding of issues (I) and (II), whilst Sections 4 and 5 concentrate on two different perspectives that emerge from the literature and appear useful for resolving issue (III). A unitary framework for the analysis is set out in Section 6.

In conclusion of this Section, a note of caution is in order. The above figure contains arrows indicating causation. However, one of the major weaknesses of this literature in its entirety regards precisely the evidence on causation, rather than on correlation. It will therefore be preferable to speak in what follows of ‘presumed causation’ or ‘presumed effects’. This presumption is entailed by the large use made of controls in the regressions, and on the great quantity and variety of studies examined, but a great deal of research is needed on this aspect.

## **2. Econometric research on job satisfaction ( $Y, Z \rightarrow W$ )**

Job satisfaction has been defined as the "positive emotional state resulting from the appraisal of one's job" (Locke, 1976:1300). Research on job satisfaction usually adopts self-reported data,<sup>4</sup> and it has rapidly developed in connection with so-called ‘happiness economics’. The methodology of research varies to some extent. Economists usually prefer datasets of large size, with samples of thousands and even tens of thousands of individuals. They refer to countries as a whole, usually developed countries, or to sectors, or to groups of firms. Statistical elaboration can thus be rather sophisticated, and econometrics is the standard method used. Psychologists usually construct their own databases, and prefer to work with several and deep-lying dimensions of concepts, such as job satisfaction, and they concentrate on capturing the best psychological indices for them. This restricts the empirical analysis to relatively small samples. However, meta-analysis, which is a statistical analysis of the results of a body of studies in the literature, is also used in psychology.

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<sup>4</sup> Job satisfaction has also been questioned as an economic construct, being instead interpreted as a proxy for the intention to be absent from work, and to quit (Freeman 1978), with obvious negative effects on turnover (Griffeth et al. 2000), and absenteeism (Breaugh 1981; Wegge et al. 2007). See also (Carsten & Spector, 1987; Brook & Price, 1989; Pierce et al., 1991; Tett & Meyer, 1993; Eby et al., 1999). Borzaga & Tortia (2006) use, as the dependent variable in regressions, both self-reported satisfaction and a variable drawn from a question on “desire to stay with the current organisation”, and they obtain similar results. A specific study on the reliability of the self-reported job satisfaction measure shows positive results (Kristensen & Westgaard-Nielsen 2008).

### *2.1 The dynamic of job satisfaction over time*

Over past decades, economic growth and technological progress have ameliorated the economic conditions of workers and the material conditions of their workplaces, on average. However, some studies on a country basis show that job satisfaction has recently decreased in some rich countries, and is presumably stable in others. This is what emerges in the US (Blanchflower & Oswald, 1999), in Germany (Sousa-Poza & Sousa-Poza, 2000), and also in the UK (Green & Tsitsianis, 2005), at least since the 1970s, and most of the OECD countries during the 1990s (Clark, 2005). For the other countries the data available are restricted to around six years and show stability (Green & Tsitsianis, 2005).<sup>5</sup> The opposite dynamic of job satisfaction with respect to the economic conditions as represented by wages, and to job conditions as represented by working time, is also evident (Clark, 2005).

A test for reliability of self-reported data over time has been conducted by Green and Gallie (2002), who use both data of this kind and an epidemiological measure of affective well-being based on two coordinates – enthusiasm-depression and contentment-anxiety – obtaining very similar results in their regression exercises.

If job satisfaction decreases or remains stable despite overall economic growth, some other factors may account for the phenomenon. First, increasing inequality in some job characteristics, principally in the different treatment of some classes of workers, appears to be a significant factor. Specifically, job satisfaction has particularly decreased for older (aged over 45) and less-educated workers, while it has somewhat increased for young and highly-educated people (Clark, 2005). Secondly, job insecurity, work intensity, greater stress, and dissatisfaction with working hours have increased in the US and in Germany, and they significantly explain the decline of job satisfaction (Green & Tsitsianis 2005; Blanchflower & Oswald 1999). However, the puzzle of a divergent trend of job satisfaction with respect to economic growth partially remains, because these studies also show that the explanatory contribution of all the deteriorating factors considered is relatively small.

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<sup>5</sup> Green & Tsitsianis (2005) also show that the decline persists even when controlling for the cohort effect, and for the cyclical effect.

## *2.2 Cross-sectional evidence on job satisfaction and economic conditions*

The happiness literature has found that per-capita income and happiness are positively related for the cross-section of countries, despite the declining trend of happiness in the US (Stevenson & Wolfers 2008). Similarly, the literature on job satisfaction finds that workers' compensation and job satisfaction are positively related for the cross-section of countries. For example, Skalli et al. (2007) and Sousa-Poza & Sousa-Poza (2000) show that workers in East-European countries appear to be the least satisfied on the job, while ones in Mediterranean countries occupy an intermediate position. In particular, the US is very well placed in the ranking, while Italy is placed in a rather low position (see also Blanchflower & Oswald, 1999).<sup>6</sup>

Other studies confirm this result. Diaz-Serrano & Cabral Vieira (2005) show that low-pay workers are likely to have low-quality jobs, and consequently less job satisfaction. Siebern-Thomas's (2005) cross-sectional analysis on the European Community Household Panel shows that the correlation between wage and job satisfaction is significant and positive. Brown & McIntosh (1998) have found evidence that the correlation between wage and job satisfaction is particularly close in the case of low levels of monetary compensation, both within the sector and among sectors. A different result is obtained by Leontaridi & Sloane (2001), who show that low-pay workers report higher job satisfaction than do other workers.

But the striking finding of studies of this kind is that monetary compensation is not the most important determinant of job satisfaction. According to Sousa-Poza & Sousa-Poza (2000), monetary compensation ranks fourth as a positive determinant of job satisfaction at country level; according to Skalli et al. (2007) it ranks second, but with a coefficient halved with respect to the first determinant; according to Helliwell & Huang (2005) personal income ranks sixth among non-socio-demographic determinants. For Clark (2005), the importance of having a high wage is at the bottom of the list of job values, since other aspects (from job security to having an interesting job, from work independency to social usefulness, etc.) come first.<sup>7</sup> Furthermore, placing most value on pay at work is negatively correlated with job satisfaction (see also Clark 1997).

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<sup>6</sup> This ranking is similar to that for happiness. See in particular the bad conditions of Italy in Blanchflower & Oswald's (2007) objective evidence on mental health with respect to the other countries.

<sup>7</sup> Clark (2005) also observes that monetary compensation is especially important in the Mediterranean countries, which are the poorest in its sample.

Other interesting results are that the reference group income is negatively correlated with individual job satisfaction (Cappelli & Sherer, 1988; Clark, 1999), indicating the interference of psychological perceptions in the estimation of the personal well-being and the importance of relative income (as also found by Clark & Oswald, 1996; Brown & McIntosh, 1998; Hammermesh, 2001). Clark (1999) shows that changes in workers' pay over time positively influence their well-being, whereas the current level of pay does not impact on job satisfaction. Finally, a non-linearity between compensation and satisfaction may be conjectured. Helliwell & Huang (2005) find that the logarithm of income provides a better fit for satisfaction. Borzaga & Depedri (2005) observe that, even in a sector characterised by low average salaries like the social-services sector, employees are more satisfied when their wages increase up to a threshold, but not above that threshold.

Satisfaction from monetary compensation also varies according to the sector. For example, Benz (2005) finds that wages for for-profit employees would have to be doubled (US) and tripled (UK) in order to make for-profit employees as satisfied as non-profit workers, with a special premium for professional services. Similar results emerge for Italy (Tortia 2008; Borzaga & Tortia 2006).<sup>8</sup>

The economic conditions, as represented by  $Y$  in our scheme, include other contractual conditions besides current monetary compensation: e.g. promotions, job security, training and professional growth. Despite the importance of tournaments and promotions in agency theory, they have been little studied in empirical analyses. Only Clark (1997) finds that promotion opportunities are positively correlated with job satisfaction, but he also finds that valuing promotion the most at work is negatively correlated with job satisfaction.

Much more studied is job stability, which has been mainly investigated in regard to the effect of job insecurity on job satisfaction. The detrimental impact of unemployment has been shown by Clark (2005) on a regional basis. This effect is similar to that found in the happiness literature, where unemployment displays a negative effect on subjective well-being over and above the effect due to income loss (stigma effect). This suggests that job insecurity is not represented entirely by  $Y$ , but also partially by psychological components included in  $Z$ .

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<sup>8</sup> For the wage gap between these two sectors in Italy see Mosca et al. (2006).

The role of a specific variable for job insecurity has been also found to have a significant negative effect on job satisfaction, but it is not one of great importance. The small though highly significant<sup>9</sup> size of the attached coefficient has been reported by Sousa-Poza & Sousa-Poza (2000), and similar results have been obtained by Blanchflower & Oswald (1999) through finer analysis of the insecurity variable.<sup>10</sup> In a study on job security guarantees, Bryson et al. (2004) find that job security positively impacts only on pay satisfaction, not on other measures of job satisfaction, such as satisfaction with non-pecuniary aspects of the job and intensity of the job. A converging result has been found for temporary contract workers, who appear to be less satisfied with their jobs than employees with open-ended contracts (Siebern-Thomas, 2005; Kaiser, 2002).

### *2.3 Characteristics of the job and job satisfaction*

Section 1 suggested that a specific focus on variables other than those representing the economic conditions, i.e. *Z*-variables, is needed if job satisfaction is to be effectively explained. This subsection considers the group of variables representing the extra-economic characteristics of the job and of the workplace (i.e. ones not already included in *Y*), labelled with *Z<sub>j</sub>*.

A striking finding in this regard is that an interesting job is considered by workers to be the greatest positive determinant of job satisfaction (Sousa-Poza & Sousa-Poza 2000; Skalli et al. 2007), or one of the most important job characteristics (Clark, 2005; Helliwell & Huang, 2005).<sup>11</sup> The similar characteristic of ‘good job contents’ (by which is meant having an interesting job, useful for helping other people and society, and which makes the worker independent) has the largest impact on job satisfaction together with relations at work (Clark, 2005). Being interested in the job is also the most significant factor in the general definition given to the possible ‘commitment to type of work’ which emerges when workers are discouraged from leaving their jobs by the attractiveness of the activity performed. In particular, empirical studies show that workers (especially managers) are frequently committed more to their jobs than to their organizations, and

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<sup>9</sup> This is confirmed by Clark’s (1997) finding that valuing security the most at work is positively correlated with job satisfaction.

<sup>10</sup> This result is partially confirmed by temporal data, as mentioned in section 2.1.

<sup>11</sup> In Italy, this result seems especially important and even independent from the education level (Skalli et al. 2007).

the former increases their job satisfaction much more than the latter (Stroh et al. 1994). This result may be explained by opportunities for cross-training and innovation which increase workers' interest and curiosity.<sup>12</sup> Close to the notion of commitment to work is that of 'psychological empowerment'. This has been conceived as "a tool to encourage workers to think for themselves about the requirements of the job, and to move beyond blindly doing what they are told" (Spence Laschinger et al. 2004). The analysis by Hechanova et al. (2006) of Filipino service workers shows, for example, that all the factors of psychological empowerment — meaning of the job, workers' competence, autonomy or self-determination, and impact of the workers' activity — significantly and positively impact on their job satisfaction. In manufacturing firms, however, innovations – evaluated in terms of training, organizational and technological innovations – appear to be neutral with respect to the degree of empowerment of workers, although it influences some aspects of their well-being (Antonioli et al., 2008).

An aspect which has been particularly closely studied in the literature is workers' involvement in the organization, also understood as participation by subordinates. In regard to job satisfaction, it has been found that the level of participation in the definition of managerial review processes appears to be a positive factor (Burke & Wilcox, 1969; Landy et al., 1980; Dipboye, 1985). Specifically, the more workers participate in the discussion of career issues and human resources policies, the greater is their satisfaction with work (Nathan et al., 1991). More recent surveys demonstrate that also participative management improves workers' job satisfaction (Soonhee, 2002), and that the use by managers of a participative style in strategic planning is positively correlated with job satisfaction, especially when it is supported with clear communication and workers are held accountable for the consequences of their decisions (Thoms et al., 2002). This kind of policy seems to be effective not only in private organizations but also in public bodies (Brewer et al., 2000).

Involvement in the organization can be included in the concept of procedural fairness, which is distinct from distributive fairness, as discussed immediately below. Specific studies on this distinction find that both kinds of fairness are important for job satisfaction (Tortia 2008; Valentini 2005; Green & Tsitsianis 2005).

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<sup>12</sup> However, when workers are strongly committed to the type of work, they also increase their criticisms of the job's characteristics. As a consequence, job satisfaction decreases owing to the presence of some salient negative aspects of the job (Cavanaugh and Noe, 1999).

The importance of perceived fairness of pay for job satisfaction has been studied in parallel with 'relative income' in the happiness literature. The result is undisputed, at least in its sign: the pay taken as the benchmark by workers is negatively correlated with their job satisfaction. Clark (1997) adds that, together with their own income, the effect still remains negative. Green & Gallie (2002) confirm the marked deterioration of affective well-being due to a lack of "fairness". Charness & Haruvy (1999) report a laboratory experiment which underlines the importance of agreement between employer and employees on the fair wage.

A recent issue of interest in the economic literature on job satisfaction, and which is included in **Z**, is relatedness with supervisors, colleagues and customers. The result is as one would expect from personal experience, since relatedness in the workplace is important for job satisfaction (Clark 1997; Borzaga & Depedri 2005). While Clark (1997) finds a generic importance, Sousa-Poza & Sousa-Poza (2000) assert that the relationship with management is the third (positive) determinant of job satisfaction, and that it is far more important than the relationship with colleagues. A consistent result has been found by Antonioli et al. (2008). Borzaga & Depedri (2005) compare non-profit with for-profit firms, and conclude that relatedness may be conceived as a good that firms can effectively exchange for monetary compensation. A more specific study on altruism and job satisfaction shows a positive correlation between them, so that other-oriented values may be also improved by organizations through their missions and social goals (Arciniega & Gonzales, 2005). Finally, Helliwell & Huang's (2005) study on the role of social capital in the workplace finds that the relation between trust in management and job satisfaction is strongly significant and very substantial.

