

Incentive Pay, Work Organization and Firm Performance: Consistent Empirical Evidence from Two Large Surveys

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Abstract

Using two large and representative firm-level data sets (the most recent “European Company Survey”, a cross-section of some 19,000 firms from 32 countries and a subsample from the “World Management Survey”, an unbalanced panel of some 700 German, French, UK and US industrial firms with more than 5,000 observations) I find that “traditional” monetary incentives seem to outperform “modern” people management practices such as worker empowerment and involvement. Moreover, investments in workplace climate seem to yield large returns in terms of a better firm performance. The channel through which workplace climate affects firm performance as well as the determinants of workplace climate have yet to be explored.

Keywords: Incentives, Participation, Involvement, Firm Performance

JEL-Code: J33, J53, M52

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Introduction

Prior to the advent of “personnel economics” in the early 1990s, economists focused on labor market exchanges rather than looking inside the “black box” of the firm. Industrial sociologists and psychologists, on the other hand, emphasized the particular role of human resource management. This traditional “division of labor” has virtually disappeared in last three decades. Personnel economics is now used as the economist’s translation of the term “human resource management”, constituting a major field in applied microeconomics. The hallmark of this work is to use standard economic tools applied to the special circumstances of managing employees within companies. Personnel economics covers a wide range of activities. The main areas I will focus on in this paper are incentives on the one hand and work organization on the other. Incentives include remuneration systems (e.g. individual or group incentives and contingent pay) and appraisal systems. By work organization (or “people management”) I mean job design (e.g. flexibility of work, job rotation), teamwork, the distribution of decision rights between managers and workers (e.g. autonomy and decentralization), worker representation (via e.g. unions and workplace representatives) and information provision (a similar typology is used by Bloom and van Reenen 2013).

The question I want to answer in this paper is whether “management by incentives” and “people management” are complements or substitutes, i.e. whether financial incentives and work organization impact the performance of firms jointly or in isolation. Using two large and representative data sets I estimate a series of models to identify the separate as well as the combined effect of various measures of incentive pay, worker empowerment, worker involvement and workplace climate on firm performance. It appears that monetary incentives are far more important to improve firm performance than either worker involvement or worker participation.

The remainder of the paper is organized as follows: Section 2 provides a (highly) selective review of the relevant literature with a particular emphasis on studies looking at the interaction of various human resource management practices. Section 3 contains a detailed description of the two datasets including their sampling frames and descriptive statistics. Section 4 includes the estimation results that are surprisingly consistent given the differences in the intentions of the researchers who compiled them and the way the data sets have been assembled. Section 5 concludes with a brief summary of the findings, a discussion of the managerial implications and some suggestions for future research.

Literature Review

Four different strands of literature need to be addressed here:

First, literature emphasizing complementarities between different human resource management practices (e.g. Ichniowski, Shaw and Prennushi 1997).

Second, literature investigating the impact of worker participation on firm performance (e.g. Freeman and Lazear 1994, Frick 1996, Jirjahn 2010).

Third, literature emphasizing the importance of worker involvement on firm performance (e.g. Frick, Götzen and Simmons 2013).

Fourth, literature on importance of (individual as well as team) incentives for firm performance (Lazear 2000; Bandiera et al. 2005, 2007).

Competing Theoretical Paradigms: Monetary Incentives vs. Participation and Involvement

Economic theory posits that “... incentives are what drive modern economies. Understanding basic incentive theory provides you with an intuition that is useful in many business contexts” because “(t)he psychology of your workforce is, generally, quite difficult to change (...). By contrast, incentives are relatively easy to alter. Thus, pay for performance and other forms of extrinsic rewards are the most important motivational levers that a manager can pull” (Lazear and Gibbs 2009: 232).

This (traditional) view has recently been challenged by economists as well as human resource and/or industrial relations researchers. The former have pointed out that “... strong incentives are very often a bad idea, especially within organizations. (...) The problem is that people respond just as strongly to badly designed incentives as they do to well-structured ones. And when those badly designed incentives are strong, they can lead to really egregious forms of behavior, and the results can then be horrendous” (Roberts 2010: 125). Thus, “... designing useful incentives inside organizations is very complicated, and designing ones that are both useful and strong is often impossible” (Roberts 2010: 126).

