The impact of human resources practices and labor relations on organizational performance in Uruguay: an empirical test[1]

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Abstract

The present paper analyzes the impact of Human Resources Management Practices on Organizational Performance under different contexts of industrial relations that have taken place in Uruguay starting in 2005. Using the CRANET Survey multivariate models are used to estimate the effects of union variables on performance in different sectors and the impact and complementarities of calculative or collaborative HRM practices on the firm's performance, as meassured by, gross benefits, productivity and quality.
The differential impact of these HRM practices under the changing conditions of union influence are finally examined.
Results indicate a variety of different arrangements (bundles) and different complementarities under different regimes and the relevance of introducing the destination between calculative and collaborative practices.

Keywords: Complementarities and organizational performance, human resources management practices, unions and organizational performance, HRM in Uruguay, HRM and organizational performance, HRM and unions, complementarities in HRM practices.

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1. INTRODUCTION

Following a "CRANET tradition" and *leitmotif* (Lazarova *et al.*, 2008), in this paper we explore the degree of adoption, institutionalization and appropriateness of Human Resource Management (HRM) and its impact on organizational performance examining the Uruguayan case. This small South American country is characterized by several of the dimensions traditionally emphasized by the "European" model (Brewster and Tyson, 1991; Brewster *et al.*, 1992; Brewster, 1993; 1995), such as highly regulated labor relations and strong trade unions, among other "powerful, non-market institutional factors" (Gooderham *et al.*, 2004: 20). Hence, the evidence obtained sheds light on the mechanisms underlying previous results reported in the literature for other countries.

Recent institutional changes that have taken place in Uruguay starting in 2005, enable us to analyze HRM under different contexts of industrial relations, collective bargaining and increasing unionization. We carry out the analyses using a multivariate statistical model that links the probability of attaining a certain pre-defined level of firm performance to HRM practices while controlling for diverse characteristics related to unionization as well as for other contingency variables. Our results thus provide insights on the importance of considering institutional and regulatory contexts and other environmental features in accounting for the relationship between HRM and performance.

Particular emphasis is also set on the complementarities among practices. Within empirical studies, this debated issue is materialized in the comparison of the outcome from estimated models that include HRM practices individually or by subsets with respect to those that consider bundles/configurations previously identified by different statistical methods. While we also model our data with bundles of practices using factor analysis as a validating mechanism, we develop a set of additive variables and bundles that capture the most relevant complementarities among the diverse HRM practice dimensions and union variables.

We model the Uruguayan evidence along these lines, based on a sample of 274 companies with more than 50 employees, most of them SMEs according to international standards but nonetheless the largest firms in the country.

The next section is devoted to briefly review the literature on these two topics that would in turn justify the specification of our empirical model. A description of the information set is included in Section 3, together with the model specification. In Section 4 the outcome of the estimated model is discussed while the most relevant conclusions are summarized in the final section.

2. LITERATURE REVIEW

2.1 HRM and Organizational Performance

Becker and Gerhart (1996), Boxall and Purcell (2003), and Gerhart (2005; 2007a,b) have made comprehensive reviews of the seminal work on the relationship between HRM practices and firm performance as done by Arthur (1994), MacDuffie (1995), and Ichniowski *et al.* (1997) in manufacturing and by Batt (2002) in the service sector. Huselid (1995), in turn, conducted an early and influential study that introduced the concept of complementarities as applied to HRM practices (Milgrom, 1991). The literature to date has generally provided supportive evidence on the existence of positive linkages between at least one specific dimension of firms' economic performance and certain HRM practices, even in the case of small and medium size units (Way, 2002).

Due to its strong emphasis on a subset of these practices that would operate as "best practices", supposedly superior to more traditional ones (and with a theoretical rationale behind it), much of this literature has been equated with a "universalistic perspective". The logic posed assumes that the relationship found can be generalized to any context, developing a set of 'High Performance Human Resources Practices' (HPP) with a progressive impact on organizational performance (e.g. Delaney and Huselid, 1996).

In a somewhat parallel logic, but less universal in its claim, the configurational approach argues that firm performance is dependent on the effective combination of some HRM practices and how these practices are "bundled" together, examining the impact of different bundles on different levels and dimensions of outcomes (Arthur, 1994; MacDuffie, 1995; Ichinowski *et al.*, 1997; Stavrou and Brewster, 2005), in which selected or specific HRM practices have a consistent configuration that reinforces their impact. These bundles are at times used to define diverse 'work systems' (Guthrie, 2001; Guest *et al.*, 2003) and in some of the literature there is a normative and ideal type component (Delery and Doty, 1996; Doty *et al.* 1993; Martín-Alcázar *et al.*, 2005), as in the pre-existing management profiles approach. In this case, the focus had been set on the characterization of management profiles according to the presence/absence of specific practices within the mentioned categories and on the assumption that they have a differential impact on performance (Druker and White, 1995; Edwards, 1979; Font, 2010; Gowler and Legge, 1986; Labadie, 2005; Monks, 1992/3; Rodriguez *et al.*, 2001; 2003).

In terms of empirical research, Perry-Smith and Blum (2000) argue that HRM bundles capture broader effects than those captured by single individual practices or than clusters of individual practices combined in an additive manner, given the latter would be unable to account for synergistic complementarities, a concept that is particularly relevant for investigating firm-level effects.

In addition to the two aforementioned approaches, the contingency perspective argues that HRM policies must be consistent and aligned with other organizational aspects in order to be effective and that a fit must exist between the HRM strategy, the general business strategy and the external environment in which the firm operates (Shuler and Jackson, 1987a; b; c; 1989; Dolan *et al.*, 2005). That is, complementary practices per se (horizontal fit) do not suffice to explain firm performance and they should be thus matched to the organizations´ strategy (vertical fit) in order to build a case (see, e.g. Youndt *et al.*, 1996).

The growing acceptance on the existence of a HRM-organizational performance relationship that depends on contextual factors is however not coupled to the empirical evidence reported to date (Dyer and Reeves, 1994; Gerhart *et al.*, 1996; Gerhart, 2007a,b; Godard, 2004). Recent work done by Gooderman, Parry and Ringdal (2008) is an example that when these variables are considered, calculative and not collaborative practices may be prevalent.

In fact, much of the existing empirical evidence on the actual adoption levels of HPP, as Godard (2004, pp. 6) convincingly argues, shows that many workplaces in effect combine a number of traditional personnel practices coupled with intermediate levels of adoption of HPPs and that they perform better than those without them. However, these studies cannot account as to why most employers settle on partial adoption of some of these high-level HPPs unless recognizing that the significant gains they yield could be partially offset by their associated costs, that are rarely reflected in the performance measures used by researchers (Cappelli and Neumark 2001: 743). These costs, in turn, are strongly dependant on certain characteristics of the firm and its environment as argued in Godard (2004, pp. 20).

A significant contingency variable, particularly relevant when studying SMEs, refers to differences in HRM and its effects on performance depending on firm-size. When considering smaller firms and individual practices, a number of studies examine the "sophistication" and/or "formalization" of HRM practices (Aldrich and Langton, 1997; Bacon *et al.*, 1996; Deshpande and Golhar, 1994; Duberley and Walley, 1995; Hendry *et al.*, 1991; Jackson *et al.*, 1989; Koch and McGrath, 1996). As de Kok and Uhlaner (2001) and de Kok *et al.* (2006) have argued based on entrepreneurial research, smaller organizations and family businesses are more likely to operate in an informal and flexible manner than are larger firms, replicating these patterns of informality in HRM practices. For instance, Koch and McGrath (1996) find that, in general, company size is positively related with the incidence of HRM planning and formal training, and with the level of overall HRM sophistication. Evidence suggests, however, that HRM practices can be more sophisticated or formal than expected in smaller firms, in many instances defined as those with 250 employees or less (Bacon *et al.*, 1996; Deshpande and Golhar,1994; Duberley and Walley, 1995; Hendry *et al.*, 1991).

