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des modèles socio-productifs en France (1992-2004)*

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124

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*Un panorama dynamique des modèles socio-productifs  
en France (1992-2004)*

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## **A DYNAMIC OVERVIEW OF SOCIO-PRODUCTIVE MODELS IN FRANCE (1992-2004)**

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### **ABSTRACT**

In this article, we use the REPOSE survey conducted in France among 3,000 workplaces in 1992-93, 1998-99 and 2004-05 to evaluate the empirical pertinence of socio-productive models, taking into account three dimensions: work organization, human resources management and industrial relations. The results show the emergence of not one but two “innovative” models: the ‘Toyotist’ model and the ‘neo-Taylorist’ model. Data also reveals the existence and persistence of an additional configuration that was not anticipated by the theoretical literature, and that may possibly be specific to France: the ‘public in transition’ model. In a dynamic perspective, we do not observe a generalized and systematic convergence towards ‘innovative’ models, but a dual movement: on one hand, the renewal of the productive base definitely contributes to the development of the ‘toyotist’ model, but mainly between 1992-93 and 1998-99; on the other hand, firms aging and privatizations appear to boost the ‘neo-taylorist’ model, whose revival questions the irreversibility of managerial innovations and the relevance of a *one best way*, whether managerial or organizational.

**Key words:** socio-productive models, Toyotism, neo-Taylorism, work organization, human resources management, industrial relations.

## ***Un panorama dynamique des modèles socio-productifs en France\* (1992-2004)***

### ***Résumé***

*Dans cet article, nous utilisons l'enquête REPONSE menée en France auprès de 3 000 établissements en 1992-93, 1998-99 et 2004-05 afin d'évaluer la pertinence empirique de la notion de modèles socio-productifs. Concrètement, ces modèles sont définis à partir de trois dimensions : l'organisation du travail, la gestion des ressources humaines et les relations professionnelles. Les résultats montrent l'émergence non pas d'un, mais de deux modèles « innovants » : le modèle « toyotiste » et le modèle « néo-taylorien ». Les données révèlent également l'existence et la persistance d'une configuration particulière qui ne figure pas dans la littérature théorique et qui est peut-être spécifique à la France : le modèle « public en transition ». Dans une perspective dynamique, nous n'observons pas de convergence généralisée et systématique vers des « modèles innovants », mais un double mouvement : d'une part, le renouvellement du tissu productif contribue bien au développement du modèle « toyotiste » – surtout entre 1992-93 et 1998-99 – ; d'autre part, le vieillissement des entreprises et les privatisations semblent favoriser le modèle « néo-taylorien », dont le regain invite à mettre en doute l'irréversibilité des innovations managériales et à interroger la pertinence d'un one best way, tant gestionnaire qu'organisationnel.*

**Mots-clefs :** *modèles socio-productifs, toyotisme, néo-taylorisme, organisation du travail, gestion des ressources humaines, relations professionnelles.*

\* Cet article renvoie à l'ouvrage dirigé par Thomas Amossé, Catherine Bloch-London et Loup Wolff, Les relations sociales en entreprise. Un portrait à partir des enquêtes « Relations professionnelles et négociations d'entreprise » qui a été publié en 2008 à La Découverte dans la collection « Recherches ».

In the face of continual competition in product, labor and capital markets, firms are constantly adapting their organizational methods. In order to attract clients, recruit staff and attract investors, they have to implement marketing strategies, human resource management strategies and financial strategies. There is a scientific consensus around the idea that strategies adopted by firms in these three domains must be mutually reinforcing ('internal fit') and coherent with the firm's socio-economic environment ('external fit') (Dyer, Kochan, 1994). However, the relative importance accorded to 'internal' or 'external' fit is not agreed upon.

Much of the literature on new methods of work and firm organization thus concentrates on '*high performance work organization*' (Osterman, 1994) or the so-called 'dominant model theory' outlined by Dyer and Kochan (1994) according to which the adoption of 'high road' practices (such as autonomous teams, multi-skilling, continuous training and employee incentives) would enable a firm to improve its economic performance in any context (Department of Labor, 1994) and to be intrinsically more effective than those adopting the 'low road' strategy of low wages, Taylorist work organization and precarious jobs. In contrast, insisting on the importance of 'external fit' leads to the hypothesis that optimal practices *per se* do not exist independently of a firm's environmental context and strategic choices: the 'multiple model theory' (Dyer and Kochan, 1994; Applebaum, Batt, 1994) admits the diversity of efficient organizational methods, and the question becomes that of the 'complementarities' (Milgrom, Roberts, 1990; Aoki, 1994; Amable, 2005) between combined strategies and practices adopted in different domains of action; an 'innovative' practice (for example increasing employees' autonomy) can reinforce a given strategy's effectiveness (for example permanent innovation) but may be unsuitable in a different context (for example a low cost strategy).

In this article we use a multiple model approach, based on the hypothesis of a variety of effective socio-productive models, able to deal with the uncertainties firms have to cope with at both organizational and market levels. After a brief review of the existing literature concerning the different socio-productive models, we use data from the REPOSE survey conducted in France among 3,000 workplaces in 1992-93, 1998-99 and 2004-05 to evaluate the empirical pertinence of these theoretical models, taking into account three dimensions: work organization, human resources management and industrial relations. The longitudinal nature of our data enables us to provide a dynamic picture of firms' strategies over time.

## **1. SOCIO-PRODUCTIVE MODELS: A BRIEF REVIEW OF LITERATURE**

At the beginning of the 1960s, management developed the "contingency theory" (Burns, Stalker, 1961) asserting the need for coherence between a firm's internal organization and the nature of its markets; between 'structure' and 'environment'. A formalized or vertical structure is viewed as being adapted to a stable environment whereas a changing, innovating environment requires a more flexible, horizontal organization. At the end of the 1980s, this type of approach was taken up by economists (Aoki, 1988; Milgrom, Roberts, 1994). The theoreticians of the 'J' firm, such as Aoki, added social regulation to the model: the 'J' firm is characterized by its competitive strategy (differentiation within a mass market), its organizational model (horizontal communication and workers' autonomy) and its industrial relations system (the labor union – representing permanent staff – facilitates employee cooperation and pushes management to equitably share productivity increases between employees and shareholders).

## **1.1. From ‘factory regime’ to ‘socio-productive models’**

At that time the American radical economists had already developed a systemic approach to the firm based on the Marxian concept of the ‘factory regime’ (Burawoy, 1983). A ‘regime’ is an institutional mechanism situated “between the labor process and the State” – as indicated by the title of Burawoy’s article – that extends beyond the firm’s boundary but accounts for the coherence between the nature of competition within the product market, labor organization methods and labor-power reproduction. Burawoy distinguishes two types of regime: ‘despotic’ regimes in which employer dominance is permanently subjecting employees to the threats of unemployment and job insecurity, and the ‘hegemonic’ regimes in which employees voluntarily consent to their own exploitation because they have resources (qualifications, trade-unions, labour laws, social protection) that give them the bargaining power to negotiate the terms of this exploitation with their employers. With the globalization of capital, Burawoy diagnoses the emergence of an additional ‘despotic-hegemonic’ regime in which reigns not only “the arbitrary tyranny of the overseer aimed at individual workers’ but also “the ‘rational’ tyranny of capital mobility over the collective worker” (ibid., p. 603), with permanent threats of closure or overseas relocation of entire workplaces.

Focusing the analysis again on the firm level, one can distinguish three types of radical uncertainty that threaten the firm’s survival: uncertainty related to market competition; uncertainty due to the complexity and fragility of the in-house technical and organizational system; and uncertainty stemming from the existence of potentially turbulent working communities. To manage these uncertainties and keep in business, management must simultaneously, coherently and efficiently implement competitive strategies, work organization and management methods, and industrial relations routines (Coutrot, 1998). There are a limited number of configurations (or labor mobilization ‘regimes’) that ensure the necessary coherence between these three strategies. These configurations can also be described as ‘socio-productive models’ (Boyer, Freyssenet, 2000). The term ‘model’ intends to describe both an adaptative response to challenges and an ideal to be attained, a stylization of empirical facts and a theoretical construction. According to Boyer & Freyssenet, a model is ‘a largely unintentional process whereby technical, organizational, managerial or social changes become externally appropriate and internally compatible’ (p. 8, original translation). Beyond the debate about theoretical foundations, we adopt a heuristic use of the concept as a means of describing and understanding recent changes in managerial policies and industrial relations.

## **1.2. From traditional models to innovative ones**

According to a traditional model, the ‘paternalistic firm’ operates by metaphorically reproducing family-like relationships: industrial relations are based on ‘simple control’ (Edwards, 1979), authoritarian in nature but tempered by familiarity; the horizon of the employment relationship is long term. Employee integration naturally prevents any form of collective organization and any work-related tensions are resolved by direct adjustment. Almost as traditional is the ‘factory despotism’ described by Marx, followed by Taylorism in the first half of the twentieth century. Both are despotic models under which workers are submitted to the permanent threat of redundancy (Burawoy refers to this as ‘market despotism’) and are unable to resist collectively due to the division of labor. Taylorism differs from factory despotism, however, by its scientific management of labor focused on mass production of standardized goods: work is rigorously prescribed; wages and employment relations are individualized. If Fordism is an extension of Taylorism in terms of its low-price strategy and



hierarchical labor organization (assembly-line work and automation), it differentiates itself by its industrial relations system that allows the formation of autonomous working communities and puts limits on managerial power, in particular regarding redundancies. It is for this reason that Fordism is a 'hegemonic' regime: it is based on a social compromise where employees consent to work intensification in exchange for regular wage increases and relative job security. The 'Fordist model', however, is itself divided into several varieties such as the 'Sloanian', 'Woolardian' etc. models analyzed in the automotive industry (Boyer, Freyssenet, 2000).

Since the beginning of the 1980s, the economic and management literature has produced an abundance of candidates to succeed the 'Fordist model'. The models of 'flexible specialization' (Piore, Sabel, 1989) and 'lean production' (Womack, Jones, Ross, 1993) attempted to combine the advantages of small-scale craft production with those of mass production. Flexible specialization, which relied on networking and local production communities, declined with the spread of globalization and the concentration of financial capital (Courault, 2005), whereas 'lean production' became widespread (Lorenz, Valeyre, 2005). At the same time, the concept of 'the knowledge-creating firm' emerged (Nonaka, Takeuchi, 1997), in which the firms based its competitive superiority on its capacity to mobilize employees' tacit and specific knowledge in order to permanently adapt its organizational routines to changes in its environment. The models of 'lean production' and 'the knowledge-creating firm' are similar in various respects: with the need for reactivity (in the former case) and organizational learning (in the latter), both are based, to some extent, on the decentralization of day to day decision-making, horizontal coordination methods rather than vertical hierarchies, and a high degree of employee cooperation. In terms of industrial relations, both imply direct employee participation mechanisms (quality circles, semi-self-managed groups, project teams etc.); a 'pacified' social climate achieved by highly individualized management-employee relations; high internal and external employee mobility; and both enable a certain fragmentation of work communities. Beyond these similarities, the 'knowledge-creating firm', in principle, distinguishes itself from the 'lean production' model in three distinct ways: higher skills; greater discretion at work; and more complex and less repetitive tasks (Lorenz, Valeyre, 2005).

### **1.3. Overlapping models observed throughout the economy**

Empirical observations typically describe the juxtaposition of 'innovative' and 'traditional' models (Applebaum, Batt, 1994). But "traditional" models have been modernized through the introduction of new technologies: neo-Taylorism or neo-Fordism thus combine the traditional characteristics of Taylorism and Fordism with the electronic surveillance of employee performance and computer-assisted methods of production and design. The 'neo-liberal networked firm' (Coutrot, 2002) stems from a hierarchical integration of establishments or firms coming from different models: 'knowledge-creating' at the top of the network, neo-Fordist or 'lean production' at a first subsidiary or outsourcer level, neo-Taylorist at a second level, etc. This articulation is designed to attain shareholders' profitability standards at the top end of the network (Palpacuer, Seignour, Vercher, 2006). Furthermore, the autonomous dynamics of industrial relations, notably at national and regional level, leave their footprint on firms' industrial relations models: traditions, histories and institutions contribute in shaping how interests and conflicts are represented in ways that, to a certain extent, escape from economic determinism or strategic intentionality (Poutsma, Ligthart, Veersma, 2006).