Ambiguous results emerge when the public versus private sector has been considered by analyses of job satisfaction. Diaz-Serrano & Cabral Vieira (2005) find that workers are more satisfied in the public sector, whereas Ghinetti (2007) finds that the opposite is the case. The ambiguity seems to be due to the fact that public employees are more satisfied with job security, whilst private employees emphasise interest in the type of job.

The importance of the social dimension on the job has been also underlined by studies of establishment size: working in larger establishments is more unpleasant because of the more impersonal atmosphere and the increased division of labour

(Masters, 1969). In fact, empirical surveys show that establishment size is negatively correlated with job satisfaction (“Overview: Small business optimism”, 1997; see also Clark, 1997). More precisely, Gazioglu & Tansel (2006) find that establishment size is negatively correlated more with the specific satisfaction involving a sense of achievement than with the other types of satisfaction, and Skalli et al. (2007) find that medium firm size, more than the large firm size, has a positive effect on the specific satisfaction with pay in Italy. Another explanation of the negative correlation between firm size and workers’ job satisfaction is that it is mainly due to a different process of workplace learning (Rowden, 2002).

Interest in the job and networks within organisations may be also be responsible for the puzzling result of studies on the relationship between participation in trade unions and job satisfaction. In fact, less satisfied workers are expected to be involved in this type of activity, because they are attracted by this way of having a voice. However, this is confirmed by only a few works (see for example Schwochau, 1987), whereas Miller (1990) shows that belonging to a trade union is positively correlated with job satisfaction, perhaps because of aspirations, mobility strivings, and greater creativity, as suggested by Spinrad (1960). An explanation for these opposing results is offered by Bryson et al. (2005), who find that unionism in Great Britain negatively impacts on job satisfaction only when unions are recognised for bargaining purposes (endogenous recognition), but not when the membership is due to other factors.

#### *2.4. Characteristics of individuals and job satisfaction*

The second group of variables included in  $Z$  pertain to the characteristics of the individual ( $Z^i$ ). A characteristic of workers intriguing for the analysis of job satisfaction is gender. Many studies in fact show that women have a premium for being satisfied with their jobs (see e.g. Clark, 1997),<sup>13</sup> thus replicating a standard result in the happiness literature. Income and other conditions are usually controlled in regression analysis, but omitted variables capturing working conditions, which are usually relatively worse for women, cannot be excluded. This case thus strengthens the puzzle. Clark (1997) proposes the explanation that women have fewer expectations than men regarding work. This hypothesis is confirmed for Australia by Long (2005), but it is rejected by Kaiser

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<sup>13</sup> However, Diaz-Serrano & Cabral Vieira (2005) report mixed results across the EU.

(2002), although his cross-sectional analysis shows that females are highly satisfied with their jobs in most countries. In this regard, Bilimoria et al. (2006) argue that women are mainly satisfied with internal relationships and fairness in the relational support received from colleagues, and that these factors positively influence their satisfaction with the job as a whole. Sloane and Williams (2000) argue that the satisfaction premium for women may be due to self-selection into jobs with highly valued attributes. It is however true that differences between males and females have significantly decreased in recent years (Sousa-Poza and Sousa-Poza, 2003), probably because of converging expectations between the two genders (Clark 1997).

Another characteristic of workers usually included in econometric analysis is age. The evidence tends to show the existence of a U-shaped pattern with job satisfaction, as in the econometrics of happiness. Young and old people are more satisfied with their jobs than are middle-aged people (Blanchflower & Oswald 1999; Clark 1997). The authors explain this result with the observation that some adaptations by workers emerge over time, although this also comes about through a change of job.

An even more intriguing variable is education, since the evidence shows that this is correlated with job satisfaction in a significant and negative way in some instances (Skalli et al. 2007; Gazioglu & Tansel, 2006), whilst in others it has no significant impact on job satisfaction (Sousa-Poza & Sousa-Poza, 2000; Clark 1997). In more detailed studies, tertiary education exhibits a negative effect on the specific satisfaction with pay (Skalli et al. 2007), whilst this specific satisfaction is lowest not only among clerical staff but also among managers (Gazioglu & Tansel, 2006). Investment in education thus appears to be self-defeating if job satisfaction is considered as the final aim. However, education length has also a positive indirect impact on job satisfaction: it influences health status (ensured by better working and economic conditions, social-psychological resources, and a healthy lifestyle); and it is correlated with observable job characteristics (Florit & Vila Lladosa, 2007). On studying the main characteristics of work, Meng (1990) finds that more educated workers are usually more involved in the activity and enjoy higher levels of autonomy; consequently, they are less stressed and receive psychological benefits which positively impact on their job satisfaction.

The education puzzle may be further explained by the greater expectations induced by education but not realised on the job, and in particular by what has been

termed ‘surplus education’ (Tsang, 1991). Various surveys estimate the match between the level of competence required by the job and that offered by the education possessed, and they obtain different results. Vila & Garcia-Mora (2005) empirically demonstrate that the match between employment and education strictly influences job satisfaction; Hersch (1991) and Tsang et al. (1991) find a negative correlation between job satisfaction and surplus schooling, especially for workers with higher levels of education. Diaz-Serrano & Cabral Vieira (2005) obtain similar results for the correlation between over-skilling and job satisfaction; Gazioglu & Tansel (2006) find a negative correlation between education (but not pay) and the specific satisfaction comprising a sense of achievement. It therefore seems that job satisfaction is enhanced when the education level is that required by the organization, whereas job satisfaction decreases when workers are educated to above the level required (i.e. the role covered).

Deeper analysis has been conducted by examining observable affective well-being on the job, besides self-reported job satisfaction. Green & Gallie (2002) find that both the level of, and the increase in, the skills required are associated with higher levels of arousal among workers, but also greater task discretion and greater participation of workers in decisions concerning their jobs, and, to a lesser extent, more support from a team. Stress ensues because the arousal is excessive with respect to the other gratifying effects. By contrast, under-skilling tends to generate boredom and depression (see also Maynard et al. 2006).

### **3. Research on the determinants of job performance ( $Y,Z \rightarrow P$ )**

The relationship between economic incentives and job performance has been conventionally studied in economic theory as a principal-agent problem, predicting a positive correlation between  $Y$  and  $P$ . Subsection 3.1, after a brief presentation of the theoretical analysis, discusses some limitations in the efficiency of economic incentives and illustrates some empirical evidence. A more complex picture emerges when productive organisations adopt other incentive schemes aimed at involving workers more closely and thereby raise productive performance. Subsection 3.2 examines the literature on these alternative organisational practices. The attention thus shifts to workers’ motivation, so that psychology becomes especially important. However, as discussed in

subsection 3.3, psychology studies warn us that workers' motivation may even be reduced by conventional incentives.

### *3.1 Incentives and job performance: the conventional prediction*

A large body of theoretical literature is devoted to the economics of incentives and focuses on various firm's policies to reward workers (for a comprehensive survey, see Prendergast, 1999). This literature assumes that  $Y$  mainly includes pay-for-performance practices (where wages depend on the level of organizational outcomes), bonuses, promotions and tournament mechanisms, deferred-compensation schemes. The theory argues that these incentives raise the opportunity cost of exit for workers, thus inducing them to put in greater levels of effort, which is a disutility for them, to retain the job.

However, the same theory admits that there are limitations in the functioning of the positive correlation between incentives and performances. First of all, pay-for-performance practices allocate part of the organizational risk to employees and consequently decrease their initial investments. Secondly, economic incentives are limited to cases where performances are simple to verify, activities are mainly single-tasking, and the costs of control are quite low. By contrast, most of the time and in many sectors, jobs involve multi-tasking, and the principal cannot devise a complete incentives scheme to improve the quality (other than quantity) of workers' performances.<sup>14</sup> Control mechanisms may fail owing to the costs of verifying the quality (other than the quantity) of the agent's effort and impossibility of control by third parties (Holmstrom & Milgrom, 1991). Finally, tournaments are inefficient when competition between colleagues is a source of conflict and reduces cooperation within the group.<sup>15</sup>

Empirical data confirm that the significance of the relationship between compensation and job performance mainly depends on the sector of activity and the characteristic of jobs and tasks. Lazear (1996) shows that classic economic incentives

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<sup>14</sup> Specifically, the principal specifies only the quantitative dimension as the basis on which economic incentives are calculated. As a consequence, dysfunctional behavioural responses by the agent, under-production of the other dimension of the job (quality), and a re-allocation of effort to the component with which pay is linked, emerge as inefficiencies.

<sup>15</sup> Tournament theory assumes that internal competition among employees also increases their effort and organizational performances, as well as sorting workers with more talents and abilities (Rosen, 1982). The assumption, however, is limited by the number of competitors, by the level of the incentive, and especially by disruptive behaviours among colleagues.

(like premiums and bonuses) matter in those economic sectors where the outcome is strictly measurable. Greater support for the positive relationship between  $Y$  and  $P$  is forthcoming in the case of efficiency wages, i.e., when the principal overpays the worker in order to increase the value of her/his job (Shapiro & Stiglitz, 1984). The positive consequence of tournaments on performance when the prize is high has instead been tested by many empirical analyses (e.g., Becker & Huselid, 1992). Some evidence, however, indicates that there is a risk of anti-cooperative behaviour (Drago & Garvey, 1997).

As regards specific incentive mechanisms, the empirical evidence shows that profit sharing and gain sharing are evaluated by workers as the best economic means to increase their effort (Opinion Research Corporation, 1957; Colletti, 1969; Bella & Hanson, 1987); and also organizations find a positive relationship between profit-sharing plans and performances (Brower, 1957; Metzger, 1975; National Commission on Productivity and Work Quality, 1975; New York Stock Exchange, 1982; Smith, 1986; O'Dell & MacAdams, 1987), because indexes of workers' productivity (such as value added and sales per employee) increase with incentives (Cable & FitzRoy, 1980; Conte & Svejnar, 1988; Kruse, 1988; Wadhvani & Wall, 1988; Mitchell et al., 1989).

In spite of the large number of surveys supporting the contention that incentives matter, it should also be noted that rigorous empirical studies show that the positive relationship between  $Y$  and  $P$  emerges only (or at least mainly) when it improves workers' cooperation and morale (Metzger, 1966). Another consistent finding is that the marginal effect on performances is especially high in organizations characterised by a cooperative climate (Defourney et al., 1987 on French cooperatives; Jones & Svejnar, 1985 on Italian cooperatives; Jones, 1987 on British cooperatives).

In conclusion, a large body of empirical evidence shows that the link between  $Y$  and  $P$  is positive; but also that it is variable, mainly because it depends on the extent to which workers are involved in the productive process and results, and how they perceive the social context. It is for this reason that both theoretical studies and empirical data support the hypothesis that other extra-economic factors enter the relationship among productivity, effort and job satisfaction (Akerlof & Yellen, 1984).

### *3.2 High Performance Workplace Practices*

A specific strand of research studies job performance, linked to job satisfaction and to compensation, from the perspective of the organisational changes induced by the increased global competition and the rapid developments in information technology of the 1980s and 1990s. The new type of organisation that has emerged has been called High Performance Workplace Practices (HPWP), because it refers not simply to monetary incentives but to complex incentives schemes. Specifically, HPWP comprise two kinds of practices: (i) alternative work practices like multi-tasking, job rotation, self-responsible teams, problem-solving groups, flat hierarchical structures, horizontal communication, and (ii) high-commitment employment practices like sophisticated selection and training, behaviour-based appraisal, contingent pay systems (pay-for-knowledge, group bonuses, and profit sharing). According to their proponents, HPWP enable workers to develop, share and apply their knowledge and skills more fully than do traditional practices, with positive implications for job satisfaction and job performance. It is claimed that HPWP redeem workers from the alienation of the Taylorist division of labour and hierarchical structure and give them the motivating and self-rewarding work activities of the recent knowledge-based modes of production (Ichniowski et al. (1996); Godard 2004; Handel & Levine 2004; Freeman et al. 2000).<sup>16</sup>

The results of studies on the effects of HPWP on organisational performance and productivity, and on workers' satisfaction are mixed. Ichniowski et al. (2000) find positive results if clusters of new work practices are implemented, thus supporting the argument that these practices are complementary. Cristini et al. (2003) find that productivity increases if practices are complementary to the adoption of new technologies. Further positive results are reported by Appelbaum et al. (2000) for some industries in the US, by Patterson, West & Nickell (1997) with reference to British firms, and by Greenan (1996) in a survey on French industries. Combs et al. (2006), in a meta-analysis of articles in human resources management journals, estimate a significant correlation of 0.20 between organisational performance and HPWP.

Positive results focused on the correlation between a variety of HPWP and workers' job satisfaction have been found in the US (Batt 2004), in Japan (Chuma et al. 2007), in the EU (Bauer 2004; Oriogo & Pagani 2006), and specifically in Finland

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<sup>16</sup> A distinct feature of these practices, in fact, is that "blue-collar workers us[e] abstract reasoning skills as well as perform[.] manual tasks" (Helper et al. 2002:330).

(Kalmi & Kauhanen 2008). Positive results have also been obtained for wages and compensations, which appear to be correlated with HPWP (Black & Lynch 2000; Bailey et al. 2001; Kalmi & Kauhanen 2008; Cristini 2008). In particular, Helper et al. (2002) observe that wages are higher when HPWP are adopted even if training is controlled for, while turnover and supervision variables are not significant. Hence HPWP lend support to the efficiency wage approach, and specifically to Akerlof's (1984) argument of gift-exchange, whereas neither Salop's (1979) thesis on turnover costs, nor Shapiro & Stiglitz's (1984) on shirking, appear to be supported.

However, some other studies cast serious doubts on these positive results. HPWP have weak and poorly specified effects on productivity according to Freeman et al.'s (2000) study. Cappelli & Neumark (2001) find similar results, and they add that practices of this kind are even associated with increased labour costs. Insignificant correlations for both effort and job satisfaction are the result of Harley's (2002) study. Handel & Levine (2004) and Handel & Gittleman (2004) find little evidence that HPWP are associated with higher wages.

Godard (2004) scrutinizes a number of authoritative studies, identifying serious limitations and weaknesses which undermine their significance. Disentangling the effects of HPWP and evaluating their size are especially difficult because HPWP interact with other variables, such as establishment size, technology and market context, and because HPWP may interact with traditional practices – given that this mix is prevalent in most cases – contravening the complementarity hypothesis. Evaluations of the convenience of HPWP should also take their costs into account.