Size is also relevant when considering the characteristics of firms that use external labor arrangements (Davis-Blake and Uzzi, 1993; Kalleberg and Schmidt, 1996; Uzzi and Barsness, 1998). Variables such as firm size, industry, the presence of unions, labor-management conflicts, and bureaucratic hiring and termination procedures all appear to have some relationship with external labor arrangements (Masters and Miles, 2002).

The national/multinational character of firms is also considered as a differential feature for the analysis of HRM and one could expect different paths and sets of prevailing practices among them. Indeed, much of an MNC competitive advantage should come from its competence to utilize its organizational capabilities on a global basis (Kostova and Roth, 2002) and to implement organizational practices that are aligned with their strategic intent (Kostova, 1999) so that HR practices should have a key influence on this respect (Gómez and Sanchez, 2005).

If these contrasts and considerations can be made with respect to research in the US, Canada, England and some European countries, the lack of knowledge and quantitative studies for Latin American countries is critical. Very limited valid empirical research has been published, with the exception of Elvira and Davila (2005) and Davila and Elvira (2009), who edit cases and narratives of HRM practices in the region, but hardly any quantitative empirical test, except for Labadie (2005) and Font (2010). Further, to our knowledge no referred publication reports empirical evidence on HRM in the lines previously depicted, nor models it, including large countries like Mexico.

2.2 The Role of Unions and their relationship to HRM

The role that unions play, accepting, promoting or rejecting certain HRM practices, and that of the overall labor relations environment have been usually examined in terms of either "the union substitution effect" or the "mutual gains" hypotheses. First introduced by Kochan (1980) as an alternative employer strategy to "union suppression", the idea that HRM practices operate as a substitute to unions has been generally accepted by the literature, despite its insufficient empirical support. In contrast, some authors within the field of industrial relations have argued that the implementation of these practices may generate a "mutual gain" and create opportunities for union renewal, enabling unions to abandon their traditional adversarial role in favor of a new one, more partnership-oriented. As Godard (2004:1) states, citing Heckscher, 1988: 114–52; Kochan and Osterman, 1994: 141–68; Marshall, 1992: 307–8; Rubinstein and Kochan, 2001:133–5,

> "… the high-performance paradigm is best practice not only for employers, but also for workers and, potentially, for their unions".

Further, according to Machin and Wood, "one of the key hypotheses of modern industrial relations, (is) that unionism has been replaced by alternative non-union forms of voice and communication through the adoption of HRM practices" (2005: 214) particularly HPP. Within this frame, HRM is thought of as a substitute to unions and also as an alternative –more indirect- employer strategy to discourage unionism. The argumentation is further consistent with the decline of unions, both in the US and Great Britain, because of "the effects that positive employer practices…have in reducing the causes of unionism" (Fiorito, 2001: 335). The rationale is founded on the assumption that firms would always prefer to follow "a non-union path, emphasizing individual rather than collective agreements" as argued by Guest (1989: 48), who goes as far as hypothesizing that "a company may pursue non-union policies or remain fortuitously non-union without practicing HRM."

The empirical evidence, though, is at best mixed with respect to the adoption of HRM seeking to counteract union influence at the firm. The role of merit and performance related pay and communication methods that give direct voice to workers without third party mediation may be considered as the only exception (see the discussions in Machin and Wood, 2005 and in Godard, 2009 as well as the references therein). Further still, some of the reported results indicate that HRM might in fact be complementary to the organization of work in largely unionized workplaces, thus supporting the "mutual gains" opposing hypothesis recently reviewed by Gill (2009).

Alternatively, the inability of the existing empirical literature to provide with robust evidence on the matter has been linked to union's capacity to fight the employer (strength) and willingness to do so (militancy) given they would serve as an "enforcement or forestalling agent", so that the quality of industrial relations would mediate union impact on HPP (Ramírez *et al.*, 2007). Under that frame, powerful or militant unions with a poor relationship with management are likely to have a negative impact on the adoption of HPP, at the extent that organizations characterized by large union militancy might exhibit a significantly lower likelihood of undertaking any HPP (Wells, 1993). In contrast, they may facilitate the effective adoption of HPP and HRM when they establish a 'good' relationship with management.

The distinction introduced in the HRM literature between traditional HRM Practices - at times to be equated with calculative ones, particularly those centered in the control dimension (Kochan and Capelli, 1984; Walton, 1985) - and new or "best practices" (Beer and Spector, 1985; Guest 1987) -at times equated with commitment-based or collaborative practices (Gooderham *et al.* 1999) may contribute to the proper understanding of these apparently inconsistent findings since they mobilize different set of interests for unions. In fact, Godard (2009) proposes a further differentiation among practices, independently of whether they fit the previous categories, in terms of them being or not opposed to union interests, as would be the case of contingent pay schemes and alternative work practices (i.e. autonomous or semi-autonomous teamwork, job rotations, etc.).

All the above rationalizations are built under the assumption that a 'cause and effect' relationship exists between union action and HPP adoption. Therefore, if this were not the case, the contradictory conclusions reported in the empirical literature could have a common explanation. Indeed, if HRM and unionization are instead seen as two distinct but related operational facets of firms that follow different paths depending on their characteristics, their linkages should be analyzed in terms of the role they play within organizations, as done by

union-contextualized studies on firm performance. Most of the existing empirical literature on the topic, however, is not fully fit for this purpose due to the fact that the influence exerted by unions and HRM are assumed independent from each other. As such, the relative gains or losses driven by changes in HRM (or unionization) would be unaltered no matter the nature of the prevailing union (or HRM) setting, while the type of link between the two dimensions would be unique and should lead to their characterization as either substitutes or complements.

Under an alternative perspective, their substitutive/complementary character may be thought of as determined by the specific patterns that characterize unionization and HRM as well as by the profiles that result from diverse configurations. Within this frame, empirical models of firm performance should allow not only for individual impacts of HPP and unionization but also for their joint effect. Two noteworthy studies carried out along these lines are those of Black and Lynch (2001; 2004), who analyze the links between labor productivity, HPP and unionization within a sample of US private manufacturing firms at one point in time using cross-section and panel data. According to their results, union/HPP effects per se would not be unidirectional, or even significant, but largely dependent on their interaction so that the negative/nil marginal effects of unionization on productivity, e.g., is turned into a large positive impact under a certain HRM practices while HPP may also acquire an otherwise inexistent relevance under certain union-firm arrangements.

These findings are consistent with the above-proposed approach to the analysis of HRM-union linkages within a model of firm performance in which they are allowed to simultaneously interact. It is important to note, however, that the methodology used has one well-known shortcoming related to the fact that the conclusions drawn are based on the comparison of firms with different HPPs/union settings. Hence, they may be contaminated by unobserved/unaccounted firm specificities. Our research, in contrast, is not completely subject to this criticism given the exceptional characteristics of the information set used and the exceptional characteristics of the time-period analyzed. Due to the institutional and political changes that took place in Uruguay since 1985, union membership and the structure of collective bargaining have substantially varied during the last 25 years for all firms. Consequently, we are able to analyze the role played by unionization and HRM on firm performance under the current setting and also the eventual impact that the change in regulations may have had on these linkages within each firm.

2.3 The Uruguayan Case.

2.3.1 HRM practices

Although the empirical research on HRM in Uruguay is still very scant, it has nonetheless brought forth the existence of several regularities. A first worthy finding refers to the apparent progressive professionalization of HRM practices among medium and large firms that took place along the last two decades, the drivers of such trend not being yet clearly identified (Font, 2010; Labadie, 2005). In fact, the current observed heterogeneity of HRM practices among firms reported in Font (2010) is in sharp contrast to the 'simple management profile' that prevailed in the 90s even among the largest companies, characterized by employer-employees relations aimed at short-run goals; infrequently observed formal systems of performance-evaluation; and administrative/bureaucratic HHRR departments despite that their relevance is found to be larger than that associated to a pure simple configuration (Labadie, 2005; Rodríguez-Gustá *et al.*, 2001; 2003).

According to these studies, the most widespread practices, both currently and in the past, are related to recruitment and training, as opposed to the use of monetary premia based on individual/team performance. However, the patterns differ among firms depending on several features, such as family-ownership; corporative character; size; sales market; or economic sector; while it also depends on the firm having or not a HHRR department. A higher degree of formality and professionalism of HRM is found among large corporative, non-family-owned firms that have a formal HHRR division, operating in the service sector and/or oriented to the international market (Rodriguez-Gustá *et al.* 2001, 2003; Font, 2010).