In a similar vein, the latter have argued that financial incentives (whether adequately designed or not) can have negative side effects (such as e.g. crowding out worker motivation and destroying an individual's willingness to help others) and should, therefore, be completely abandoned or at least complemented by instruments such as worker empowerment and worker involvement. However, worker empowerment (e.g. the delegation of decision rights on work-related issues and the assignment of participation rights on these issues) can have positive as well as negative effects on firm performance: On the one hand, empowerment may raise performance due to the ensuing incentives to invest in firm-specific human capital and increased worker motivation. On the other hand, empowerment may also reduce performance because workers have incentives to abuse their increased authority at the expense of owners/ shareholders. At the same time, worker involvement (such as e.g. teamwork and suggestion schemes) can increase commitment, loyalty and motivation, but can also lead to inefficient influence activities and other forms of productivity-decreasing behavior.

Thus, theory seems to offer no definitive guidance as to the (relative) effects of incentives, worker representation and worker involvement on firm performance. Although a large (and still growing) body of literature has documented the impact of incentive systems on the one hand and various forms of work organization on the other on different measures of firm performance, few studies have convincingly separated their relative importance. These studies, however, all used rather small samples, the results of which cannot be generalized. The main goal of the following empirical analysis is, therefore, to simultaneously test the following three hypotheses:

H₁: Incentive pay is, other things equal, associated with better firm performance.

H₂: Worker participation is, ceteris paribus, associated with better firm performance.

H₃: Worker involvement is, other things equal, associated with better firm performance.

3. Data and Findings

3.1. Data

3.1.1. The European Company Survey

The 3rd European Company Survey is a telephone survey of establishments in Europe, involving 24,251 interviews with a management representative³ responsible for the establishment⁴. The unit of inquiry for the survey is the establishment. The target population is all establishments with 10 or more employees in all economic sectors except agriculture, activities of households as employers and activities of extraterritorial organizations⁵. The countries covered are all 28 EU Member States plus Iceland, the Former Yugoslav Republic of Macedonia, Montenegro and Turkey⁶. The thematic focus of the survey – work organization, human resource management policies, employee participation and social dialogue – “was chosen with a view to understanding how these establishment-level practices might relate, both individually and in combination, to ‘win-win’ outcomes in terms of both company performance and workers’ well-being” (Eurofound 2015: 10).

The key research questions addressed by the survey are the following (Eurofound 2015: 11):

- What is the incidence of practices in terms of work organization, human resources policies, forms of employee involvement and social dialogue in European companies, and how do they compare across companies with different characteristics?
- How do different workplace practices bundle together – that is, what types of organizations can be identified with similar sets of workplace practices?
- How are different types of organization – in relation to their bundles of practices – distributed across countries, sectors and firm size classes?
- What is the relationship between different types and structures of workplace practices and establishment performance and worker well-being?

The target sample size for the management interviews ranged from 300 in the smallest countries to 1,650 in the largest countries. In order to ensure that establishments were randomly selected and representative of establishments and countries, a sophisticated sampling and related contacting procedure was applied, which had to take into account country differences in the availability of business registers used as sampling frames. Gallup Europe conducted the fieldwork between February and June 2013. The management interviews took 27 minutes on average⁷.

³ In addition, 6,860 interviews were conducted with – where available – an employee representative responsible for the establishment.

⁴ The first European Company Survey (2004–2005) covered working time arrangements and work–life balance at establishment level. The second European Company Survey (2009) dealt with flexibility practices and social dialogue practices at establishment level, documenting workplace practices with regard to different forms of flexibility and social dialogue at the workplace. The survey studied different measures of quantitative and qualitative flexibility, both internal and external.

⁵ In the following analyses, public sector firms are excluded, reducing the size of the sample by about 20 percent.

