A PANEL DATA ANALYSIS OF THE EFFECTS OF VOLUNTARY AND INVOLUNTARY SEPARATIONS ON UNIT PERFORMANCE IN THE RETAIL INDUSTRY

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Abstract

We studied the relationship between collective involuntary and voluntary turnover over unit-level performance. Our unique dataset, consisting of panel data with 24-month observations for 232 stores of a large Spanish fashion retail company, enabled us to compare different time lags between the moment of departures and the performance measures using fixed effects regressions. Such analyses revealed that both types of turnover had different consequences. Voluntary turnover was unrelated to store performance. Otherwise, involuntary turnover was significantly and negatively related both to store productivity and efficiency when variables are measured simultaneously, though this effect disappears in a one-month time lag. These results are discussed in the context of operational disruption arguments, and reveal the importance of using distinct variables that isolate the nature of employees' separations (voluntary or involuntary) for the purposes of understanding what is meant by the functionality of turnover. Our findings also evidence the need to expand the range of methods used for analyzing the collective turnover-organizational performance link in order to advance knowledge in the field.

Keywords: collective turnover, organizational performance, fixed effects models

INTRODUCTION

Organizational turnover has long been considered a most relevant source of research, with implications both for academic and practitioners' knowledge growth. While the original research tradition that started in the 1900 (as reported by Price, 1977) focused on the antecedents of individual turnover -aspects affecting workers' decisions to quit-, the last decades have seen a vast growth of studies shifting from antecedents to consequences of turnover, and using measures at the collective level rather than at the individual one. From this basis, research over the last 20 years has mostly enriched the types of dimensions of corporate performance used as dependent variables, but little progress has been made in disentangling the differential effect of turnover according to its actual causes and nature (Shaw, 2011).

Most of the work developed so far has focused either on voluntary turnover or on total turnover reported through informal records to be mostly voluntary. Obviously, the concept seems much easier to approach since it is much more homogeneous in its nature than involuntary turnover –which may comprise a wide range of decisions from individual dismissals to substantial downsizing-, but it has created a gap in the study of how companies cope with workforce flexibility according to their business needs. In an attempt of explanation for this bias towards quits, Price (1977) argued that most of the *actual* turnover has been voluntary in most industries. However, the situation may have overturned due to the current economic situation. In the context of the US, Hausknecht and Trevor (2011) note "2009 data signal the first instance where the involuntary turnover rate surpassed the voluntary turnover rate. In addition, comparing 2001 and 2009 voluntary rates reveals a 39% drop across the period" (p.356). European countries pass through a very similar moment. Therefore, considering the present times when organizations are experiencing a growing need

for flexibility in their employment flows, involuntary turnover gains momentum as a research topic.

We fully agree with the classical literature that outlines, *"the variables and causal process which produce involuntary separations are probably different from the variables and process that cause voluntary separations"* (Bluedorn, 1978). Our study, along this line and following recommendations from recent reviews such as Hausknecht and Trevor (2011) and Shaw (2011), uses distinct measures for voluntary and involuntary turnover in order to understand their specific effects over organizational outcome variables. We draw from operational disruption arguments (Staw, 1980; Shaw et al., 2005b) and discuss what is for turnover to be functional (Osterman, 1987, Dalton et al., 1982; Price, 1977) according to the distinct nature of quits and discharges.

Empirical analyses so far have also yielded inconsistent results regarding the nature of the relationship between different measures of turnover and organizational performance. Most of them find a linear and negative relationship, and it is only lately that nonlinearity has started to be tested (Guthrie, 2001; Alexander, Bloom and Nichols, 1994; Arthur, 1994; Glebbeek and Bax, 2004). More recent studies find evidence of an attenuated curvilinear relationship (Shaw et al., 2005; Ton and Huckman, 2008), and few studies have even found an inverted U curve (Siebert and Zubanov, 2009; Meier and Hicklin, 2008). In the context of an intense debate about the reason for these inconsistencies, and thanks to the characteristics of our unique dataset (panel data with 24 monthly observations for the total set of stores of a retail company) our study contributes with a discussion about the differential effects of voluntary and involuntary collective turnover over performance, and how those distinct and complete measures may yield a different pattern in this relationship.

Our panel data also enables us to study the effects of turnover using different time lags between the moment of departures and the performance measures. The majority of studies

using data from only one organization have been carried out within the context of highly decentralized industries, for which comparison across units sharing the same corporate culture and set of operational procedures is possible. Our data fits into this context, since we have analyzed the nationwide stores of a large Spanish fashion group. We run our study with a sample of low qualified workers under a context of what has been considered knowledge exploitation vs. knowledge innovation (Ton and Huckman, 2008).

Studies in the field have been performed using a myriad of samples, from cross-industry data (e.g., Huselid, 1995; Guthrie, 2001) to the examination of facility or unit-levels within the same company (e.g., Kacmar et al., 2006); Shaw et al., 2005). Nevertheless, the use of methods other than Ordinary Least Squares (OLS) regressions has been rare so far, bringing about issues concerning the management of unobservables, in particular omitted variable bias. The present research addresses this potential confound using fixed effects regressions with our panel and monthly data.

In summary, the research questions we address in our study are:

1. Do voluntary and involuntary turnover rates have the same effects on organizational performance? To what extent a total turnover measure is masking the impact of different types of employees' departures?

2. To what extent degree can we assert that involuntary turnover is "functional"? Is there a difference between short and medium-term to long-term effects on performance that can refine the functionality of involuntary turnover?

BACKGROUND AND THEORY

There has long been consensus among scholars that turnover has negative consequences for organizational performance (Shaw, 2011). In an early non-economics-based discussion of the consequences of turnover, Staw (1980) outlined four main sources of costs: (1) recruitment and selection of replacements, (2) training and development (3) operational disruption -in particular in the cases of highly interdependent positions- and (4) demoralization of organizational membership. These costs might be contrasted against a series of positive consequences such as increased performance and motivation of the new hires and organizational renovation. It is worth noting Staw's remark that such positive aspects would rather be observed in the long-run viability of the organization, thus making the costs of terminations and quits more salient than their benefits.

The most widely used theoretical bases are consistent with Staw's statements, and come mainly from human capital theory (Osterman, 1987; Shaw et al., 2005). However, in the context of our study, the retail industry taking stores as working units, there is a claim that performance, even when there is obviously human capital contribution to the organization, is very much affected by job design issues (Strober, 1990). Therefore, we rather find theoretical support for our analyses in arguments that delve into the organizational disruption that terminations and quits cause in daily operations, the likely decrease in the morale of workers that stay and the cost associated with managing separations and eventual replacements (Katz and Kahn, 1978; Price, 1977; Alexander et al., 1994; Shaw, 2011).