The concept of the 'socio-productive model' is thus complex, standing at the crossroads of different social sciences: industrial and political economy, management, sociology (of work, organizations and collective action). A country's industrial specialization, its economic

performance and its social cohesion heavily depend upon the predominant socio-productive model and, more globally, the institutional (lack of) complementarities at the macroeconomic level (Aoki, 1994; Amable, 2005; Lung, 2005). In the following sections of this article, we attempt to answer empirically two specific questions. First, are the theoretical models proposed in the literature coherent with the configurations *de facto* observed in the French economy? Second, over the fifteen years covered by the REPONSE surveys we rely on, can one detect the decay of ‘traditional’ models and the rise of one or more ‘innovative’ models?

## **2. SOCIO-PRODUCTIVE MODELS VIEWED THROUGH THE LENSES OF STATISTICAL SURVEYS: QUESTIONS OF DATA AND METHODS**

For our analyses, we used different waves of the REPONSE survey (1992-93, 1998-99 and 2004-05), and different datasets from within those surveys (‘management’ and ‘employee’ questionnaires). We now describe these data in greater detail.

### **2.1. Data: the French REPONSE surveys**

The REPONSE survey was largely inspired by its British counterpart, WIRS (*the Workplace Industrial Relations Surveys*), conducted in 1980, 1984 and 1990, latterly becoming WERS (*Workplace Employment Relations Surveys*) in 1998 and 2004 (see Blanchflower *et al*, 2007 for a recent synthesis of what has been learned through the WI(E)RS series). In common with the British version, the REPONSE survey is conducted under the aegis of the Ministry of Labor and collects the point of view not only of a senior manager in each workplace but also of employee representatives (if they are present) and of a sample of employees. It also, like the British survey, interrogates employers and representatives by means of face to face interviews and employees by means of a self-administered questionnaire. The questions cover a wide spectrum of themes ranging from the structure of ownership to the conditions and organization of work, without forgetting industrial relations and human resources management practices. Finally, it also includes a panel of workplaces which are followed from one survey wave to the next. A detailed account of the REPONSE survey, including its history and methodology, is provided by Amossé and Coutrot (2008). An overview of the different samples, particularly the ones we use here, is presented in *Annex 1*.

In this research, we mainly use a ‘pooled’ sample ( $n = 6,265$ ), which aggregates three samples of 1,744 (from REPONSE 1992-93), 2,256 (from 1998-99) and 2,265 workplaces (from 2004-2005). Each of these samples is representative (when weighted<sup>1</sup>) of all French workplaces with 50 employees or over in the competitive sector (excluding agriculture) at the time of the survey. We also use a sample of 6,128 employees, that were working in establishments of the 2004-05 sample. Finally, in order to present a dynamic perspective, we draw on two panels: the first one includes 371 workplaces, surveyed both in 1992-93 and in 1998-99; the second one includes 742 workplaces, surveyed both in 1998-99 and 2004-05.

In coherence with the theoretical orientation sketched above (which in fact oriented the conception of the survey from the outset), we built a set of indicators for each dimension of the socio-productive models; from work organization to industrial relations, including human

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<sup>1</sup> The weights correct for unequal inclusion probabilities due to the sampling design and include post-stratification by size and industry.

resources management (*Annex 2*). The choice of indicators is limited by the availability of the same variables throughout the three editions of the survey. We therefore could not include in the analysis of the 'pooled' sample the competitive strategy variables, which were asked in different ways in the 1992-93 edition and in the following ones. It nevertheless enables us to succinctly describe how organizational practices, labor management methods and industrial relations evolved in workplaces of over 50 employees in the competitive sector, between 1992-93 and 2004-05 (*Table 1*).

## 2.2. Main trends observed through univariate analyses

'ISO' quality norms are still expanding, under the influence of prime contractors (Gorgeu, Mathieu, Pialoux, 1998), but computer-assisted production technologies have reached their full development, while organizational changes involving the remodeling of company boundaries ("focus on core business" and "outsourcing") have become less frequent.

**Table 1: The main indicators\* used to define the socio-productive models**

	Percentage of workplaces		
	1992-93	1998-99	2004-05
<b>Work organization</b>			
ISO standard	14	37	35
Computer-assisted production, use of robots	19	20	19
At least two organizational innovations (refocusing, outsourcing, streamlining)	28	18	14
At least two participatory devices (quality circles, employee meetings, expression groups)	46	54	58
<b>Human Resources Management</b>			
Individual appraisal interviews (for all employees)	36	41	53
Profit sharing agreement	43	48	54
No general wage increases (either for management or non-management)	14	25	19
Recent change in job classifications	40	24	37
<b>Industrial Relations</b>			
Intensive communication with employees (newsletter, mailings etc.)	36	37	40
Participatory devices (suggestion schemes etc.)	34	36	36
Firm is member of an employer federation	65	60	60
Participates in employer network (industry federation, local employer association)	40	41	31
Presence of union(s) representative(s)	48	55	61
Presence of at least two elected delegates (employee representatives, works council, health and safety committee)	80	79	82
Problem of absenteeism (according to management)	45	44	52
Numerous sanctions against employees	24	18	27
Collective action (strike during the last three years)	20	21	25
<b>Number of observations</b>	<b>1 744</b>	<b>2 256</b>	<b>2 265</b>

\*: See Annex 2 for a precise definition of the underlying indicators. All these variables are active in the empirical construction of the 'socio-productive models'. All figures are weighted.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Management Questionnaire', pooled sample, (n = 6,265), 1992-93, 1998-99, 2004-05 REPOSE surveys, Dares.

After a period of intensive managerial innovation in the 1990s, and the reduction of working hours implemented by the left-wing government between 1998 and 2002, organizational change seems to have slowed down (Bué, Coutrot, Hamon-Cholet, Vinck, 2007; Greenan, Guillemot,

Kosoglu, 2009). The development of participative devices such as quality circles, regular meetings and ‘expression groups’ reflects management’s long-term strategy to increase employee involvement and to facilitate the implementation of profound organizational changes.

Concerning HRM, we observe a significant progression in the use of individual performance appraisal and assessment interviews, notably for non-executives (executives were already subject to these practices at the beginning of the period under review), as well as in flexible wage policies: annual collective wage increases tend to be replaced by a combination of collective increases and flexible or individualized increases based on performance. New job classification methods are less extensively introduced between 1996 and 1998: maybe the morose economic context of previous years dissuaded management from engaging in such formalization (‘investissement de forme’) (Thévenot, 1986).

The industrial relations indicators look relatively stable as far as internal communication devices are concerned, but show a drop in employers’ cohesion (observed in the decline of branch or local employer association membership). Absenteeism and employee sanctions reach or revert to high levels whereas trade union presence and collective conflicts continue to develop. France is thus characterized by an increasingly striking ‘trade-union paradox’<sup>2</sup>: between the late 70’s and the mid 90’s, union membership has registered a steady decline, dropping since then to the lowest rates recorded in any developed country (7% of French employees belonged to a union in 2005); at the same time, and notably since the early 90’s, industrial disputes and union presence at the workplace have continuously increased (Wolff, 2008).

We thus observe a twofold trend: on one hand the standardization and consolidation of procedures, on the other hand a rise in ‘individualizing’ HRM practices aimed at reinforcing direct relations between management and employees. At the same time, we observe an increase in trade-union presence, and increases in individual and collective conflicts. In the French case, even at this very first step of the analysis, one can already detect a discrepancy between the predictions of certain theoretical models’ and the empirical evolution: far from pacifying industrial relations, the introduction of organizational and managerial innovations seems to have coexisted with fairly high levels of conflict between 1992 and 2005.

### **2.3. Multivariate methods used to empirically identify and characterize socio-productive models**

In order to better understand the coherence of practices and strategies that make up the different dimensions of socio-productive models, we first implemented a Multiple Correspondence Analysis (MCA) with the Ward metric<sup>3</sup> on the ‘pooled sample’ with, as active variables, the categorical indicators relating to work organization, human resources management and industrial relations at the workplace<sup>4</sup>. We then utilized a Hierarchical Cluster Analysis (HCA) based on the first axes provided by the MCA. We first describe the characteristics of workplaces and workers in each class, and then relate the classes to the theoretical socio-productive models.

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<sup>2</sup> This paradox is quite specific to the French industrial relation system, where unions bargain for any employees and not only for their members. Individual and workplace unionisation are very weakly linked in France: even in workplaces or firms where a union is recognised for the purposes of bargaining with the employer, only a small part of the workforce is usually unionised.

<sup>3</sup> For a comprehensive description of this method, computational details, and its applications, see for instance Greenacre (1984). Concretely, the ‘*proc corresp*’ of the SAS software has been used with the ‘*mca*’ option.

<sup>4</sup> As previously indicated, the competitive strategy should theoretically be included amongst the analysis’ active variables, but the relevant indicators are unavailable in the 1992-93 survey and the questions concerning this domain changed between 1998-99 and 2004-05; we include them as supplementary variables for the last survey (see later, Table 3).

As noted by Greenacre and Hastie (1987), MCA is the equivalent of principal components analysis for categorical data. As in the usual principal component analysis, the successive axes may be regarded as optimal in repeated scaling programs: with the Ward metric, any set of scale values for all of the categorical indicators used in the MCA imply a score for each respondent (here each workplace), where the score is the average scale value of the categories into which the workplace falls. The first principal axis is then defined so that the scale value provided by the positions on it yield scores with maximum variance. In other words, principal axes are inertia maximising, where inertia is the weighted average of squared (chi-squared) distances from the centroid to the projections of the category points on them. Main displays of MCA are graphical representations of principal axes, which are optimal scale values for the categorical indicators used in the analysis. For instance, *Figure 1* (see later) displays the configuration of category points which maximizes the dispersion of the workplaces in a planar display. Furthermore, each principal inertia can be decomposed into components due to each indicator or category. The study of these components, or 'contributions to inertia' (presented in *Annex 3* for our analysis), is an important feature of the geometric interpretation of the analysis. The categories that contribute highly to a principal axis (there are in bold type in *Figure 1*) have, in effect, largely determined the orientation and thus the identity of the corresponding axis.

The interest of the MCA is not only to provide a graphical representation of the 'structural' patterns of the workplace population in terms of work organization, HR management and industrial relations, but also to help in summarizing the abounding information given by not less than 17 categorical indicators (corresponding to 48 categories) observed for 6,265 workplaces. Indeed, in the cluster analysis, we did not use all of the categorical indicators initially taken into account in the MCA or – the exact equivalent – all of the principal axes it provides. We rely only on the six first principal axes, which correspond to about one third of the total inertia, in order to avoid having some classes defined by only a few workplaces with very specific profiles. Cluster analysis, and notably HCA, is widely used to classify multivariate data into sub-groups. We do not give much detail on the method here: using the principal axes which emerge from a MCA provides the metric directly; and following the elbow criterion<sup>5</sup>, we finally obtained four classes, which can be interpreted by analyzing the profiles of workplaces and employees (in terms of active or additional variables; see later *Tables 2, 3 and 4*).