The specific negative effects of HPWP – Godard (2001) observes – are work overload, workers' stress, and negative job-to-home externality, so that HPWP may have increasing returns if moderately applied, and then decreasing ones, which may even be negative if extensively applied. In fact, stimulating and involving work may become intense and accelerated, and peer pressure for stronger performance norms may emerge (see also Belanger's 2000 survey). This suggestion is interesting, because it can explain cases in which HPWP have simultaneously positive effects on organisational productivity and wages and negative ones on workers' satisfaction.

### *3.3. Incentives and job performance: an alternative approach?*

Psychology research has accumulated a great amount of experimental evidence on the so-called crowding out of motivations which has sparked a heated debate in that discipline, but which is also of special interest for the economics of incentives. The concept of crowding-out is defined as the displacement of intrinsic motivations for an activity, which means pursuing an activity for its own sake, by an offer of a material reward for doing it, i.e. by an extrinsic motivation. The reason for this effect is that “rewards can lead people away from their interests and their inner desire for challenge, instead prompting for a more narrow instrumental focus” (Ryan & Deci 2000:37).

Typical experimental studies on crowding out used to be applied on performance-contingent rewards conditions, where participants received a monetary reward for “having done well at the activity” (Ryan et al. 1983), or because they were said to have “performed better than 80% of other participants” (Harackiewicz et al. 1984). The conclusions of the most recent and comprehensive works in this strand of research, i.e. the survey by Deci et al. (1999) and the book edited by Sansone & Harackiewicz (2000), are in fact striking. First, “the type of rewards that was most detrimental was [...] one in which people’s rewards are provided as a direct function of their performance”; second, “the finding of negative effects of engagement-contingent rewards [which is dependent on simply engaging in the activity] is extremely important [...]. For example, most hourly employees get paid for working at their jobs without having the pay tied specifically to the number of tasks completed” (Ryan & Deci 2000:26,29).<sup>17</sup>

The distinction between intrinsic and extrinsic motivations on the job was also proposed by Porter & Lawler (1968), who argued that a worker’s interest in the activity increases her/his performance. This case, where the favourable effects of intrinsic motivations on job performance add to those of extrinsic motivations, can also be called the crowding-in case. Both cases depart from conventional economic theory, since this implicitly assumes that intrinsic motivations are constant and embodied in preferences.

According to Deci & Ryan (1985:ch.4), the occurrence of crowding-out or crowding-in is due to distinct conditions which can be synthesised as controlling, or informational and supporting conditions. In the former case, rewards perform a control function on how the activity is performed, and this undermines the individual’s self-

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<sup>17</sup> See also the survey by Gagné & Forest (2008).

determination and autonomy. In the latter case, rewards perform an informational function on the individual's effectance of her/his action, and on how this is socially valued. Therefore, interesting tasks, positive feedbacks in interpersonal relations, participation in procedures and decisions may turn the controlling function of extrinsic rewards into a supporting informational function.

Cases of crowding-in are evidenced by studies on workers' participation on the job. High budgetary participation in combination with high budget emphasis has been found to be a significant condition for the positive correlation between economic rewards and workers' performance (Brownell, 1982; Brownell & Hirst, 1986; Brownell & Duck, 1991; Harrison, 1992; Lau & Buckland, 2000). This is due to workers' perceptions and collection of information about their job, and about their organization more generally, which also positively influences their job satisfaction (Lau & Tan, 2003).

Participation in organizational decisions and productivity seems to explain workers' performances better than profit sharing or other economic rewards (Blinder ed., 1990). The majority of empirical surveys demonstrate that the correlation is positive and also very significant (Cable & FitzRoy, 1980; Defourney et al., 1985; Jones, 1987; Ben-Ner & Estrin, 1988; Morishima, 1988; Mitchell et al., 1989), although some empirical analyses find no correlation between this kind of workers' participation (Svejnar, 1982; Katz et al., 1987; Kruse, 1988), whilst others find a negative correlation (Katz et al., 1985; Kraft & FitzRoy, 1987).

Bartel et al.'s (2004) intriguing study shows the importance of the interpersonal environment on the job for work performance, which is consistent with the crowding-in effect. They consider the role of work attitude in the performance of branches of the same firm, rather than individual workers' performances. They first define attitude as the composite index of employees' judgments on supervisors, team cooperation, transparency in employees' evaluations, and distributive fairness. They then observe that the heterogeneity of attitudes within branches is smaller than the heterogeneity across them, which demonstrates employees' conformism, or something called the 'branch's attitude'. The economic performance of the various branches in terms of sales, turnovers, and closures proves to be correlated with the 'branch's attitude'.

Frey (1997) and Frey & Jegen (2001) have addressed the problem of crowding-out and crowding-in within economics through a reinterpretation in terms of agency

theory and a survey of the evidence on crowding-out in a variety of cases.<sup>18</sup> They point out that incentives involve both benefits and motivational costs for the agent, and that the costs may outweigh the benefits under certain conditions. For example, they report Barkema's (1995) econometric paper showing that, in a case concerning managers and the parent company, controlling the agents has negative effects on their job performance.

This result is confirmed by Minkler (2002), who finds that monitoring is both negatively and significantly correlated with self-reported effort, after controlling for self-reported intrinsic motivation (which emerges as significant), work ethic, and peer-pressure. This result is again confirmed, but in an experimental principal-agent game, by Falk and Kosfeld (2006), who add that "when asked for their emotional perception of control, most agents who react negatively say that they perceive the controlling decision as a signal of distrust and a limitation of their choice autonomy" (Falk and Kosfeld 2006:1611).

Some tests on the effects of the different forms of incentives have shown that base-pay is related to job performance, whereas bonuses are not (Kuvaas 2006), and targeted incentives are negatively related to it, which suggests some crowding out (Valentini 2005).

A recent meta-analysis concentrates on experimental studies which address the effect of incentives on task performance (quantity and/or quality measures) and use control groups and adult populations. Both economic and psychology journals are considered. The meta-analysis finds that incentives increase performance with a significant coefficient (0.41), but only when tasks are simple and/or boring, while performance is reduced with a significant coefficient (-0.13) when tasks are difficult and/or interesting (Weibel et al. 2007).

#### **4. Two routes from job performance to job satisfaction ( $P \rightarrow W$ )**

The relationship between job satisfaction and job performance ( $P \leftrightarrow W$ ) is not new in the psychology literature. It was investigated extensively some time ago, until an authoritative survey published in the 1980s concluded that the relationship was not quantitatively appreciable, so that the research on the topic appeared to have reached a

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<sup>18</sup> The survey can be updated with the very recent Reeson & Tisdell (2008).

dead end (Iaffaldano & Muchinsky, 1985; see also Bagozzi, 1980; Brown & Peterson, 1993; Baryfield & Crockett, 1955).

Recently, however, another extensive survey by Judge et al. (2001), which also conducts a more rigorous meta-analysis, reverses the conclusions. Its starting framework is clear because it distinguishes studies on the effects of *P* on *W* from studies on the effects of *W* on *P*. Whilst *W* has been measured in various ways, *P* is usually determined by the performance of workers as reported by supervisors. Judge et al. (2001) thus draw the main conclusion that the correlation between job satisfaction and job performance is positive and significant, that it is strict for complex jobs, but generally moderate (0.30).

This result is encouraging, but it still falls short of the theoretical expectations, so that the debate has been re-opened. In particular, recent research addresses the problem of the direction of causality between job satisfaction and job performance. In fact, not only do different arguments appear to support the two opposite directions of causality, but some arguments support a negative effect, and others a positive effect. Therefore, the relationship between job satisfaction and job performance should be studied within a framework where the two variables are clearly defined, and the interrelationship with other variables is considered. More encouraging levels of the partial correlations may thus be found.

This Section concentrates on research supporting the causation from job performance to job satisfaction, whereas Section 5 concentrates on research supporting the opposite causation. The line of reasoning can be followed by looking at the scheme in Section 1.

#### *4.1 The positive route from job performance to job satisfaction*

Judge et al. (2001) suggest that the positive correlation between *P* and *W* can be explained because performance on the job affects self-esteem. The consistency between actual behaviour and self-esteem thus positively enters the determination of job satisfaction. In terms of our scheme, this can be represented by the route from *P*<sup>0</sup> through *S* to *W*.

The concept of self-esteem refers to an individual's overall self-evaluation of her/his competencies, with an affective component (liking/disliking) about her/himself. Korman (1966:479) points out that individuals with high self-esteem have a "sense of

personal adequacy and a sense of having achieved need satisfaction in the past". More specifically, 'organization-based self-esteem' has been defined in the psychology literature as the extent to which an individual believes her/himself to be capable, significant, and worthy as an organizational member (Pierce & Gardner 2004). Korman (1970) argues that global self-esteem is central to the explanation of employee's motivation, job performance and job satisfaction. More specific studies find that organization-based self-esteem is significantly and highly correlated with several variables which underlie motivation on the job, like personal autonomy and competence, complex and interesting jobs, distributive and procedural fairness in the organisation, job security, and with job satisfaction, including stress and physical strain, whilst organization-based self-esteem seems to have a two-way role with job performance (Pierce & Gardner 2004).

The relationship between job performance and job satisfaction has been reconsidered, after Judge et al. (2001), by a meta-analysis which controls for self-esteem variables (Bowling 2007) and yields interesting results. If the job performance-satisfaction correlation is controlled for global self-esteem, it drops to 0.23; if controlled for organization-based self-esteem, it drops to 0.09, although remaining significant in both cases. The role of self-esteem also appears significant against the role of personality traits. In fact, if the job performance/satisfaction correlation is controlled for personality traits, it drops to 0.19.

Because organization-based self-esteem is a social construct, it can be influenced by the organisation. In their review, Pierce & Gardner (2004) conclude that organization-based self-esteem is positively associated with a number of variables capturing organisational features, i.e. work environment structures and management practices (e.g., social system design, technology, participatory leadership and management practices, job design) that give rise to opportunities for self-direction and self-control, signals from organizations which communicate to employees that they are a valued, important, competent and capable part of the organization (e.g., trust, perceived organizational support, pay level, fairness, ownership), positive and success-building role conditions (e.g., performance support, security, role clarity). These conclusions support the link between *Z* and *S* via *P*.

A different body of psychology research instead concentrates on work motivations, and on the underlying favourable organisational conditions, by distinguishing intrinsic motivations which crucially contribute to the development of the individual's self. According to Deci and Ryan and their team, intrinsic motivation requires interest in the job, and this brings the individual to inner well-being, because intrinsically motivated activities satisfy basic human psychological needs, thus enriching her/his self (Deci & Ryan 1985, 2000; Gagné & Deci 2005).<sup>19</sup>

An established result of Deci and Ryan's research is that people particularly inclined to intrinsic motivations exhibit relatively greater well-being (Kasser 2002). Specific studies on the work setting confirm this result, and extend it to the job conditions enhancing intrinsic motivations. Gagné & Deci (2005) find that managerial support for employees' autonomy positively affects both job satisfaction and job performance. The supporting actions applied are the following: giving to employees non-controlling informational feedback as well as opportunities to take initiatives, i.e. make choices and solve problems, and recognising and accepting their perspectives in terms of needs and feelings (see also Baard 2002). Otis & Pelletier (2005) find that the employees who perceive a supervisor as being highly supportive of their autonomy is correlated with their intrinsic motivations and job satisfaction, in terms of reduced physical symptoms. Richer et al. (2002) find that feelings of relatedness toward work colleagues, and feelings of competence jointly and positively affect self-determined work motivation, which in turn facilitates job satisfaction, with discouraging effects on labour turnover.

Evidence favourable for the intrinsic motivations approach to performance and satisfaction in the workplace is provided by other psychology studies. Ng et al.'s (2006) meta-analysis shows the importance of the locus of control, whether internal or external to the individual, for both job performance and job satisfaction. Ilardi et al.'s (1993) test on the positive influence of satisfaction of basic psychological needs in the workplace on job performance and well-being is also favourable, where well-being is measured with a mental health questionnaire.

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<sup>19</sup> More precisely, intrinsic motivation satisfies the basic psychological needs for competence, i.e. for controlling outcomes of one's own actions and experiencing their effectance, for autonomy, i.e. for feeling the internal origin of own actions, and for relatedness with others. Satisfaction of these basic psychological needs makes the individual's self more sophisticated and able to deal with the external world (Deci & Ryan 1985).

Economic studies on the importance of intrinsic motivations for job satisfaction are Borzaga & Tortia (2006), and Sousa-Poza & Sousa-Poza (2000), who find that autonomy, which is another component of intrinsic motivation, is significantly and positively correlated with job satisfaction. Hechanova, Alampay & Franco (2006), Huang & van de Vliert (2002) further find that, besides intrinsic motivations, also intrinsic rewards, which may be earned from interesting and challenging types of jobs, are positively correlated with job satisfaction.

These results are also consistent with other research in organisational studies. A rather general line of inquiry in psychology is called Positive Organizational Behavior, which is “the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace” (Luhtans 2003:179; see also Luhtans 2002; Wright 2003; Salanova et al. 2006).

#### *4.2 The negative route from job performance to job satisfaction*

Economic theory, and in particular agency theory and efficiency wage theory, assumes that worker’s effort positively enters her/his production function, but negatively her/his utility function, which represents her/his satisfaction on the job. It thus implicitly assumes that worker’s effort immediately translates into her/his performance on the job. Therefore, job performance can be evaluated by observing effort as its input ( $PI$ ), or directly when realised as an outcome, and observed by, e.g., supervisors ( $PO$ ).

Usually, studies on the link from job performance to job satisfaction take  $PO$  for job performance, thus finding a positive relationship. But when work effort is specifically addressed ( $PI$ ), usually through self-reported evaluation, then a negative relationship is found by a number of studies (Clark & Oswald, 1996; Sloane & Williams 2000; Green & Tsitsianis 2005). However, this result is weakened in the case of high occupational levels (Ghinetti, 2007); and if effort is combined with team support it becomes positively correlated with job satisfaction (Green & Gallie 2002).