Conversely, benefits have also been associated with turnover. It has been posed that a certain degree of renovation of the workforce is healthy for the purposes of adapting to the environment and preventing endogamy (Staw, 1990). Building on a more nuanced definition of turnover, Dalton et al. (1982) suggested that even voluntary terminations can entail positive effects for the organization. These authors formally expanded the traditional

taxonomy of turnover (voluntary vs. involuntary) to introduce a discussion on the actual *dysfunctionality* of voluntary terminations, according to the organization's evaluation of the individual intending to quit.

Though research so far has yielded fruitful insights on the impact of turnover over organizational performance, several commentators have pointed to the need to advance on the analysis of the actual causes of employees' leaving companies (Hausknecht and Trevor, 2011; Shaw, 2011). These authors defend that working with total turnover rates would mask the differential effects that quits and other forms of termination can bring about. Therefore, isolating at least the effects of quits and involuntary terminations would greatly contribute to both the academic and practitioners' knowledge in the field.

Voluntary turnover

Concerning the difference between the effects of quits and involuntary turnover, and adopting an organizational perspective, we can assume that voluntary turnover is basically unanticipated and can therefore become more dysfunctional for the organization (Morrow and McElroy, 2007). The organizational disruption argument supports a negative impact of quits as well as other type of terminations, but so far no case has been made for one of them being stronger than the other.

Equally, empirical tests become scarce when we shift the focus from total turnover rates to voluntary separations. Most research on voluntary turnover has been performed at the individual level of analysis (Hausknecht and Trevor, 2011), but much less work has been reported at the collective level. The research mainstream so far has used total turnover rates, in some cases reporting rough estimations of the proportion of quits and discharges contained. As for those studies analyzing the association between net measures of collective voluntary turnover and different dimensions of organizational performance (we have not

included studies examining this relationship as a side issue, e.g. Huselid, 1995), most find it is linear negative (McElroy et al., 2001; Batt, 2002; Kacmar et al., 2006; Yanadori and Kato, 2007; Morrow and McElroy, 2007; Hausknecht et al., 2009). So far we have found only two studies focusing on voluntary turnover and testing for curvilinearity (Shaw et al., 2005; Shaw et al., 2011). Both of them find that the relationship between quits and several proximal and distal measures of performance depicts an attenuated negative curve, that is, the relationship is negative for lower levels of turnover and it is lessened when turnover increases.

Given this evidences, we predict:

H1: Voluntary turnover will be negatively related to store performance.

Involuntary turnover

There are many arguments in the literature that support a logic predicting a positive impact of involuntary turnover on organizational performance (Hausknecht and Trevor, 2011). In its simplest meaning, as "turnover initiated by the company" (Abelson and Baysinger, 1984), dismissals can be more easily anticipated than quits, and therefore replacement and redistribution of activities can be planned in advance (Morrow and McElroy, 2007). Also, under the assumption that discharges affect mainly poor performers that are eventually replaced by at least average ones, companies can also expect benefits from a turnover that has traditionally been labeled as 'functional' (Dalton et al., 1982). This position would also be shared by Human Capital theory (Strober, 1990), since planned discharges of poor performers would bring about an improvement in the quality of human capital in the short and long run. The reasoning is equally valid though its application gets weakened in the case of dealing with a low-qualified workforce (Siebert and Zubanov, 2009). In their recent literature reviews, however, both Hausknecht and Trevor (2011) and Shaw (2011), remark that even this type of dismissals can affect operational dynamics, at least up to the point when

replacements reach the level of professional proficiency of departing workers. This observation introduces the time dimension as a critical variable when approaching the study of involuntary turnover, because the difference between short and medium term effects may be relevant in order to assess the actual functionality of dismissals. As suggested by Shaw (2011), analyses that contemplate observations over time using an isolated measure of involuntary turnover would help approach more precise predictions of such relationships and refine theoretical models about them.

This debate has received scarce empirical support so far. We have found only two studies comparing various dimensions of collective turnover. McElroy et al (2001) distinguish between voluntary turnover (in their study "employees who left a given region on their own initiative"), involuntary turnover ("employees in a given region who were let go because of a failure to meet company standards") and reduction-in-force ("employees who were laid off for economic or redundancy reasons"). Their analysis of 31 regional subunits of a bank shows that the three types of turnover are negatively related to unit productivity, but that the magnitude of the effects is different for the three of them. Their involuntary turnover rate is negatively related to customer satisfaction and cost per loan (2-year span measure). Voluntary turnover is negatively related to profitability over the same year and profitability and cost per loan in a 2-year span. Finally, reduction-in-force is negatively related to all of the previous measures plus the 2-year measure of profitability. Therefore, the reduction-in-force rate has more pervasive effects on corporate performance that the other two rates. Interestingly, their productivity variable (sales per month per person) was the only one that did not correlate with any of the turnover dimensions. Results of this study have to be however filtered through the level of robustness of the analysis performed, based only on partial correlations.

More recently, a study by Batt and Colvin (2011) moves forward both in the definition of turnover dimensions and in the emphasis placed on involuntary turnover as a relevant topic of study itself. They define involuntary turnover as "*employer decision to fire individual employees, rather than decisions to cut costs through mass layoffs, downsizing, early retirement buyouts or organizational restructuring"* (p. 695). The section of their extensive study that deals with quits, dismissals and total turnover as independent variables show that voluntary and total turnover rates have a significant, negative impact over customer satisfaction, a proximal performance measure. The relationship with dismissals is negative as well, though non-significant. The study does not include other measures of corporate performance such as productivity or efficiency, neither it introduces observations over time lags that may develop the discussion on these relationships.

The context of our work contemplates involuntary turnover very much along the lines of Batt and Colvin. But we try to take a step forward in the definition of dismissals, supported by previous discussion in the literature (Osterman, 1987). As stated above, involuntary turnover has been categorized into discharges due to poor performance and downsizing due to economic or redundancy reasons. Hausknecht and Trevor (2011) state that both categories are sometimes included in the involuntary turnover rate, but their discussion of the concept relies on the assumption that *"the functional turnover position mandates that any single poor-performer will tend to be replaced by an average employee"* (p. 369). Our position is that the involuntary turnover that may be found in companies such as the one under study here (and arguably in industries characterized by low qualified, decentralized units under seasonality business constraints) demands a more nuanced analysis. The employment model in these cases caters for highly dynamic fluctuations in the staff, either due to varying levels of demand and or to personnel contingencies (sick or maternity leaves, holidays, etc).