The relationship between economic/organizational performance and HRM has been explored only by Font (2010). Measured as the self-ranking relative to its competitors in terms of profitability; labor productivity; and quality of the products/services, firm performance is examined in relation to individual HRM practices: recruitment; training; performance evaluation; and monetary payments. Font further considers several additional features that are grouped using factor analysis to build indicators of 'best practices' (complementary practices among different policies) that in turn serve to construct significant clusters of firms. Although the general conclusion points at professional HRM being matched to an improved firm economic/organizational performance, the four configurations obtained cannot be unambiguously ordered in terms of 'best practices', except for firms in the cluster denoted as 'low-profile'.

Based on some apparent "theoretical and normative" inconsistencies in the previously estimated managerial typologies for the Uruguayan case (Rodríguez-Gustá *et al.* 2003), Labadie (2005) hypothesized that the linkages between HRM practices and performance are influenced by the overall institutional framework of labor relations and particularly by the role played by HR departments in relation to trade unions. The additional insights provided in Font (2010) also point in that direction while they further suggest that the structure of bargaining and its continuity in time have also a major incidence.

2.3.2 HRM and Industrial relations in Uruguay

Starting in 1985 Uruguay´s unique system of Wage Councils was re-instituted after almost 15 years along which collective bargaining was absent given that the 1973 military coup had banned unions. The traditional system operated mainly through a system of trilateral negotiations – unions, employers´ representatives and government - within wage councils by industry. Minimum wages by job category were set through collective agreements and endorsed by the government to all firms within the sector. The system implied that for most SMEs the level and timing of wage setting were located outside the boundaries of firm decision-making, by the negotiators of the larger companies that were represented in the employers´ associations. Along these lines, the HHRR department was only strategically relevant for those large firms with powerful unions that frequently operated in concentrated sectors (Labadie, 2005). Unions, in turn, were almost exclusively interested in setting wage levels, in accordance with the intermediate degree of centralization of the system and the highly inflationary entourage. This was particularly the case of the manufacturing sector, which in 1985 employed almost half the labor force in the private sector, of which one third were union members (Cassoni *et al.*, 2004).

In 1991 there was a new significant change. The government stopped participating in bargaining and hence collective agreements bound only those firms and unions that were actually represented in the negotiation. As a result, union density within the private sector dropped sharply and many agreements started to be bargained at the firm level (for details on these

changes and their effects on the labor market regarding employment, mobility, wages, as well as on firm economic performance, investment and profitability, see Cassoni *et al.*, 1996; 2000; 2004; 2005).

Cassoni and Labadie (2001) show that a recursive efficient contracts model is a sensible characterization of collective bargaining along the 90s, with negotiations over wages and job stability at the firm-level and absence of synchronization. The number of firm-level contracts signed since 1995 increased and by 1997 covered around 20% of manufacturing workers.

In 2005, with the advent of a newly elected government, the traditional tripartite industry-level negotiation system was re-instituted, while compulsory bargaining was also extended to all services, commerce, rural workers and traditionally informal activities. As a result, the number of firms that set wages internally decreased sharply. Union membership increased about 40% between 1997 and 2007 further fueled by the prevailing context of sustained economic growth, employment formalization and wage increases after the 2002-economic crisis, one of the most significant in the history of Uruguay (Bianchi *et al.*, 2011). Not surprisingly, employment also grew in 70% of the firms in the current sample, the rise being above 25% in 40% of the cases.

3. DATA, MODEL AND VARIABLES DEFINITION

The information used stems from the "Survey on Labor Relations and HRM Practices" (SLR), collected using a questionnaire designed following the CRANET methodology. [1] Interviews were performed in 2007 to a sample of 274 medium and large enterprises, representative of the universe of firms with 50 and more workers, belonging to Industry; Construction; Commerce; and Services. The data relate to a wide range of HRM practices and other operational characteristics of the firm, its main market and the institutional setting of labor relations, many of which are also referred to 1999-2001.[2]

3.1 Indicators of Firm Performance

The SRL information allows us to define categorical variables based on the comparative self-positioning of firms with respect to their competitors in terms of quality and productivity. We define three categories of firm performance depending on the firm being ranked below, above or at the sector's average level in productivity and quality. Regarding the profitability dimension, we use the data on the level of gross profits – negative; nil; positive; extremely positive - along the three previous years.

3.2 Firm, Industry and Market Characteristics

Contingency variables that are hypothesized to influence firm economic/organizational performance besides HRM practices refer to: a) type of ownership (family-owned or not); b) existence of formal links with other firms (corporative character and membership to an economic network); c) firm size (medium, large, largest); d) its being at a maturity stage or not as stated by the respondent; e) relevant economic sector in which it operates (Industry and Construction; Commerce; Services); f) main sales market (local, regional, international); g)

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[1] "Encuesta de Relaciones Laborales y Prácticas de Recursos Humanos a nivel de Empresa", ORT Uruguay University - Equipos Mori, 2007. Besides the regular CRANET questionnaire validated in Spanish, an additional module added questions on HRM and Union practices in 1999-2001.
[2] Some descriptive statistics are depicted in Table A.1 in the Appendix.

degree of organizational formalization/culture (high/low); and h) the strategy followed to achieve success (based on marketing activities; high efficiency levels -both general and in terms of labor productivity-; innovation activities; or adequate cost-administration).[3]

3.3 Union variables and institutional labor relations context

We include several proxy variables for union power in order to account for their relative influence on the firm's decision process, in turn assumed to reflect the incidence that the prevailing frame of labor relations has on its performance.

Although affiliation rates are one major determinant of union power, its marginal effect is known to differ depending on the structure of bargaining, as reflected in the level at which negotiations take place – national, sectoral or firm-level; the enforcement or not of agreements; and the bargaining agenda, the inclusion or not of employment stability clauses setting a key distinction on the expected outcome of negotiations. Further still, the combined effect of these aspects at a specific point in time is likely to differ depending on the divergent experience accumulated by both the union and the firm, as mirrored in the frame within which wages were set in the past (1999-2001)[4].

Explanatory variables included in the model are: a) affiliation rate at the firm (0; 1-10%; 11-25%; 26-50%; 51-75%; and 76-100%); b) whether there is a collective agreement at the firm-level or not; and c) current degree of union influence at the firm (high/low). In those cases in which unions' incidence is low, a differentiation is done according to its temporal evolution with respect to 1999-2001 as perceived by the respondent (increased or unchanged/decreased union membership). Given collective bargaining became mandatory for firms in Commerce and in private Services only in 2005, the effect of these variables is allowed to differ only for industrial companies.

In order to explore if the impact of HRM changes under different institutional settings, we include interactive terms for each HRM practice (see 3.4 below) with the variables associated to the above-defined two scenarios – high incidence and low but substantially larger influence than in the past. Therefore, significant estimates of the coefficients associated to the first interactions would reflect changes in the impact of HRM practices within a frame of strong unionization relative to one of lesser involvement, while in the second case they would reflect the effect of a change towards a more unionized setting with respect to an unchanged/less unionized framework.

3.4 HRM practices and type of HRM department

Dimensions considered relate to hiring; training; pay systems; performance evaluation; and formalization/ organizational culture.

Data from the SRL may be associated to at least 36 individual practices that are here used to define a reduced number of bundles that capture the most relevant features in the Uruguayan

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[3] The questions that give rise to these typologies are stated in terms of the firm self-classification in a category that best fits actual patterns within a scale ranging from 1 – 'not at all' - to 5 – 'perfect fit'. The typologies here defined, as well as those related to the role of union and to HRM practices below described, are associated to answers in the top two categories.