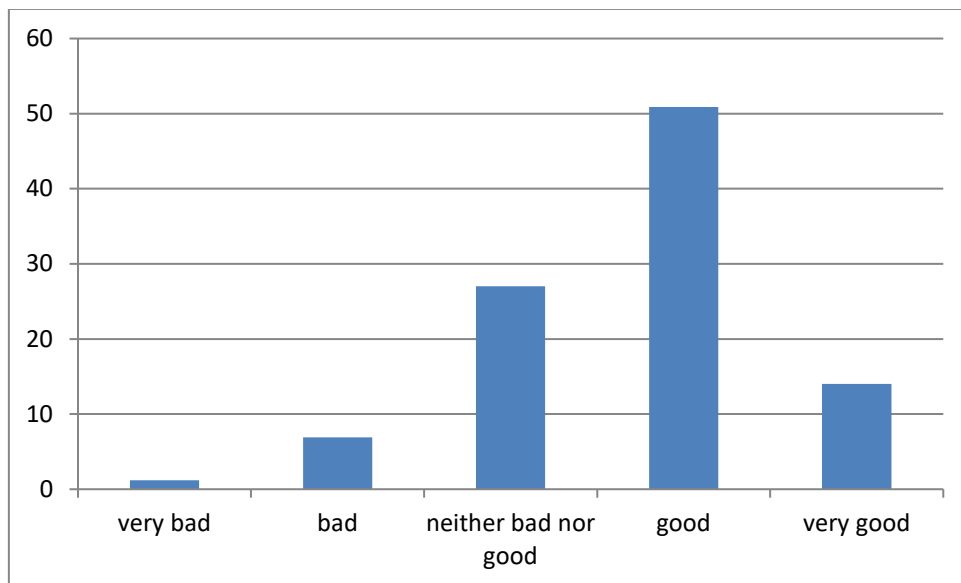
⁶ The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social and work-related policies.

⁷ Interview duration with employee representatives was 18 minutes due to the shorter questionnaire.

The overall response rate of the survey for the management interviews was 38%, ranging between 18% in Austria and 62% in Slovenia.

Figure 1 shows that there is considerable variation in performance across private sector firms in Europe: Nearly 10 percent of the respondents report performance to be “very bad” or “bad” while 50 percent say they are doing “good”. More than 15 percent are even saying that their performance is “very good”.

Figure 1
Firm Performance in Europe, 2013



Source: own calculation based on 3rd European Company Survey (Management Questionnaire) by European Foundation for the Improvement of Living and Working Conditions (n=18,679 private sector firms)

It appears from Table 1 that there is considerable variation in the use of incentive systems as well as worker participation and involvement across European firms. Whether these differences help explaining the observable variation in firm performance (see Figure 1 above) remains to be tested.

Table 1
Descriptive Statistics of Explanatory Variables

Variable	Mean
Remuneration System	
Pay by results (0=no; 1=yes)	0.420
Pay by individual performance (0=no; 1=yes)	0.516
Pay by team performance (0=no; 1=yes)	0.330
Pay by organizational performance (0=no; 1=yes)	0.388
Share ownership (0=no; 1=yes)	0.074
Formal appraisal system (0=no; 1=yes)	0.744
Workplace Representation	
Union representation (0=no; 1=yes)	0.264
Works council representation (0=no; 1=yes)	0.239
Employee representation constructive?	
No employee representation	0.535
Strongly agree	0.104
Agree	0.259
Disagree	0.085
Strongly disagree	0.017
Employee representation increases commitment of employees?	
No employee representation	0.535
Strongly agree	0.099
Agree	0.271
Disagree	0.084
Strongly disagree	0.011
Employee representation trustworthy?	
No employee representation	0.535
Strongly agree	0.115
Agree	0.309
Disagree	0.036
Strongly disagree	0.005
Prefer direct consultation	
No direct consultation	0.534
Strongly agree	0.093
Agree	0.244
Disagree	0.114
Strongly disagree	0.016
Employee Involvement	
Teams (0=no; 1=yes)	0.787
Do employees rotate across teams?	
No teams	0.213
Yes, all do	0.194
Yes, some do	0.374
No, nobody does	0.175
No, due to highly specialized skills	0.043
Suggestion scheme (0=no; 1=yes)	0.487
Regular staff meetings (0=no; 1=yes)	0.626
Worker involvement increases tenure	
Strongly agree	0.311
Agree	0.565
Disagree	0.110
Strongly disagree	0.014