A proxy for effort may also be actual working time, which too negatively enters the worker’s utility function, according to economic theory. However, the evidence is mixed in this case. Schwochau (1987) finds a positive relationship, whereas Clark (1996) and Clark & Oswald (1996) find a negative correlation between working hours and job

satisfaction. In particular, workers appear increasingly dissatisfied with their working hours in Greece, Italy and Spain (Skalli et al. 2007), in the UK and Germany (Green & Tsitsianis 2005), while a rising number of people would prefer to work less in Germany (Green & Tsitsianis 2005). In other studies, it emerges that the number of working hours is negatively correlated with job satisfaction generally, except in the UK, where it is positively correlated (Diaz-Serrano & Cabral Vieira 2005), and it is also negatively correlated with the special job satisfaction regarding influence over the job (Gazioglu & Tansel 2006) (see also Souza-Poza & Henneberger 2000). Sousa-Poza & Sousa-Poza (2000) find that the relative majority of workers are satisfied with their working time, a second and substantial part would prefer to work more, and a third part would prefer to work less. These considerations are in line with studies on voluntary part-time jobs, which show that job satisfaction is less for workers with involuntary part-time contracts (Buddelmeyer, Mourre & Ward, 2004).

It may be that these results are mixed because they reflect both the negative route from  $P^I$  to  $U$  and the positive route from  $P^O$  to  $S$ . More specific analysis would be required to disentangle the effects of the two routes. For example, deliberately chosen overtime may help in capturing the positive route.

By contrast, an excessive workload is undoubtedly harmful to job satisfaction, and also to health. This has been found by Clark (1997), and, with more careful analysis, by Golden & Wiens-Tuers (2006).

#### 4.3 A synthesis

A comprehensive test that captures both routes from job performance to job satisfaction is provided by Christen et al. (2006). More precisely, they test a structural model with the SUR method, which includes the following links:  $(P^I, P^O, Y, Z) \rightarrow W$ ,  $(Y, Z) \rightarrow P^I$ ,  $(P^I) \rightarrow P^O$ . They then find interesting results that confirm our scheme.

First, the distinction between the two routes linking  $P$  to  $W$  is not simply a refinement; instead, it resolves the central issues stated in Section 1: the sign (III.1), which is both negative and positive; the significance (III.2), which is strong rather than moderate; and the direct causality from  $P$  to  $W$  (III.3-4), rather than the reverse. Omitting one of the two routes in the estimates gives rise to biased results.

Secondly, the impact of income on both job performance and job satisfaction is less than expected by the economic wisdom. In fact, the impact on  $P^I$  due to compensation is not significant, and that due to profits-sharing is weakly significant, while the impact on  $W$  due to profits-sharing is halved with respect to the impact of job attractiveness, and, again, almost halved in the case of compensation. These results also partially meet issues (I) and (II) of Section 1.<sup>20</sup> Crowding-in thus emerges as being rather weak, although a specific test for its conditions is not applied.

## 5. From job satisfaction to job performance through happiness ( $W \rightarrow P$ )

The most successful approach put forward in the literature to explain the causation from job satisfaction to job performance – which is the reverse of that explored in Section 4 – combines two lines of inquiry in happiness research. A subsection is devoted to each of them.

### 5.1 *The effects of happiness on job performance in psychology research*

In the psychology literature, research on the effects of job satisfaction on job performance has not yielded satisfactory results (Judge et al. 2001). However, a recent attempt has been more successful. This has shifted the focus from job satisfaction, which mainly relates to cognition, to a more general conception of happiness, which mainly relates it to emotions and affect and will be termed  $H$ . In this way, a clear result has been obtained: that happy people are more successful on the job.

This result is supported by a recent and detailed meta-analysis conducted by Lyubomirsky et al. (2005), although they do not consider whether  $H$  is an endogenous variable or whether it is exogenously fixed. More explicitly, Wright & Staw (1998) consider worker well-being as an exogenous general disposition, and find a significant and sizeable effect of  $H$  on  $P$ . Even more specifically, Boehm & Lyubomirsky (2007) preliminarily define a happy person as someone who frequently experiences positive emotions like joy, satisfaction, contentment, enthusiasm and interest. Then, by drawing on both longitudinal and experimental studies, they show that people of this kind are more likely to be successful in their careers.

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<sup>20</sup> Also  $P^I$  emerges as positively and significantly correlated with  $P^O$ .

The underlying arguments are that employees with high positive affect are able to handle jobs requiring the performance of a wide range of tasks and described as more meaningful and more autonomous (Staw et al, 1994). More generally, Carver (2003) argues that people in a good mood are more likely to enter novel situations, interact with other people, and pursue new goals.

A line of inquiry that shares this intuition has been pursued by Isen (2000), who studies how positive emotions and feelings (i.e. **H**) influence individuals' modes and capacities of choice including some innovative content (i.e. **P**). The link between **H** and **P** remains simple, but the concept of **P** becomes complex, because it includes creative ability. In fact, Isen finds various effects of **H** on **P** that can be summarized as follows. Found to increase is the information perceived, interest in problems, problem-solving capacity, expectations of success if involved in an uncertain activity, the ability to mediate and to negotiate with others, to intuit the other person's pay-off, to decide more quickly by selecting among the options more rapidly, and finally to respond more creatively.<sup>21</sup> Therefore, positive affect does not induce careless and superficial behaviour, but rather gives rise to responsible behaviour, and possibly selects enjoyable activities (Isen & Reeve 2005).

### *5.2 The effects of job satisfaction on happiness*

Happiness research has been recently developed around the issue of whether happiness significantly varies over the life cycle, or whether it is idiosyncratic to adult individuals and is thus a personal trait. One line of inquiry has focused on the distinction among life domains where people may be successful.

This line of inquiry has obtained a result of interest to this survey: namely that job satisfaction is one of the most important life domains for an individual's happiness (Easterlin 2005; Layard 2005). The other most important life domain is that of the family and other social relations, whilst health becomes especially important during old age (**X**). A specific study on job satisfaction and satisfaction with life finds that the former is very important for the latter, together with personal characteristics included in our **X** (Helliwell & Huang, 2005). Therefore, this result and that of the previous subsection 5.1 aid understanding of the links of **W** to **H**, and of **H** to **P**, as depicted in Fig. 1.

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<sup>21</sup> Not increased, instead, are expectations of success in gambles, or interest and skill in boring games.

## 6. An economic framework for an integrated analysis

The results of the studies reported in the previous sections yield the complex picture represented in Fig. 1. The evidence on the link  $Y,Z \rightarrow W$ , as surveyed in Section 2, has shown that the relationship between monetary compensation and job satisfaction is significant, but only in cross-section studies and not in time-series studies, and that it is not of primary importance. In fact, what emerges as primarily important for job satisfaction is working in an interesting job well-matched with the competence offered, followed by being actively involved in the productive process and results, and enjoying relatedness at work. Studies on the  $Y,Z \rightarrow P$  link, as surveyed in Section 3, have shown that income is not necessarily an efficacious incentive for job performance. Obstacles against participation in procedures and decisions, the type of controls exerted on the person's work, and an unfriendly interpersonal environment may also condition the sign of the link from income to job performance. Studies on the  $P \leftrightarrow W$  link reveal that causation may operate in both directions, but through different routes. Studies on the  $P \rightarrow W$  link, as surveyed in Section 4, have shown that the key input to job performance, i.e. work effort, is negatively correlated with job satisfaction, whilst job performance as an outcome is positively correlated with job satisfaction. Studies on the  $W \rightarrow P$  link, as surveyed in Section 5, have shown that job satisfaction is important for happiness, and that happiness positively correlates with success on the job.

This set of evidence suggests that the picture depicted by the conventional economic theory should be reconsidered and possibly enlarged. The present Section takes up this suggestion by drawing on the literature on identity and self-esteem.

The theoretical focus is on employees' preferences regarding their work. It considers that employees can earn a reward from work by taking account of their identity or self-esteem, besides the rewards deriving from the contractual conditions. This approach is not new in the economic literature, because of two groundbreaking contributions. On the one hand, Akerlof & Kranton (2000; 2003) consider the psychic reward deriving from the individual's identity (or self-image) through a simple extension of the conventional utility function, and then apply this idea to workers in organisations. On the other hand, Becker (1996) considers the possibility that individuals can raise their human capital and abilities in order to increase psychic income as well as monetary

income.<sup>22</sup> Substantial evidence of the importance of identity (or self-image) for work performance and job satisfaction is provided by psychology studies on self-esteem, which have already been briefly discussed in Section 4.1.

Let us take the employee's satisfaction on the job ( $W$ ) as a function of her/his conventional utility ( $U$ ), and of psychic rewards from her/his identity ( $S$ ). The variables  $U$  and  $S$  are proxied in economic research on job satisfaction as specific domains or facets of overall job satisfaction:  $U$  is usually proxied by satisfaction with total pay, earnings, career, or also short-term rewards;  $S$  is usually proxied by satisfaction with the actual work itself (Clark 1997), with the type of work (Skalli et al. 2007), with the sense of achievement (Gaziouglu & Tansel 2006), with intrinsic incentives embodying decision-making autonomy, variety and creativity, recognition of one's contribution and professional development (Tortia 2008). Surveys usually find that these two domains are the most important ones (Clark 1997; Skalli et al. 2007; Tortia 2008). The specific domains of satisfaction are functions of the economic and extra-economic variables. Skalli et al. (2007) calls this approach 'Lancasterian', arguing that the employee chooses among jobs, and not directly among job features, so that her/his overall satisfaction is due to a weighted average of the specific facets of satisfaction.

The worker's overall function can be specified thus:

$$(1) \quad W = \pi(P^I) [U(Y, P^I, Z) + \alpha S(Y, P^O, Z)] + (1 - \pi(P^I)) V \quad \alpha \geq 0$$

where  $U$  and  $S$  are positive and concave functions in all the arguments, except  $U_{P^I} < 0$ ,  $U_{P^I P^I} < 0$ . In particular:  $U(0, P^I, Z) = S(Y, 0, Z) = 0$ . The arguments within these two functions are not independent, except  $U_{P^I Y}$  which is reasonably equal to zero, as it is usually assumed in the efficiency wage literature (e.g. Shapiro & Stiglitz 1984).<sup>23</sup>

Equation (1) allows one to distinguish  $P$  as effort when it enters  $U$  (i.e.  $P^I$ ), thus representing fatigue and stress, and  $P$  as expected personal achievement when it enters  $S$  (i.e.  $P^O$ ), thus representing the psychic reward from the job.<sup>24</sup> The two routes from  $P$  to  $W$  in Fig. 1 are thus identified.

<sup>22</sup> The similarity between Akerlof & Kranton's analysis and Becker's approach has been also been pointed out by Sobel (2005).

<sup>23</sup> If we think about the physical fatigue of working, it is obvious that monetary compensation does not alter it. The main effect of  $Y$  on  $U$  is direct.

<sup>24</sup> Personal achievement ( $P^O_i$ ) may be distinct from productive results ( $P^O_j$ ). The former is more relevant to  $S$ , while the latter is more relevant to the firm's performance. The two dimensions should be strongly linked, but little empirical work have been done on this point.

The two versions of  $P$  are positively linked, i.e.:

$$(2) \quad P^O = f(P^I) \quad \text{with } f' > 0 \quad \text{and} \quad 0 = f(0)$$

so that:

$$(1') \quad W = \pi(P^I) [U(Y, P^I, Z) + \alpha S^f(Y, P^I, Z)] + (1 - \pi(P^I)) V.$$

The distinction between  $U$  and  $S$  is useful for two reasons: because the concept of intrinsic motivation can be represented by the expected reward  $S^f_{P^I}$ , which has an important role in our analysis, and because  $Y$  and  $Z$  may be expected to enter the two functions with different weights. More precisely,  $U_Y$  may be expected to be rather large, whereas  $S^f_Y$  may be expected to be rather small or even zero, as confirmed by several findings (Clark 1997; Skalli et al. 2007; Gaziouglu & Tansel 2006; Tortia 2008). Symmetrically,  $U_Z$  may be expected to be rather small or even zero, whereas  $S^f_Z$  may be expected to be rather large, as suggested by some findings on specific  $Z$ -variables. For example, Clark (1997) and Skalli et al. (2007) find that the establishment size is not significant or with ambiguous sign in the estimation of  $U$ , whereas it is positively significant in the estimation of  $S$ . Gaziouglu & Tansel (2006) find that the occupations of manager and clerk with respect to sales person negatively and positively enter the two estimations respectively. Tortia (2008) instead finds that distributive and procedural fairness always enters significantly and positively.

The variable  $V$  represents the worker's reserve satisfaction as the outside option; and  $\pi$  represents the probability of taking the job as a positive function of her/his individual effort. This can be justified, in a partial equilibrium framework, by assuming that the firm does not observe an individual worker's effort, but rather observes the productive outcome of the whole team of workers. The less positive is the outcome, more workers will be randomly fired.<sup>25</sup> The workers thus evaluate their satisfaction on the job, controlling for  $P^I$ , against their outside option. The less they fix  $P^I$ , the more they expect to be fired. At zero  $P^I$ , they expect that the firm will fire all of them, because all workers are identical. The maximum  $P^I$  can be defined, i.e.  $P^I_{max}$ , so that  $U(Y, P^I_{max}, Z) = 0$ . Therefore, the following properties hold:  $\pi_{P^I} > 0$ ,  $\pi_{P^I P^I} < 0$ ,  $\pi(0) = 0$ ,  $0 \leq P^I \leq P^I_{max}$ .

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<sup>25</sup> The firm's behaviour is here sketched in a way consistent with Shapiro & Stiglitz's (1984) shirking model.

The happiness variable  $H$  does not appear in (1) and (1') because it is partially endogenous, so that the functions  $U$  and  $S^f$  embody both the multiplier effect, assumed as bounded, and individual fixed effects as represented by  $X$ .