[4] A set of questions were introduced to the regular CRANET questionnaire to ascertain, on the basis of recall, the level of union power that prevailed in 1999-2001; its evolution in terms of union influence at the firm relative to its current levels and the items included in the bargaining agenda.

case. We perform the task using two methodological strategies. We first apply factor analysis using Principal Components to the set of all practices and keep 9 factors that account for 55% of the total variance with eigenvalues larger than 1 following Kaiser's criterion (see Table A.2 in the Appendix).[5] Following Gooderham *et al.* (2008), we classify the 9 bundles into calculative (4), collaborative (2) and intermediate (3) and include them in the models as explanatory variables[6].

However, "intermediate bundles" do not allow to properly distinguish aligned incentives (and signs of relationships) within the combination of HRM practices. They are hence not amenable to model unequivocal effects with respect to unions, as reviewed in the literature. Therefore, we follow a second strategy, defining a set of additive bundles based on theoretical arguments as well as on the empirical evidence that stems from both the distribution of firms according to individual practices within each of the 5 dimensions of HRM above-mentioned and to the composition of the 9 significant factors previously identified. The resulting proxies are either binary variables (5) that reflect a single HRM practice (e.g. Hiring) although, in all cases except for one, they "scale" different sets of practices within them; or else categorical indices (3) that account for two or more related features within the practice. Given the method's inherent nature, the individual/grouped practices may always be characterized as calculative (6) or collaborative (2).

In order to allow for the existence of complementarities among them, we include a set of binary variables that state if each possible pair of practices are undertaken or not. Due to the high colinearity that would be introduced when all cases are jointly considered, we perform the analysis sequentially, keeping only the relevant variables in the final specifications.[7]

Firms that have an HR Department are divided according to whether their managers consider themselves to be up to date with worldwide best practices, or else it acts just as an administrative division and/or it mirrors practices used by other firms. We further consider that even if HRM is done outside the firm, its impact on productivity levels can be similar to that of an internal professionalized management unit. We thus define three variables to reflect these characteristics - the existence or not of a HHRR department differentiating between professional and low profile units; and HRM being fully outsourced or not. An additional distinction is set among firms that do not have an HHRR department but keep HRM internally according to the HR manager being or not professionally qualified for the task.

Hiring practices are hypothesized to have an impact on firm performance by enabling the recruitment of workers with the best profile for each specific task under the assumption that total factor productivity, quality and profits would be enhanced while the costs of training would be minimized. We thus consider the degree of formality of the recruitment mechanisms and the scientific character of the method employed. A system is defined as 'formal' whenever potential workers of at least one occupational category are sought within the company (recruited in internal markets); among students in education/training institutions; within those registered in specialized agencies; or by means of ads, as opposed to a selection based only on candidates

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[5] We discard the last 4 factors with an eigenvalue larger than 1 due to the fact that no practice can be clearly identified as most significant within them thus preventing to match the factor with a meaningful bundle. See Table A.2 in Appendix.

[6] The empirical models estimated are included in Tables A.3 and A.4, in the Appendix. The results for contingency and union variables are quite consistent with the final estimated model, although the results for HRM bundles are, obviously, different given the different definition of variables and final model specification.

7 The inclusion/exclusion of variables is decided upon based on the results of inference performed with at least an 85% confidence level.

identified by word-to-mouth information or personal recommendations. Regarding the method employed to accept/reject candidates, it is defined as 'scientific' in case it involves standard objective tests and/or professional interviews, in contrast to the use of informal evaluations or personal references. Given that the distribution of firms according to the formal character of hiring and to the scientific nature of the methods used are extremely similar, we consider both characteristics jointly as a single variable.

Another aspect of recruitment considered as relevant refers to the high/low weight that is assigned within the establishment to a long-term working relationship when hiring new workers. We hence combine this characteristic and the formal/scientific nature of hiring practices in an additive bundle that takes the value 0 if none of these facets is present, 1 if only one is observed and 2 when both practices are undertaken.

Systematic training of workers, no matter the main goal sought, is expected to improve organizational performance. Nevertheless, the nature of such impact is likely to differ depending on whether the goals sought are short or long-term-oriented. Training programs that are undertaken to increase the sense of belonging and commitment of the workforce are likely to have longer term effects increasing the quality of effort devoted to all types of tasks. Contrarily, current impacts may be minor if training is intended to increase the skill level of workers, eventually to overcome inefficiencies and/or to keep pace with technical progress. We thus differentiate among both types of programs by including two distinct binary variables that in turn add up the information referred to all occupational categories, so as to capture the dynamics of firms that could actually have "gone through a crisis" and have therefore adopted training programs given their low performance (Pil and MacDuffie, 1996).

Three variables are defined to reflect the relevant evaluation practices: two binary indicators stating if evaluation is aimed at deciding on pay/premia based on performance or not, for production/non-production workers; and a categorical indicator of evaluation practices related to improve efficiency levels either in terms of qualification needs or of organizational bottlenecks. If only one goal is observed, the indicator is equal to 1 while it takes the value 2 when both are present. Given that an informal evaluation system is undertaken in only 8 out of 143 cases in which the indicator is equal to 0, the variable also reflects the formal/informal nature of evaluation practices.

Data on pay-related practices refer to a wide range of aspects, such as the monetary/non-monetary character of wages, the weight of compensation and benefits; the distinct methods used to determine their level; among others. Given the results in Font (2010) and the regulatory framework that prevailed in 2007 which implied that firms had to comply to sectoral minimum wages by occupation, we here focus on two facets: (i) the locus of wage-setting, distinguishing between those that are set at the firm, as opposed to those that are set at the parent company or by collective agreements; and (ii) the use or not of premia based on performance. We differentiate blue-collar workers from the rest based on the internationally observed divergent patterns for each group regarding both union membership and pay methods.

A last dimension of HRM considered as influential on firm performance relates to formalization and organizational culture practices. We take into account the existence of written/unwritten statements of a) mission and strategy; b) organizational values, social responsibility or ethics; or c) diversity. We define a combined indicator that ranges from 0 (none of the three types of practices is observed) to 3 (all are undertaken). Firms with written statements are all classified within the categories valued as equal to 2 or 3 so that the variable is equal to 1 whenever only one of the practices is observed and there is no written statement.

3.5. Statistical Models

The variables described in 3.2 to 3.4 are assumed to have an impact on the probability of attaining a certain level of economic/organizational performance. The underlying mechanisms at work are thus mirrored in the specification of an Ordered Logit model, given the categorical nature of the dependent variable and the fact that the categories are ordered in an ascending manner. The dependent variable – θ_j - is defined as the ratio of the probability of performing up to a certain level 'j' given a set of relevant factors 'X' over the probability of outperforming such level. However, the latent character of the dependent variable forces to assume it is a function of an observable indicator - y – that takes a finite number of values 'j', each associated to a category or dimension of firm performance:

$$\theta_j = \mathrm{Prob}(y^* \leq j/X)/\mathrm{Prob}(y^* > j/X) \quad \text{where } \mathrm{Prob}(y^* \leq j/X) = \exp(X\beta)/[1+\exp(X\beta)]$$

$$\rightarrow \quad \ln(\theta_{ij}) = \alpha_j - X_i\beta + u_{ij}$$

Where 'α_j' refers to each of the defined thresholds; 'i' is the firm identifier; and vector X includes three different types of variables linked to firm/sector characteristics; HRM practices; and firm/sector features related to the institutional framework of labor relations. Within this statistical model, the estimated coefficients constitute a measure of the marginal impact of each factor given the joint effect of all the other included dimensions.[8]

HR-practices are included individually and in additive bundles by practice, by indicators for complementarities, and their interaction with those that account for the degree of union influence at the firm. Their impacts on three indicators of firms´ organizational performance above-stated are compared seeking alternative configurations of HR practices depending of the performance dimension and in order to more robustly identify the relevant relationships, in particular with respect to union variables.