Worker involvement leads to competitive advantage	
Strongly agree	0.254
Agree	0.605
Disagree	0.129
Strongly disagree	0.011
Workplace Climate	
Very bad	0.003
Bad	0.015
Neither bad nor good	0.141
Good	0.622
Very good	0.219
Personnel Problems	
High absenteeism (0=no; 1=yes)	0.161
Voluntary quits (0=no; 1=yes)	0.117
Layoffs necessary (0=no; 1=yes)	0.201
Low motivation (0=no; 1=yes)	0.204

3.1.2. The World Management Survey

The subsample of the “World Management Survey” used here is based on an innovative survey tool to collect management practice data from some 700 medium-sized manufacturing firms in England, France, Germany and the United States (Bloom and van Reenen 2007). The observation period – i.e. the years for which performance data is available – ranges from 1994 to 2004. The methodology combines the econometric advantages of large sample surveys with the measurement advantages of more detailed case study interviews. The survey identifies eighteen key management practices typically used by manufacturing firms and scores them on a 5-point Likert scale from one (worst practice) to five (best practice) on each of these practices. These practices are grouped into four areas: *operations* (three practices), *monitoring* (five practices), *targets* (five practices), and *incentives* (five practices)⁸. The latter area includes promotion criteria (e.g., purely tenure-based or including an element linked to individual performance), pay and bonuses, and fixing or firing bad performers, where best practice is deemed the approach that gives strong rewards to those with both ability and effort. In the estimations presented below I use as an “incentive index” a variable calculated as the unweighted average across all z-scores⁹ (from the one to five scale) of the five incentives practices included in this survey¹⁰.

The questions relevant for the computation of the “management by incentives index” are as follows (Bloom and van Reenen 2007: 1395-1396)¹¹:

- How does your appraisal system work? Tell me about the most recent round?

⁸ The correlation between the four dimensions ranges between +0.70 and +.74 (n=6,267 observations, of which only 5,350 can be used in the estimations due to missing values on firm performance).

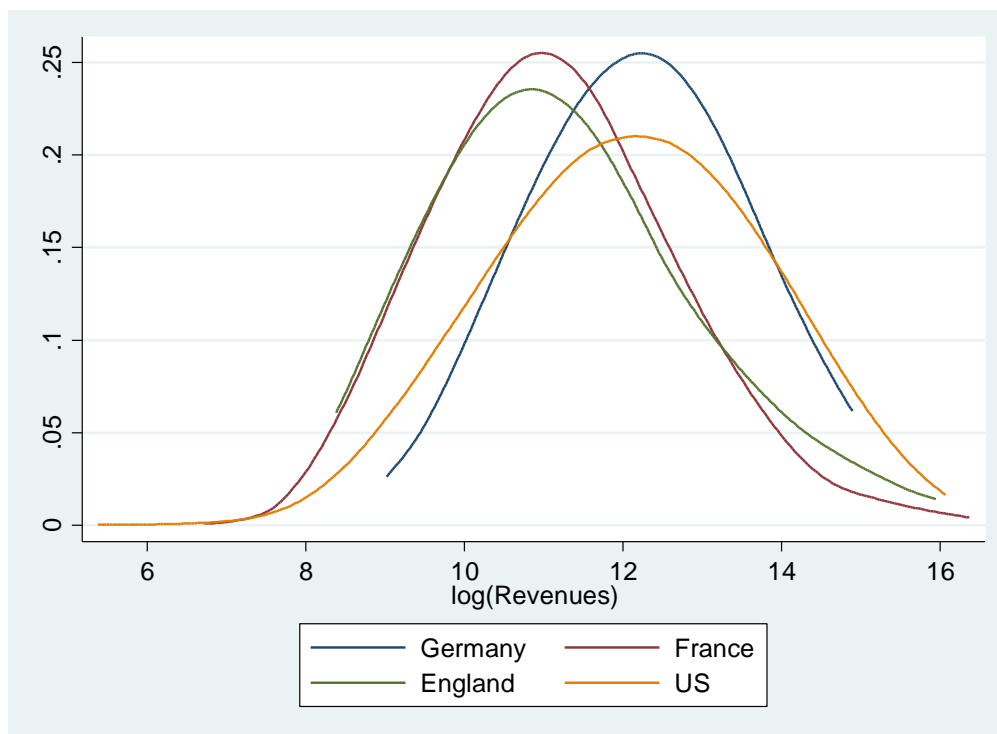
⁹ The z-scores are calculated by normalizing each practice to mean zero and standard deviation one.

