

**Middle managers, communication, personnel turnover and sales:
a long-term field experiment in a retail chain**

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Abstract

In a field experiment, a large retail chain's CEO asked managers of treated stores "to do what they can" to reduce personnel turnover. Turnover decreases by a quarter for nine months; a reminder treatment triggers a similar decrease for a shorter period. Treated managers report shifting their time toward HR; their employees report more managerial attention and support. Store sales are unaffected, indicating that the possible performance increases related to managers spending more time on HR are neutralized by the effects of managers spending less times on customers and goods. The discernible efficiency gains occur on the firm rather than on the store level.

Keywords: organizations, managers, randomized controlled trial (RCT), insider econometrics, communication, HR, hierarchy, personnel turnover

JEL codes: L2, M1, M12, M5

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1. Introduction

There is growing evidence that management practices such as performance targets, monitoring, and incentives can explain substantial parts of organizational performance (e.g., Bloom et al., 2014, Bloom et al., 2017) and persistent productivity differences across firms (Syverson, 2011). Many of these practices can be adopted as a *technology* (Bloom et al., 2016), but productivity also depends on the way people's interactions in an organization are managed.¹

Face-to-face interaction is crucial for the well-being of people (Goffman, 1967) and for the productivity of teams (Battiston et al., 2017), but is costly in terms of time (Ellingsen and Johannesson, 2007). Top management's time is limited and information about different needs of different people at different points in time is dispersed. Hence, large organizations tend to delegate personal interactions to middle managers implying a loss of control of top management (Williamson, 1967; Gibbons and Roberts, 2013) and cementing middle managers' importance. It seems fair to say that, traditionally, little was known in economics about middle managers.² However, recent contributions (Lazear et al., 2015; Hoffman and Tadelis, 2018; Benson et al., 2017) provide evidence that workplaces managed by “good” managers score better on work place performance and worker's turnover,³ but the observational data used do not allow inferences about whether it is managers' personalities or firms' incentives and policies that matter. Neither is it clear from these papers what middle managers do to make a difference, and how different outcomes are affected by their actions.

The main purpose of our study is to provide causal evidence on the role of middle managers on personnel turnover⁴ and sales, and to open the black-box of the HR activities of middle managers. We carry out a long-term experiment (16 months

¹ Previously, these interactions have been of interest mainly for industrial psychology and management science (see Rhoades and Eisenberger, 2002), but they are increasingly becoming a focus of economics as well (Kosfeld, 2017, and Zehnder et al., 2017).

² In contrast, the importance of *top* manager's personality and what they do for productivity has been the subject of a classic theoretical literature (e.g. Barnard, 1938; Cyert and March, 1963); and a substantial more recent empirical literature has shown how important CEOs are for firm performance (e.g. Bertrand and Schoar, 2003; Bandiera et al., 2014; Bandiera et al., 2017).

³ Managers can also have very destructive effects on workplace performance, as Glover et al (forthcoming) show in their on the link between supervisor attention and minority worker performance in a retail firm.

⁴ To avoid confusion, we are not primarily interested in the effect of turnover on firm efficiency or wages, the subject of a large literature in labor economics that among others has pointed to the effect of turnover on specific capital and match quality (e.g., Anderson et al., 1994). Rather, we mainly want to understand the effect of managers' behavior on employee turnover.

post treatment) in a retail chain with 238 stores, 7,700 employees, and high levels of personnel turnover, in the realm of 80% per year. In our main treatment (called *Manage*), the CEO sent a letter to randomly selected middle (i.e., store) managers asking them to do what they can to reduce turnover in their stores. Turnover in the respective stores decreased by one quarter, a stable effect lasting nine months. After sending a reminder, we triggered another, shorter term, treatment effect of similar magnitude.

To open the black box of what managers do to affect workers' turnover decision we use a battery of ten different surveys directed at different hierarchical levels (regional managers, store managers, store employees) and administrative data. After the treatment, middle managers, current employees, and employees who quit all report increased interactions between managers and employees. We also find evidence that managers are using their local information to direct attention to those employees they deem most likely to quit. In general, managers spend more time on HR-related tasks.

Because of our long pre- and post-treatment time series on the two objective performance measures sales and shrinkage,⁵ we can reject the hypothesis that lower personnel turnover causally affects sales and shrinkage. This came as a surprise to us and the management, because in the pre-treatment data, we found a strong correlation between personnel turnover and these performance measures, reflecting the belief of most management scholars that happier employees are both less likely to leave and more productive (Hausknecht and Trevor, 2011).