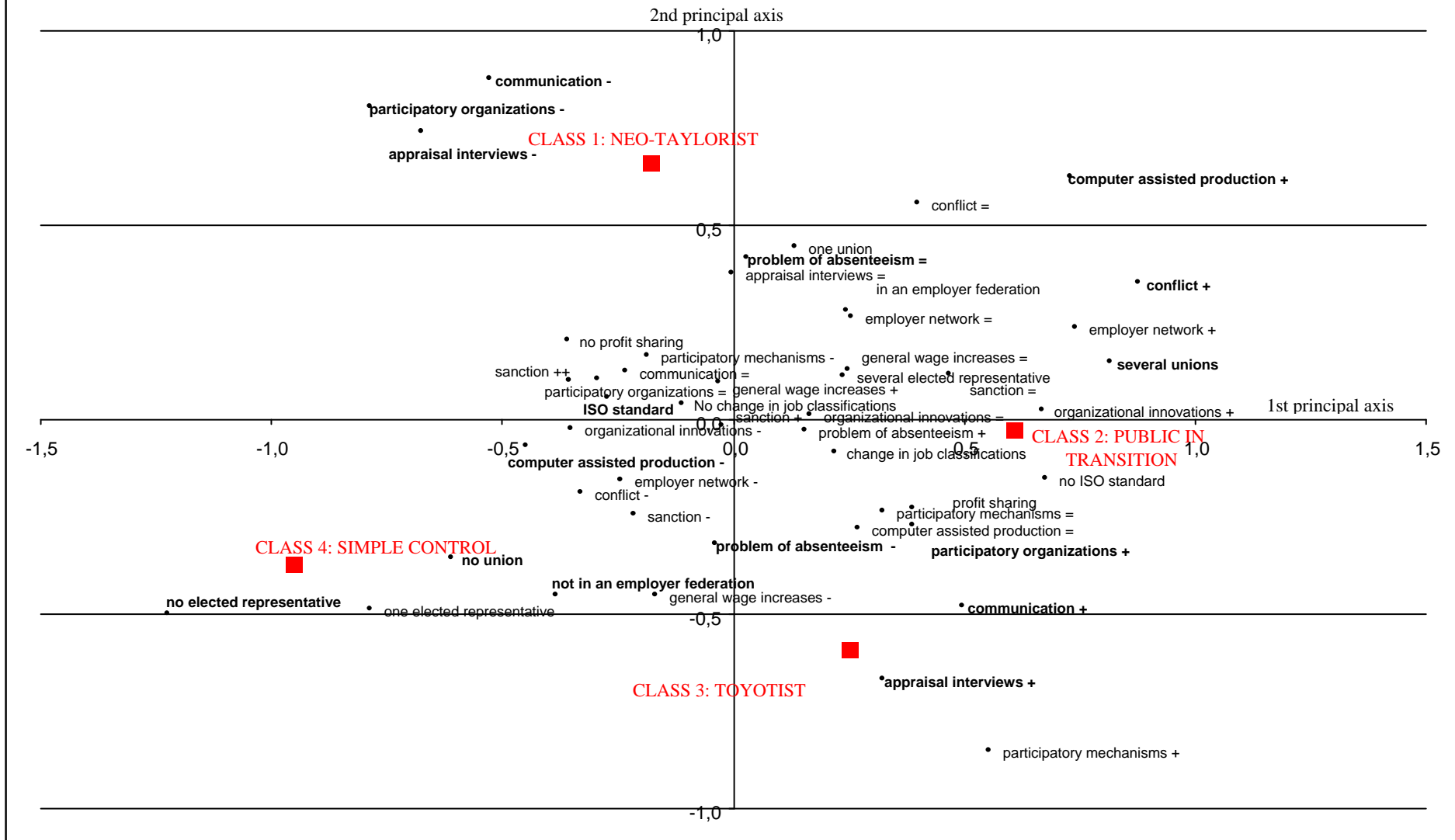
### **3. THE THEORETICAL MODELS: PERTINENT BUT NOT CLAIRVOYANT**

Before describing the results of the MCA, one first notes that it supplies very similar results whether conducted on each of the separate samples (1992-93, 1998-99, 2004-05; not presented here) or on the 'pooled' one. The principal axes seem thus structurally invariant from one survey wave to the next, from the point of view of work organization or HRM, and with the same relationship to supplementary variables such as size or industry. Although not crucial, this first finding confirms this method is able to identify stable and meaningful socio-productive models. As mentioned above, we will now focus on the analysis of the 'pooled' sample, thus opening up the possibility of assessing the evolution of workplaces over time on the principal plan.

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<sup>5</sup> This criterion is an empirical 'rule of thumb' that recommends choosing a number of clusters so that adding another cluster does not greatly improve the modeling of the data.

Figure 1: The four socio-productive models and the categorical indicators used to define them, as displayed in the first principal plan



Note: The four classes are displayed as supplementary variables, whereas all the 48 categories of the 17 indicators (For more details on their labels, see Annex 3) are active variables in the MCA. Categories of indicators which contribute the most to the two first axes are in bold type (some of them contribute both to the first and to the second axis, see Annex 3 for their detailed contributions).  
 Field: Workplaces with 50 employees or more in the non-agricultural trading sector.  
 Source: 'Management Questionnaire', pooled sample, (n = 6,265), 1992-93, 1998-99, 2004-05 REPOSE surveys, Dares.

The first principal axis (8% of inertia<sup>6</sup>) of the MCA is primarily composed of industrial relations variables (*Figure 1, Annex 3*). On one side of the principal plan, workplaces with trade-union representation, with several elected workers' representatives, internal communication networks but also numerous conflicts: these workplaces also exhibit a relatively intense use of technological innovations (*e.g.* computer-assisted production) and organizational innovations (notably ISO standards). On the other side stand workplaces with the reverse characteristics; no union representation whether elected or designated<sup>7</sup>, traditional assembly-line production and no annual performance appraisal interview. The coordinates on this first axis may be interpreted as the degree of formalization of industrial relations and production processes; it is highly correlated with establishment size.

The second principal axis (5%) is mainly determined by HRM variables (individual appraisal interview for every employee, internal communication, participatory devices): workplaces that exhibit an intensive use of these tools are opposed to those who rarely use them. This opposition is further increased by declarations concerning absenteeism: managers from workplaces with few HRM practices complain more about absenteeism than those who have a sophisticated HRM approach; the latter also have a lesser probability of being a member of a business association (*e.g.* industry federation or local employer club).

The third principal axis (4.5%) highlights workplaces where management practices are different for executives and engineers ('cadres') compared to other employees: management mentions problems of absenteeism for these employees even though they are subject to individualized appraisal-based wage increases. Furthermore, these workplaces less frequently belong to any employer organization and are more prone to sanctioning employees. The fourth principal axis (4.2%) identifies workplaces that belong to an employers' organization, have formalized work organization (ISO standard, computer-assisted production) but no employee representatives (whether elected or designated).

In order to constitute a typology by a HCA, we retained the workplaces' coordinates on these four axes to which we added the fifth and sixth., The four empirical classes emerging then from the cluster analysis represent 'workplace profiles' which combine work organization methods, human resources management and social regulation practices (at least as they were highlighted by the REPOSE survey) in a specific manner. To compare these classes with the socio-productive models outlined by the theoretical literature is no more than a heuristic tool, given that, to a great extent, they depend on methodological choices not exempt from arbitrariness. In effect, the number of classes is set according to the elbow criterion but this same criterion applied to other specifications (for example when retaining eight principal axes and not six) supplies six classes. Nevertheless, the first two principal axes do not depend on the choice of a specific wave of the survey or a specific choice of indicators, and the profile of the socio-productive classes (possibly split into sub-classes) does not depend much on the choice of the classification method.

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<sup>6</sup> The inertia percentile explained by the first factorial axes may look small but can be explained by the large number of variables (17) and active response modes (48) in the analysis, which increases the diversity of individual situation. As outlined in insert 2, the aim of this method is precisely to summarize this diversity by identifying its underlying structure.

<sup>7</sup> In France, two types of employee representatives exist: first, any employee may be chosen as union delegate ('délégué syndical') by a 'representative' union – the main organisations are CFDT; CGT; CGT-FO, CFE-CGC and CFTC, some others are significant only at industry or firm level; other worker representatives may then be elected ('délégué du personnel' in workplaces over 11 employees; works councils (Comité d'entreprise) in workplaces over 50 employees).

**Table 2: Characteristics of the four socio-productive model profiles (active variables\*)**

	Percentage of workplaces			
	Simple control (n = 509)	Neo-Taylorist (n = 2 230)	Toyotist (n = 1565)	Public in transition (n = 1565)
<b>Work organization</b>				
ISO standard	<b>9**</b>	26	<b>49</b>	<b>12</b>
Computer-assisted production , robot	8	<b>27</b>	<b>20 (-)</b>	<b>8</b>
At least two organizational innovations (refocusing, outsourcing, streamlining)	15	<b>17</b>	<b>19</b>	<b>32</b>
At least two participatory devices (quality circles, employee meetings, expression groups)	43	<b>44</b>	<b>69</b>	<b>48 (-)</b>
<b>Human Resources Management</b>				
Individual appraisal interviews (for all employees)	<b>32 (-)</b>	<b>22</b>	<b>66</b>	<b>55</b>
Profit sharing agreement	<b>25</b>	44	<b>59</b>	55
No general wage increases (either for management or non-management)	<b>13</b>	<b>13</b>	<b>33</b>	<b>12</b>
Recent change in job classifications	<b>45</b>	<b>29</b>	<b>32</b>	<b>42</b>
<b>Industrial Relations</b>				
Intensive communication with employees (newsletter, mailings...)	<b>32 (+)</b>	<b>21</b>	<b>47</b>	<b>60</b>
Participatory devices (ideas box or open-door day)	29	<b>27</b>	<b>49</b>	<b>31 (-)</b>
Firm is member of an employer federation	<b>61 (+)</b>	<b>60 (-)</b>	63	<b>61 (-)</b>
Participates in employer network (industry federation and local employer association)	<b>37 (+)</b>	<b>31 (-)</b>	40	<b>45</b>
Presence of union(s) representative(s)	<b>4</b>	<b>62</b>	<b>51 (-)</b>	<b>85</b>
Presence of at least two elected delegates (employee representatives, work council, HSWCC)	<b>25</b>	<b>89</b>	<b>85</b>	<b>95</b>
Problem of absenteeism (according to by management)	<b>39 (-)</b>	<b>67</b>	<b>29</b>	47
Numerous sanctions against employees	<b>34</b>	<b>35</b>	<b>13</b>	<b>11</b>
Collective action (strike during the last three years)	<b>3</b>	<b>25</b>	<b>10</b>	<b>53</b>
<b>Size of the different classes</b>	<b>13</b>	<b>36</b>	<b>33</b>	<b>18</b>

\*: See Annex 2 for a precise definition of the indicators used to define the classes.

\*\* All figures are weighted. The figures in bold type identify those items which, in a logistic regression model explaining whether a workplace belongs to the socio-productive model noted in the column heading, are statistically significant at the 5 % level. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). '+' and '-' signs indicate the direction of the net effect (all being equal) when it is not clear. The detailed results of the models are presented in Annex 4a.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Management Questionnaire', pooled sample, (n = 6,265), 1992-93, 1998-99, 2004-05 REPONSE surveys, Dares.



**Table 3: Characteristics of the four socio-productive models (additional management variables\* in 2004-05)**

Percentage of workplaces

	Simple control (n = 130)	Neo-Taylorist (n = 787)	Toyotist (n = 756)	Public in transition (n = 592)
<b>Legal and ownership structure</b>				
single site firm	50	44	38	33
Workplace older than 20 years	<b>55**</b>	67	65	<b>74</b>
Family owned	36	<b>37</b>	29	<b>14</b>
Under public control (State, local authorities)	5	<b>2</b>	3	<b>13</b>
Belongs to a larger corporation	<b>32</b>	54	61	57
listed firm	16	30	<b>42</b>	37
<b>Economic strategy and positioning</b>				
Market spread	<b>Local (45)</b>	<b>Regional (20)</b>	<b>Worldwide (30)</b>	Local (31)
Market share over 25 %	27	<b>34</b>	25	30
Predictable market	31	26	29	<b>41</b>
Stable market	<b>57</b>	<b>55</b>	<b>66</b>	67
Main element of economic strategy	Service quality (42), price (22)	Price (24)	Product quality (21), <b>Innovation (10)</b>	Service quality (42), no strategy (7)
Substantial market power	25	20	27	18
Main benchmark in price fixing	Costs (30)	Costs (27)	Market (37)	<b>Regulation (20)</b>
Firm's primary objective	<b>Quality (30)</b>	<b>Profitability (29)</b>	<b>Profitability (37)</b>	Budget (28)
Prime contractor	<b>44</b>	62	63	63
Sub-contractor (for at least 10 % of turnover)	17	20	19	16
Non-profit organisation	<b>7</b>	8	5	<b>15</b>
<b>Economic health</b>				
High profitability (according to management)	25	22	<b>30</b>	22
Growth in business activity	<b>63</b>	52	55	51
Growth in total number of employees	50	41	46	39
Growth in number of executives ('cadres')	<b>25</b>	28	<b>41</b>	32
Growth in number of white collar employees ('employés')	41	31	30	<b>22</b>
Growth in number of blue collar employees ('ouvriers')	23	26	20	17
<b>Human resource management and work organization</b>				
Training budget amounts to 2 % of pay roll	<b>44</b>	<b>48</b>	<b>66</b>	64
Just-in-time arrangement with customers	33	42	42	33
Integrated management solutions (ERP)	<b>26</b>	<b>33</b>	<b>53</b>	39
Significant technological change (in last 3 years)	13	<b>11</b>	17	<b>22</b>
Significant organizational change (in last 3 years)	27	31	34	<b>43</b>
Product innovation (in last 3 years)	35	<b>30</b>	41	<b>45</b>
Work is strictly prescribed	<b>62</b>	<b>75</b>	<b>58</b>	65
Low employee autonomy	46	<b>52</b>	<b>37</b>	41
Permanent controls on employees	72	71	67	<b>56</b>
Multi-skilling	42	44	46	39

\*: Questions used to define the indicators can be found on '[http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST\\_RD\\_2004-2005.pdf](http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST_RD_2004-2005.pdf)'. For more details, please contact authors.