¹⁰ In their papers, Bloom, van Reenen and their co-authors (2007, 2010, 2011, 2012a, 2012b, 2014, 2016) use an overall “management score” calculated in the same way, but including all 18 practices.

¹¹ The research design applied in the World Management Survey focuses on managerial practices from the employer perspective rather than the worker perspective. Perhaps surprisingly, these “tough” management practices do not come at the expense of work intensification and a breakdown of reciprocity and job satisfaction in the workplace. Bloom, Kretschmer and van Reenen (2011) show that their overall management score is strongly positively correlated with many pro-worker features of firms, such as more generous childcare subsidies and better work-life balance indicators, suggesting that workers prefer employment in well-managed firms.

- How does the bonus system work? Are there any non-financial rewards for top performers?
- If you had a worker who could not do his job what would you do?
- How long would underperformance be tolerated?
- Do you find any workers who lead a sort of charmed life? Do some individuals always just manage to avoid being fixed/fired?
- Can you rise up the company rapidly if you are really good?
- What about underperformers—do they get promoted more slowly?
- How would you identify and develop (i.e., train) your star performers?
- If you had a star performer who wanted to leave what would the company do?

Figure 2
Smoothed Kernel Density Estimation of Firm Performance by Countries



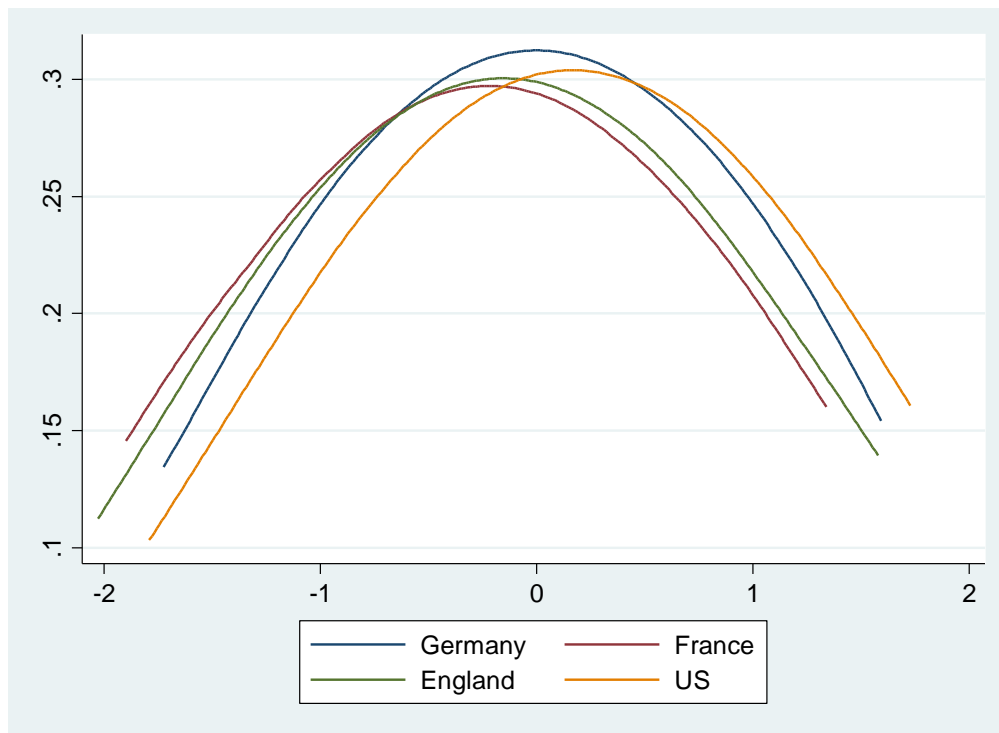
The data set used here includes only medium-sized manufacturing firms with employment ranging between 50 and 10,000 workers (with a median of 675). Very small firms were excluded because have few publicly available data. Very large firms were excluded too because they are likely to be heterogeneous across plants, making it difficult to get a picture of managerial performance in the firm as a whole from one or two plant interviews^{12 13}.