The worker thus maximises  $W$  by taking  $P^I$  as the control variable,  $Y$  as fixed by the firm, and  $Z$  as exogenous. Let us first consider the conventional and special case of  $\alpha=0$ . In this case a positive internal solution exists, say  $P^{I*}|_{\alpha=0}$ , because  $W=0$  at both  $P^I=0$  and  $P^I=P^{Imax}$ , so that:

$$(3) \quad P^{I*}|_{\alpha=0} = P^{I*}(Y, Z, V).$$

This implies the conventional result that greater  $Y$  induces the worker to put in greater  $P^{I*}$ . In fact:

$$(4) \quad P^{I*}_Y|_{\alpha=0} = - W_{P^I Y} / W_{P^I P^I}|_{\alpha=0} = - \frac{\pi_{P^I} [U_Y]}{\pi[U_{P^I P^I}] + \pi_{P^I P^I} [U - V] + 2\pi_{P^I} [U_{P^I}]} > 0$$

since the numerator is greater than zero, and the denominator smaller than zero, if  $U > V$ . Note, however, that  $U$  can be very low for very low  $Y$ , so that the denominator may be negative. Therefore, a positive level of  $Y$  exists, say  $Y^{min}$ , such that  $P^{I*}|_{\alpha=0} = P^{I*}(Y^{min}, Z, V) = 0$ . This means that a minimum level of  $Y$ , which may be partially traded off with  $Z$ , is necessary to attract individuals to a job, insofar they maintain a positive reserve utility level  $V$ . The second derivative  $P^{I*}_{YY}|_{\alpha=0}$  can be proved to be negative.<sup>26</sup>

The maximised  $W$  can be thus determined, and in particular the following can be derived:

$$(5) \quad W^*_Y|_{\alpha=0} = \pi[U_Y + P^{I*}_Y U_{P^I}].$$

In order to obtain greater job satisfaction, the direct positive benefit coming from the monetary incentive must be greater than the indirect cost through a higher level of effort. This condition is usually unnoticed, but it becomes interesting in the analysis of job satisfaction.

Let us consider the extended version of (1') with  $\alpha > 0$ . In this case,  $P^I$  adds a positive effect on  $W$  through  $S^f$  to the negative and positive effects through  $U$  and  $\pi$  respectively. If the negative effect prevails when  $P^I$  is close to  $P^{Imax}$ , so that  $W_{P^I P^I} < 0$ ,

<sup>26</sup> Note that the effort function (3) has the standard properties adopted in the efficiency wage models, i.e. it is concave in  $Y$  only starting from a positive level of  $Y$ .

which is a reasonable restriction, then an interior solution for  $P^I$  still exists. The first interesting result in this case is that the larger is  $\alpha$ , the greater is the interior solution for  $P^I$ , thus making  $V$  relatively smaller. In fact:

$$(6) \quad P^I*_{\alpha} = - \frac{\pi[S^f_{P^I}] + \pi_{P^I} [S^f]}{W_{P^I P^I}|_{\alpha>0}} > 0$$

The second result is that in this case the sign of  $P^I*_{Y}$  may be positive or negative, even if  $V$  remains sufficiently low. In fact:

$$(7) \quad P^I*_{Y}|_{\alpha>0} = - \frac{\pi[\alpha S^f_{P^I Y}] + \pi_{P^I} [U_Y + \alpha S^f_Y]}{W_{P^I P^I}|_{\alpha>0}}$$

where the numerator depends on  $S^f_{P^I Y}$ . More precisely, the numerator is positive if  $S^f_{P^I Y} > 0$ , or if both  $S^f_{P^I Y} < 0$  and  $-\pi[\alpha S^f_{P^I Y}] < \pi_{P^I} [U_Y + \alpha S^f_Y]$ . In words, if intrinsic motivations are increased, or if they are only slightly reduced by monetary incentives, then the crowding-in effect on job performance takes place. The numerator of (7) is negative if both  $S^f_{P^I Y} < 0$  and  $-\pi[\alpha S^f_{P^I Y}] > \pi_{P^I} [U_Y + \alpha S^f_Y]$ . In words, if intrinsic motivations are heavily reduced by monetary incentives, i.e. they overcome the positive effects on  $U$  and  $S$ , then the crowding-out effect on job performance takes place. Note that  $Y^{min}$  also makes  $P^I*_{\alpha=0} = 0$ , because of the property  $S^f(Y, 0, Z) = 0$ .

The existence of crowding-out by observing  $S^f_{P^I Y}$  has been tested by Weibel et al. (2007) with a confirmatory result. They also suggest that  $S^f_{P^I Y}$  may become less negative and crowding-out may disappear if monetary incentives are very high. This means that  $S^f_{P^I Y Y}$  must be sufficiently negative.<sup>27</sup>

Considering  $\alpha > 0$  also positively affects job satisfaction, unless effort is particularly stressful, i.e.  $U_{P^I}$  is not too negative. In fact:

$$(8) \quad W*_{\alpha} = \pi[S^f + P^I*_{\alpha} (U_{P^I} + \alpha S^f_{P^I})] + \pi_{P^I} P^I*_{\alpha} [U + \alpha S^f - V].$$

This case is consistent with evidence on the significance of employees' work values for job satisfaction, which may be referred to the low or high level of  $\alpha$ . Clark (1997) finds that those workers who regard pay as the most important or the second most

<sup>27</sup> This reversed effect of very high levels of  $Y$  on  $P$ , which captures the idea that "everything has a price whatever high" has also been studied by Benabou & Tirole (2003). One can call this effect the 'Indecent Proposal' effect, from the well-known movie.

important value also report less satisfaction with both pay and the work itself, whereas those who regard the work itself as the most important or the second most important value do not report less satisfaction in the two domains. Borzaga & Tortia (2006) find that those workers who are most interested in the wage also report less job satisfaction, whereas those who mostly regard work as an opportunity for self-fulfilment also report greater job satisfaction.

Considering  $\alpha > 0$  further changes the effect of monetary incentives on job satisfaction, in fact:

$$(9) \quad W^*_{Y\alpha} = \pi [ Sf_Y + Pl^*_Y Sf_{Pl} ]$$

The effectiveness is reduced, i.e.  $W^*_{Y\alpha} < 0$ , if  $Pl^*_Y$  is sufficiently negative.

Therefore, introducing the route in the job performance/job satisfaction link where the psychological concept of intrinsic motivations can be defined, and effectively plays a role, allows us to obtain a number of interesting results for solution of the issues in Section 1. First, the conventional assumption that a worker's effort has a negative effect on her/his utility is consistent with the evidence that s/he obtains satisfaction from working besides monetary rewards. This helps explain issue (III.1).

Secondly, it is possible to explain why monetary incentives may have positive effects on job performance, as usually considered in economics, or may have negative effects, as especially claimed by experimental psychology. This helps explain issues (II.2). Specifically, the effect of monetary incentives on job performance crucially depends on extra-economic and extra-contractual variables, since the conditions for crowding-out and crowding-in also depend on  $Z$ . This may account for the evidence on the importance of selected conditions, like participation in decisions and the social climate in the firm, on job performance. This is a new result with respect to the conventional economic theory. Instead of using economic incentives by relying on the opportunity cost of being fired, as appears in the numerator of (4), the employer can implement other actions to motivate and satisfy workers to improve performance ( $Sf_{Pl^*_Y}$  in (7)). This helps explain issue (II.3).

Thirdly, when studying the relationship between income and job satisfaction, consideration of  $Z$  becomes important both directly through the  $U$ -function and  $Sf$ -function ( $Z$  may reduce fatigue and stress, thus reducing the negative impact of  $U_{Pl}$ ), and

through  $P^I_Y$  (see (8)). Therefore, variation in the  $Z$ -variables, over time or sectionally, may account for an important portion of the variation of  $W$ , with respect to variation of  $Y$ . This may help explain issue (I).

In particular, firms' policies to improve performance by using  $Z$ -variables, like workers' involvement in more knowledge-based tasks (see HPWP in section 3.3), may have positive effects on their job satisfaction, but only if effort does not become too stressful. Formally, the possibility that the effects on job performance are positive, i.e.  $P^I_Z > 0$ , but negative on job satisfaction can be accounted for by the necessary condition for  $W_Z < 0$ , i.e.  $U_Z + \alpha S^f_Z + \alpha P^I_Z S^f_{P^I} < -P^I_Z U_{P^I}$ . This condition becomes possible when  $P^I$  is great, and hence  $U_P$  very negative. The condition of having perverse effects on job satisfaction due to monetary incentives, which are also used in the HPWP package, is similar, i.e.  $U_Y + \alpha S^f_Y + \alpha P^I_Y S^f_{P^I} < -P^I_Y U_{P^I}$ .

## Conclusions

Recent econometric research on job satisfaction and some lines of inquiry in psychology have produced empirical results which challenge some tenets of conventional economic theory, like the greater positive effect of economic incentives on both job performance and job satisfaction, and the disutility to workers of working hard. This paper has conducted a critical survey of those empirical results, and, on that basis, has suggested an economic framework in which to reconcile evidence with theory, and economics with organisational psychology. In particular, the psychological concept of intrinsic motivations has been found to be especially powerful if properly introduced into the economic framework.

The main recommendation for future research on this topic is that the disciplinary horizon should be extended in order to avoid the traps of biased partial correlations, especially because variables in the psychological dimension may be omitted, and because new interdependent links may arise. Extending the horizon obviously makes the picture more complex, but it may also provide suggestions on how to handle the most serious problems of this literature, namely those of causation and endogeneity.

## Appendix

*Synoptic table of empirical literature on job satisfaction (after 1990)*

Reference	Theme	Sample	Data set
Antonioli et al. (2008)	Innovations, ICT and working conditions	192 manufacturing firms; balance sheet data for 1998-2004	Northern Italy (province of Reggio Emilia)
Arciniega and Gonzales (2005)	Working conditions, altruism and job satisfaction	3201 employees from 11 different cities	30 Mexican companies
Bailey et al (2001)	HPWP, discretionary effort, contingent pay	4109 workers in	Three industries: apparel, steel and medical electronics detailed
Batt (2004)	Participation in self-managed teams, employment security	1200 workers, supervisors, and middle managers	Interviews in a large telecommunications company
Bauer (2004)	HPWO and job satisfaction	15 EU member states	European Survey on Working Conditions in 2000
Bazen et al. (2005)	Influence, pay, achievement and respect	28237 employees in 2191 workplaces in 1997/1998	British Workplace Employee Relations Survey of 1998
Benz (2005)	Non-profit vs. for-profit wage	American and British employees	American National Longitudinal Study of Youth 1979-2000, BHPS 1991-1999
Bilimoria et al (2006)	Gender	579 faculty members	University-wide survey in 2004
Black & Lynch (2001)	Workplace practices, human capital investments and productivity	about 3000 establishments	EQW National Employers Survey in U.S.; Panel data from 1987 to 1993
Blanchflower & Oswald (1999)	Decline in job satisfaction	US and European workers	1989 International Social Survey Programme, 1995-6 Eurobarometer, GSS
Borzaga & Depedri (2005)	Social relations in the workplace	2066 workers, 266 managers	1998 survey on the Italian social services sector
Borzaga & Tortia (2006)	Job satisfaction and loyalty	2066 workers	1998 survey on the Italian social services sector
Brown & McIntosh (1998)	Determinants of job satisfaction	1000 workers at 50 sites	1996-1997 survey on three national companies: a supermarket chain, a hotel group and a quick service restaurant chain
Bryson et al. (2004)	Job security guarantees, work intensification	19050 employees in all sectors of economy excluding agriculture	British Workplace Employee Relations Survey In 1998
Bryson et al. (2005)	Unionization	17832 employees in all sectors of activity, except agriculture	British Workplace Employee Relations Survey in 1998
Cappelli & Shererer (1988)	Satisfaction with pay and job	579 employees in airline industries in 1985	Minnesota Satisfaction Questionnaire
Christen, Iyer, and Soberman (2006)	Job autonomy, effort and job performances	store managers and supervisors	188 supermarkets of U.S.,

(continue)

Chuma et al. (2007)	Human resources management practices efficiency wages, morale	2,611 workers and 445 full-time workers in non-unionized companies	Japanese electrical, electronic and information industries in the Union Denki Rengo
Clark (1996)	Level of education, working hours	5000 employees	British Household Panel Survey in 1991
Clark (1997)	Career, male-female gaps	5000 employees	British Household Panel Survey in 1991
Clark (1999)	Equity and reference group, psychological perceptions	5000 employees	British Household Panel Survey in 1991
Clark (2005)	Job values and outcomes	About 11000 employees (5348 in 1989 and 5378 in 1997)	1989- 1997 Work Orientations Module of the International Social Survey Programme in OECD Countries
Clark, Oswald (1996)	Working hours, relative income	5000 employees	British Household Panel Survey in 1991
Diaz-Serrano & Cabral Vieira (2005)	Low paid-high paid job gap	14 EU members	ECHP (1994-2001), GSOEP et PSELL
Egan et al. (2004)	Organizational learning culture, turnover	245 employees in 13 firms	Large firms in information technology departments in U.S.
Florit & Vila Lladosa (2007)	Direct and indirect impact of education	4000 employees	Spanish Household Survey Panel (SHPS) in 1998
Gazioglu & Tansel (2006)	Working hours	British employees	Workplace Employee Relations Survey, 1997
Ghinetti (2007)	Private-public satisfaction gap	Italian employees	1995 Survey of Household Income and Wealth
Godard (2001)	Alternative work practices, task involvement	508 Canadian employees	Telephone survey in 1997
Golden & Wiens-Tuers (2006)	Workload, health	1796 employed people	General Social Survey 2002 and Quality of Working Life 2002
Green & Gallie (2002)	Mental well-being and its decline	UK	Skills Survey of 2001
Green & Tsitsianis (2005)	Decline in job satisfaction	UK and Germany	ECHP, BHPS (1991-2002); GOES (1985-2002); Employment in Britain 1992, 2001 Skills Survey
Hamermesh (2001)	Relative earnings, skills	539 observations in 1978 and 1049 observations in 1996	National Longitudinal Survey of Young Men and the National Longitudinal Survey of Youth in 1978, 1988 and 1996
Hechanova et al. (2006)	Psycho-empowerment, intrinsic motivation, performance	954 employees from 10 organizations	5 service sector in Philippines
Helliwell & Huang (2005)	Social capital at the workplace, income	1700 working population	Equality, Security, and Community survey, Canada, wave 2002-2003
Hersch (1991)	Education, over-qualification	637 employees	Eugene, Oregon area in 1986, manufacturing and warehouse firms

(continue)