\*\* All figures are weighted. The figures in bold type identify those items which, in a logistic regression model explaining whether a workplace belongs to the socio-productive model noted in the column heading, are statistically significant at the 5 % level. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). '+' and '-' signs indicate the direction of the net effect (all being equal) when it is not clear. The detailed results of the models are presented in Annex 4b.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire' (n = 2,265), 2004-05 REPOSE survey, Dares.

**Table 4: Characteristics of the four socio-productive models  
(additional employee variables\* in 2004-05)**

	Percentage of employees			
	Simple control (n = 295)	Neo-Taylorist (n = 2 071)	Toyotist (n = 2 121)	Public in transition (n = 1 641)
<b>Work organization</b>				
Always or often works in a hurry	32	27	27	27
Chooses one's work method	<b>75*</b>	82	87	87
Personally handles incidents	51	<b>51</b>	57	57
Participates in work related meetings	53	<b>58 (-)</b>	<b>73</b>	74
Has individual appraisal interviews with superiors	<b>37</b>	<b>44</b>	<b>67</b>	<b>68</b>
<b>Reasons for investing in one's work</b>				
To gain respect from peers	27	<b>23</b>	28	29
To satisfy clients, users	76	68	73	76
Fear of losing one's job	19	<b>16</b>	12	11
<b>Obstacles to investing in one's work</b>				
Working conditions	19	19	15	16
Lack of recognition	42	40	<b>33</b>	36
<b>Industrial relations</b>				
Has participated in meetings with employee representatives	19	29	<b>25 (-)</b>	35
Has participated in a work stoppage	3	23	<b>14 (-)</b>	<b>28</b>
Has participated in another form of collective action (petition, rally, etc.)	7	21	<b>17 (-)</b>	<b>28</b>
Is a union member	3	<b>8 (-)</b>	6	<b>13</b>
Indicates that 'management consults employees in the event of tensions within the workplace'	<b>30</b>	<b>44</b>	41	<b>44</b>

\*: Questions used to define the indicators can be found on '[http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST\\_Sal\\_2004-2005.pdf](http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST_Sal_2004-2005.pdf)'. For more details, please contact authors.

\*\* All figures are weighted. The figures in bold type identify those items which, in a logistic regression model explaining whether a workplace belongs to the socio-productive model noted in the column heading, are statistically significant at the 5 % level. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). '+' and '-' signs indicate the direction of the net effect (all being equal) when it is not clear. The detailed results of the models are presented in Annex 4c.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Employee Questionnaire' (n = 6,128), 2004-05 REPONSE survey, Dares.

### 3.1. Simple control

The first type is defined by negative characteristics, notably the lesser presence of trade-unions and elected institutions and apathetic industrial relations (*Table 2*): these workplaces are less frequently faced with problems of absenteeism than elsewhere, and have notably few collective conflicts (they do not hesitate, however, to sanction employees). These workplaces have scarcely adopted the ISO standards or computer-assisted production methods, and innovations in work organization and participatory devices are equally rare. They do not commonly undertake individual performance appraisal interviews or use profit sharing as a wage policy.

Concerning the supplementary variables (which were not active in the determination of the classes) (*Table 3*), in 2004-05<sup>8</sup> these establishments are often single site, independent SMEs, and rarely prime contractors. They report a rather dynamic economic situation. Their markets are often local and their competitiveness relies on service quality. Work is strictly supervised and training budgets are low. In the latest edition of the survey, the related industries are hotel/catering (chains), contract cleaning, security, health and social care. Confirming managers' statements, employees in these workplaces more often report low discretion at work and poor working conditions limiting the extent to which they invest in their work (even though this last difference is not statistically significant). Few belong to a trade-union or participate in industrial actions at work (*Table 4*), thus confirming the somewhat 'despotic' nature of this socio-productive model.

On the whole, this profile is very similar to the 'simple control' model (Edwards, 1979). It accounts for 13% of workplaces with 50 employees or more (and only 7% of employees).

### 3.2. Neo-Taylorist

The second profile looks like the first in respect of the limited spread of organizational innovation, participatory devices, communication policies and individual appraisal interviews. Another point in common is the fairly intensive use of sanctions against employees. At the same time, and in contrast to 'simple control' profiles, these workplaces are much more "high tech", with many ICT devices, and are plagued with high rates of absenteeism which probably indicates employee dissatisfaction with working conditions and/or difficult jobs. These workplaces, being on average larger, more frequently have a profit sharing scheme, but less frequently have adopted a new job classification scheme, confirming their relatively low investment in human resources management. Participation in employer networks is low and union presence is average.

The supplementary variables confirm that this profile has a close resemblance to the neo-Taylorist production model: just-in-time, multi-skilling is clearly more developed than elsewhere, work is meticulously prescribed, employees' latitude to intervene in case of work-related incidents (like production breakdowns) is low; competitiveness is often based on low prices, and profitability is said by managers to be somewhat lower than other competitors. These workplaces almost never are public utilities, but frequently belong to family owned firms. The related industries are manufacturing (in particular intermediary and production goods) but also include road transportation, retail trade, cleaning etc. This model concerns 36% of workplaces and 35% of employees.

The employees interrogated in these workplaces largely corroborate the analysis resulting from their managers' responses: they have less autonomy, as they frequently declare that they have to call for assistance in case of an incident at work. They more frequently complain about 'poor working conditions' as being an obstacle to them making a greater investment in their work<sup>9</sup>. Nevertheless, they do not adopt the *exit* strategies (Hirschman, 1970) as their managers indicate: a high proportion of employees (almost a half if one considers both work stoppages and other forms of collective action) has participated in a collective dispute during the last three years preceding the survey, which in practice tends to attenuate this model's 'despotic' nature.

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<sup>8</sup> As mentioned previously, certain variables were in fact only available in the last survey wave.

<sup>9</sup> The difference with employees of other models' workplaces is though not statistically significant.

### **3.3. Toyotist**

The third workplace profile (33% of workplaces and 34% of employees) is radically different from the two preceding models: innovative HRM systems are widespread, whether in terms of communication devices, employee participation, individual appraisal interviews, profit-sharing agreements, or wage flexibility and ISO standards. These workplaces have exceptionally peaceful industrial relations: they report low absenteeism and few individual sanctions or collective work stoppages. Union presence is somewhat lower than in other workplaces of equivalent size.

Looking at the supplementary variables, work organization methods confirm that this profile is close to both the 'lean production' and 'knowledge-creating' models: work is varied, management declares that employees benefit from a high degree of autonomy in handling work-related incidents, and training budgets are high. Just-in-time organizational methods and integrated management solutions are widespread; these indicate the presence of horizontal coordination systems. These companies belong to major listed firms and operate in international markets, often considered stable; their competitive strategies are based on innovation and product quality, and profitability is said to be relatively high compared with competitors. They are typically found in the consultancy sector, IT, high value-added manufacturing industries (automotive and luxury goods), and specialized wholesale and retail trade. In fact, the work organization indicators we use here are not precise enough to allow for a clear empirical distinction between 'lean production' and 'knowledge-creating' models: this is why we qualify this profile as 'Toyotist', a somewhat less precise label, in reference to Aoki's model, even if French unions do not have the same close relationship with their firm than their Japanese counterparts.

In these workplaces, employees' statements confirm their managers': Compared to employees of other models' workplaces, they more often declare that their work is not tightly prescribed, that they have an annual individual appraisal interview, that they invest in their work to 'gain recognition from colleagues', a promotion or a wage increase (differences though not statistically significant); they rarely participate in collective conflicts. Managerial hegemony appears to be salient in this socio-productive model.

### **3.4. Public management in transition**

The fourth model is less expected with regard to the current theoretical models. These workplaces practice organizational, technological and product innovation, and have intensive communication practices; yet they have rarely implemented ISO standards or computer-assisted production methods. Their HRM is characterized by an apparently paradoxical cocktail: individual appraisal interviews are widespread, but at the same time, so are collective wage policies such as across-the-board wage rises and profit sharing. In terms of industrial relations we observe a strong union presence, often with several unions at the same workplace, few individual sanctions but a great number of strikes. Most of these characteristics are confirmed by reports from the employee questionnaires: in these workplaces managerial hegemony appears widely contested by relatively autonomous work communities.

As far as the organization of work is concerned, just-in-time is unusual and work is not strictly controlled. Workplaces are old and large, often belong to public utilities or non-profit organizations; their market is mainly national, their competitiveness is based on service

quality and their prices are often regulated. Compared to other models' workplaces, their growth is slower but market evolutions are fairly predictable from one year to the next. The main related industries are banking and insurance, railways, and council housing agencies: all industries where public ownership had and continues to play an essential role in France.

This profile is described as 'public' in that these companies' management systems are managed according to legal or collectively negotiated standards, and often by the state itself. In many cases employees are granted protective employment rules ('emplois à statut'), similar to civil servants. We add 'in transition' because these workplaces often belong to firms that are either privatized or in the process of being privatized (such as the Post Office, the railways, air transport, electricity production), that have significantly modified their work organization over the last few years and that have innovated in terms of products and individualized human resources management (Culpepper, Hall, Palier, 2006). The transition nevertheless appears to be conflictual and its outcome somewhat unpredictable: a high incidence of industrial action in these firms suggests the resistance of strong professional identities and work communities confronted with increased flexibility and profitability standards. This model accounts for 18% of workplaces and 25% of employees in the competitive sector.

Although each socio-productive model is strongly associated with certain industries, and this association is extremely stable through time, it is not deterministic. Firms engaged in manufacturing, as well as those engaged in trade or services, can be found in each of the different models, although not with the same probability: in 2004-05 for instance, while road transportation is more present in the neo-Taylorist class (6.5% of neo-Taylorist workplaces), it is not totally absent of the Toyotist one (1.5%); and the opposite happens for consultancy, which respectively represents 2.1% and 7.8% of the neo-Taylorist and the Toyotist workplaces. In terms of socio-productive models, differences exist both between and within industries. Sometimes even in the same company, different workplaces can belong to different models: there is thus a great amount of heterogeneity within firms in regard to work organization, HRM and industrial relations.

In the end, the empirical data can be confronted with some models classically outlined in the theoretical literature: simple control, neo-Taylorist and Toyotist. But we do not isolate a 'lean production' or a 'knowledge-creating company' model, as do other typologies based solely on work organization variables (Lorenz, Valeyre, 2005). Two main reasons can be put forward: a technical one refers to the fact that the variables describing work organization and available in the three survey editions are neither numerous nor precise enough to identify this distinction. Furthermore, in our approach, HRM and industrial relations practices play a dominant role when compared with work organization characteristics. These HRM and industrial relations variables shape the 'public in transition' model we identify, which was not predicted in the theoretical literature. Its importance appears to be specific to the French situation where the weight of these (formerly) public utilities continues to shape the productive base and especially industrial relations, despite the active privatization policies carried out over the last fifteen years.

#### **4. THE DYNAMICS OF SOCIO-PRODUCTIVE MODEL**

From one edition of the survey to the next, the relative importance of the different socio-productive models present in the French economy changes under the impact of two mechanisms. On one hand, workplace demographics: some establishments disappear, others are created, and

the resulting impact modifies the relative weight of the different models. On the other hand workplaces can switch between models: panel analysis reveals these transitions between models. Using the panel surveys – one comprising establishments interrogated both in 1992-93 and 1998-99, and another comprising those present both in 1998-99 and in 2004-05 – one can describe how workplaces move from one model to another (Table 6 and 7). Panel data allows us to compute the flows of workplaces and employees that changed classes between two surveys, and how the relative weight of each class has increased or diminished (Figures 2 and 3), two results that will be compared with the cross-sectional data on change presented in Table 5.