¹² Comparing the responding firms with those in the sampling frame, Bloom and van Reenen (2007) found no evidence that the responders were systematically different from the non-responders on any of the performance measures. They were also statistically similar on all the other observables in the dataset. The only exception was size, where the responding firms were slightly larger on average than those in the sampling frame.

¹³ According to Bloom and van Reenen (2007: 1392) a second survey wave will be conducted soon. It is important to follow up the surveyed firms in order to examine the extent to which management practices develop over time. This will enable the researchers to examine whether competition is working simply through selection or if there is learning of better managerial techniques by incumbent firms.

Figure 2 shows that firm performance – measured by the natural logarithm of sales per year – varies considerably across the firms in the sample. Moreover, it appears that the German firms are particularly large and rather homogenous (the mean of log revenues is the highest and the coefficient of variation is the lowest) while the French firms are rather small and quite homogenous (the coefficient of variation is rather low too).

Figure 3
Smoothed Kernel Density Estimation of Incentive Score by Countries



It appears from Figure 3 that management by incentives is widely used by US firms and that British and French firms are equally far behind in this respect. German firms use incentives less often than US firms, but significantly more than British or French firms¹⁴.

¹⁴ The Eurofound data confirm these differences between English, French and German firms with respect to the use of payment by results, variable extra pay linked to team performance and variable pay linked to organizational performance.

3.2. Econometric Evidence

3.2.1. The Relative Importance of Participation, Involvement, and Incentives

Using the European Company Survey I first estimate a series of ordered probit models (with standard errors clustered at the country-level) to identify the separate as well as the combined effect of various measures of incentive pay, worker empowerment, worker involvement and workplace climate on firm performance (as assessed by either the owner or a top manager on a 5-point Likert Scale).

Controlling for firm characteristics (size, industry), the presence of specific personnel problems (high levels of sickness, skill shortages, high turnover, low motivation), recent organizational changes (new products and/or processes, new technology) and the composition of the workforce (age, gender, qualification, fixed-term employees) I find a significantly positive and linear impact of various forms of incentive pay on firm performance. The impact of worker empowerment and involvement, however, is mixed: While e.g. none of the measures of employee representation has a statistically significant impact on firm performance, the effect of suggestion schemes is positive. Finally, workplace climate (again assessed by respondents on a 5-point Likert Scale) is found to have a significantly positive impact. A number of robustness checks (including e.g. country dummies and separate estimations for subgroups of the countries included in the survey) confirm the initial findings.

3.2.2. The Dominant Role of Management by Incentives

Using the World Management Survey data described above I estimate a simple Cobb Douglas production function the results of which are displayed in Table 4 below. As an additional input factor in the production process I include “management by incentives” as described above. It appears that a one unit increase in the use of incentive systems is associated with 4 percent higher sales. This effect is robust across a number of specifications.

In a second step I include in the estimations interactions of the management by incentives term with country dummies to check whether the definition of “good” management by incentives is biased toward an Anglo-Saxon view of the management world because some people may consider these business practices as suitable for British and American firms but less suitable for continental European (i.e. French and German) companies. However, the findings presented in Table 4, columns 3, 4, and 6 suggest that the hypothesis that the coefficients on management by incentives are equal across countries cannot be rejected. This implies that the returns to incentive systems are identical across different industrial relations systems.

Table 2
Determinants of Firm Performance in Europe, 2013

	Model (1) Remuneration System	Model (2) Workplace Rep- resentation	Model (3) Employee In- volvement	Model (4) Complete Model
Remuneration System				
Pay by Results	0.0342 (0.0209)	---	---	0.0354* (0.0208)
Pay by Individual Performance	0.0474* (0.0269)	---	---	0.0463* (0.0270)
Pay by Team Performance	0.00427 (0.0186)	---	---	0.0000325 (0.0189)
Pay by Organizational Performance	0.127*** (0.0189)	---	---	0.127*** (0.0182)
Share Ownership	0.0363 (0.0434)	---	---	0.0342 (0.0437)
Formal Appraisal System	0.0771*** (0.0209)	---	---	0.0709*** (0.0201)
Workplace Representation				
Union Representation	---	0.0156 (0.0374)	---	0.0199 (0.0365)
Works Council Representation	---	0.00577 (0.0390)	---	0.0144 (0.0377)
Our employee representation is con- structive	---	Ref.	---	Ref.
Strongly agree	---	0.0459 (0.0700)	---	-0.00104 (0.0600)
Agree	---	-0.0408 (0.0914)	---	-0.0841 (0.0791)
Disagree	---	-0.00586 (0.0824)	---	-0.0420 (0.0723)
Strongly disagree	---	0.149 (0.115)	---	0.107 (0.108)