To date we have found no empirical evidence of the impact of temporary employees' fluctuations on organizational or subunit performance outcomes. The academic literature also lacks sound conceptualizations of this phenomenon. We claim that retail companies' involuntary turnover strategy would be closer to what Osterman, when questioning the actual meaning of the term 'turnover' (1987) defined as *"short-term layoffs* (probably) *followed by recall"*. Equally, as Staw (1980) originally stated, organizations may have regular estimates of employees' flow and have historically included a certain level of replacement as part of their dynamics. All this considered, we would argue that involuntary turnover would provide a balance to the establishment that we hypothesize would revert into higher levels of efficiency. However, even in the most flexible staffing strategies some immediate cost in terms of operational disruption that may bring about immediate negative effects over productivity, in particular when there is a certain level of interdependence of tasks among unit members, as is the case in any retail store that tries to optimize staff dimension through the introduction of functional flexibility (Cappelli and Neumark, 1994). As Staw (1980) puts it, "*costs would be more salient in the short run, thus magnifying its effects over benefits*".

These arguments lead us to hypothesize:

H2a: there will be a negative relationship between involuntary turnover and store performance in the short term.

H2b: the involuntary turnover-store performance relationship will turn into positive as the time lag between dismissals and store performance increases.

METHOD

Organization

Data were collected from 232 establishments of a large Spanish fashion retail group. All stores were located in the Spanish territory and represent the whole population of the brand's establishments in the country. Stores opening or closing within the study period were omitted from the analysis. The total sample of establishments included 9.494 employees.

Stores are quite large in size, with an average of 41 employees, and they have been in existence for an average of 13 years. The stores in our study assign their workers to different positions, whose denominations and relative percentages are: sales assistants (67.8%), cashiers (9%), section coordinators (16.4%) and store managers (6.8%). Store variables in our study include all types of employees as every position contributes to selling. Nevertheless, it is worth noting that most separations (96%) are related to sales assistants.

During the period studied, average annual involuntary turnover was 31.7%, much higher than annual voluntary quits (8.2%). As mentioned in the theoretical section, sales fluctuations (due to seasonality) largely determine involuntary turnover levels. Though company records do not allow identifying the different causes of involuntary turnover, the corporate HR staff in charge of workforce analysis confirmed that the vast proportion is due to a dynamic reduction in workforce according to sales fluctuations and coverage of leaves and vacation among permanent staff. Only a small part of the involuntary turnover actually consists of dismissals of underperformers.

Business operations are centralized in our organization. Both products offered at the stores and their layouts are decided at the corporate level and are very similar across locations. Also, all establishments share organizational culture and general management practices. Nevertheless, store managers are given much autonomy in organizing their staff.

The headquarters decide upon a number of hours that can be hired at each store depending on the estimation of sales volume for every period. With this information, store managers become responsible for the hiring and negotiation of timetables with employees. They make decisions on dismissals (due to poor performance) and, at the end of a temporary contract, they also determine if employees' contracts will be renewed or not and under which conditions (always in accordance with the number of hours allocated from the headquarters). Finally, store managers are responsible for the assignment of workers to the different jobs. They can move them from one section to another (stores can have up to 3 sections: women, men and kids), ask them to go to the warehouse to restock or to serve at the fitting room, among other functions. Thus, as store managers have extended discretion in how to supervise their staff, their skills in doing so will surely influence the turnover-performance relationship. Actually, their capacity of coordination is key for store's success, since there is a high level of functional flexibility and interdependency among shop assistants, and decisions have to be made in a very dynamic way according to customers' flow and demands.

Data collection procedure

Most data used in the present research comes from company records facilitated by corporate HR officials with whom a close collaboration has been set. Most data were extracted from a centralized information system that collects it from all establishments, which allows for a high level of objectivity and low levels of measurement error. Sales are automatically registered as they occur through the store's cash terminals. Information on individual store turnover (voluntary and involuntary) and other variables used in the study is collected through a centralized corporate system. Store managers enter personnel information on a computer located in each establishment, mostly at the individual level (incorporation of new employees, number of hours worked per month, weekly working hours, quits and

dismissals). We aggregated these data at the store level for the purposes of the present analyses. Furthermore, years of operation and size were also available at the store level. The only variable not coming from company records is unemployment, which is available for every province in Spain and calculated using a nationally representative survey.

The company provided complete monthly data on the above listed variables for 24 months, from February 2009 to January 2011 (the organization's economic year runs from February of a given year to January of the next). We believe it is advantageous to use monthly data in this type of setting because workforce is low qualified in retail and the time it takes for a new employee to be as productive as the one being replaced is probably a matter of weeks. Hence the impact of turnover on store performance will probably be better captured with monthly observations.

Measures

We use a set of panel data comprising 24 monthly observations of 232 stores for each of the variables under study (except for unemployment where data is collected every three months).

Independent variables. The *voluntary turnover rate* is calculated as the number of employees who leave the store voluntarily over a month divided by the average number of employees in the store that same month multiplied by 100. This is a conventional way of measuring turnover even though all the reviewed studies report an annual rate (e.g. Shaw et al., 2005; Seibert and Zubanov, 2009; Glebeek and Bax, 2004) with the exception of Ton and Huckman (2008).