4. FINDINGS AND DISCUSSION

The outcome of the three different versions of the model according to the definition of firm performance is fully depicted in Table A.3 in the Appendix, using the set of predetermined variables described in Section 3. The results on the effects of HRM on firm performance are afterwards compared to those obtained by using instead the bundles identified by factor analysis (see Tables A.2 and A.4 in the Appendix).[9]

The relevant set of firm characteristics that are found to be significant contingency variables, as well as the overall explanatory power, differs among models (the Pseudo-R2 ranges from 0.23 and 0.64). In all cases it is important to allow a differentiated performance for those firms that have reduced their workforce and are thus likely to have faced specific obstacles despite the overall positive economic environment.[10] The odds of getting greater gross benefits are only distinct for those firms that are mature and of the largest size. Largest firms, other things controlled, are however self-ranked as with lower quality outputs relative to the sector's average. The same happens to those that have Corporative character. Although the result may be just a reflection of their enlarged scale of production, it may also reveal that these companies in

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[8] This ordered logit model specification is estimated by Full-Information Maximum Likelihood using Stata 11 in order to account for individual effects correlated with the unobserved random features.

[9] The outcome of the models using factor based and additive bundles is almost identical in terms of the effect of firm characteristics and regulatory framework, while divergent results are found on the linkages between HRM and firm performance.

[10] The annual growth rate of GDP between 2005 and 2007 was 6% on average.

Uruguay operate within highly concentrated markets and/or display a large market power. Under such context, they would be able to charge a higher mark-up than their competitors despite offering a product of relatively lower average quality.[11]   A similar negative result is found for productivity levels linked to Family-Owned firms, especially if they operate within regional markets. All these effects, though, are counterbalanced if these firms belong to an Economic Group, which increases, both quality and productivity.

Enhanced performance is always associated to marketing strategies, while innovation activities have the opposite impact on both profits and quality levels. Further, formalization/organizational culture-oriented managerial practices also lower quality of outputs, unless the firm also relies on an overall internal efficiency to foster quality levels.

4.1 The Impact of Unions and Labor Relations Context

The impact of trade unions within the firm is shown to be significant but of distinct weight depending on certain key features (Table 1).

The higher the affiliation rate at the firm, the worse is its level of profits and quality. However, given a certain membership level, firms in which unions have a higher incidence on the decision process outperform those in which they play a minor role in terms of productivity, no matter their economic activity.

The same can be said for industrial firms regarding the quality of the output. In contrast, the change in the regulatory framework faced by firms in Services and Commerce is at the root of the negative impact found in their quality performance.

Table 1 – Union impact on firm performance – Estimated coefficients

Variable	Gross Benefits	Productivity	Quality
Affiliation rate	-0.5[**]	----	-1.6[***]
Firm-level collective agreement - Industry	----	----	24.8[***]
Union influence at the firm:			
High			
Industry & Construction	----	20.8[***]	13.7[***]
Commerce & Services	----	20.8[***]	-24.9[***]
Low but increased w/r to 2005			
Industry & Construction	4.4[**]	----	11.2[***]
Commerce & Services	4.4[**]	----	----

Note: Non-significant coefficients are not reported. [**]/[***] refer $p<0.05$; $p<0.01$

Gains in gross profits are found for all firms subject to a low though increased union influence when compared to those where no changes have occurred since 2005 or else that are strongly unionized, but a positive impact in terms of quality is observed only in manufacturing and construction.

Finally, there is a significant and relevant effect of collective agreements signed at the firm level. Since sector-level bargaining is mandatory for all economic agents, firm-level agreements

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[11] The argument is consistent with the fact that 80% of these firms belong to the Construction and Health Services and are thus subject to Government price and wage controls that are thus matched with them sacrificing quality to keep their profits rates up.

can state additional regular or extraordinary payments and labour conditions only if they are not in conflict with those set at the sector bargaining table. Given the other results reported in Table 1, the impact on quality performance only operates for Manufacturing and Construction firms. In fact, the negative effect of union membership is more than counter-balanced within these companies, even if all employees were union members.

Considered together, these results suggest that while a better performance of the firm is attained management has no union influence (since higher affiliation rates have a small negative effect), within a highly regulated context of labor relations as that prevailing in 2007, a collaborative strategy is more successful than an adversarial one. The evidence is in line with the findings reported in Black and Lynch (2001) and with the predictions of theories that emphasize the "mutual gain" hypothesis. They are also consistent with firms following differentiated paths depending on the strength of the regulatory changes faced and attaining different levels in a path dependent way, as predicted by the literature that argues that there is a learning process that necessarily takes place once bargaining is the rule for most firms within an economic sector (see for example Metcalf, 2003).

4.2 The Impact of HRM on Firm Performance.

Once the above contexts are taken into account, HR practices, in particular if distinguished among calculative and collaborative, are found to be relevant in terms of performance.

Further, the magnitude of their impact differs depending on the prevailing influence of unions at the firm and also on the regulatory benchmark of labor relations. Moreover, the models are able to identify complementarities among the diverse dimensions of HRM, even in cases where a particular practice has no effect when individually considered.

No distinction is captured among firms with/without a HHRR department or division, but if the HHRR department is of lower managerial quality ('low-profile') its effects on productivity and quality are negative. At the other end, an enhanced performance in terms of quality is associated to firms that outsource all HRM practices with respect to those that fully or partially keep control of their human resources management (see Table 2 and Table A3 in the Appendix). The results thus point to the significance of professional management, either integrated vertically or outsourced.

Within a frame of both current and past low union influence, firms using professional hiring practices aimed at establishing a long-term work relation are found to outperform their competitors in both quality and productivity levels, although they are neutral with respect to the amount of gross benefits attained.

Calculative training (aimed at qualification) is associated with increased quality performance and has a negative impact on productivity and profits. This result may be associated with some firms actually practicing training as a result of a perceived temporal disadvantage or crisis, and therefore may be training their workforce to catch up with their competitors. Instead, training aimed at commitment as a collaborative practice has a positive impact on both profits and productivity levels.

Firms that internally set wages for production workers are better positioned in productivity and quality than those in which wages are determined at the parent company, by the government, or by sector-level collective bargaining; although at the cost of a relatively lower level of gross profits (in line with the mandatory character of minimum wages agreed upon by collective

agreements, so that a wage set at the firm would exceed the bargained level and thus increase labor costs).

Table 2 – HRM and firm performance - Additive bundles and Complementarities among Practices

	Gross Benefits	Productivity	Quality
Calculative individual HRM Practice and Additive Bundles			
Additive Calculative bundle - HHRR Department 'Low-profile'	---	-1,6	-2,1
Individual practice - No HHRR Dept./HHRR manager qualified	---	---	---
Individual practice - HRM outsourced	---	---	21,3
Additive Calculative bundle - Hiring	---	1,1	3,6
Additive Calculative bundle -Training	-14,0	-1,9	19,4
Individual practice – Wage production workers: set at firm	-3,0	11,1	14,1
Additive Calculative bundle - Evaluation	---	---	-3,2
Additive Calculative bundle - Performance premia	---	---	---
Collaborative Additive Bundles			
Additive Collaborative bundle – Formaliz./Organizational culture	---	---	---
Additive Collaborative bundle - Premia	1,5	---	-3,1
Additive Collaborative bundle - Training	19,1	11,6	---
Complementarities			
Hiring/Wage	3.6	---	7.1
Calculative Training/Formalization-Organizational culture	13.1	---	-17.3
Wage/Formalization-Organizational culture	---	-10.3	-13.0
Collaborative Training/Wage	-18.5	-11.4	---

When considering complementarities between hiring practices and wages, a magnified impact on quality is found for each of the two practices, while hiring practices become a positive fostering factor for profits. Moreover, the otherwise reduced benefits associated to firms that set production workers wages above the sector's bargained level are neutralized when they are recruited by professional mechanisms, suggesting that "efficiency wages" could also be relevant in the Uruguayan case (Akerlof and Yellen, 1986).

The only calculative practices that have no impact on any of the three dimensions of firm performance modeled are related to monetary premia (as short term bonus or merit pay), actually currently practiced by 90% of the firms.

Among collaborative practices, instead, premia considered as a longer term incentive, with shares or other benefits, has a positive effect on gross benefits, but negative on quality.

Formalization/organizational culture-related practices do impact on firm performance only if displayed jointly with other bundles of HRM practices. In particular, in the context of a formalized organization, training programs aimed at qualification would positively impact quality levels but would result in reduced gross benefits. Similarly, negative effects on both quality and productivity would be observed for formalized organizations that set wages of production workers at the firm, their magnitude being such that the gains that stem from wage practices become closer to 0 (0.8 and 1.1 respectively). These results combined, suggest that the

configurations might be capturing some of the "bureaucratic" transaction and quality costs of highly formalized organizations.