With the help of the time use survey, we can, however, offer an explanation for this result. Managers in the treatment group do *not* work longer hours, rather, they shift around 20 minutes of their daily work time from interacting with customers (to increase sales) and dealing with the flow of goods (to reduce shrinkage) to HR activities (to reduce turnover). The shift of time use seems to occur along the transformation curve implied by the production function of the manager: extra managerial time spent on employees may indeed improve sales and shrinkage. We do not observe this however, because the effect is likely to be neutralized because less managerial time is spent on customers- and goods-related tasks.

⁵ Shrinkage is the value of perished goods. According to management of the study firm, shrinkage can be managed by carefully managing the flow of goods, e.g. by positioning goods closer to the expiry date such that they are seen first by customers. This is work intensive for both employees and managers.

The outlook on the experiment is a bit less bleak, because some efficiency gains materialize on the firm level: administrative costs associated with hiring, training, and quits of workers decrease, and so does the risk of high turnover jeopardizing the functioning of the internal labor market, and of damaging the firm's reputation.

In contrast to the bulk of the growing literature on field experiments in firms, which have focused on monetary incentives, our intervention is on communication only.⁶ We are not the first using communication as an intervention in an organizational and personnel economics framework (Ashraf et al., 2017; Englmaier et al., 2017), but this paper is the first on the role of “skip-level” communication (Friebel and Raith, 2004), i.e., direct communication between top and lower-level managers as a management tool.⁷

To learn more about the role of skip-level communication, we designed two additional treatments. A first one, called *Career*, similar to the one in Ashraf et al. (2017), but targeted on retention rather than self-selection, consisted of a campaign about the career opportunities in the firm: a letter from top management to each employee, and letters to the store managers asking them to inform employees about these opportunities. This treatment resulted in a smaller and statistically insignificant effect on turnover, and according to the surveys, it seems that managers played a less active role. The combination of the treatments, *Career+Manage*, produced an effect comparable to that of the *Manage* treatment, however, it realized only after a few months. These results suggest that an active role of the manager is important for the turnover decision of workers.

The role of middle managers in our experiment is compatible with an analytical framework in which middle managers allocate their time given the existing KPIs, associated monetary incentives, and direct orders from direct supervisors. Middle managers reacted to top-management's communication by shifting their attention (Dessein and Prat, 2016) to HR activities. They may have rationally anticipated some rewards for decreasing personnel turnover, but upon realizing that these did not materialize (we find no evidence that managers received any turnover-related rewards),

⁶ For instance, Delfgaauw et al. (2013), Friebel et al. (2017), Manthei et al. (2017).

⁷ This is different from papers on training, for instance, Grönqvist and Lindqvist (2016) who use observational data to show that military training is associated with stronger management skills, or Schoar (2017) who investigates the effects of training on employee-manager communications in a field experiment.

they may have gone back to “business as usual”, explaining why the treatment effects faded after nine months.

2. Study background

2.1. The firm and its workers

Our study firm is located in an Eastern EU country. It runs one of the leading retail chains comprising 238 grocery stores spread over the whole country (half are located in urban areas), and controls around one third of the groceries market. An average store sells ca. 200,000 Euros worth of goods per month and employs 23 workers and a store manager (see Table 1, Panel A, column 1).

TABLE 1 ABOUT HERE

Store managers (91% female, average age 41, average tenure 6.3 years as of August 2015; see Table 1, Panel B, column 1) run the day-to-day business of the stores. Managers are responsible for operations (maintaining the availability of the goods, store appearance, hygiene and food safety standards) and customer relations. They also take care of most of the HR activities which includes scheduling work shifts as well as contributing to hiring, training, coordinating and motivating employees. Each store manager reports to her regional manager who oversees ten stores on average and reports to the board of directors. Thus, given their scope of responsibilities and position in the firm’s hierarchy, store managers are the middle managers of the firm.

The largest employee group in the stores (82% on average) and the ones we focus on in this study, are general store employees whom we label as “cashiers” in what follows.⁸ Cashiers are 89% female, their average age is 33, their average tenure is 2.3 years, 95% of them are employed full-time (see Table 1, Panel C, column 1); cashiers almost never move between stores. In addition to operating cash registers, they fill the shelves and clean the store, working in shifts throughout the day. Cashiers earn minimum wage or close to it; their average monthly earnings, including bonuses, are 345 Euros. Bonus pools for stores are determined by regional managers who also heavily influence the allocation between cashiers; cashiers also receive loyalty bonuses.