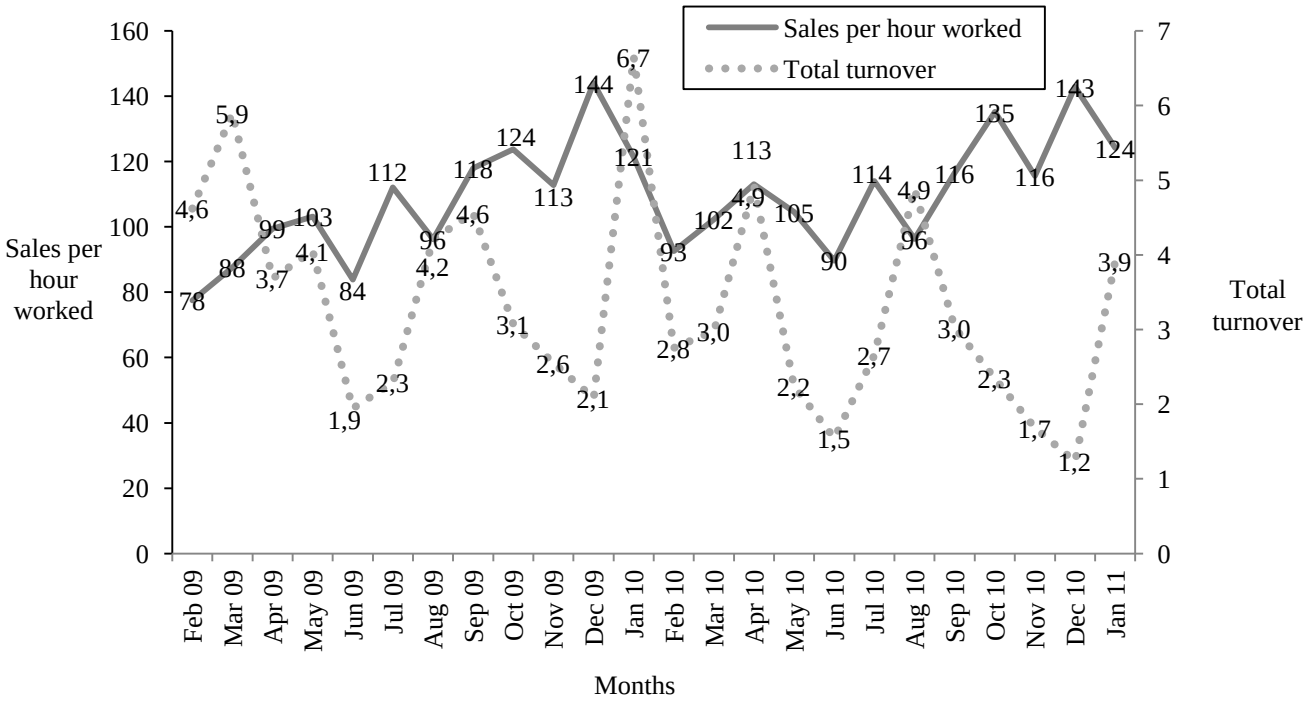
The *involuntary turnover rate* is operationalized as the number of workers who leave a store involuntarily during a month divided by the average number of employees in the store that same month multiplied by 100. The *total turnover* is the addition of the voluntary and involuntary turnover rates.

Dependent variables. Labor productivity, which we have labeled *sales per hour worked*, was calculated following the standards of the company. It is the ratio of gross store sales and the total number of hours worked by all employees of the store, on a monthly basis. Figure 1 shows how the level of sales per hour is higher during the fall and winter periods compared to summer and spring. The main reason for this difference is that clothes are more expensive throughout the cold weather. Also, it can be observed how total turnover fluctuates along the year. Turnover is lower when sales are at the highest of the year, which is around the months of June (just preceding the July discount period) and December (when most Christmas shopping occurs). On the other hand, overall turnover is highest after peak selling periods. That is around the months of March (end of the winter sale), August (end of the summer sale) and January (end of the Christmas sale). These fluctuations evidence the organization's management of their staff turnover (mostly being involuntary, as mentioned) according to seasonal changes in sales.

Our second dependent variable is an efficiency measure, *sales per square meter*, also used by the company as a standard management control measure. It is calculated dividing the store's gross monthly sales by its size in square meters.

FIGURE 1

Sales per hour worked and total turnover per store and month



Control variables. We used a set of control variables that can be related to turnover and/or to organizational performance, most of them suggested by previous research (e.g. Seibert and Zuvanov, 2009; Arthur, 1994). *Percentage of permanent contracts* and *number of weekly working hours* per store were used as proxies for the existence of a commitment working system. Stores scoring higher in both measures are believed to be run closer to a commitment working system, which has been found to be related to organizational performance (e.g. Arthur, 1994), to turnover (Arthur, 1994) and to the turnover-performance association (Seibert and Zubanov, 2009). The percentage of permanent workers is the number of permanent contracts in a store divided by its total staff (which includes permanent and temporary workers) multiplied by 100. The weekly working hours are the number of hours worked per employee on a weekly basis aggregated at the store level. In Spain, the maximum number of hours an employee can legally work per week is 40 hours.

The level of local *unemployment* may influence turnover as well as sales. The tightness of the labor market for a particular position can influence the efforts an organization must make to replace a leaver (Staw, 1980). Thus one would expect, for example, higher levels of dismissals in a strong labor market (characterized by high unemployment rates), as found in Batt and Colvin (2011). It is also plausible that high levels of unemployment diminish purchasing power, and therefore stores may sell less. Previous studies have found unemployment rates relate to organizational performance (e.g. Seibert and Zubanov, 2009; Ton and Huckman, 2008) and to turnover (Ton and Huckman, 2008). In the present research, the unemployment rate is the number of unemployed persons divided by the active population (which includes employed and unemployed individuals). It is calculated at the province level (Spain is divided into 52 provinces). The 232 stores of our study are assigned the unemployment rate of the province where they are located. This rate is measured every three months through the Labor Force Survey (which surveys, in Spain, over 60.000 homes) conducted by the Spanish National Institute of Statistics (INE). As the rest of variables are used on a monthly basis, we have assigned each quarter's unemployment rate to the corresponding months to every establishment.

It has generally been tested in the empirical literature that low quit and layoff rates are related to a higher level of *employee tenure* (Osterman, 1987). Further, we expect the *age of employees* to be related to turnover. Specifically, younger workers have been found to have higher quit rates than older workers (Osterman, 1987). Therefore we will include both variables as controls. Tenure of workers has been assessed as the number of months they have been employed by the company. Their age is measured in years. Both variables have been aggregated at a store level and measured monthly as well. Additionally, we have included *managers' tenure* as it can be related to sales. It is calculated as the number of months the store manager has been in his/her position.

The size of the establishment is also controlled as it can correlate with sales (e.g. Kacmar et al., 2006) and it is assessed using the *total hours worked* by employees (per store) as well as the *store* (physical) *size*. Each store has a number of hours hired with its employees every month, some of which are not worked due to holidays, absenteeism and maternity/paternity leaves. The total number of hours hired per store per month minus those hours not worked (for the reasons just outlined) raises the actual number of hours worked. The physical size of the store, labeled *store size*, is measured in square meters. Store's years of operation, *store age*, is also introduced as a control variable due to its relationship to turnover (e.g. Batt and Colvin, 2011). It is assessed as the number of years since the store opened until February 2011.

ANALYSES

To test our hypotheses we regressed sales per hour worked and sales per square meter on the linear terms of voluntary, involuntary and total turnover, as well as the control variables. Variation in our dependent variables can come from variation within stores over time and from variation between stores. OLS regressions, used in numerous cross-sectional studies, estimates between-store variation while fixed-effects regressions study the effects on our dependent variables caused by within-store variation over time (controlling for all stable and unobserved differences across stores; Allison, 1994, 2009). One of the main reasons for estimating the regression parameters through fixed-effects, or in general through unobservable effects models, is to avoid an endogeneity bias, where one or several explanatory variables are correlated with the error term (Wooldridge, 2002). In particular, it is used to avoid an endogeneity bias due to the existence of unmeasured variables, therefore not included in the regression equation, which might influence the independent and/or dependent variables. This type of bias is one of the methodological challenges that plague

cross-sectional studies and could call into question the HR-performance (positive) relationship found in the HRM literature (Becker and Huselid, 2006). When using fixed-effects regressions, the effect of unmeasured (and stable) unit characteristics are removed by subtracting the unit-mean from each observation (England et al., 1983) and therefore omitted variable bias is significantly minimized.