In summary, the above-described results reveal that HRM practices impact in a distinctive manner on the diverse dimensions of firm performance considered. Gross profits would be increased only by collaborative practices related to pay and training (premia for managers in about a fourth of firms, and training aimed at commitment).

Somehow paradoxically, instead, quality would be enhanced by calculative practices in hiring, training, and wage setting at the firm level for blue collar workers. In line with some of the traditional total quality literature (i.e. Deming), performance evaluation for qualification - considered as a calculative practice- is the only one that has a negative effect in quality.[12] In-between, different sets of calculative and collaborative practices are found to have positive effects on labor productivity. Contrarily, the bundle of formalization/organizational culture-related (only if combined with other HRM practices) is always associated to a comparatively lower performance of firms (that is, generating negative complementarities), particularly when performance is analyzed in terms of profitability and quality levels.

4.3 The Impact of HRM depending on Union Influence Levels and Recent changes.

The evidence that stems from our models unambiguously points at the relevance of the role played by unions in relationship to the firm, and that many of the above-identified effects of HRMs on firm performance are contingent upon their role.

Three scenarios are characterized in Table 3. Under the first scenario, already discussed in Section 4.2, Human Resource Management practices are developed in the context of low union (or no union) influence and without reported changes with respect to the previous situation, when regulatory changes took place (Table 3, columns 1 to 3).

In the second scenario, firms have experienced an increase in the influence of unions on their decision processes with respect to 2005, although their influence is still low relative to other organizations. The new frame of labor relations brings up a change in some of the previously described impacts of HRM on all three indicators of firm performance (Table 3, columns 4 to 6).

The same pattern is observed within the third modeled scenario, in which unions are and were already largely involved in the firm decision process before 2005 (Table 3, columns 7 to 9).

The largest changes in the estimated effects of HRM practices on firm performance under these different contexts of labor relations at the firm level are found when proxied by the relative quality of outputs, as opposed to the minor differences captured when measured in terms of gross benefits.

Within a scarcely influential role of unions, more formalized organizations are those that "suffer" the most in terms of profitability levels as a result of the transition, suggesting that their inherent characteristics prevent them to react in time to the new setting, thus allowing unions to capture a larger proportion of their "rents".

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[12] Perhaps for these "endogenous" reasons, about one half of the firms do not implement these evaluation practices.

Table 3 – HRM and firm performance by union influence – Estimated coefficients

Union influence at the firm:	Low & unchanged w/r 2005			Low but increased w/r 2005			High		
HRM Practices	**GB**	**P**	**Q**	**GB**	**P**	**Q**	**GB**	**P**	**Q**
HHRR department: 'Low profile'	---	-1.6	-2.1	---	-1.6	-2.1	---	-1.6	-2.1
HHRR Manager: qualified	---	---	---	---	---	---	---	---	---
All HRM practices outsourced	---	---	21.4	---	---	21.4	---	---	21.4
Additive bundle - Calculative Hiring									
Individually	---	1.1	3.6	---	-0.6	0.2	2.9	-2.4	3.6
With Wage	3.6	1.1	10.7	3.6	-0.6	7.3	6.5	-2.4	10.7
Additive bundle - Calculative Training									
Individually	-14.0	-1.9	19.4	-14.0	-1.9	19.4	-14.0	-13.6	40.9
With Form./Org. culture	-0.9	-1.9	2.1	-0.9	-1.9	2.1	-0.9	-13.6	23.6
Wage production workers: set at firm									
Individually	-3.0	11.1	14.1	-3.0	11.1	2.9	-3.0	11.1	29.5
With Hiring	---	11.1	21.2	---	11.1	10.0	---	11.1	36.6
With Form./Org. culture	-3.0	0.8	1.1	-3.0	0.8	-10.1	-3.0	0.8	16.5
With Hiring & Form./Org. culture	---	0.8	8.2	---	0.8	-3.0	---	0.8	23.6
Additive bundle - Calculative Evaluation									
Individually	---	---	-3.2	---	1.8	0.9	---	---	-3.2
Additive bundle - Calculative Premia									
Individually	---	---	---	---	-4.7	---	---	-4.3	36.0
Additive bundle -Form./Org. culture									
Individually	---	---	---	-1.5	---	---	---	---	-11.2
With Calculative Training	13.1	---	-17.3	11.6	---	-17.3	13.1	---	-28.5
With Collaborative Training	-18.5	-11.4	---	-20.0	-11.4	---	-18.5	-11.4	-11.2
With Wage	---	-10.3	-13.0	-1.5	-10.3	-13.0	---	-10.3	-24.2
With Wage &Training	-5.4	-21.7	-30.3	-6.9	-21.7	-30.3	-5.4	-21.7	-41.5
Additive bundle - Collaborative Premia									
Individually	1.5	---	-3.1	1.5	3.0	-3.1	1.5	---	7.2
Additive bundle - Collaborative Training									
Individually	19.1	11.6	---	19.1	11.6	7.0	19.1	11.6	-21.2
With Form./Org. culture	0.6	0.2	---	0.6	0.2	7.0	0.6	0.2	-21.2

HRM effects on productivity change the sign of their impact in calculative hiring and calculative premia-related practices, that are found to exert a negative effect within this frame, in contrast to the previously found positive/nil impact. Analogously, collaborative premia and evaluation systems aimed at the identification of inefficiencies are turned into positive factors. These results suggest that organizations better adapt to the increased influence of unions by promoting an improved work system and collaborative practices; while they are also consistent with unions that are aligned against "personnel selection" and heterogeneous worker compensation schemes, eventually perceived as anti-union policies. The argumentation is further supported by the fact that the linkages between quality levels and both calculative hiring and firm-level wage setting for production workers-related practices are substantially weakened, while calculative evaluation and collaborative training start exerting a positive impact.

At the other end, the negative effects on firm performance brought by training programs aimed at workers qualification under a low union influence frame are unchanged within the two

temporal evolution scenarios modeled, in accordance to the above-hypothesized underlying sources of such result.

The impact of HRM on organizational performance for those that are subject to a strong union influence is also distinct. Calculative hiring has a positive effect (for the first time) on Gross Benefits. The role played by collaborative practices when focused on productivity levels is equal to that observed within a stable and low unionization setting. Therefore, the previously-described changes are only associated to the transition from one situation to the other. Instead, the negative impact on productivity of calculative practices (pay, recruitment and training) is equal, or of an increased magnitude, than those that arise under a low union influence.

In the quality dimension, however, the effects are different. Collaborative practices that were not relevant, such as training and formalization have a negative effect. Only long term premia has a positive effect. Calculative HRM practices keep the same sign than in the low union influence scenario and when they change their positive impact, it is only to significantly increase this positive effect.

These findings point at the fact that the effects of HRM practices and their configurations have a complex interaction with union behavior and that those calculative practices that were successful in the low union influence environment multiply or synergize their impact in a high union environment. This scenario is characterized by a longstanding union influence, particularly in Manufacturing, and, interestingly, mutual gains appear when calculative practices seem to have been adopted and accepted by unions, and collaborative HRM oriented to commitment seem to be ineffective or even negative, perhaps rejected or forestalled by unions. However, these effects are even more complex, since their effects on productivity and quality seem to be different, and obviously management has to consider these equivocal trade-offs.

SUMMARY AND CONCLUSIONS.

In this paper we have tested in a logistic model the impact of HRM practices, bundles, and their complementarities on three dimensions of firm performance: gross benefits, productivity and quality. We have done it integrating the contingency-configurational-contextual frameworks, examining the impact of different configurations, controlling for a series of relevant contingency variables, and evaluating the impact of contextual factors such as the changes that took place in the Uruguayan labor relations system and increasing union coverage, density and influence.