**Table 5: The dynamics of socio-productive models (cross-sectional data)**

	1992-93	1998-99	2004-05
<b>Percentage of workplaces*</b>			
Simple control	16	12	11
Neo-Taylorist	38	34	36
Toyotist	25	36	35
Public in Transition	21	16	17
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Percentage of employees*</b>			
Simple control	11	5	6
Neo-Taylorist	35	34	35
Toyotist	24	36	34
Public in Transition	30	25	25
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

\* Figures are weighted with two different weighting sets: that used in the upper panel allows the analyst to infer proportions in the workplaces population; that used in the lower panel allows the analyst to infer the proportions in the corresponding employee population.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Management Questionnaire', pooled sample, (n = 6,265), 1992-93, 1998-99, 2004-05 REPONSE surveys, Dares.

#### 4.1. Declining models: 'public in transition' and 'simple control'

Between 1992-1993 and 2004-2005, we observe a decline in the 'public in transition' and 'simple control' models whereas the Toyotist model becomes more widespread. The prevalence of neo-Taylorist workplaces remains relatively stable. The decline of the 'simple control' model must not be overstated, considering that we ignore the changes undergone in workplaces with fewer than 50 employees. Concerning the 'public' and 'Toyotist' models, their relative importance has been inverted in less than fifteen years: in 2004-05, they represent 25% and 34% of employees respectively, against 30% and 24% in 1992-93. During the most recent survey, the 'Toyotist' and 'neo-Taylorist' workplaces account for equivalent numbers of employees, well above 'public in transition' workplaces.

Coherent with the decline in the intensity of organizational change observed during the most recent period, the changes appear more significant between 1992-93 and 1998-99 than between 1998-99 and 2004-05. Over this last period, the overall configuration appears to have stabilized and the reduction in working hours ('35 heures') has reinforced the specificity of each model rather than having altered it (Coutrot, 2006). A projection on the first factorial plan, representing the centre of gravity of workplaces present over the different

survey waves, confirm these observed trends: the spot moves from the north-west quadrant (the area where the most 'neo-Taylorist' workplaces are projected) towards the south-east quadrant (where we find the most 'Toyotist' type workplaces); on the two sub-periods that separate the three surveys, the direction of change shifts slightly and its magnitude diminishes. Thus with the stable weight of the neo-Taylorist model, the decline in the participation of other socio-productive models ('simple control' and 'public in transition') implies to some extent a 'Toyotization' of France's productive base.

**Table 6: The dynamics of socio-productive models (1992-93 and 1998-99 panel)**

Percentage of workplaces		1998-99				Total
		Simple control	Neo-Taylorist	Toyotist	Public in transition	
1992-93	Simple control	4 (n = 10)	4 (n = 14)	7 (n = 18)	0 (n = 2)	15
	Neo-Taylorist	4 (n = 8)	21 (n = 77)	11 (n = 39)	7 (n = 25)	43
	Toyotist	1 (n = 1)	6 (n = 19)	12 (n = 43)	4 (n = 19)	23
	Public in Transition	1 (n = 3)	6 (n = 29)	7 (n = 26)	6 (n = 38)	19
<b>Total</b>		<b>9</b>	<b>37</b>	<b>37</b>	<b>17</b>	<b>100</b>

Percentage of employees		1998-99				Total
		Simple control	Neo-Taylorist	Toyotist	Public in transition	
1992-93	Simple control	2	3	3	1	9
	Neo-Taylorist	1	21	10	6	38
	Toyotist	0	5	11	6	22
	Public in Transition	1	8	9	13	31
<b>Total</b>		<b>4</b>	<b>37</b>	<b>33</b>	<b>26</b>	<b>100</b>

\* Figures are weighted with two different weighting sets: that used in the upper panel allows the analyst to infer proportions in the workplaces population; that used in the lower panel allows the analyst to infer the proportions in the corresponding employee population. Each of these two sets is defined as the mean of the 1992-93 and the 1998-99 weights.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire', 1992-93 and 1998-99 panel sample, (n = 371), REPOSE surveys, Dares.

**Table 7: The dynamics of socio-productive models (1998-99 and 2004-05 panel)**

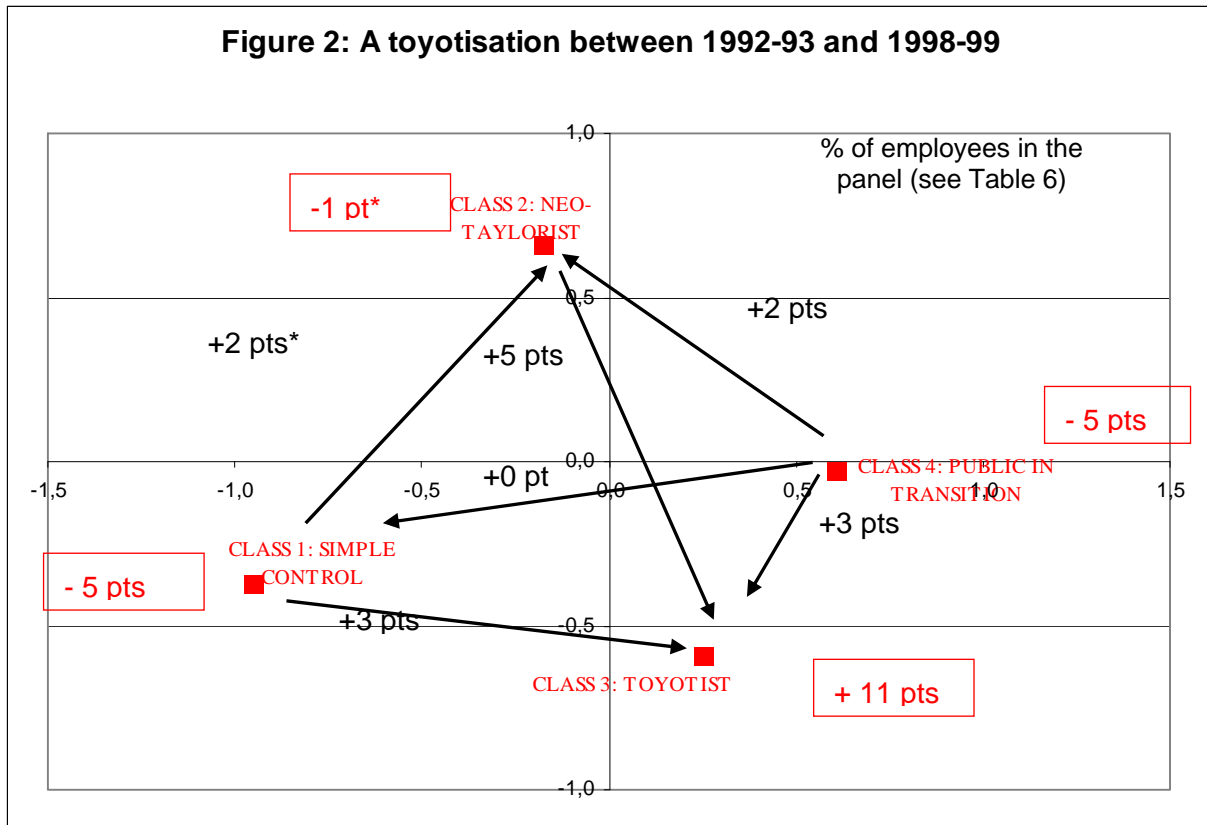
Percentage of workplaces		1998-99				Total
		Simple control	Neo-Taylorist	Toyotist	Public in transition	
1998-99	Simple control	3 (n = 10)	4 (n = 16)	3 (n = 10)	1 (n = 2)	11
	Neo-Taylorist	2 (n = 10)	23 (n = 173)	10 (n = 70)	5 (n = 38)	40
	Toyotist	3 (n = 9)	10 (n = 79)	13 (n = 96)	6 (n = 57)	32
	Public in Transition	1 (n = 4)	5 (n = 53)	3 (n = 31)	8 (n = 82)	17
<b>Total</b>		<b>9</b>	<b>42</b>	<b>29</b>	<b>20</b>	<b>100</b>

Percentage of employees		1998-99				Total
		Simple control	Neo-Taylorist	Toyotist	Public in transition	
1998-99	Simple control	1	2	1	0	4
	Neo-Taylorist	1	23	9	5	38
	Toyotist	1	10	13	9	33
	Public in Transition	1	7	4	13	25
	<b>Total</b>	<b>4</b>	<b>42</b>	<b>27</b>	<b>27</b>	<b>100</b>

\* Figures are weighted with two different weighting sets: that used in the upper panel allows the analyst to infer proportions in the workplaces population; that used in the lower panel allows the analyst to infer the proportions in the corresponding employee population. Each of these two sets is defined as the mean of the 1998-99 and the 2004-05 weights.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire', 1998-99 and 2004-05 panel sample, (n = 742), REPOSE surveys, Dares.

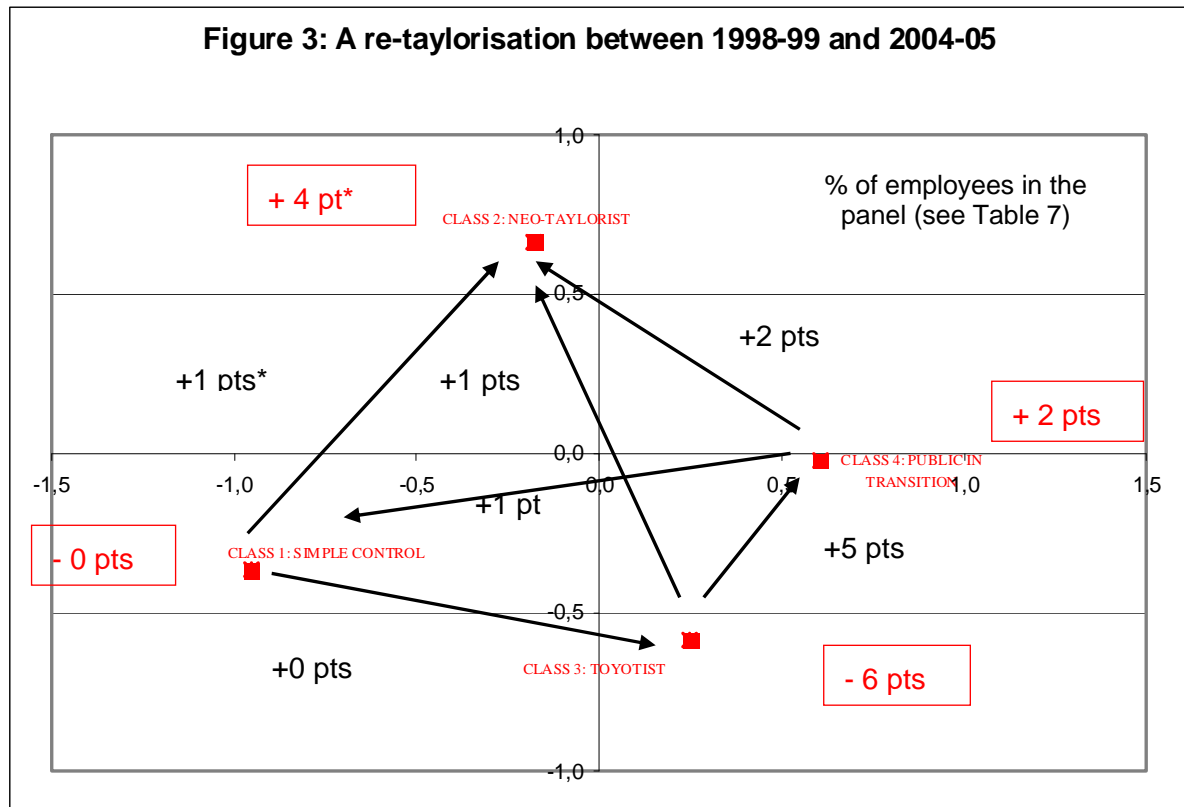


\* All figures are weighted (by the mean of the 1992-93 and the 1998-99 weights) so that they correspond to the change between or within each socio-productive class (in percentage of employees in the panel): the net flow of workplaces from the 'simple control' class to the 'neo-Taylorist' class represents 2 % of the total number of employees in the panel; given all the net flows, the 'neo-Taylorist' class loses the equivalent of 1 % of the employees of perennial workplaces between 1992-93 and 1998-99. For more details see Table 6.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire', 1992-93 and 1998-99 panel sample, (n = 371), REPOSE surveys, Dares.