It is noteworthy that, when unobserved attributes affect the relationship studied, fixed-effects are not the only estimator to consider. Random effects estimators are also occasionally tested. Using Wooldridge's (2002: page 251) notation, the basic unobserved effects model (fixed or random) can be written as follows:

$$\boldsymbol{y}_{it} = \boldsymbol{x}_{\boldsymbol{it}} \beta + c_i + u_{it}$$

where $\boldsymbol{x}_{\boldsymbol{it}}$ is a vector of observable variables for different units (i) at different points in time (t). $\boldsymbol{y}_{it}$ is a vector of dependent variables. c_i represents time-invariant unit-specific unobserved effects and the u_{it} the idiosyncratic errors. In methodological and empirical papers it is discussed whether c_i must be treated as a random effect or a fixed effect (Wooldridge, 2002). The random effects estimator is more restrictive than the fixed effects as it requires the unobserved effect (c_i) to be uncorrelated with the measured explanatory variables (Halaby, 2004). This is unlikely to happen with non-experimental data (Allison, 1994). The less restrictive fixed effects estimator allows for c_i to be correlated with $\boldsymbol{x}_{\boldsymbol{it}}$. In the results section of our study, it will be shown that the fixed-effects estimator will be preferred to the random-effects, according to the outcome of the Hausman (1978) test. This test will indicate that unobservables are related to the regressors, rendering the fixed-effects models as the only reliable estimators.

In the present research, $\boldsymbol{y}_{\boldsymbol{it}}$ in turn represents labor productivity (sales per hour worked) and efficiency (sales per square meter). $\boldsymbol{x}_{\boldsymbol{it}}$ are the linear terms of voluntary, involuntary and total turnover and the control variables, measured at the store level (percent of permanent

workers, employees' tenure and age, total number of hours worked, weekly working hours, store manager's tenure) and at the local level (unemployment). Two additional controls will be tested: store size (m^2) and store's tenure (time since its opening). These two variables will be dropped when estimating the fixed-effects coefficients as they are time-invariant (store tenure does vary but its variation is constant over time) but will be used when calculating the OLS regressions. In order to control for store size in the fixed-effects model, we have included the number of hours worked (monthly) at each store as it is time-variant and therefore can be estimated through fixed effects. Finally, monthly time dummies were added to all regressions to control for seasonality.

A caveat of the fixed-effects estimators is that they are unable to control for unobserved variables that *change* over the measurement interval (Allison, 2009; Firebaugh and Beck, 1994). In our setting, unobservable attributes related to store location (which affect store performance and/or turnover) are unlikely to change during the period studied. Moreover, due to the short measurement interval (2 years), we think it is conservative to think managerial attributes will remain stable in most stores.

RESULTS

Descriptive results

Table 1 shows the means, standard deviations and correlations among all the variables. In the upper part of the table the statistics are calculated between stores and in the bottom section correlations are calculated within stores. Descriptive data on the performance (dependent) variables has been omitted for the purposes of corporate information confidentiality. The average monthly voluntary turnover is .68, which corresponds to an annual voluntary rate of 8.2%. The average monthly involuntary turnover is 2.64, equivalent to an annual involuntary rate of 31.7%. It is also noteworthy that most of the staff (91%)

works under permanent contracts and that, on average, employees work 30.63 hours every week (a full-time schedule corresponds to 40 hours/week).

Several within store correlations are noticeably different from the between store correlations. For instance, the zero-order correlation between the involuntary turnover rate and labor productivity is negative, low and significant when it is calculated within stores and it is positive, moderate and also significant when it is calculated between stores, which can be a first hint of the potential effects of the unobservables on the turnover-performance relationship. These effects are substantiated by the regression results shown hereafter.

TABLE 1

Means, standard deviations and correlations for all variables

	Mean[a]	s.d.[a]	1	2	3	4	5	6	7	8	9	10	11	12	13
BETWEEN STORE DATA[b] (n = 232)															
1. Sales per square meter	--	--													
2. Sales per hour worked	--	--	.47***												
3. Voluntary turnover rate	0.68	1.54	.38***	.19**											
4. Involuntary turnover rate	2.64	3.78	.34***	.40***	.50***										
5.Total turnover	3.32	4.24	.40***	.37***	.75***	.94***									
6. Percentage of permanent workers	90.75	7.63	-.39***	-.42***	-.58***	-.75***	-.79***								
7. Unemployment	19.08	5.90	-.14*	-.13	-.26***	-.01	-.10	.24***							
8. Tenure of employees (in months)	77.95	30.23	-.10	-.14*	-.43***	-.31***	-.40***	.23**	-.09						
9. Age of employees	29.58	2.66	-.10	-.15*	-.49***	-.30***	-.41***	.22**	-.05	.94***					
10. Total hours worked	4213.75	1571.13	.53***	.43***	.40***	.28***	.36***	-.28***	.03	-.27***	-.26***				
11. Weekly working hours	30.63	1.82	-.10	-.03	-.09	-.08	-.09	.16*	.15*	.03	.04	-.12			
12. Manager tenure (in months)	42.60	42.15	.16*	.12	-.10	-.03	-.06	-.09	-.21**	.39***	.41***	.07	-.04		
13. Store age (in years)	13,36	8.12	.16*	-.02	-.05	-.07	-.07	-.04	-.14*	.66***	.60***	.02	-.05	.40***	
14. Store size (in m^2)	1270.55	331.36	-.32***	.22**	.01	.05	.04	.02	.14*	-.33***	-.29***	.49***	.00	-.04	-.30***
WITHIN STORE DATA[c] (ns = 5201 to 5567)															
1. Sales per square meter															
2. Sales per hour worked			.83***												
3. Voluntary turnover rate			-.02	-.05***											
4. Involuntary turnover rate			-.02	-.07***	.04**										
5.Total turnover			-.02	-.09***	.40***	.93***									
6. Percentage of permanent workers			-.09***	.00	-.14***	-.47***	-.48***								
7. Unemployment			.08***	.22***	-.10***	-.07***	-.10***	.02							
8. Tenure of employees (in months)			.22***	.41***	-.12***	-.19***	-.21***	.28***	.50***						
9. Age of employees			.21***	.40***	-.12***	-.18***	-.21***	.22***	.52***	.90***					
10. Total hours worked			.53***	.10***	.06***	.11***	.12***	-.19***	-.21***	-.26***	-.25***				
11. Weekly working hours			-.02	-.02	-.02	-.08***	-.08***	.12***	-.04**	.10***	.08***	-.03*			