Huang & van de Vliert (2002)	Intrinsic and extrinsic rewards	8506 full-time employees in 19 countries; 129,087 employees in a multinational company	International Social Survey Program in 1997 and questionnaire survey in 2000
Ichniowski et.al (1996)	Worker participation, flexibility, decentralization	Case studies and national cross-industries studies for a total of 3452 firms	US business
Kaiser (2002)	Gender	About 1000 interviewees per member-state	The European Community Household Panel (ECHP) for the years 1994 to 2001
Kalmi & Kauhanen (2008)	Workplace innovations and employee outcomes	5270 Finnish employees aged 15-64, interviewed in 2003	The Quality of Work Life Survey
Lau & Tan (2003)	Budgetary participation, job-relevant information	152 senior managers	Manufacturing organizations in Singapore
Long (2005)	Gender	13 969 full- and part-time workers over the age of 18 years	Wave 1 of the HILDA survey - Melbourne in 2001
Meng (1990)	Members attitudes, unionization	Random choice of members of Canadian unions	Canadian unions
Nathan et al. (1991)	Interpersonal relations, participation	417 subordinates and 391 supervisors	10 strategic business units interviewed in 1990
Origo & Pagani (2006)	Functional, numerical and time flexibility	1000 interviews per member-state	2001 Special Eurobarometer
Rowden (2002)	Workplace learning, organizational size	794 employees in twelve companies, mainly manufacturing	Job Satisfaction Survey in U.S.
Siebern-Thomas (2005)	Job characteristics, sector, job quality	Country samples in the 15-EU	European Community Household Panel in 1995-2000, European Labour Force Survey 2000
Skalli et al. (2007)	Determinants of job satisfaction and of each facet	10 European countries Employees	ECHP 1994-2001
Sloane & Williams (2000)	Gender	6110 individuals (UK)	1986 Social and Economic Life Initiative Survey (ESRC)
Soonhee (2002)	Participative processes, supervisory communication	1576 employees in different departments (from airport to social services)	Clark County employee survey in 1999
Souza-Poza & Souza-Poza (2000)	Determinants of job satisfaction	full- and part-time workers in 21 countries	ISSP 1997
Stroh et al. (1994)	Management, gender,	615 managers participating to two surveys in 1989 and 1991	Managers of 20 companies in different industries (hospital, communication, manufacturing)
Thoms et al. (2002)	Workers' perception of accountability	275 employers in three manufacturing plants	Internal survey in Midwest
Tortia (2008)	Fairness in non-profit and for-profit firms	2066 workers, 266 managers	1998 survey on the Italian social services sector

(continue)

Tsang et al. (1991)	Surplus education	1500 Workers in the USA	1969 Survey on Working Conditions and 1973/77 Quality of Employment Surveys
Valentini (2005)	Personal condition of workers	904 subjects	Research on Working in Britain, 2000
Vila & Garcia-Mora (2005)	Education, aspects of the job	5000 adults aged between 16-64 working at least 15 hours per week	Spanish Household Survey Panel in 1998

*Synoptic table of empirical literature on job performance (after 1990)*

<b>Reference</b>	<b>Theme</b>	<b>Sample</b>	<b>Data set</b>
Antonioli, Mazzanti Pini, Tortia (2008)	Industrial relations, flexibility, structural features of firms	199 manufacturing firms	Big-sized manufacturing firms in North-Italy (Reggio Emilia province)
Appelbaum (2000)	Decision making autonomy, communication, participation	40 manufacturing industries	Interviewees with managers and workers in steel, apparel and medical electronics sectors
Baard (2002)	Autonomy, competence relatedness	495 employees	Field study in a major investment banking firm
Barkema (1995)	Regulation and control	116 managers	Medium-sized Dutch firms in 1985
Bartel et al. (2004)	Attitudes and economic outcomes	193 and 143 branches, 2245 and 1439 workers in 1994 and 1996	Branches of a large New York metropolitan bank
Becker & Huselid (1992)	Tournaments	Panel of 29 auto-racing	Data collected in the National Association for Stock Car Auto Racing
Cappelli & Neumark (2001)	Job rotation, teams, unionization, training, profit sharing	433 manufacturing firms from 1994 and 1997	Survey on the Manufacturing sector in US
Cristini et al. (2003)	Workplace practices	100 firms	cross-section questionnaires and longitudinal balance sheets in Italy, Period 1991-1999
Cristini (2007)	Working conditions, job security, teamworking, HPWP, and job satisfaction	3605 employees	OAC (organization, learning and competencies), in Italy, designed by ISFOL in 2004
Drago & Garvey (1998)	Promotion, profit-sharing and effort	839 employees	1998 survey on non-supervisory employees in 23 workplaces in Australia
Freeman (2000)	Employee involvement, production and financial outcomes	273 firms in the USA	1993 mail survey of firms of the Society for Human Resource Management
Gittleman & Horrigan (1998)	Incentive based compensations, extensive training and flexibility	8000 establishments	Survey of Employer Provided Training

(continue)

Golden & Wiens-Tuers (2006)	Excessive working time, happiness and job satisfaction	US workers	2002 General Social Survey (GSS) Quality of Working Life (QWL)
Harley (2002)	Performance-related pay, communication, training, team work	4000 employees	Australian Workplace Industrial Relations Survey 1995
Helper et al. (2002)	Representative and supportive participation, wages, loyalty	60 automotive supplier plants	Survey data collected in 1993 and data on employment by the 1999 Elm Guide
Huselid (1997)	HPWP, effectiveness, alignment	702 American workers	Sampling frame of all publicly-help domestic firms with more than 100 employees
Iardi et al. (1993)	Mental health	117 workers	Shoe factory in New York
Janod & Saint-Martin (2004)	Work reorganization	2404 French manufacturing firms in 1995 and 1999	Data from Changements Organisationnels et Informatisation and DIANE
Kalmi & Kauhanen (2008)	Workplace innovations and employee outcomes	5270 Finnish employees aged 15-64, interviewed in 2003	The Quality of Work Life Survey
Kuvaas (2006)	Different pay administration	634 employees	Data on two business units in a Norwegian company
Lazear (1996)	Monetary incentives, selection and effort	29837 observations	Safelite Glass Corporation survey in Ohio during 1994-1995
Leoni et al. (2001)	Job rotation, teamwork, training, involvement	Italian manufacturing firms in Bergamo from 1990 to 1999	100 firms
Minkler (2002)	Work motivations, self-reported effort	1005 workers	National telephone survey in 2000
Patterson et al. (1997)	Organizational culture, employee attitudes	senior managers in each of the 100 organisations	Sheffield Effectiveness Programme, from 1991 to 2000 in 100 manufacturing British companies
Salanova et al. (2006)	Work motivation, enjoyment	258 teachers	Survey of 50 Spanish secondary schools
Tsang et al. (1991)	Surplus schooling	1500 working Americans	1969 Survey of working conditions, Quality of employment surveys in 1973-77
Valentini (2005)	Incentives	904 subjects	Research on Working in Britain, 2000

*Empirical literature on the relation between job satisfaction and performances (after 1990)*

Reference	Theme	Sample	Data set
Brown & Peterson (1994)	Effort, sales performance, job satisfaction	380 direct sales-people	a company selling door-to-door throughout the United States
Christen et al. (2006)	Work effort, job performance and job satisfaction	177 store managers	U.S. grocery retailer with more than 200 supermarkets.

(continue)

Clark & Oswald (1996)	Determinants of job satisfaction and relation with performances	5000 employees	British Household Panel Survey in 1991
Ghinetti (2007)	Satisfaction and performances in private and public organizat.	Italian employees	1995 Survey of Household Income and Wealth
Green & Gallie (2002)	Mental well-being, job satisfaction and performances	UK	Skills Survey of 2001
Green & Tsitsianis (2005)	Job satisfaction and performances	UK and Germany	ECHP, BHPS (1991-2002); GOES (1985-2002); Employment in Britain 1992, 2001 Skills Survey
Otis & Pelletier (2005)	Supervisors, autonomy, performances and job satisfaction	122 policies officers	Participants recruited in all police stations in Quebec
Sloane & Williams (2000)	Job satisfaction, gender and performances	6110 individuals (UK)	1986 Social and Economic Life Initiative Survey (ESRC)

## References

- Akerlof G.A., Jellen J.L. (1984) Gift Exchange and Efficiency Wage Theory: Four Views, *American Economic Review*, 78, pp.44-49
- Antonioli D., Mazzanti M., Pini P. (2008) Working conditions ‘determinants’: The role of innovations and industrial relations. Evidence for a local productive system, mimeo, Research Centre for Innovations and Knowledge Economy, University of Ferrara, Italy
- Appelbaum E. (2000) The Impact of New Forms of Work Organization on Workers, *Work and Employment Relations in the High-Performance Workplace*, edited by Gregor Murray, Jacques Bélanger, Anthony Giles, and Paul-André Lapointe, pp. 120–49. London: Continuum
- Appelbaum, E., T. Bailey, P. Berg, and A. Kalleberg (2000) *Manufacturing Advantage: Why High Performance Work Systems Pay Off*. Ithaca, N.Y.: ILR Press.
- Arciniega L.M. and Gonzalez L. (2005) Other-Oriented Values and Job Satisfaction, *Problems and Perspectives in Management*, iss. 4, pp. 128-32
- Arnold H. J., Feldman D. C. (1982). A multivariate analysis of the determinants of job turnover. *Journal of Applied Psychology*, 67, 350–360.
- AWIR95 Data.” *Journal of Industrial Relations*, 44(3):418-34.
- Baard P.P. (2002). Intrinsic need satisfaction in organizations: A motivational basis of success in for-profit and not-for-profit settings. In Deci E.L., Ryan R.M. (Eds.) *Handbook of self-determination research* (pp.255-275). Rochester, NY: University of Rochester Press
- Bagozzi (1980) “Performance and Satisfaction in an Industrial Sales Force: An Examination of their Antecedents and simultaneity,” *Journal of Marketing*, 44 (Spring), 65–77
- Bailey T., Berg P., Sandy C. (2001) The Effect of High-Performance Work Practices on Employee Earnings in the Steel, Apparel, and Medical Electronics and Imaging Industries, *Industrial and Labor Relations Review*, Vol. 54, No. 2A, Extra Issue: Industry Studies of Wage Inequality, March, pp. 525-543
- Barkema H.G. (1995) Do Job Executives Work Harder When They Are Monitored?, *Kyklos*, n.48, pp.19-42
- Bartel A., Freeman R., Ichniowski C., Kleiner M. (2004) Can a Work Organization Have an Attitude Problem? The Impact of Workplaces on Employee Attitudes and Economic Outcomes, CEP *Discussion Paper* No 636
- Batt R. (2004) Who Benefits from Teams? Comparing Workers, Supervisors, and Managers, *Industrial Relations* 43(1):183–212.
- Battu H., Sloane P.J. (2004) Over-education and Ethnic Minorities in Britain, *The Manchester School*, vol.72, n.4, pp.535-559
- Bauer T. (2003) High Performance Workplace Practices and Job Satisfaction: Evidence from Europe, *IZA discussion paper* n.1265
- Bazen S., Lucifora C., Salverda W. (2005) *Job quality and Employer Behaviour*, Palgrave MacMillan, New York

- Becker B. and Huselid M. (1992) The incentive Effects of Tournament Compensation Systems, *Administrator Scientist Quarterly*, 37, pp. 336-350
- Becker G. (1996) *Accounting for Tastes*, Harvard: Harvard University Press
- Bélangier J. (2000) The influence of employee involvement on productivity: a review of research, *Research Paper Series, Human Resources Development*, Hull, Canada
- Bell D.W. and Hanson C.G. (1987) *Profit sharing and profitability: How profit sharing promotes business success*, Kogan Page, London
- Benabou R., Tirole J. (2002) Self-confidence and personal motivation, *Quarterly Journal of Economics*, 117(3), pp.871-916
- Benabou R., Tirole J. (2003) Intrinsic and Extrinsic Motivation, *Review of Economic Studies*, 70(3), 489-520
- Ben-Ner A., Estrin S. (1988) Unions and Productivity: Unionised Firms versus Union Managed Firms, Working paper 88-01, Industrial Relations Center, University of Minnesota
- Benz M. (2005) Not for the Profit, but for the Satisfaction? – Evidence on Worker Well-Being in Non-Profit Firms, *Kyklos*, Vol. 58 , No. 2, 155–176
- Bilimoria D., Perry S., Liang X., Stoller E., Higgins P., Taylor C. (2006), “How Do Female and Male Faculty Members Construct Job Satisfaction? The Roles of Perceived Institutional Leadership and Mentoring and Their Mediating Processes”, *Journal of Technology Transfer*, v. 31, iss. 3, pp. 355-65
- Black S.E., Lynch L.M. (2001) How to Compete: The Impact of Workplace Practices and Information Technology on Productivity, *The Review of Economics and Statistics*, vol.83, n.3, pp.434-445
- Black S.E., Lynch L.M. (2004) What’s driving the new economy? The benefits of workplace innovations, *The Economic Journal*, vol.114, pp. F97-F116
- Blanchflower D.G., Oswald A.J. (1999) Well-Being, Insecurity and the Decline of American Job Satisfaction, mimeo
- Blinder ed. (1990), *Paying for productivity. A look at the evidence*, The Brooking Institutions, Washington D.C.
- Boehm J.K., Lyubomirsky S. (2007) Does Happiness Promote Career Success? *Journal of Career Assessment*, forthcoming.
- Borzaga C., Tortia E. (2006) Worker Motivations, Job Satisfaction, and Loyalty in Public and Nonprofit Social Services, *Nonprofit and Voluntary Sector Quarterly*, vol. 35, no. 2, 225-248
- Borzaga, C., Depedri, S., (2005). Interpersonal relations and job satisfaction: Some empirical results in social and community care services, in: Gui, B., Sugden, R. (Eds.), *Economics and social interaction: accounting for interpersonal relations*. Cambridge University Press, Cambridge, pp.132-153.
- Bowling N.A. (2007) Is the job satisfaction–job performance relationship spurious? A meta-analytic examination, *Journal of Vocational Behavior*, vol.71, n.2, pp.167-185
- Brayfield, A.H. and Crockett, W.H. (1955), Employee attitudes and employee performance, *Psychological Bulletin*, Vol. 52, pp. 396-424
- Breaugh J. A. (1981). Predicting absenteeism from prior absenteeism and work attitudes. *Psychological Bulletin*, 52, 415–422