\* All figures are weighted (by the mean of the 1998-99 and the 2004-05 weights) so that they correspond to the change between or within each socio-productive class (in percentage of employees in the panel): the net flow of workplaces from the 'simple control' class to the 'neo-Taylorist' class represents 1 % of the total number of employees in the panel; given all the net flows, the 'neo-Taylorist' gains the equivalent of 4 % of the employees of perennial workplaces between 1998-99 and 2004-05. For more details see Table 7.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire', 1998-99 and 2004-05 panel sample, (n = 742), REPOSE surveys, Dares.

## 4.2. Renewal and ageing, contradictory trends: towards a 'reTaylorization' of work?

So as to clearly define the dynamics at work, we used the survey's longitudinal dimension, based on the follow-up of a significant number of workplaces from one survey edition to the next ('perennial' workplaces). *Figures 2 and 3* exhibit the net flows of workplaces from one model to another (arrows) and the variations in the number of employees in each model (insert). These two statistics each provide distinct insights: the latter reveals the rise or decline of the different models in perennial workplaces, thus only taking into account the aging of the productive base and not its renewal; the first provides an understanding of the movements of perennial workplaces between models.

On the whole, the demographics and aging of workplaces (by creation or closure) mutually reinforce their effects on the structure of France's productive base. In the first period the decline of the 'public' and 'simple control' models, observed transversally (that is to say on the full sample), is validated by the panel (-5 points for each), as is the significant rise of the 'Toyotist' model (+ 11 points). In the most recent period, stabilization is confirmed by the panel in coherence with the evolutions observed on the full sample: there is only a very small decline in the relative weight of the 'simple control' model, and even an increase for the

'public' model (+ 2 points). Nevertheless, for the 'neo-Taylorist' model, aging and renewal are not always correlated: the renewal of the productive base leads to a loss of influence for this model (new workplaces being less frequently 'neo-Taylorist' than those that disappear). On the contrary, between 1998-99 and 2004-05, a significant proportion of ageing workplaces tend to shift to a 'Taylorist' model. Amongst the panel workplaces, the percentage of employees in 'neo-Taylorist' workplaces thus increases by 4 points between the two surveys.

The analysis of movements between models provides more precise results: over the two periods, the '(neo)-Taylorist' shift takes place between the 'public' and 'simple control' models. These movements can be explained either by the crossing of critical size thresholds for some 'simple control' workplaces, or by significant changes (privatization, mergers) accompanied by changes in work organization and industrial relations. From one period to the next, however, the dynamics of the two 'innovative' models are reversed. There is a clear 'Toyotization' between 1992-93 and 1998-99: in the panel 5% of employees move from a 'neo-Taylorist' structure to a 'Toyotist' structure between these two dates. Inversely, between 1998-99 and 2004-05, the swing is from the 'Toyotist' model to the 'neo-Taylorist' model with an admittedly modest flow of 1% of panel employees, which nevertheless reinforces those flows related to the decline of the 'simple control' and, more especially, the 'public in transition' models. The 'Toyotist' model is no longer the preferred destination of existing workplaces; that is now the 'neo-Taylorist' model. Finally, over the two periods, the preferred destination of workplaces that fit the 'public in transition' model is the same: the 'neo-Taylorist' model. Departing from the 'public' model seems to imply a demise of employees collective commitment at work and a decline in employees' professional autonomy. The way this transition occurs would explain the acrimony of the reactions from the employees of ex-public sector companies, which would tend to strengthen the most radical labor-unions (Denis, Jeannot, 2005).

## **5. CONCLUSION AND DISCUSSION**

One must naturally keep in mind that our sample size is limited and that the indicators used in our analysis are very synthetic; the results thus require validation from other sources or methodologies. They appear nevertheless coherent with the results of the French 2005 survey on working conditions (Bué, Hamon-Cholet, Coutrot, Vinck, 2007) which indicates a decline in employees' autonomy at work between 1998 and 2005, as do recent field observations (Barisi, 2004; Ardeni, Gorgeu, Mathieu, 2007). It appears as if, having passed the most intensive period of innovation, management partially retrieves the autonomy it temporarily granted to employees.

On the whole, we do not observe a generalized and systematic convergence towards 'innovative' models, but a dual movement: on one hand, the renewal of the productive base definitely contributes to the development of the 'Toyotist' model, but only between 1992-93 and 1998-99; on the other hand, firms ageing and privatizations appear to boost the 'neo-Taylorist' model. To some extent, the 'simple control' model appears as transitory: developing workplaces either fall into the 'Taylorist' model or shift towards the 'Toyotist' model. Although experiencing a decline throughout the 1990s, and despite (or maybe because of) the major changes it suffered, the 'public in transition' model does not appear to have disappeared at all. Among panel workplaces, a significant number of workplaces and employees have shifted from the 'Toyotist' model to the 'public in transition' model during

the recent period. In common with the more traditional 'neo-Taylorist' socio-productive model, this French exception resists the rise of the supposed '*one best way*' of Toyotism.

Our typology of socio-productive models is not devoid of weaknesses or even arbitrariness: the choice of active variables was largely determined by the nature of available data that were common between the three survey editions, and the choice of four configurations is not the only ones possible: other typologies with six or ten classes would be just as valid on empirical grounds. We were not able to distinguish between "knowledge-based" and "lean production" models, and had to refer to the somewhat less-precise notion of "Toyotism". Nevertheless the main results do not change much with methodological variants, and the typology presented fairly echoes the models evoked in the literature (simple control, (neo)-Taylorism, Toyotism). It equally highlights the presence of a less classical model called 'public in transition', where work organization, human resources and industrial relations are managed in reference to state ownership or protective employment statuses. The longitudinal analysis carried out on the panel data indicates a rise in 'innovative' models but also the resistance, if not the development, of the 'neo-Taylorist' model in the most recent period; a development notably driven by the transition of 'public' workplaces to a more commercial and financial focus. Employee reports confirm the models' coherence and provide insights into the roles that employees and their representatives are given in each model.

The 'public in transition' model includes specific (highly institutionalized and conflictual) industrial relations, human resource management practices (with developed internal markets) and market structures (with a degree of legal regulation): it seems rather idiosyncratic to the French case, and would probably not be identified with such clarity in datasets coming from countries such as Britain, USA or Australia. The relative revival of neo-Taylorism during the most recent period questions the irreversibility of managerial innovations and the relevance of a *one best way*, whether managerial or organizational. During the history of capitalism, work organization methods have oscillated between 'autonomy' and 'control' in line with prevailing economic situations and the major waves of innovation; the restructuring of work in the 1980-90 period favored a relative increase in the discretion granted to employees, probably partially retrieved by management at the beginning of the 2000s once organizational methods stabilized. One may also speculate about the impact of the rise of the shareholder value model in the 1990s: one hypothesis could be that "financialisation" did favor the rise of the "neo-Taylorist" model, as can be inferred from the relatively frequent transitions between the "public" and "neo-Taylorist" models through privatizations. On the other hand, listed firms tend to be associated with the "Toyotist" model (Table 3), which may be seen as contradictory to the hypothesis.

This research may also have methodological implications. Greater attention has recently been paid to the analysis of individual behavior using mathematical models and sophisticated econometric methodologies applied to statistical data on individual firms and employees. These models generally imply strong hypotheses of linearity<sup>10</sup> that attempt to reveal causalities from statistical associations established between two dimensions (for example HRM with industrial relations, or union presence with economic performance). Yet, as we observed in our data, the characteristics of numerous socio-productive models only make

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<sup>10</sup> This hypothesis means that an 'independent' characteristic of the workplace (for example systematic individual appraisal interviews) has an identical statistical association with a 'dependent' variable (such as employees' job satisfaction) whatever the firms' or employees' other characteristics. As it happens, the hypothesis is invalidated by the fact that this association may differ according to whether a union is present in the firm or not. In other words, the associations between variables strongly depend on the context (*i.e.* the socio-productive model to which the firm belongs).

sense through the way in which they interact in combination with other characteristics; a potential source of divergence from the assumed linearity of the phenomena described. Innovations in panel econometrics do not make obsolete the synthetic and/or qualitative analyses that can be used to highlight the complexity of such interdependences.

This should certainly not lead one to dismiss all analytical methods, but instead highlights the importance of a prior identification of the configurations that articulate the different socio-productive dimensions, in order to avoid the omission of core variables in the analysis specification itself. One should also handle causal econometrics with the utmost caution when dealing with complex social phenomena in which the systemic dimension is essential. In that sense, the models outlined in this article should be taken as heuristic supports to be used in interaction with other methodologies, whether it concerns the qualitative observation of firms or industries, or detailed statistical analyses on limited but exhaustive samples, such as the CAC 40<sup>11</sup>, or a group of multinational firms where data of different types (accounts, social audits, etc.) can be collected, including amongst subsidiaries or sister companies abroad. It is, moreover, with international perspectives that we believe it is important to conclude: as a future common interrogative core is emerging between the French (REPONSE) and British (WERS)<sup>12</sup> surveys, a promising avenue for research could aim to better understand the role of legal and societal contexts in the characterization of governance compromises that configures the socio-productive models.

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<sup>11</sup> The Paris stock index.

<sup>12</sup> And maybe even beyond, since other countries seem to be interested in this survey model [Amossé, Coutrot, 2008].

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<sup>13</sup> [http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/13/bf/4c.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/bf/4c.pdf)

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# APPENDIX

## Annex 1: Synopsis of the three REPONSE survey data sets used in this article

	1992-93	1998-99	2004-05
<b>Workplaces</b>			
Population	Workplaces belonging to firms with over 50 employees in the non-agricultural trading sector	Workplaces with over 20 employees in the non-agricultural trading sector	Workplaces with over 20 employees in the non-agricultural trading sector
Sampling method	Quota sampling from the 1992 “Wage structure”* survey sample	Random sampling from the SIRENE** data base	Random sampling from the SIRENE** data matched with the DADS***
Sampling design	Stratification by size and sector with a proportional allocation according to the employee share within the size bracket and to the number of workplaces within the sector		
<b>Management</b>			
Individual interrogated (appointment obtained after telephone survey)	“Head of social relations” within the firm, computer-assisted questionnaire (CAPI), face-to-face interview lasting one and a half hours on average		
Interviews achieved (of which in workplaces with over 50 employees)	3 013 (of which <u>1 744</u> )	2 978 (of which <u>2 256</u> )	2 930**** (of which <u>2 265</u> )
<b>Employees</b>			
Individual interrogated			10 employees present in the firm on 31/12/2003
Selection method			Dispatched to individual’s home after random survey in the DADS***
Number of returned questionnaires (of which in workplaces with over 50 employees that responded to the management survey)			11 766**** (of which <u>6 128</u> )
<b>Panels</b>			
Number of workplaces interrogated in two successive waves (of which in workplaces with over 50 employees)	560 (of which <u>372</u> )	960 (of which <u>741</u> )	

\* The ‘Wage structure’ survey is a large scale (over 25,000 workplaces) representative survey carried out every four years by the French Statistical Office (Insee). See <http://www.insee.fr/fr/methodes/default.asp?page=definitions/enquete-structure-salaires.htm> for more precisions.

\*\* SIRENE is a national firm and workplace register used by the Insee as a sampling frame for firm or workplace surveys. See [http://www.sirene.tm.fr/accueil/page\\_accueil.asp](http://www.sirene.tm.fr/accueil/page_accueil.asp) for more details.

\*\*\* The DADS dataset is an exhaustive tax register containing any employee spell declared each year. It is used as a sampling frame to randomly select employees within workplaces or firms. See [http://www.insee.fr/fr/themes/detail.asp?ref\\_id=fd-dads2004&page=fichiers\\_detail/DADS2004/presentation.htm](http://www.insee.fr/fr/themes/detail.asp?ref_id=fd-dads2004&page=fichiers_detail/DADS2004/presentation.htm) for more details.

\*\*\*\* Response rates are respectively estimated at 62 % and 32 %. *Source*: Table 1 (p. 43) in Amossé, Coutrot (2008).