12. Manager tenure (in months)	-.02	-.03*	.01	.02	.02	-.03*	-.04**	.04**	.02	.01	.00

[a]Means and standard deviations are calculated for the overall data (includes the 232 stores and 24 time intervals) with the exception of store size and age which refer to the 232 stores only.
[b]Between-store correlations are the correlations between store averages.
[c]Within-store correlations are calculated as follows: firstly, store averages for all variables are calculated ($\bar{x}_i, \bar{y}_i$), then these means are subtracted from each original observation ($x-\bar{x}_i$, $y-\bar{y}_i$), and finally the correlation between mean deviations is calculated, $r(x-\bar{x}_i, y-\bar{y}_i)$.

* $p < .05$

** $p < .01$

*** $p < .001$

Regression results

Main effects. The regression results used to test hypothesis 1 (which states that voluntary turnover and organizational performance are negatively associated) and hypothesis 2a (involuntary turnover and organizational performance are negatively associated in the short-term) are shown in Table 2 where the independent variables and the dependent variables introduced operate simultaneously (during the same month). The regressions separately relate voluntary, involuntary and total turnover (and the controls) with our two dependent variables.

The results shown were finally calculated with fixed-effects estimators for the following reasons. Two tests were computed in order to decide upon the convenience of using fixed-effects, random-effects or OLS estimators. We have first run a Breusch and Pagan Lagrangian multiplier test to verify if variances across stores are zero. Using our notation, the null hypothesis tests if var(c_i) = 0. If the test is statistically insignificant, no evidence of differences across stores is deduced and OLS is more appropriate. Nevertheless, according to the results of the test, the variance of the unobservable store attributes is significantly different than zero in the 6 regression models shown in Table 2 signaling there are unobserved differences across stores. Specifically, the chi square tests render $X^2(1)$ = 12033 to 12291, p<.001 for the 3 regressions relating the turnover rates to labor productivity and $X^2(1)$ = 41110 to 41261, p<.001 for the 3 regressions relating the turnover rates to efficiency. Therefore it was advisable to use an unobserved effect model (fixed or random) rather than an OLS model. Subsequently we applied the standard Hausman test to verify if the unobserved effect (c_i) was correlated with the predictors. The chi square results of the six regressions were X^2 (30) = 85.90 to 313.90, p<.001, indicating that c_i correlates with $\mathbf{x_{it}}$. Therefore fixed effects was shown to be the best model.

The regression results are quite similar for both dependent variables, which evidence their consistency. The voluntary turnover regression coefficient is negative but statistically non significant. Hypothesis 1 is therefore not supported. Voluntary turnover is unrelated to labor productivity and to efficiency. The involuntary turnover rate is negatively related to both dependent variables. Thus hypothesis 2a is supported. As indicated, all variables used have been measured during the same month. Therefore, in the short-term (within one month), a higher involuntary separation rate is negatively related to sales. The total turnover rate (addition of the voluntary and involuntary rates) was also negatively and significantly related both to labor productivity and efficiency.

We also tested the potential nonlinearity of the relationships (as suggested by several researchers, e.g. Glebbeek and Bax, 2004; Shaw, 2011) introducing the squared terms of the turnover rates. None of the regression coefficients associated to those squared terms was significant, signaling the relationships are not nonlinear (therefore results are not included in the paper). On the other hand, the effects of some of the control variables are worth noting. Unemployment and employees' tenure behaved as expected. A high unemployment, indicator of lower wealth, was negatively related to sales (per hour and per square meter). Higher tenured employees were shown to be more productive in our study, as this attribute is positively associated with the labor productivity and efficiency measures. Conversely, there were two control variables that did not behave as we expected. A higher percentage of permanent workers in a store and a higher average of weekly working hours were negatively related to labor productivity. Sales per square meter was also negatively related to the former but its relationship with the latter was not significant. Finally, most of the time dummies proved significant (results not shown).

TABLE 2

Fixed-effects regressions predicting sales per hour worked and sales per square meters

	Sales per hour worked						Sales per squared meters					
Variables[a]	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
Voluntary turnover rate	-.15	(.12)					-.61	(0.59)				
Involuntary turnover rate			-.15*	(.07)					-.83**	(.28)		
Total turnover rate					-.16*	(.06)					-.83**	(.26)
Percentage of permanent workers	-.20***	(.04)	-.24***	(.05)	-.25***	(.05)	-.72***	(0.18)	-.93***	(.20)	-.97***	(.20)
Unemployment	-.87***	(.16)	-.88***	(.16)	-.87***	(.16)	-2.93***	(.61)	-2.94***	(.61)	-2.93***	(.61)
Tenure of employees (in months)	.22***	(.06)	.23***	(.06)	.23***	(.06)	.63*	(.26)	.67**	(.26)	.68**	(.26)
Age of employees	-.52	(.66)	-.58	(.66)	-.57	(.66)	-1.38	(2.81)	-1.68	(2.79)	-1.62	(2.80)
Total hours worked	-.003**	(.00)	-.003**	(.00)	-.003**	(.00)	.08***	(.00)	.08***	(.00)	.08***	(.00)
Percentage weekly working hours	-.67*	(.28)	-.69*	(.28)	-.70*	(.28)	-.83	(1.26)	-.95	(1.26)	-1.00	(1.26)
Manager tenure (in months)	-.00	(.01)	-.00	(.01)	-.00	(.01)	-.05	(.05)	-.05	(.05)	-.05	(.05)

Unstandardized regression coefficients are reported and numbers within parentheses are SE.

All regressions include intercept and unreported monthly time dummies.

[a]Regressors are centered.

* $p < .05$

** $p < .01$

*** $p < .001$

Time lags. Hypothesis 2b predicted involuntary turnover to be positively related to store performance as the time lag between both variables increases. To test it we regressed the involuntary turnover rate and the controls on store performance assessing turnover one and two months prior to the rest of the variables. Results of these analyses are shown in Table 3. The regression coefficients associated to involuntary turnover are non significant (neutral) for both labor productivity (model 2) and efficiency (model 5). Hence hypothesis 2b is not supported; a positive relationship between involuntary turnover and store performance is not found. Nevertheless, these results, together with those shown in table 2 where all variables are measured simultaneously, do evidence that the immediate negative effects of the involuntary turnover rate on performance (Table 2) fade away after only one month (Table 3).