- Brewer G., Selden S., Facer R. II (2000). Individual conceptions of public service motivation. *Public Administration Review*, 60, 254-264.
- Brooke P. B., Price J. L. (1989) The determinants of employee absenteeism: An empirical test of a causal model. *Journal of Occupational Psychology*, 62: 1-19
- Brower F.B. (1957) Sharing Profits with Employees, *Studies in Personnel Policies*, vol.162
- Brown D., McIntosh (1998), If You're Happy and You Know It... Job Satisfaction in the Low Wage Service Sector, *Discussion Paper 405*, Centre for Economic Performance, London
- Brown S.P., Peterson R.A. (1994), The Effects of Effort on Sales Performance and Job Satisfaction, *Journal of Marketing*, vol.58, n.2, pp.70-80
- Brownell P. (1982) The Role of Accounting Data in Performance Evaluation, Budgetary Participation, and Organizational Effectiveness, *Journal of Accounting Research*, vol.20, n.1, pp.12-27
- Brownell P., Dunck A.S. (1991) Task Uncertainty and Its Interaction with Budgetary Participation and Budget Emphasis: Some Methodological Issues and Empirical Investigation, *Accounting, Organizations and Society*, vol.16, n.8, pp.693-703
- Brownell P., Hirst (1986) Reliance on Accounting Information, Budgetary Participation and Task Uncertainty: Test of a Three-Way Interaction, *Journal of Accounting Research*, vol.24, n.2, pp.241-249
- Bruni L., Porta P.L. (eds.) (2005), *Economics and Happiness. Framing the Analysis*, Oxford: Oxford University Press
- Bryson A., Cappellari L., Lucifera C. (2005), Why So Unhappy? The Effects of Unionisation on Job Satisfaction, IZA DP n.1498
- Buddelmeyer H., Mourre G., Ward M.E. (2004) The Determinants of Part-Time Work in EU Countries: Empirical Investigation with Macro-Panel Data, *IZA Discussion Paper*, n.1361
- Buechel F. (2002) The effect of overeducation on productivity in Germany – the firms viewpoint, *Economics of Education Review*, n.21, pp.263-275
- Burke R.J., Wilcox D.S. (1969) Effects of different patterns and degrees of openness in superior-subordinate communication of subordinate job satisfaction, *Academy of Management Journal*, vol.12, pp.319-326
- Cable J.R., FitzRoy F.R. (1980) Cooperation and Productivity: Some Evidence from West German Experience, *Economic Analysis and Workers' Management*, vol.14, n.2, pp.163-180
- Cappelli P., Neumark D. (2001), Do «High Performance» Work Practices Improve establishment level outcomes? *Industrial and Labor Relations Review*, 54, pp. 737-775
- Cappelli P., Sherer P.D. (1988) Satisfaction, Market Wages, & Labor Relations: An airline Study, *Industrial Relations*, vol.27, n.1, pp. 56-73
- Carsten J.M., Spector P.E. (1987) Unemployment, Job Satisfaction and Employment Turnover: A Meta-Analytic Test of Muchinsky Model, *Journal of Applied Psychology*, vol.72, n.2, pp.374-381
- Carver C. S. (2003). Pleasure as a sign you can attend to something else: Placing positive feelings within a general model of affect. *Cognition and Emotion*, 17, 241-261.

- Cavanaugh, M. A., & Noe, R. A. (1999). Antecedents and consequences of relational components of the new psychological contract. *Journal of Organizational Behavior*, 20, pp.323–340
- Charness G., Haruvy E. (1999) Self-Serving Biases: Evidence from a Simulated Labor Relationship, Universitat Pompeu Fabra, *Economics Working Paper* No. 370, Dec.
- Christen M., Iyer G., Soberman D. (2006) Job Satisfaction, Job Performance, and Effort: A Reexamination Using Agency Theory, *Journal of Marketing*, 70(1), pp.137-150
- Chuma H., Kato T. and Ohashi I. (2007) Morale and Work Satisfaction in the Workplace: Evidence from the Japanese Worker Representation and Participation Survey, Presentation at the TPLS, UC-Santa Barbara, March 10
- Clark A. (1996) Job satisfaction in Britain. *British Journal of Industrial Relations*, 34, pp. 189–217
- Clark A. (1997) Job satisfaction and gender: why are women so happy at work?, *Labour Economics*, 4, pp.341-72
- Clark A. (1999) Are wages habit-forming? Evidence form micro data, *Journal of Economic Behavior & Organization*, vol.39, pp.179-200
- Clark A. (2005) What Makes a Good Job? Evidence from OECD Countries, in Bazen S., Lucifora C., Salverda W. (2005) *Job quality and Employer Behaviour*, Palgrave MacMillan, New York
- Clark A. and Oswald A.J. (1996) Satisfaction and Comparison Income, *Journal of Public Economics*, vol.61, pp.359-381
- Clark A., Frijters P., Shields M. (2007) Relative Income, Happiness and Utility: An Explanation for the Easterlin Paradox and Other Puzzles, *Journal of Economic Literature*, forthcoming
- Cohn E., Kahn S.P. (1995), The wage effect of over schooling revisited, *Labour Economics*, n.2, pp.67-76
- Colletti J. (1969) Profit Sharing and Employee Attitudes: A Case Study of the Deferred Profit-Sharing Program at Motorola Inc., University of Wisconsin, Centre for the Study of Productivity Motivation, report
- Combs J., Hall A., Ketchen D. (2006) How much do high-performance work practices matter? A meta-analysis of their effects on organizational performances, *Personnel Psychology*, vol.59, pp.501-528
- Conte M.A., Svejnar J. (1988) Productivity Effects of Workers' Participation, Profit Sharing, Worker Ownership of Assets and Unionization in U.S. Firms, *International Journal of Industrial Organization*, vol.6, pp.139-151
- Cristini A (2008) High-performance workplace practices from the employees' perspective, *SKOPE Research Paper*, 77, March
- Cristini A., Gaj A., Leoni R. (2003), The gains from investing in workplace organisation, University of Bergamo, mimeo
- Deci E.L., Ryan R.M. (1985) *Intrinsic Motivation and Self-Determination in Human Behavior*. Plenum Press, New York
- Deci E.L., Ryan R.M. (2000) The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry* 11, 227-268

- Defourney J., Estrin S., Jones D.C. (1987) The Effects of Workers Participation on Enterprise Performance: Empirical Evidence from French Cooperatives, *International Journal of Industrial Organization*, vol.3, pp.197-212
- Depedri S. (2007) The pursuit of happiness: when work makes the difference, University of Trento, Economics Department (mimeo)
- Diaz-Serrano L., Cabral Vieira J.A. (2005) Low Pay, Higher Pay and Job Satisfaction within the European Union: Empirical Evidence from Fourteen Countries, *Discussion Paper No. 1558, IZA*
- Dipboye R.L. (1985), Some Neglected Variables in Research on Discrimination in Appraisals, *Academy of Management Journal*, vol.10, pp.116-127
- Drago R. and Garvey G. (1998) Incentives for Helping on the Job: Theory and Evidence, *Journal of Labour Economics*, 16:1, pp. 1-25
- Easterlin R.A. (2005) Is there an “Iron Law of Happiness?”, *Iepr Working Paper 05.8*. University of Southern California
- Eby L.T., Freeman D.M., Rush M.C., Lance C.E. (1999) Motivational Bases of Affective Organizational Commitment: A Partial Test of an Integrative Theoretical Model, *Journal of Occupational and Organizational Psychology*, vl.72, n.4, pp.463-483
- Egan T.M., Yang B., Bartlett K.R. (2004) The Effects of Organizational Learning Culture and Job Satisfaction on Motivation to Transfer Learning and Turnover Intention, *Human Resource Development Quarterly*, vol.15, n.3, pp.279-301
- Falk A., M. Kosfeld (2006) The hidden costs of control, *American Economic Review*, 96(5), 1611-1630
- Florit E., Vila Lladosa L.E. (2007), Evaluation of the Effects of Education on Job Satisfaction: Independent Single-Equation vs. Structural Equation Models, *International Advances in Economic Research*, 13(2), pp. 157-170
- Freeman R.B. (1978), Job Satisfaction as an Economic Variable, *American Economic Review*, 68:135-141.
- Freeman, R. B., Kleiner M. M., and Ostroff C. (2000). The Anatomy of Employee Involvement and Its Effects on Firms and Workers. NBER Working Paper No. 8050. NBER, Cambridge, MA.
- Frey B.S. (1997), On the Relationship between Intrinsic and Extrinsic Work Motivation, *International Journal of Industrial Organization*, July, v. 15, iss. 4, pp. 427-39
- Frey B.S. (2008) *Happiness. A Revolution in Economics*, Cambridge (MA): MIT Press
- Frey B.S., Jegen R. (2001), Motivation crowding theory, *Journal of Economic Surveys*, 15(5), pp. 591-611
- Gächter S., Falk A. (2000) Work motivation, institutions, and performance, in Rami Zwick und Amnon Rapoport (eds), *Advances in Experimental Business Research*, Kluwer Academic Publishers
- Gagné M., Deci E.L. (2005) Self-Determination Theory and work motivation, *Journal of Organizational Behavior*, 26, 331-62
- Gagné M., J. Forest (2008) The study of compensation systems through the lens of Self-Determination Theory: reconciling 35 years of debate, *Canadian Psychology*, 49(3), 225-232
- Gazioglu S., Tansel A. (2006) Job satisfaction in Britain: individual and job related factors, *Applied Economics*, 38, 1163–1171

- Gerhart B. (2005) The (affective) dispositional approach to job satisfaction: sorting out the policy implications, *Journal of Organizational Behavior* 26, 79–97
- Ghinetti P. (2007) The Public–Private Job Satisfaction Differential in Italy, *Labour* 21 (2) 361–388
- Gittleman M., Horrigan M., Joyce M. (1998) “Flexible” Workplace Practices: Evidence from a Nationally Representative Survey, *Industrial and Labor Relations Review*, vol.52, n.1, pp.99-115
- Godard J. (2001) High Performance and the Transformation of Work? The Implications of Alternative Work Practices for the Experience and Outcomes of Work, *Industrial and Labor Relations Review*, Vol. 54, No. 4, pp. 776-805
- Godard J. (2004) A Critical Assessment of the High-Performance Paradigm, *British Journal of Industrial Relations* 42(2):349–78.
- Golden L., Wiens-Tuers B. (2006) To your happiness? Extra hours of labor supply and worker well-being, *Journal of Socio-Economics* 35 (2006) 382–397
- Green F., Gallie D. (2002) High Skills and High Anxiety: Skills, Hard Work and Mental Well-Being, mimeo
- Green F., Tsitsianis N. (2005) An Investigation of National Trends in Job Satisfaction in Britain and Germany, *British Journal of Industrial Relations*, vol.43, n.3, pp.401-430.
- Greenan N. (1996) Innovation Technologique, Changements Organisationnels e Evolution des Competences: une tude empirique sur l'industrie manufacturire, *Economie et Statistique*, 8(298), pp.15-33
- Griffeth R.W., Hom P.W., Gaertner S. (2000) A Meta-Analysis of Antecedents and Correlates of Employee Turnover, *Journal of Management* 2000; 26(3); 463-488
- Hammermesh D.S. (2001) The Changing distribution of job satisfaction, *Human Resources*, vol.36, n.1, pp.1-30
- Handel M., Levine D.I. (2004) Editors’ Introduction: The Effects of New Work Practices on Workers, *Industrial Relations* 43(1):1–43.
- Handel M., Gittleman S. (2004) Is there a wage payoff to innovative work practices?, *Industrial Relations* 43(1):67-97.
- Harley B. (2002) Employee Responses to High Performance Work System Practices: An Analysis of the AWIRS95 Data, *Journal of Industrial Relations*, 44(3):418–34
- Harrison G.L. (1992) The Cross-Cultural Generalizability of the Relation between Participation, Budget Emphasis and Job Related Attitudes, *Accounting, Organizations, and Society*, vol.17, n.1, pp.1-15
- Hechanova M.R.M, Alampay R.B.A. and Franco E.P. (2006), Psychological empowerment, job satisfaction and performance among Filipino service workers, *Asian Journal of Social Psychology*, v.9, pp.72-78
- Helliwell J.F. & H Huang (2005) How’s the job? Well-being and social capital in the workplace, *NBER working paper*, no.11759
- Helper S., Levine D.I., Bendoly E. (2002) Employee Involvement and Pay at US and Canadian Auto Suppliers, *Journal of Economics & Management Strategy*, Volume 11, Number 2, Summer 2002, 329–377

- Hennessey B.H. (2000) Rewards and creativity, in Sansone C. (Ed); Harackiewicz J.M. (Ed) (2000), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance*, San Diego, CA, Academic Press, Inc., pp.55-78
- Hersch J. (1991) Education Match and Job Match, *The Review of Economics and Statistics*, vol.73, 1, pp.140-144
- Holmstrom B., Milgrom P. (1991) Multitasking Principal Agent Analyses: Incentive Contract, Asset Ownership and Job Design, *Journal of Law, Economic, and Organization*, 7:special issue, pp. 24-52
- Huang, X. and Van de Vliert E. (2002), Intrinsic Job Rewards at Country-Level and Individual-Level Codetermine Job Satisfaction, *Journal of International Business Studies*, v. 33, iss. 2, pp. 385-94
- Iaffaldano M.T., Muchinsky P.M. (1985), Job Satisfaction and Job Performance: A Meta-Analysis, *Psychological Bulletin*, 97, pp.251-273
- Ichniowski C., Levine D.I., Olson C., Strauss G. (Editors) (2000) *The American Workplace: Skills, Pay, and Employment Involvement*, Cambridge University Press, Cambridge
- Ichniowski C., Kochan T., Levine T., Olson C., Strauss G. (1996) What Works at Work: Overview and Assessment, *Industrial Relations* 35(3): 299–333.
- Iardi B.C., Leone D., Kasser T., Ryan R.M. (1993) Employee and supervisor ratings of motivation: main effects and discrepancies associated with job satisfaction and adjustment in a factory setting, *Journal of Applied Social Psychology*, 23, 21, pp.1789-1805
- Isen A. (2000) Positive affect and decision making, in M Lewis and JM Haviland-Jones (eds) *The Handbook of Emotions*, New York: Guilford, 2<sup>nd</sup> ed., pp. 417-35
- Isen A.M., J. Reeve (2005) The influence of positive affect on intrinsic and extrinsic motivation, *Motivation and Emotion*, Vol. 29(4), 298-325
- Jones D.C. (1987) The Productivity Effects of Worker Directors and Financial Participation in the E.U. The Case of British Retail Cooperatives, *Industrial and Labor Relations Review*, vol.41, pp.79-92
- Jones D.C., Svejnar J. (1985) Participation, Profit Sharing, Worker Ownership and Efficiency in Italian Producer Cooperatives, *Economica*, vol.52, pp.449-465
- Judge T., Bono J.E., Thoresen C.J., Patton G.K. (2001), “The Job Satisfaction-Job Performance Relationship: A Qualitative and Quantitative Review,” *Psychological Bulletin* 127, pp.376-407.
- Kaiser L.C. (2002) Job Satisfaction: A Comparison of Standard, Non Standard, and Self-Employment Patterns across Europe with a Special Note to the Gender/Job Satisfaction Paradox, EPAG Working paper, 27
- Kalmi P., Kauhanen (2008) Workplace Innovation and Employee Outcomes: Evidence from Finland, *Industrial Relations*, vol.47, n.3, pp.430-457
- Katz H.C., Kochan T.A., Keefe J. (1987) Industrial Relations and Productivity in the U.S. Automobile Industry, *Brooking Papers on Economic Activity*, n.3, pp.685-715
- Katz H.C., Kochan T.A., Weber M.R. (1985) Assessing the Effects of Industrial Relations Systems and Efforts to Improve the Quality of Working Life on Organizational Effectiveness, *Academy of Management Journal*, vol.28, pp.509-526