After briefly reviewing the international literature, both in terms of HRM and HPWP practices and their interrelations with unions, we have concluded that in order to understand and model properly their inter-relations, the distinction between calculative and collaborative HRM practices is critical. The relevance of the distinction is not only important to distinguish among bundles of HRM practices, but also to understand and model their effects and complementarities with union behavior and interests, and in turn their impact on organizational performance. We model their impact on three different performance measures because they could actually imply different contingent strategies of HRM practices, in particular en relation to Union behavior.

We construct "bundles" of HRM practices in an additive manner (and validate the additive measures with a complementary factor analysis) so that we can also validly model complementarities among different practices. These variables, in turn, are allowed to interact

with three different levels of union influence: low influence, increasing influence but still relatively low, and high influence.

Results show that several contingency variables such as size, family-owned, being part of an economic group, the strategy privileged by the firm, or its degree of formalization , as well as other contextual variables operate differently depending on the performance indicator.

Higher union affiliation within the firm lowers levels of gross benefits and quality, but at a given level, higher union influence in decision making improves productivity in any industry. Within Manufacturing, that has had a longer historical incidence of union influence, this is also true for quality performance, indicating that alignment is possible.

When efficiency wages are paid by the firm, above those set by collective agreements, the negative effects of union effects are counterbalanced (at the expense of profits). As referred in the previous discussion, these results are in line with the "mutual gains" hypothesis within a unionized context.

In terms of HR departments and practices, the results point to positive effects in terms of productivity and quality when there is a professional management of HHRR, either vertically integrated or fully outsourced.

HRM practices impact significantly but differently on the diverse dimensions of firm performance considered. Gross profits are increased only by collaborative practices related to pay and training (premia for managers in about a fourth of firms, and training aimed at commitment). Perhaps paradoxically, instead, quality would be enhanced by calculative practices in hiring, training, and wage setting at the firm level for blue collar workers. Performance evaluation for qualification, considered as a calculative practice, is the only HRM practice that has a negative effect in quality; a result that is line with some of the traditional quality literature. In-between, both types of practices are found to have positive effects on labor productivity. Contrarily, the bundle of formalization/organizational culture-related (only if combined with other HRM practices and by itself in highly unionized environments) is always associated to a comparatively lower performance of firms (that is, generating negative complementarities), particularly when performance is analyzed in terms of profitability and quality levels.

When considering the three different scenarios of union influence, the marginal effects of HRM on firm performance also differ. Within a scarcely influential role of unions, most formalized organizations are those that incur a higher loss in terms of profitability levels as a result of the transition, suggesting that their inherent rigidities prevent them to react in time to the new setting, thus allowing unions to capture a larger proportion of their "rents".

Different configurations appear to be relevant depending on the levels of union influence at the firm level, and particularly in the context of those firms that have had a recent change. But the variety and even changing signs of the practices point at the fact that the effects of HRM practices and their configurations have a complex interaction with union behavior. Those calculative practices that were successful in the low union influence environment multiply or even synergize their impact in a high union environment, but collaborative practices do not seem to be particularly relevant. Therefore, mutual gains appear when calculative practices seem to have been adopted and accepted by unions, and contrary to what some of the literature has argued, collaborative HRM oriented to commitment seem to be ineffective or even have negative impacts on performance, perhaps rejected or forestalled by unions.

In conclusion, we have shown that HRM practices have a marginal impact on performance, depending on their calculative or collaborative nature. And that their effect can be either positive or negative in terms of different complementarities among practices and depending on the performance dimension considered.

We have shown that the distinction between these types of practices is critical to model and understand the actual interaction with union behavior and other contingency variables of the firm. In fact, our results show that there are indeed different effects of different practices and complementarities depending on union influence, not only at the societal level, but at the firm level. Further, we also find that their effect differ depending on the performance dimension considered, as theory would indicate.

Hence, previous studies that combine different performance measures may "confound" the results of HRM practices.

Along the same lines, the use of factor analysis to determine bundles, may not be the most appropriate methodology to be used if the distinction between calculative and collaborative practices is to be followed. Nor it is the best methodology to model complementarities, since it may also combine within factors practices with contradictory signs.

Our study has some major advantages and limitations. On one hand, the institutional change of a new labor relations setting and higher union influence at the societal level constitutes a unique "statistical experiment" to test some of the traditional hypotheses that link HRM and Unions, but with a different sign with respect to the more generalized trend of union decline elsewhere. On the other hand, we believe our model specification is applicable to other cases, and in the Uruguayan case, it has allowed us to study the behavior for all firms subject to the same context, and not just considering unionized and non-unionized firms as in some of the relevant, albeit scant, previous studies.

However, the number of cases in our sample is limited, and the type of firms studied are mostly SMEs. Therefore, many of the conclusions with respect to the stylized facts may not be generalized to larger organizations in other countries.

In terms of other significant limitations and lines for future work, our model does not incorporate any "structure", and hence does not allow us to model the interactions among variables and processes within the firm (i.e. productivity and quality could be means to attain profitability; or different outcomes could be privileged in terms of the strategy of the firm).

Another limitation of this study results from the lack of panel data, that does not allow us to model the dynamics of change in terms of adoption of HRM and other managerial practices.

Finally, the validity of the qualitative and relative evaluation of performance is still an issue to be tested in countries like Uruguay.

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Appendix

Table A.1 Descriptive statistics (% frequency of firms)

1. Firm characteristics

Gross benefits 3-years average	Negative	Nil	Positive	Extremely positive		
	11,8	17,5	53,1	17,6		
Productivity w/r sector's average	Equal/below	Above	Extremely above			
	6,8	37,7	55,5			
Quality w/r sector's average	Equal/below	Above	Extremely above			
	1,9	25,0	73,1			
Economic sector	Ind.& Const.	Commerce	Services			
	49,3	13,5	37,2			
Firm size	Medium	Large	Largest			
	32,1	43,1	24,8			
Main sales market	Local	Regional	World			
	50,0	21,2	28,8			
Success based on:	Improvement & efficiency	HHRR efficiency	Cost reduction	Marketing strategy	Innova-tion	Commit-ment
	72,8	22,8	59,9	45,6	69.0	27.9
Binary variables	*Yes*	*Yes*				
Empl. decreased	12,4	12,4				
Family-owned	48,9	48,9				
Corporate	36,1	36,1				
Economic group	34,3	34,3				
Maturity stage	54,1	54,1				
Affiliation rate	0%	1- 10%	11- 25%	26- 50%	51-75%	76-100%
	38,7	12,4	8,3	13,5	12.4	14.7
Union influence	Ind.& Const.	Commerce	Services			
High	19,4	2.7	14.6			
Low/ increased	.24.8	36.1	26.5			

2. HRM practices

HHRR Department	*Exists*	*Low profile*	*High profile*	
	60,2	19,8	31,5	
No HHRR Dept.- HR Manager at firm	*Qualified*	*Direct. board*		
	45,5	19,7	---	
HRM Outsourcing	*No*	*Partially*	*Fully*	
	30,8	65,5	3,7	
Wages Non-prod.workers: set at firm	*Yes*	*No*		
	27.7	72.3		
Additive Calculative Bundles	*Cat.1*	*Cat.2*	*Cat.3*	
Hiring	5,5	36,6	57,9	
Training	18,1	81,9	---	
Evaluation	53,4	27,6	19,0	
Premia	11,1	88,9	---	
Additive Collaborative Bundles	*Cat.1*	*Cat.2*	*Cat.3*	*Cat.4*
Premia	60,2	39,8	---	---
Formalization/Organizational	7,2	47,3	39,1	6.4
Collaborative Training	32,1	67,9	---	---

Table A.2 Factor Analysis results

Bundles (Factors)	Eigen-value	% Variance	Loading Factors
Calculative			
1. Evaluation system and goals	5.59	8.5	
Formal system			0.22
Goal: set wages			0.75
Goal: improve work organization			0.83
2. Wages: set at the firm	1.47	5.1	
For managers & professionals			0.76
For administrative & production workers			0.65
3. HRM at the firm	1.81	7.2	
HHRR manager: belongs to directive board			-0.72
HHRR Department: 'High profile'			0.59
HHRR Department: involved in policy design			0.77
4. Outsourcing of HRM	1.54	5.2	
All HMR practices outsourced			0.81
Pay-related practices outsourced			0.65
Work conditions practices outsourced			0.56
Collaborative			
1. Formalization-Organizational culture	1.67	5.3	
Mission/Values/Diversity/Ethics index			0.53
Written statements			0.52
Unwritten statements			0.58
2. Premia linked to commitment	1.30	4.7	
Premia for managers			0.69
Premia for production workers			0.59
Intermediate			
1. Hiring & communication	1.24	4.2	
Hiring based on proven skills			0.56
Hiring based on long-term relation			0.40
Consultative board			-0.56
2. Training & evaluation	2.45	8.2	
Training goal: increase skills			0.85
Training goal: increase commitment			0.67
Evaluation aimed at efficiency			0.79
3. Premia	1.71	6.9	
Premia linked to commitment			0.75
Premia linked to performance - Managers			0.83
Premia linked to performance - Production workers			0.65

Note: We report only the three practices with the highest weight within each factor. Loading factors are calculated after rotation.