Even though our hypothesis 2b was restricted to involuntary turnover, we did test the effects of the voluntary and overall turnover rates over the performance measures within one and two months' lags in an exploratory manner. Results are shown in models 1, 3, 4 and 6 of Table 3. As shown, the effects of voluntary and of total turnover on store performance are neutral (regression coefficients associated with both independent variables are non significant). Therefore, voluntary turnover is not related to store performance neither when both variables are measured simultaneously (Table 2) nor when they are assessed with time lags of one and two months (Table 3). The overall turnover-store performance association depicts the same impact as the involuntary turnover-performance. It is negative when variables are measured simultaneously and it disappears (becomes neutral) when turnover is measured one and two months apart from the dependent variables.

TABLE 3

Fixed-effects regressions predicting sales per hour worked and sales per square meters using lagged turnover rates

	Sales per hour worked						Sales per square meters	
	Model 1		Model 2		Model 3		Model 4	
Variables[a]	1 m lag	2 m lag	1 m lag	2 m lag	1 m lag	2 m lag	1 m lag	
Voluntary turnover rate	-.14	.00					-.67	-.07
Involuntary turnover rate			-.05	.00				
Total turnover rate					-.06	.00		
Percentage permanent workers	-.21***	-.21***	-.21***	-.21***	-.21***	-.21***	-.62**	-.48*
Unemployment	-.87***	-.82***	-.87***	-.82***	-.87***	-.82***	-2.82***	-2.55***
Tenure of employees (in months)	.21**	.21**	.21**	.21**	.22**	.21**	.64*	.55*
Age of employees	-.46	-.53	-.49	-.53	-.49	-.53	-1.61	-1.09
Total hours worked	-.00**	-.00*	-.00**	-.00*	-.00**	-.00*	.08***	.09***
Percent weekly working hours	-.59*	-.51	-.60*	-.51	-.60*	-.51	-1.05	-1.21
Manager tenure (in months)	-.01	-.01	-.01	-.01	-.01	-.01	-.07	-.07

Unstandardized regression coefficients are reported.

All regressions include intercept and unreported monthly time dummies.

[a]Regressors are centered.

* $p < .05$

** $p < .01$

*** $p < .001$

Comparison with OLS results. Even though the Breusch and Pagan Lagrangian test and the Hausman test indicate it is preferable to use fixed-effects models instead of OLS models with our data, we have also tested the turnover-store performance relationships using OLS. Results are shown in Table 4 and calculations are conducted mainly to test if the omitted variable bias is prevalent in this setting with the actual data. All variables entered in the OLS regressions are the means of the 24 months of available data. Under this model, the association between the turnover rates and labor productivity and efficiency proved completely different from those found using the fixed-effects models. Voluntary turnover is negatively associated to both dependent variables (it was non significant using fixed-effects). The involuntary turnover rate is positively associated to labor productivity ($b = 1.87$, $p < .05$) and its relationship to efficiency is also positive, though marginally ($b = 11.63$, $p = .051$) (recall these relationships were negative using fixed-effects). Finally, overall turnover is unrelated to store performance as the regression coefficients are non significant (utilizing fixed-effects the association was negative).

TABLE 4

OLS regressions predicting sales per hour worked and sales per square meters

	Sales per hour worked			Sales per square meter		
Variable[a]	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Voluntary turnover rate	-6.26**			-26.81*		
Involuntary turnover rate		1.87*			11.63	
Total turnover rate			.18			3.48
Percentage permanent workers	-1.29***	-.59*	-.94**	-4.17**	-.42	-1.94
Unemployment	-.28	-.23	-.16	-1.45	-1.36	-.96
Tenure of employees (in months)	.14	.12	.12	-.77	-.84	-.86
Age of employees	-1.88	-.78	-.84	-1.29	3.61	3.78
Total hours worked	.00***	.00***	.00***	.10***	.09***	.09***
Percentage weekly working hours	.70	.52	.55	3.04	2.20	2.27
Manager tenure (in months)	.02	.03	.03	.47**	.50**	.50**
Store age (in years)	-.12	-.20	-.21	-1.26	-1.57	-1.64
Store size in square meters	.00	.00	.00	-.40***	-.39***	-.39***
Adjusted R^2	.31***	.29***	.27***	.77***	.76***	.76***

Unstandardized regression coefficients are reported.

The constant value has been omitted from the results shown.

[a]Regressors are centered.

* $p < .05$

** $p < .01$

*** $p < .001$

DISCUSSION

Our study focuses on the differential effects that voluntary and involuntary turnover have over organizational performance, starting from the rare available research and considering the saliency of involuntary terminations within the current labor market situation. The unique characteristics of our dataset, including monthly observations of an ample set of store-level variables for a large nationwide retail company, allowed us to look into the effects of such turnover rates over time as well. Our findings revealed the importance of using distinct variables reflecting the actual nature of employees' separations for the purposes of understanding what is meant by *functionality* of turnover and its consequences for the purposes of organizational decision-making, mainly as regards contract terminations and discharges.

In the present research, we study 232 stores (units) within one organization. This setting offers more control of unmeasured business attributes than inter-organizational studies, as the same products are sold in the different stores following the same business standards and processes. Nevertheless, research has evidenced that even within units of the same organization, unmeasured variables may influence the turnover-performance relationship (e.g. Seibert and Zubanov, 2009) or, in general, the HR-performance association (e.g. Bartel, 2004). In our view, and according to HR officials of the organization under study, unobserved store managers' supervision of their allocated staff may clearly influence both store performance and turnover (voluntary and involuntary). We consider it to be the most influential unmeasured store attribute as it can vary considerably across stores. To a lesser extent, establishment location (neighborhood's standard of living, quantity and quality of surrounding competitors, etc.) may also influence sales. If these (or other) unobserved store attributes do not

affect turnover and/or store productivity in our study, the OLS estimators would have been more efficient than the fixed-effects estimators. That is because more parameters have to the adjusted in the fixed-effects estimators and therefore, standard errors and significant (*p*) values tend to be higher than those of alternative estimators (Allison, 1994, 2009). In Allison's (2009) words, when using fixed-effects, efficiency is (slightly) sacrificed in order to reduce bias. Nevertheless, when the unobservables do influence turnover and/or productivity (as it is the case in the present research), the fixed-effects estimators will be preferred as they bring in a potentially large reduction of omitted variable bias.