- Kesebir P and E Diener (2008) In defense of happiness, in L Bruni, F Comim and M Pugno (eds) *Capabilities and Happiness*, Oxford: Oxford University Press, pp.60-80
- Konow J., Earley J. (2003), The hedonistic paradox: is homo economicus happier?, Loyola Marymount University, Los Angeles, mimeo
- Korman A.K. (1966) Self-esteem variable in vocational choice. *Journal of Applied Psychology*, 1966, 50, 479-486.
- Korman A.K. (1970) Toward an hypothesis of work behavior, *Journal of Applied Psychology*, vol. 54, n.1, pp.31-41
- Kraft K., FitzRoy F.R. (1987), Cooperation, Productivity and Profit Sharing, *Quarterly Journal of Economics*, vol.102, pp.23-35
- Kristensen N., N. Westgaard-Nielsen (2007) Reliability of job satisfaction measures, *Journal of Happiness Studies*, 8, 273–292
- Kruse D.L. (1988) *Profit Sharing and Productivity: Microeconomic Evidence*, Rutgers University
- Kuvaas B. (2006) Work performance, affective commitment, and work motivation: the roles of pay administration and pay level, *Journal of Organizational Behaviour*, 27, pp.365–385
- Landy F.J., Banned-Farrell J., Cleveland J.N. (1980) Perceived fairness and accuracy of performance evaluation: A follow-up, *Journal of Applied Psychology*, n.65, pp.355-356
- Lau C.M., Tan S.L.C. (2003), The Effects of Participation and Job-Relevant Information on the Relationship between Evaluative Style and Job Satisfaction, *Review of Quantitative Finance and Accounting*, v. 21, iss. 1, pp. 17-34
- Lau C.M., Buckland C. (2000) Budget Emphasis, Participation, Task Difficulty and Performance: The Effect of Diversity within Culture, *Accounting and Business Research*, vol.31, pp.37-55
- Layard R. (2005) *Happiness; Lessons from a New Science*. New York: Penguin Press
- Lazear E. (1996) Performance Pay and Productivity, *NBER Working Paper 5672*
- Ledford G.E. Jr. (1998) Happiness and productivity revisited, *Journal of Organizational Behavior*, 20, 25-30.
- Leoni R., Cristini A., Labory ., Gaj A. (2001) New Work Practices in Italy. Adoption and Performance Effects, Working Paper Economics Department, University of Bergamo
- Leontaridi R., Sloane P. (2001) Measuring the Quality of Jobs: Promotion Prospects, Low Pay and Job Satisfaction, LoWER Working Paper n.7, University of Amsterdam
- Locke L.A. (1969) What is Job Satisfaction? *Organizational Behavior and Human Performance*, 4, pp. 309-336.
- Locke L.A. (1976) The Nature and Causes of Job Satisfaction, in Dunnette M.D., *Handbook of Industrial and Organizational Psychology*, Rand McNally Publication Company, Chicago, pp.
- Long A. (2005), Happily Ever After? A Study of Job Satisfaction in Australia, *The Economic Record*, vol.81, n.255, pp.303-321
- Luthans F. (2002) The need for and meaning of positive organizational behaviour, *Journal of Organizational Behavior*, 23, pp.695-706

- Luthans F. (2003). Positive organizational behavior: implications for leadership and HR development and motivation. In L. W. Porter, G. A. Bigley, & R. M. Steers (Eds.), *Motivation and work behavior* (pp. 178–195). New York: McGraw-Hill/Irwin.
- Lyubomirsky S., King L., Diener E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131, pp.803-855.
- Maynard D.C., Todd A.J., Maynard A.M. (2006) Underemployment, job attitudes, and turnover intentions, *Journal of Organizational Behaviour* 27, pp.509–536
- Meng R. (1990) The Relationship between Unions and Job Satisfaction, *Applied Economics*, 22, pp.159-183
- Metzger B.L. (1966) *Profit Sharing in Perspective*, Evanston III, Profit Sharing Research Foundation
- Metzger B.L. (1975) *Profit Sharing in 38 Large Companies: Piece of the Action of 1,000,000 Participants*, vol.1, Evanston III, Profit Sharing Research Foundation
- Miller. P. (1990). Trade unions and job satisfaction. *Australian Economic Papers* 29. 226-248.
- Minkler L. (2002) Shirking and Motivation in Firms: Survey Evidence on Worker Attitudes, University of Connecticut, *Working Paper* 2002-37
- Mitchell D.J.B., Levine D., Lawler E.F. (1989) *Alternative Systems, Firm Performance and Productivity*,
- Morishima M. (1988) Information Sharing and Firm Performance in Japan: Do Joint Consultation Committees Help?, Simon Fraser University Working paper, British Columbia
- Mosca M., Musella M., Pastore F. (2006) Relational Goods, Monitoring and Non-Pecuniary Compensations in the Nonprofit Sector: The Case of the Italian Social Services, *IZA DP* No. 2254
- Nathan B.R., Mohrman A.M., Milliman J. (1991) Interpersonal Relations as a Context for the Effects of Appraisal Interviews on Performance and Satisfaction, *The Academy of Management Journal*, vol.34, n.2, pp.352-369
- National Commission on Productivity and Work Quality (1975) *A Plant-Wide Productivity Plan in Action: Three Years of Experience with the Scanlon Plan*, Washington D.C.
- Ng TWH, Kelly L.S., Eby L.T. (2006) Locus of control at work: a meta-analysis, *Journal of Organizational Behavior*, 27, pp.1057–1087
- O'Dell C., MacAdams J. (1987) People, Performance and Pay, Austin, American Productivity Center on Workers, *Industrial Relations* 43(1):1–43.
- Origo F., Pagani L. (2006) Is Work Flexibility a Stairway to Heaven? The Story Told by Job Satisfaction in Europe, (mimeo)
- Osterman P. (1994) How Common is Workplace Transformation and Who Adopts it?, *Industrial and Labor Relations Review*, vol.47, n.2, pp.173-188
- Otis N., L.G. Pelletier (2005) A motivational model of daily hassles, physical symptoms, and future work intentions among police officers, *Journal of Applied Social Psychology*, 35, 2193-2214
- Patterson M., West M. A, Lawthom R., Nickell S., (1997), The Impact of People Management Practices on Business Performance, Institute of Personnel and Development, London, *Issues in People Management*, n.22
- Porter L.W., Lawler E.E. (1968). *Managerial attitudes and performance*. IHomewood, IL:Irwin.

- Prendergast (1999) The provision of incentives in firms, *Journal of Economic Literature*, vol.27, pp. 7-63
- Reeson A.F., J.G. Tisdell (2008) Institutions, motivations and public goods: an experimental test of motivational crowding, *Journal of Economic Behavior & Organization*, 68, 273–281
- Richer S.F., C. Blanchard, R.J. Vallerand (2002) A motivational model of work turnover, *Journal of Applied Social Psychology*, 32(10), 2089-2113.
- Rosen S. (1982) Authority, Control, and the Distribution of Earnings, *Bell Journal of Economic*, 13, pp. 311-323
- Rowden R.W. (2002), The Relationship Between Workplace Learning and Job Satisfaction in U.S. Small to Midsize Business, *Human Resource Development Quarterly*, v.13, n.4, pp.407-425
- Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory, *Journal of Personality and Social Psychology*, 45, 736-750.
- Salanova M., Bakker A.M., Lorens L. (2006) From at work: evidence for an upward spiral of personal and organizational resources, *Journal of Happiness Studies*, 7, pp.1-22
- Salop S.C. (1979), A Model of the Natural Rate of Unemployment, *American Economic Review*, March, 69, p117-25
- Sansone C. (Ed); Harackiewicz J.M. (Ed) (2000), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance*, San Diego, CA, Academic Press, Inc.
- Schor J.B. (1992) *The overworked American :the unexpected decline of leisure*, New York: Basic Books
- Schwochau S. (1987) Union Effects on Job Attitudes, *Industrial and Labor Relation Review*, 40, pp.209-224
- Shapiro S. and Stiglitz. J. (1984) Equilibrium Unemployment as a Discipline Device, *American Economic Review*, 74, pp. 433-444
- Shields M.A., Price S.W. (2002) Racial Harassment, Job Satisfaction and Intentions to Quit: Evidence from the British Nursing Profession, *Economica*, vol.69, pp.295-326
- Siebern-Thomas F. (2005) Job Quality in European Labour Markets, in Bazen S., Lucifora C., Salverda W. (2005) *Job quality and Employer Behaviour*, Palgrave MacMillan, New York
- Skalli A., Theodossiou I., Vasileiou E. (2007) Jobs as Lancaster Goods: Facets of Job Satisfaction and Overall Job Satisfaction, *Discussion Paper 2007-02*, Centre for European Market Research
- Sloane P.J., Williams H. (2000) Job satisfaction, comparison earnings, and gender, *Labour*, 14(3), pp.473-502
- Smith G.R. (1986) Profit Sharing and Employee Share Ownership in Britain, *Employment Gazette*, vol.94, pp.380-384
- Sobel J. (2005) Interdependent Preferences and Reciprocity, *Journal of Economic Literature*, Vol. XLIII (June), pp. 392–436
- Soohe K. (2002), Participative Management and Job Satisfaction: Lessons for Management Leadership, *Public Administration Review*, v. 62, iss. 2, pp. 231-41
- Souza-Poza A., Souza-Poza A (2000) Well-being at work: a cross-national analysis of the levels and determinants of job satisfaction, *Journal of Socio-Economics*, 29, pp.517-38

- Souzo-Poza A., Henneberger F. (2000) Work attitudes, work conditions and hours constraints, *Labour*, 14(3), 351-72
- Spence Laschinger H.K., Finegan J.E., Shamian J., Wilk P. (2004) A longitudinal analysis of the impact of workplace empowerment on work satisfaction, *Journal of Organizational Behavior* 25, pp.527–545
- Spinrad W. (1960) Correlates of Trade Union Participation: A Summary of the Literature, *American Sociological Review*, vol.25, n.2, pp.237-244
- Staw, B. M., Sutton, R. I., Pelled, L. H. (1994). Employee positive emotion and favourable outcomes at the workplace. *Organization Science*, 5, pp.51-71
- Stevenson, Betsey and Justin Wolfers (2008) “Economic Growth and Happiness: Reassessing the Easterlin Paradox”. *Brookings Papers on Economic Activity*, May
- Stroh, L. K., Brett, J. M. and Reilly, A. H. (1992). ‘All the right stuff: a comparison of female and male managers' career progression’, *Journal of Applied Psychology*, 77, pp.251-260
- Svejnár J. (1982) Codetermination and Productivity: Empirical Evidence from the Federal Republic of Germany, in Jones D., Svejnár J., *Participatory and Self-managed Firms: Evaluating Economic Performance*, Lexington Books, Lexington
- Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology*, 46, pp.259–293.
- Thoms P., Dose J.J. and Scott K.S. (2002), Relationship Between Accountability, Job Satisfaction, and Trust, *Human Resource Development Quarterly*, v.13, n.3, pp.307-323
- Tortia E. (2008) Worker Satisfaction and Perceived Fairness in Public and Non-Profit Organizations: Survey-Based Findings from Italy, *Journal of Socio-Economics*, 37, pp.2080-2094
- Tsang M.C., Rumberger R.W., Levin H.M. (1991) The Impact of Surplus Schooling on Worker Productivity, *Industrial Relations*, vol.30, n.2, pp.209-228
- Valentini E. (2005) Psychological factors in job satisfaction, Università delle Marche, Dipartimento di Economia, *Quaderni di Ricerca*, n. 225
- Vila L. (2005), The Outcomes of Investment in Education and People’s Well-being, *European Journal of Education*, vol.40, n.1, pp. 3-11
- Vila L., Garcia-Mora B. (2005), Education and the Determinants of Job Satisfaction, *Education Economics*, v. 13, iss. 4, pp.409-25
- Wadhvani S., Wall M. (1988) The Effects of Profit Sharing on Employment, Wages, Stock Returns and Productivity: Evidence from U.K., Working paper 1030, Center School for Labor Economics, London
- Wegge, J., Schmidt, K., Parkes, C., van Dick, K. (2007) ‘Taking a sickie’: Job satisfaction and job involvement as interactive predictors of absenteeism in a public organization, *Journal of Occupational and Organizational Psychology*, 80, pp.77-89
- Weibel A., K. Rost, M. Osterloch (2007) Crowding-out of intrinsic motivation. Opening the black box, University of Zurich (mimeo)
- Wright T. A., Staw B. M. (1998) Affect and favorable work outcomes: two longitudinal tests of the happy-productive worker thesis', *Journal of Organizational Behavior*, 20, pp.1-23
- Wright T.A. (2003) Positive organizational behaviour, *Journal of Organizational Behavior*, 24, pp.437-442

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