Table A.3 Estimated coefficients – Additive bundles and individual practices

Variables	Gross Benefits	Productivity	Quality
Firm characteristics			
Sector: Industry	-----	-2.508**	-----
Sector: Services	-----	-----	4.717**
Employment decrease	-----	-1.930***	-3.024***
Medium(<100 workers)	-----	-----	-----
Largest (>300 workers)	1.058*	-----	-2.733***
Corporative	-----	-----	-4.641***
Maturity stage	0.903**	-----	-----
Family-owned	-----	-----	-3.585***
Economic group	-----	1.672**	5.685***
Main Market: World	-----	1.658**	-----
Main Market: Local	-----	1.755**	-----
Success: Overall efficiency	-----	-----	4.570***
Success: Org. commitment	-----	-----	-4.171***
Success: Labor efficiency	-----	-----	-----
Success: Marketing	0.740**	1.067***	2.903***
Success: Innovation	-1.267***	-----	-1.982**
Success: Cost reduction	-----	-----	-----
Institutional framework			
Affiliation rate	-0.504**	-----	-1.628***
Firm-level agreement-Industry	-----	-----	24.850***
Union influence at the firm: High	-----	20.760***	-24.947***
Union influence at the firm-Industry: High	-----	-----	38.609***
Union influence at firm: Low/increased w/r 2005	4.427**	-----	-----
Union influence at firm-Industry: Low/increased w/r 2005	-----	-----	11.253***
HRM practices			
Calculative			
RRHH Department: 'Low-profile'	-----	-1.560**	-2.147**
HHRR Manager: qualified	-----	-----	-----
All HRM practices outsourced	-----	-----	21.356***
Additive bundle-Hiring	-----	1.085**	3.619***
Additive bundle-Training	-14.001***	-1.868**	19.449***
Wage production workers: set at firm	-3.028***	11.083***	14.058***
Additive bundle-Evaluation aimed at internal efficiency	-----	-----	-3.236***
Additive bundle-Premia based on performance	-----	-----	-----
Collaborative			
Additive bundle-Formalization-Organizational culture	-----	------	-----
Additive bundle-Premia based on performance	1.467**	-----	-3.072***
Additive bundle-Training	19.126***	11.621***	-----
Complementarities			
Hiring/Wage	3.589***	-----	7.154***
Calculative Training/Formalization-Organizational culture	13.083***	-----	-17.266***
Wage/Formalization-Organizational culture	-----	-10.299***	-12.973***
Collaborative Training/Wage	-18.521***	-11.417***	-----
Interactions w/ union influence at firm high			
Additive bundle-Hiring	2.908**	-3.494**	-----
Additive bundle-Calculative Training	-----	-11.706***	21.556***
Wage production workers: set at firm	-----	-----	15.418***
Additive bundle-Evaluation	-----	-----	-----
Additive bundle-Calculative Premia	-----	-4.291*	36.051***
Additive bundle-Formalization-Organizational culture	-----	-----	-11.199***
Additive bundle-Collaborative Premia	-----	------	10.572***
.Additive bundle-Collaborative Training	-----	-----	-21.250***
Interactions w/union influence at firm low/increased w/r to 2005			
Additive bundle-Hiring	-----	-1.672*	-3.399**
Additive bundle- Calculative Training	-----	-----	-----
Wage production workers: set at firm	-----	-----	-11.166***
Additive bundle-Evaluation	-----	1.773*	4.117***
Additive bundle- Calculative Premia	-----	-4.660**	-----
Additive bundle-Formalization-Organizational culture	-1.508*	-----	-----
Additive bundle-Collaborative Premia	-----	2.977***	-----
Additive bundle-Collaborative Training	-----	-----	7.001*
Pseudo-R^2	0.2521	0.4067	0.6254
Number of Observations	164	171	176

Note: Non-significant coefficients are not reported. * / ** /*** refer p<0.10; p<0.05; p<0.01

Table A.4 Estimated coefficients – Factor Analysis Bundles

Variables	Gross Benefits	Productivity	Quality
Firm characteristics			
Sector: Industry	-1.779**	-2.146**	-----
Sector: Services	-----	-2.140*	-----
Employment: decreased	-----	-1.694**	-2.278**
Medium(<100 workers)	-----	-----	-----
Largest (>300 workers)	-----	-----	-2.237**
Corporate	-----	-----	-----
Maturity stage	-----	-----	-----
Family-owned	-----	-----	-1.426*
Economic group	-----	-----	-----
Main Market: World	-----	-----	1.913*
Main Market: Local	-----	-----	-----
Success: Overall efficiency	-----	-----	2.432**
Success: Commitment	-----	-----	-2.271*
Success: Labor efficiency	-----	-----	-----
Success: Marketing	-----	0.717*	1.221**
Success: Innovation	-0.941**	-----	-1.984**
Success: Cost reduction	-----	-----	-----
Institutional framework			
Affiliation rate	-----	-----	-0.932***
Firm-level agreement-Industry	1.516*	-----	31.280***
Union influence at the firm: High	-----	-2.887**	25.154***
Union influence at the firm-Industry: High	-----	-----	-0.932***
Union influence at the firm: Low but increased w/r 2005	1.516*	-----	31.280**
Union influence at the firm-Industry: Low but increased w/r 2005	-----	-2.887**	25.154**
HRM - bundles of practices			
<u>Calculative</u>			
HRM at the firm	-----	-0.685**	-----
Outsourcing of HRM	0.446*	0.612**	-----
Wages: set at the firm	0.942***	-----	-----
Evaluation system and goals	-----	0.906***	-----
<u>Collaborative</u>			
Formalization-Organizational culture	0.587**	-----	0.642*
Premia based on performance	-----	-----	-----
<u>Intermediate</u>			
Hiring & Communication	-----	0.530**	-----
Training & Evaluation	-----	-----	-----
Premia based on performance	-----	-----	-----
Interactions w/ union influence at firm high			
HRM at the firm	-----	-----	-4.466**
Outsourcing of HRM	-----	-----	-7.068**
Wages: set at the firm	-----	-----	18.139**
Calculative Evaluation	-----	-1.152*	-----
Formalization-Organizational culture	3.094**	-----	-12.772**
Collaborative Premia	-----	-----	-23.460**
Intermediate Hiring & Communication	-----	-----	5.792**
Intermediate Training & Evaluation	-----	-----	-18.973**
Intermediate Premia	-----	-----	-4.307**
Interactions w/union influence at firm low/increased w/r to 2005			
HRM at the firm	-----	-----	-----
Outsourcing of HRM	-----	-----	-----
Wages: set at the firm	-----	-----	-1.767**
Calculative Evaluation	-----	-----	-----
Formalization-Organizational culture	-----	-----	-----
Collaborative Premia	-----	-----	-----
Intermediate Hiring & Communication	-----	-----	-----
Intermediate Training & Evaluation	-----	-----	1.638***
Intermediate Premia	-----	-----	-----
Pseudo R^2	0.2358	0.3430	0.4989
Number of Observations	159	165	170

Note: Non-significant coefficients are not reported. */**/*** refer p<0.10; p<0.05; p<0.01