Does employee representation increase commitment of employees?	---	Ref.	---	Ref.
Strongly agree	---	0.0864 (0.0992)	---	0.0713 (0.0985)
Agree	---	0.0557 (0.0962)	---	0.0567 (0.0951)
Disagree	---	0.0420 (0.106)	---	0.0393 (0.104)
Strongly disagree	---	0.00657 (0.122)	---	0.00122 (0.120)
Is employee representation trustworthy?	---	Ref.	---	Ref.
Strongly agree	---	-0.0178 (0.0809)	---	-0.0000372 (0.0829)
Agree	---	0.0144 (0.0854)	---	0.0340 (0.0882)
Disagree	---	-0.0252 (0.0946)	---	-0.00723 (0.0984)
Strongly disagree	---	-0.274 (0.172)	---	-0.272 (0.174)
We prefer direct consultation	---	Ref.	---	Ref.
Strongly agree	---	0.0104 (0.0756)	---	0.0190 (0.0743)
Agree	---	0.00890 (0.0775)	---	0.0268 (0.0773)
Disagree	---	-0.0659 (0.0887)	---	-0.0616 (0.0882)
Strongly disagree	---	-0.118 (0.0941)	---	-0.109 (0.0923)
Employee Involvement				
Teams	---	---	-0.0312 (0.0199)	-0.0124 (0.0204)
Do employees rotate? (1=yes, all do)	---	---	Ref.	Ref.
Yes, some do	---	---	0.0235 (0.0218)	0.0232 (0.0210)
No, nobody does	---	---	0.00671 (0.0258)	0.00996 (0.0245)

No, due to skill requirements	---	---	0.0108 (0.0329)	0.0129 (0.0334)
Suggestion scheme (0=no; 1=yes)	---	---	0.0730*** (0.0170)	0.0546*** (0.0161)
Regular staff meetings (1=yes)	---	---	0.00412	0.0243
Does involvement increase tenure? (1=strongly agree)	---	---	Ref.	Ref.
Agree	---	---	0.0177 (0.0249)	0.0233 (0.0266)
Disagree	---	---	0.0227 (0.0434)	0.0398 (0.0424)
Strongly disagree	---	---	0.150** (0.0718)	0.172** (0.0714)
Does involvement lead to competitive advantage? (1=strongly agree)	---	---	Ref.	Ref.
Agree	---	---	-0.0658** (0.0267)	-0.0593** (0.0279)
Disagree	---	---	-0.0622 (0.0412)	-0.0463 (0.0419)
Strongly disagree	---	---	-0.176* (0.0972)	-0.161* (0.0977)
Workplace Climate				
Climate: very bad	Ref.	Ref.	Ref.	Ref.
Climate: bad	0.763*** (0.289)	0.791*** (0.288)	0.786*** (0.284)	0.774*** (0.294)
Climate: neither good nor bad	1.107*** (0.262)	1.124*** (0.262)	1.129*** (0.260)	1.113*** (0.268)
Climate: good	1.568*** (0.263)	1.591*** (0.263)	1.593*** (0.262)	1.569*** (0.268)
Climate: very good	2.171*** (0.284)	2.200*** (0.284)	2.196*** (0.283)	2.169*** (0.290)
Personnel Problems				
Problem: Absenteeism	-0.0526*** (0.0189)	-0.0484** (0.0191)	-0.0484** (0.0190)	-0.0508*** (0.0190)
Problem: Voluntary Quits	-0.0688* (0.0372)	-0.0671* (0.0377)	-0.0685* (0.0375)	-0.0726* (0.0371)