## Annex 2:

### The variables used in the construction of socio-productive classes

The variables are all defined on the basis of the responses supplied by the manager during the interview phase. All the questions used are thus coming from the 'Management Questionnaire' (see '[http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST\\_RD\\_2004-2005.pdf](http://www.travail-solidarite.gouv.fr/IMG/pdf/QUEST_RD_2004-2005.pdf)' for more details).

#### **Work organization**

- The **ISO Standard** indicator is a binary variable defined from the "ISO Standard" response mode corresponding to the question "You have just told us that you implement a total quality control method, which one?" (other possible responses being "Another standard imposed by a client or regulations", "a standard specific to the establishment or firm").
- The **Computer-assisted production** indicator is an intensity variable that is the sum of positive responses (versus "No" and "DK") to the question "Here are some other technologies and work organization methods. Are any of them used in your firm?" asked in relation to "Robots/digital command machine-tools, "manufacturing-machining centre", and the "computer-assisted systems (PAO, CAO, DAO, FAO...)"
- The **organizational innovations** indicator is an intensity variable with the values "No innovation", "One innovation", "At least two innovations" that correspond to positive responses (versus "No" and "DK") to the question "Over the last three years, has your company implemented the following organizational changes?" asked for "an increased use of sub-contractors, outsourcing" the "refocusing on specific trades (or abandonment of diversification)" or "streamlining".
- The **Participatory arrangements** indicator is an intensity variable with the values "No arrangement", "One arrangement", "At least two arrangements" that correspond to positive responses (versus "No" and "DK") to the question "In your firm, did the following systems exist in 2004?" asked for "quality groups" problem-solving groups", "regular workshop, office or service meetings" and "direct expression groups".

#### **Human resources management**

- The **Individual interviews** indicator is an intensity variable that corresponds to the "All the employees", "Certain employees" or "None of the employees" responses to a question asking "Do the executive / Non-executive staff periodically have an individual interview with their direct supervisor (appraisal, results, perspectives...)" with response modes "Yes, all", "Yes, certain", "No" and "DK" permitting to pinpoint them.
- The **Profit-sharing agreement** indicator is a binary variable defined from the positive response (versus "No" and "DK") to the question "Do your employees benefit from a profit-sharing agreement for the 2004 financial year (in the legal sense of the term defined by the 1986 decree)?"
- The **General wage rise** indicator is an intensity variable that corresponds to the decision to allow "executive and non-executive staff", "Only one of these two staff categories" or "None of them" to benefit from general wage rises.
- The **Changes in job classifications** indicator is a binary variable defined from positive responses (versus "No" and "DK") to the question "Over the last three years, have the



following organizational changes been implemented in your firm?" asked in relation to "Changes in job classifications".

## **Social Regulation**

- The **Communication** indicator is an intensity variable that is the sum of response modes "To all employees" "versus "to executives only"), "no company-wide distribution" and "irrelevant: the document doesn't exist" to the question "Amongst the following documents, which ones are distributed to the firm's employees?" asked for "company newsletter or bulletin" and "in-house circulars or notes".
- The **Participatory systems** indicator is an intensity variable that is the sum of positive responses (versus "No" and "DK") to the question "In 2004, did the firm's management try to stimulate employee participation by introducing one of the following systems?" asked for "An ideas box" and "an open-door day".
- The **Employer federation** indicator is a binary variable defined from positive responses (versus "No" and "DK") to the question "Is your firm affiliated to an employer federation?"
- The **Employer network** indicator is an intensity variable that is the sum of response modes "Regularly" (versus "Occasionally", "Never" and "DK") to the question "Does the firm's management participate in external structures such as..." asked for "A local or regional employer association (chamber of commerce, industry, etc.)" and "A HRM or entrepreneurs club".
- The **Union representative** indicator is an intensity variable that is the sum of strictly positive responses to the question "Concerning labor unions, are there union representatives in your firm?" asked successively for the CFDT, the CFE-CGC, the CFTC, the CGT and the CGT-FO. The indicator thus enables us to pinpoint firms with union plurality at representative level, those with only one union represented and one or more representatives and those with no union representatives.
- The **Elected authorities** indicator is an intensity variable with the values "No authority", "One authority", "At least two authorities" that correspond to positive responses (versus "No") to the question "What are the elected employee representative authorities currently present in your firm?" asked with regards to "Employee representatives", the "Workers' or works council", the "health, safety and working conditions committee".
- The **Absenteeism** indicator is an intensity variable that corresponds to the problems indicated by management for "all employee classes", for "the employee and unskilled worker classes only, excluding executives, technicians and supervisors" or "for each employee class" from the questions "In 2004, did your firm have a problem with absenteeism amongst its executives/technicians/supervisors/employees/unskilled workers?"
- The **Sanctions** indicator corresponds to the rate of employees sanctioned calculated from responses to the question "In total, how many of your firm's employees were sanctioned in 2004?" after having asked the question "What sanctions were applied in 2004 to employees guilty of misconduct?" (The first response modes being "written warning", "suspended", "misconduct dismissal"...). The indicator modes correspond to "No sanctions applied" and to rates situated "between 0 % and 2.5 %", "Between 2.5 % and 5 %" and "Over 5 %".
- The **Collective conflict** indicator is an intensity variable that corresponds to the conflicts indicated by management in response to the question "Amongst the following

types of conflict, which ones has your firm experienced over the last three years (2002, 2003, 2004)?" Positive responses with regards to conflicts with work stoppages (in other words "strikes lasting two days or more", "strikes lasting less than two days" the "stoppages" and "slowdown strikes") defining the most intense modes and excluding conflicts without work stoppages ("work-to-rule, production slowdown", "refusal to work extra hours", rally, demonstration", "petition".

### Annex 3: Contribution of active variables\* to the two first axes of the MCA (first part)

	The first axis (8 %)		The second axis (5 %)	
	Contribution	Coordinate	Contribution	Coordinate
<b>Work organization</b>				
ISO standard				
Yes	<b>5.3**</b>	<b>0.68*</b>	0.4	-0.15
No	2.1	-0.27	0.2	0.06
Computer-assisted production or machine-tools				
None of these devices (-)*	<b>4.0</b>	<b>-0.45</b>	0.4	-0.07
One of these (=)	0.9	0.27	3.5	-0.28
The two of these (+)	<b>4.0</b>	<b>0.73</b>	<b>9.2</b>	<b>0.63</b>
Organizational innovations (refocusing, outsourcing, streamlining)				
None of these innovations (-)	2.6	-0.35	0.0	-0.02
One of these (=)	0.3	0.16	0.0	0.02
At least two of these (+)	<b>3.5</b>	<b>0.67</b>	0.0	0.03
Participatory arrangements (quality circles, workshop meetings, expression groups)				
None of these arrangements (-)	3.2	-0.79	<b>5.5</b>	<b>0.81</b>
One of these (=)	1.2	-0.30	0.3	0.11
At least two of these (+)	3.1	0.38	2.5	-0.27
<b>Human Resource Management</b>				
Individual appraisal interviews				
For no one employee (-)	<b>3.7</b>	<b>-0.68</b>	<b>7.4</b>	<b>0.74</b>
For some employees (=)	0.0	-0.01	3.4	0.38
For all employees (+)	1.8	0.32	<b>12.6</b>	<b>-0.66</b>
Profit sharing agreement				
Yes	2.9	0.39	1.6	-0.22
No	2.7	-0.36	1.5	0.21
General wage increases				
For management and non management (+)	0.0	-0.03	0.4	0.10
For management or non management (exclusively) (=)	0.5	0.25	0.2	0.13
Neither for management nor for non management (-)	0.2	-0.17	2.6	-0.45
Change in job classifications				
Yes	0.7	0.22	0.1	-0.08
No	0.3	-0.11	0.1	0.04
<b>Social Regulation (1)</b>				
Communication devices (newsletter, notes)				
None of these devices (-)	1.5	-0.53	<b>6.8</b>	<b>0.88</b>
One of these (=)	1.1	-0.24	0.5	0.13
Two of these (+)	<b>3.7</b>	<b>0.49</b>	<b>5.7</b>	<b>-0.48</b>
Participatory mechanisms (ideas box, open-door day)				
None of these mechanisms (-)	0.9	-0.19	1.2	0.17
One of these (=)	1.2	0.32	1.1	-0.23
Two of these (+)	0.6	0.55	2.2	-0.85

### Annex 3: Contribution of active variables\* to the two first axes of the MCA (second part)

	The first axis (8 %)		The second axis (5 %)	
	Contribution	Coordinate	Contribution	Coordinate
<b>Social Regulation (2)</b>				
Firm is member of an employer federation				
Yes	1.5	0.24	3.2	0.28
No	2.3	-0.39	<b>5.1</b>	<b>-0.45</b>
Participates in employer network (branch federation, local employer association)				
None of these associations (-)	1.5	-0.25	1.0	-0.15
One of these (=)	0.6	0.25	1.2	0.27
Two of these (+)	2.7	0.74	0.5	0.24
Presence of union(s) representative(s)				
No union	<b>6.8</b>	<b>-0.61</b>	<b>3.7</b>	<b>-0.35</b>
One union	0.2	0.13	3.4	0.45
At least two unions	<b>7.9</b>	<b>0.81</b>	0.4	0.15
Presence of elected delegates (employee representatives, works council, HSWCC)				
None	<b>5.0</b>	<b>-1.23</b>	1.3	-0.50
One of them	2.8	-0.79	1.7	-0.48
At least two of them	1.8	0.24	0.7	0.12
Problem of absenteeism indicated by management				
Neither for executives and intermediate occupations, nor for white and blue collars (-)	0.0	-0.04	<b>3.5</b>	<b>-0.32</b>
For executives and intermediate occupations, or for white and blue collars (exclusively) (=)	0.0	0.03	<b>4.7</b>	<b>0.42</b>
For both of these occupational categories (+)	0.1	0.15	0.0	-0.02
Sanctions				
No sanctions applied (-)	0.4	-0.22	0.9	-0.24
Between 0 % and 2.5 % of employees concerned (=)	2.6	0.47	0.3	0.12
Between 2.5 % and 5 % of employees concerned (+)	0.0	-0.03	0.0	-0.01
Over 5 % of employees concerned (++)	1.2	-0.36	0.2	0.10
Collective conflict in the course of the last three years				
No one (-)	3.0	-0.33	1.6	-0.18
Without work stoppage (=)	0.6	0.40	1.8	0.56
With work stoppage (+)	<b>6.8</b>	<b>0.87</b>	1.9	0.36

\* The '-', '=', and '+' signs under brackets correspond to the corresponding label used in Figure 1.

\*\* All figures in the 'Contribution' column refer to the percentage of the axis' inertia which is explained by the indicator (in line). The figures in the 'Coordinate' column indicate the average (weighted) position (on the axis) of the workplaces corresponding to the indicator.

Field: Workplaces with 50 employees or more in the non-agricultural trading sector.

Source: 'Management Questionnaire', pooled sample, (n = 6,265), 1992-93, 1998-99, 2004-05 REPONSE surveys, Dares.