In line with these methodological arguments, a contribution of this paper is to show that, in the context of our research (retail industry, unit-based collective turnover) *fixed-effects regressions over multiple time observations yields very different results than the traditionally used OLS model*. In the context of our findings, when using OLS, voluntary turnover is negatively related to performance and involuntary turnover is positively related to the same dependent variables (though marginally in sales per square meter). These results are consistent with common results in the literature so far. However, a fixed-effects regression model shows that quits are unrelated to store performance and that involuntary turnover is negatively related to store sales per hour and sales per square meter. The main reason for differences between the fixed-effects and the OLS estimators is that, even in this intra-organizational setting (enabling more control compared to inter-organizational studies) unobservable unit characteristics have a strong influence on the turnover-performance relationship. There are already antecedents in the literature. Seibert and Zubanov (2009) compared OLS and fixed-effects models (Table 3, pag. 306), and found several regression coefficients were also quite different depending on the method used. Moreover, the potential change in the

HR-performance results due to omitted variable bias suggested by several researchers (e.g. Becker and Huselid, 2006) is evidenced in current research. Thus, when appropriate data is available and statistical tests advise it, the use of fixed-effects estimators will considerably reduce the omitted variable bias and render more solid results of the turnover-performance association, and more in general, the HR-performance relationship. To use this technique, data needs to refer to, at least, two time periods, units have to be identified (that is, panel data is necessary), enough within-unit variability must be present, key variables need not be time invariant, among other characteristics well described in fixed-effects manuals (e.g. Allison, 2009). These findings lead us to think that research in the collective turnover-performance relationship has to expand both on the clear-cut nature of the independent variables and on the range of methods used for analyzing their impact over performance measures in order to advance knowledge in the field.

In the context of our study, *involuntary turnover* is negatively related to store performance when both variables are collected over the same time lag computed simultaneously. These results are consistent with Batt (2002), which discusses how short term productivity might be low until the new employee becomes fully proficient. Interestingly, our data allowed us to use different time lags and making the most of it we found that, after one month, the relationship becomes non-significant, and so remains for the next two months. When interpreting these results from the organizational disruption argument, we could argue that even in the case of a low qualified workforce (when, as confirmed by company sources, performance of new hires can attain that of job incumbents rather quickly), involuntary turnover disrupts organizational performance over a short period. This is consistent with McElroy et al. (2001) and Subramony and Holtom (2010) results, which find a negative relationship

between involuntary turnover and organizational performance. Conversely, Batt and Colvin (2011) found a non significant relationship between involuntary turnover and more customer satisfaction, a more proximal performance measure. In our case, after one month (this short time lag should probably be longer for high-qualified workers) we did not find the positive effects stated in our Hypothesis 2b. The relationship to organizational performance is neutral, neither positive but not harmful. The organization's level of performance is reestablished rather quickly. Apparently, new employees reach job incumbent's performance levels after only one month in their job at the most.

We discussed these results with key informants from the company's corporate headquarters, and asked them to what extent they considered that involuntary turnover could be considered functional if the relation did not turn positive over time. A reason they contributed is that the tradeoff resides in the labor cost savings rather than in the increase in store efficiency. This seems to us a highly plausible explanation, and some work has already been developed in the field of costing turnover from this perspective (Shaw, 2011). The discussion relates to Abelson and Baysinger's definition of optimal turnover as "the rate that minimizes the sum of the cost of turnover plus the costs associated with reducing it" (pp.333). A measure of labor costs or store profitability should definitely be used in order to be able to empirically test this assumption.

Another relevant discussion issue concerns the role that *voluntary turnover* plays in organizational performance. Contrary to streamline research findings so far, our results show that quits are unrelated to store performance. When introduced in regressions, the square term is not significant, which means the relation is neither curvilinear. This result is difficult to understand from the operational disruption argument, since we should assume that any departure would create disruption regardless

its causes. Staw's (1980) classical account of costs and benefits of turnover can provide a complementary argument in his discussion on the impact of turnover on staff de-moralization. While quits start from voluntary decisions, dismissals and contract terminations may convey a negative message to employees that can increase organizational distress and therefore have a larger negative impact over productivity and sales in the short term. In spite of this theoretical argumentation, we have to take into account that voluntary turnover represents only a small part of total departures (8.1% vs. 31.7%), and these relative weights may contribute to the relative effect of each of them over performance.

As for the *total turnover rate*, its relationship to the dependent variables seems to be capturing the effect of involuntary turnover, which as stated above is the rate of greatest magnitude in our study. Batt and Colvin (2011) find similar effects. Their total turnover rate (which is also the addition of the voluntary and involuntary rates) is negatively related to customer satisfaction. In their research, though, quits are negatively related to customer satisfaction and dismissals are unrelated to it. As their voluntary separations rate is of greater magnitude, the results of their total turnover seem to be capturing its relationship to customer satisfaction.

As stated in the results section, some *controls* behaved as expected and others did not. Unemployment and employee tenure behaved as expected. Unemployment is negatively related to sales (more unemployment, less wealth, less sales). The more tenured the employee, the larger experience the store accumulates, and the higher the store sales. On the contrary, two controls did not behave as expected: the percentage of permanent workers and weekly working hours. They were both negatively related to sales. Some explaining factors can be: when employees have permanent (as opposed to temporary) contracts and their schedule is closer to the 40 hours full time, they just

"relax" and are not so worried about selling more (Osterman, 1987). This fact may also evidence the functionality of the involuntary turnover rate (because those who separate are mainly temporary employees and part-time workers).

Although its large sample and multiple time observations that open the scope for testing particular regression models represent strengths of the present study, we face a number of limitations. First of all, the study data comes out of a single organization sample. Although working at the unit level has obvious advantages (Glebbeek and Bax, 2004), multiple-unit cross-company comparisons would certainly draw relevant conclusions on the levels of contingency we can expect from the relationship between turnover and performance, and on the generalizability of the concept of 'optimal turnover' that has been characterized from a theoretical point of view. We should also complete our study analyzing potential moderating and mediating effects of our independent variables. Moreover, as we stated above, additional measures of performance that could cover the proximal-distal continuum in a richer way would be necessary to finetune our analysis and discussion.

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Model 5		Model 6		
2 m lag	**1 m lag**	**2 m lag**	**1 m lag**	**2 m lag**
-.20	-.05			
		-.27	-.05	
-.61**	-.48*	-.62**	-.48*	
-2.85***	-2.55***	-2.85***	-2.55***	
.66*	.55*	.66*	.55*	
-1.83	-1.11	-1.85	-1.12	
.08***	.09***	.08***	.09***	
-1.05	-1.21	-1.06	-1.21	
-.07	-.07	-.07	-.07	