Problem: Layoffs Necessary	-0.491*** (0.0255)	-0.488*** (0.0257)	-0.488*** (0.0266)	-0.489*** (0.0253)
Problem: Low Motivation	-0.0878*** (0.0238)	-0.0900*** (0.0243)	-0.0927*** (0.0242)	-0.0902*** (0.0234)
Cut1	-0.725** (0.304)	-0.318 (0.329)	-0.522 (0.318)	-0.715** (0.331)
Cut2	0.351 (0.318)	0.756** (0.347)	0.554* (0.331)	0.366 (0.348)
Cut3	1.611*** (0.310)	2.012*** (0.344)	1.811*** (0.329)	1.628*** (0.339)
Cut4	3.383*** (0.308)	3.779*** (0.340)	3.579*** (0.327)	3.404*** (0.337)
<i>N</i>	18,679	18,679	18,655	18,655

Standard errors (clustered at country level) in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Country dummies (n=32; reference country: Belgium), industry dummies (n=6, reference industry: manufacturing), firm characteristics (dummies denoting change in ownership, change in products, change in processes, organizational changes, change in number of hierarchies, change in size of workforce as well as number of employees (10 to 49, 50 to 249 and 250 and more employees), type of establishment (dummies for single-site firm, headquarter, subsidiary site)), respondent characteristics (gender, tenure, position dummies), workforce composition (percent women, percent older employees (50 plus), percent university graduates, percent part-time employees, percent open-ended contracts) included as additional controls.

Table 3

Management by Incentives and Firm Performance in the UK, US, France and Germany, 1994-2004*

Dependent Variable	Log Sales					
	Model (1.1)	Model (1.2)	Model (2.1)	Model (2.2)	Model (3.1)	Model (3.2)
Log Capital Stock	0.146*** (0.0259)	0.120*** (0.0262)	0.144*** (0.0258)	0.120*** (0.0261)	0.0835*** (0.0187)	0.0846*** (0.0187)
Log Employees	0.540*** (0.0335)	0.545*** (0.0337)	0.540*** (0.0336)	0.545*** (0.0340)	0.595*** (0.0261)	0.594*** (0.0263)
Log Material Costs	0.315*** (0.0261)	0.324*** (0.0229)	0.317*** (0.0260)	0.324*** (0.0231)	0.291*** (0.0188)	0.292*** (0.0190)
Management by Incentives	0.0318*** (0.0111)	0.0458** (0.0177)	0.0436* (0.0261)	0.0428* (0.0239)	0.0415*** (0.0145)	0.0458** (0.0184)
MI_Score_Germany	---	---	0.0211 (0.0386)	0.0349 (0.0391)	---	0.0126 (0.0322)
MI_Score_France	---	---	0.00121 (0.0388)	-0.000964 (0.0392)	---	-0.0200 (0.0298)
MI_Score_United States	---	---	-0.0271 (0.0296)	-0.0850 (0.161)	---	0.0916 (0.122)
Log Average Wage	---	---	---	---	0.663*** (0.0401)	0.666*** (0.0399)
Constant	2.830*** (0.133)	2.950*** (0.163)	2.841*** (0.134)	2.948*** (0.162)	1.365*** (0.156)	1.342*** (0.155)
<i>R</i> ² *100	97.9	97.3	97.9	97.3	98.3	98.3
<i>N of Observations</i>	5,350	2,672	5,350	2,672	2,672	2,672
<i>N of Firms</i>	709	430	709	430	430	430

Standard errors (clustered at company id) in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Country dummies (n=3; reference country: England), year dummies (n=11; reference year: 1994) and industry dummies (n=102; 3 digit sic code) included but not displayed for ease of presentation. Moreover, interaction terms (log of capital stock, log of number of employees and log of material costs with country dummies for France, Germany and the United States) also included in all models.; coefficients not displayed for ease of presentation. The full results are available from the author upon request.

Data available on www.worldmanagementsurvey.org

Summary and Implications

The implications of the findings presented above for personnel economics, human resource management and/or industrial relations are straightforward: First, “traditional” monetary incentives seem to outperform “modern” human resource management practices such as worker empowerment and involvement. Second, investments in workplace climate seem to yield large returns in terms of a better firm performance. However, the channel through which workplace climate affects firm performance as well as the determinants of workplace climate have yet to be explored.

To be completed

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