## Annex 4a: The four socio-productive model profiles according to active variables (separate logistic regressions for each model)

	Simple control (n = 509)	Neo-Taylorist (n = 2 230)	Toyotist (n = 1 961)	Public in transition (n = 1 565)
<b>Work organization</b>				
ISO standard	-1.87 (0.17)	-0.09 (0.08)	1.61 (0.09)	-1.88 (0.13)
Intensive computer-assisted production (machine-tool and computer-assisted systems)	-0.14 (0.21)	1.19 (0.10)	-0.28 (0.11)	-1.70 (0.15)
At least two organizational innovations (refocusing, outsourcing, streamlining)	0.20 (0.16)	-0.31 (0.09)	-0.44 (0.10)	0.73 (0.10)
At least two participatory arrangements (quality circles, workshop meetings, expression groups)	0.05 (0.12)	-0.45 (0.07)	0.98 (0.08)	-0.58 (0.09)
<b>Human Resource Management</b>				
Individual appraisal interviews (for all employees)	-0.79 (0.12)	-1.46 (0.07)	1.55 (0.08)	0.53 (0.09)
Profit sharing agreement	-0.86 (0.12)	-0.04 (0.07)	0.54 (0.08)	-0.01 (0.09)
No general wage increases (either for management or non-management)	-0.99 (0.15)	-0.78 (0.09)	1.62 (0.09)	-0.78 (0.12)
Change in job classifications	1.18 (0.12)	-0.48 (0.07)	-0.26 (0.08)	0.44 (0.09)
<b>Social Regulation</b>				
Intensive communication (newsletter, notes)	0.31 (0.12)	-1.19 (0.08)	0.39 (0.08)	1.06 (0.09)
Participatory mechanisms (ideas box or open-door day)	0.15 (0.12)	-0.59 (0.07)	0.94 (0.08)	-0.38 (0.09)
Firm is member of an employer federation	0.56 (0.12)	-0.22 (0.07)	-0.13 (0.08)	-0.20 (0.09)
Participates in employer network (branch federation and local employer association)	0.66 (0.12)	-0.46 (0.07)	0.09 (0.08)	0.33 (0.09)
Presence of union(s) representative(s)	-3.34 (0.21)	0.50 (0.08)	-0.24 (0.08)	1.25 (0.11)
Presence of at least two elected delegates (employee representatives, works council, HSWCC)	-3.05 (0.13)	1.48 (0.10)	0.72 (0.10)	0.10 (0.16)
Problem of absenteeism indicated by management	-0.46 (0.12)	1.27 (0.07)	-1.29 (0.08)	-0.11 (0.09)
Numerous sanctions	0.74 (0.13)	1.11 (0.08)	-1.23 (0.10)	-1.02 (0.13)
Collective conflict with work stoppage in the last three years	-1.77 (0.27)	0.13 (0.09)	-1.89 (0.11)	1.73 (0.10)
<b>Percentage of concordant pairs</b>	<b>95.7</b>	<b>82.0</b>	<b>86.8</b>	<b>87.3</b>

*Method:* coefficients and standard errors (in brackets) correspond to the effects of variables in logistic regression models explaining whether a workplace belongs to the socio-productive model noted in the column heading. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). Estimations are weighted with sample and non response weights normalised so that total weight is the net sample size.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Management Questionnaire', pooled sample (n = 6,265), 1992-93, 1998-99, 2004-05 REPOSE surveys, Dares.

**Annexe 4b:**  
**The four socio-productive models according to additional management variables in 2004-05 (separate logistic regression for each model, first part)**

	Simple control (n = 130)	Neo-Taylorist (n = 787)	Toyotist (n = 756)	Public in transition (n = 592)
<b>Legal and capital structure</b>				
In a single site firm	0.26 (0.17)	0.06 (0.10)	-0.06 (0.11)	-0.20 (0.14)
Workplace over 20 years old	-0.45 (0.17)	-0.05 (0.11)	0.03 (0.11)	0.42 (0.15)
Family shareholder base	-0.07 (0.19)	0.24 (0.12)	0.03 (0.12)	-0.56 (0.18)
Under public control (State, local authorities)	0.25 (0.42)	-1.56 (0.34)	-0.13 (0.28)	1.03 (0.26)
Belongs to a business group	-0.76 (0.19)	0.17 (0.12)	0.01 (0.12)	0.24 (0.16)
In a listed firm	-0.34 (0.23)	-0.09 (0.13)	0.31 (0.12)	-0.11 (0.16)
<b>Economic strategy and positioning</b>				
Market spread (ref.: 'National')				
Local	0.54 (0.24)	0.08 (0.16)	-0.59 (0.16)	0.19 (0.20)
Regional	0.10 (0.25)	0.35 (0.16)	-0.46 (0.16)	0.10 (0.21)
European	-0.40 (0.38)	0.15 (0.18)	0.33 (0.18)	-0.88 (0.28)
Worldwide	-0.59 (0.30)	-0.24 (0.15)	0.48 (0.15)	-0.24 (0.20)
Market share over 25 %	-0.13 (0.18)	0.25 (0.11)	-0.17 (0.11)	-0.05 (0.15)
Predictable market	0.06 (0.18)	-0.03 (0.11)	-0.20 (0.11)	0.29 (0.14)
Stable market	-0.35 (0.17)	-0.38 (0.10)	0.51 (0.11)	0.09 (0.14)
Main element of economic strategy (ref.: 'product or service quality')				
Price	0.39 (0.22)	0.07 (0.13)	-0.34 (0.14)	0.32 (0.18)
Innovation	-0.20 (0.45)	-0.20 (0.20)	0.10 (0.19)	0.06 (0.27)
Originality, reputation	0.44 (0.29)	0.06 (0.19)	-0.23 (0.19)	-0.16 (0.26)
Diversity of products or services	-0.49 (0.53)	0.46 (0.26)	-0.39 (0.25)	0.30 (0.34)
No economic strategy	0.12 (0.42)	0.28 (0.27)	-0.02 (0.30)	-0.32 (0.32)
Substantial market power	-0.13 (0.18)	-0.08 (0.12)	0.18 (0.12)	-0.23 (0.17)
Main benchmark in price fixing (ref.: 'price of competitors')				
Regulation (occupation, State)	-0.81 (0.33)	0.19 (0.20)	0.06 (0.22)	0.01 (0.23)
Costs of production	0.33 (0.23)	0.12 (0.15)	0.02 (0.15)	-0.48 (0.21)
Clients	-1.11 (0.69)	0.10 (0.25)	0.14 (0.26)	0.04 (0.32)
Market	0.07 (0.22)	0.01 (0.14)	0.06 (0.14)	-0.09 (0.18)
Firm's priority objective (ref.: 'growth, market share')				
Profitability	-0.13 (0.26)	-0.35 (0.16)	0.43 (0.16)	-0.09 (0.21)
Budget	0.29 (0.27)	-0.17 (0.17)	0.11 (0.18)	-0.12 (0.22)
Pay roll	0.01 (0.48)	-0.18 (0.32)	0.16 (0.33)	-0.19 (0.44)
Quality	0.76 (0.29)	-0.15 (0.19)	-0.05 (0.19)	-0.31 (0.26)
Security	-0.12 (0.31)	-0.25 (0.19)	0.08 (0.19)	0.27 (0.25)
Prime contractor	-0.62 (0.17)	-0.04 (0.11)	0.12 (0.11)	0.19 (0.15)
Sub-contractor (for at least 10 % of turnover)	-0.02 (0.23)	-0.19 (0.13)	0.25 (0.13)	0.02 (0.18)
Non-profit organisation	-1.46 (0.37)	-0.39 (0.24)	-0.44 (0.26)	0.94 (0.27)

**Annexe 4b:**  
**The four socio-productive models according to additional management variables in 2004-05 (separate logistic regression for each model, second part)**

	Simple control (n = 130)	Neo-Taylorist (n = 787)	Toyotist (n = 756)	Public in transition (n = 592)
<b>Economic health</b>				
High profitability	0.01 (0.20)	-0.23 (0.12)	0.30 (0.12)	-0.07 (0.16)
Growth in business activity	0.53 (0.18)	0.03 (0.11)	-0.19 (0.11)	-0.09 (0.15)
Growth in total number of employees	0.20 (0.25)	-0.18 (0.16)	0.10 (0.16)	-0.07 (0.21)
Growth in number of executives ('cadres')	-0.42 (0.20)	-0.09 (0.12)	0.37 (0.12)	-0.13 (0.16)
Growth in number of white collar employees ('employés')	0.06 (0.22)	0.25 (0.14)	-0.00 (0.14)	-0.49 (0.19)
Growth in number of blue collar employees ('ouvriers')	-0.10 (0.23)	0.21 (0.15)	-0.13 (0.15)	-0.04 (0.21)
<b>Human resource management and work organization</b>				
Training budget amounts to 2 % of payroll	-0.34 (0.16)	-0.41 (0.10)	0.47 (0.10)	0.07 (0.14)
Just-in-time arrangement with customers	0.02 (0.18)	0.05 (0.10)	0.01 (0.11)	-0.16 (0.15)
Integrated management solutions or ERP	-0.39 (0.19)	-0.39 (0.11)	0.54 (0.11)	-0.20 (0.14)
Significant technological change	-0.10 (0.24)	-0.31 (0.15)	0.03 (0.14)	0.39 (0.17)
Significant organizational change	-0.16 (0.19)	0.03 (0.11)	-0.19 (0.11)	0.33 (0.14)
Product innovation	0.20 (0.18)	-0.34 (0.11)	-0.04 (0.11)	0.59 (0.14)
Prescribed work	-0.39 (0.18)	0.30 (0.11)	-0.25 (0.11)	0.18 (0.15)
Low employee autonomy	-0.03 (0.17)	0.34 (0.10)	-0.31 (0.10)	-0.02 (0.13)
Permanent controls on employees	0.18 (0.18)	0.12 (0.10)	0.04 (0.11)	-0.39 (0.13)
Multi-skilling	0.11 (0.17)	-0.19 (0.11)	0.05 (0.11)	0.10 (0.14)
<b>Percentage of concordant pairs</b>	<b>85.6</b>	<b>68.3</b>	<b>66.5</b>	<b>74.2</b>

*Method:* coefficients and standard errors (in brackets) correspond to the effects of variables in logistic regression models explaining whether a workplace belongs to the socio-productive model noted in the column heading. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). Estimations are weighted with sample and non response weights normalised so that total weight is the net sample size.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Management Questionnaire' (n = 2,265), 2004-05 REPOSE survey, Dares.

**Annexe 4c:**  
**The four socio-productive models according to additional employee variables in 2004-05 (separate logistic regression for each model)**

	Simple control (n = 295)	Neo-Taylorist (n = 2 071)	Toyotist (n = 2 121)	Public in transition (n = 1 641)
<b>Work organization</b>				
Is always obliged to hurry	0.04 (0.13)	-0.05 (0.07)	-0.02 (0.06)	0.09 (0.08)
Chooses one's work method	-0.37 (0.15)	-0.07 (0.08)	0.10 (0.08)	0.15 (0.10)
Personally handles incidents	-0.03 (0.12)	-0.15 (0.06)	0.07 (0.06)	0.09 (0.07)
Participates in work-related meetings	-0.17 (0.13)	-0.26 (0.07)	0.29 (0.07)	0.05 (0.08)
Has individual appraisal interviews with superiors	-0.42 (0.13)	-0.68 (0.06)	0.56 (0.06)	0.28 (0.08)
<b>Reasons for investing in one's work</b>				
To gain respect from peers	0.06 (0.14)	-0.22 (0.07)	0.09 (0.06)	0.12 (0.08)
To satisfy clients, users	0.18 (0.14)	-0.09 (0.07)	-0.02 (0.06)	0.08 (0.08)
In fear of losing one's job	0.30 (0.16)	0.11 (0.08)	-0.13 (0.08)	-0.04 (0.10)
<b>Obstacles to investing in one's work</b>				
Working conditions	-0.03 (0.17)	0.07 (0.08)	0.00 (0.08)	-0.08 (0.10)
Lack of recognition	0.17 (0.13)	0.09 (0.07)	-0.15 (0.06)	0.02 (0.08)
<b>Work relations</b>				
Has participated in meetings with employee representatives	-0.18 (0.15)	0.03 (0.07)	-0.20 (0.07)	0.28 (0.08)
Has participated in a work stoppage	-1.21 (0.34)	0.06 (0.08)	-0.40 (0.09)	0.56 (0.09)
Has participated in another form of collective action (petition, rally, etc.)	-0.42 (0.23)	-0.04 (0.08)	-0.16 (0.08)	0.31 (0.09)
Is a union member	-0.56 (0.34)	-0.24 (0.11)	-0.04 (0.11)	0.34 (0.11)
Indicates that 'management consults employees in the event of tensions within the workplace'	-0.24 (0.13)	0.19 (0.06)	-0.19 (0.06)	0.13 (0.07)
<b>Percentage of concordant pairs</b>	<b>83.7</b>	<b>69.2</b>	<b>65.2</b>	<b>74.3</b>

*Method:* coefficients and standard errors (in brackets) correspond to the effects of variables in logistic regression models explaining whether a workplace belongs to the socio-productive model noted in the column heading. The regression models also include indicators of workplace size (50-99; 100-199; 200-499; 500 and more), sector (15 categories roughly corresponding to first level of the NAICS). Estimations are weighted with sample and non response weights normalised so that total weight is the net sample size.

*Field:* Workplaces with 50 employees or more in the non-agricultural trading sector.

*Source:* 'Employee Questionnaire' (n = 6,128), 2004-05 REPONSE survey, Dares.



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