⁸ Besides cashiers, stores employ specialists such as bakers or butchers, and (in larger stores) department managers who assist the store managers. These groups of employees have more of a career job, are better paid (their average monthly earnings, including bonuses, are 566 Euros) and tend to stay with the firm longer (average tenure 5.2 years).

Many cashiers are dissatisfied with their working conditions.⁹ Yet, the conditions are similar to competitors', and to the ones observed on the retail market in Eastern EU countries in general (Giaccone and Di Nunzio, 2012).

2.2. The problem of cashier turnover

There is high turnover rate among cashiers, averaging at 6% per month in the period between January 2014 and August 2015. (For comparison, the turnover rate of store managers (other store employees) is 0.9% (2.7%) per month over the same period.) This average disguises significant variations in the cashier turnover rate by season of the year, going from its lowest rate of 3% in January to its highest of 10% in August. Newly hired cashiers are particularly likely to quit: in fact, 50% of the cashiers who left did so within five months from being hired, similar to the numbers Burks et al. (2015) reports in a U.S. call centre.¹⁰

Top management has expressed the long-term ambition to halve the existing turnover rate. This, so far unofficial and un-incentivized, target reflects management conviction that there is a natural rate of turnover, and that some turnover is helpful in adjusting labor input to changes in demand (Siebert and Zubanov, 2009). However, the existing high level of turnover among cashiers was considered too high and costly to the firm.

To quantify the employee turnover problem that beset our study firm and to inform the deliberations with top management, we attempted to estimate the costs of turnover. These costs consist of four components. First, there are accounting costs at the store level: the costs of time spent on turnover administration, interviewing, selecting and training the new workers. Second, there are accounting costs at the firm level: the cost of employing HR personnel who update personnel records, run exit interviews, place job ads, collect applications and forward them to store managers. Third, there are economic costs in terms of profits stores lose because of turnover. In

⁹ In a companion research project of ours (Friebel et al., 2018), employees in randomly selected stores received a bonus of up to 40% of monthly earnings if they referred a friend. Employees rarely used the referral system. In our *Store Manager Survey Sept 2016* and *Cashier Survey Sept 2016* (see Section 3.2 for more details on our surveys) around 50-67% of the store managers and cashiers explicitly stated that the "unpleasant working conditions" are the reason why employees did not make referrals.

¹⁰ In general, high turnover is a substantial problem in sectors with low-wage workers; Manning's (2011) survey provides estimates on the elasticity of personnel turnover with respect to wages in the realm of 0.5-1.5.

particular, newly hired workers are less productive than experienced workers,¹¹ existing workers have to put up with changes in shift schedules as many cashiers quit from one day to the other, and store managers lose time dealing with personnel turnover instead of operations and customer relations.¹² Fourth, there are economic costs accrued to the firm as a whole. In particular, high turnover damages firm's reputation, diminishes the incentives to train workers, and drains the talent pool from which more senior employees can be selected. We provide calculations about the costs in Appendix I, and find a magnitude of roughly three months of wage per quit which is consistent with the estimate of Blatter et al. (2012) and the summary of case studies on turnover costs in Boushey and Glynn (2012). These estimates, though, are fraught with problems of endogeneity, and hence we prefer to rely on the treatment effects to provide a causal estimate of the effects of reducing personnel turnover.

2.3 Why the turnover problem became focal

Historically, our study firm, one of the first modern retail structures in the former Soviet Union, had paid wages well above the market level in retail. However, with the advent of the financial crisis in 2008 and the resulting drastic fall in purchasing power, the company had got under pressure and began to cut costs. As a consequence, wages were adjusted to competitors' level, and cashier turnover increased to the level we witnessed at the beginning of our intervention.

Initially, the high cashier turnover did not receive much attention within the group of top managers. However, prior to our intervention, the problem gained in importance for a number of reasons. First, there was a change in top management in 2014, when the foreign owner of the firm took action against declining profitability. With this change the firm focused on a broader set of performance, among others quality and cashier turnover. Second, it became public in 2014 that *Lidl*, a large international discounter, planned to enter the market (it did actually enter in June 2016). Top management of the firm expected an 8% drop in sales as a result of *Lidl* entry, and decided to increase its claim to quality leadership in the market. Reducing cashier

¹¹ Blatter et al. (2012) estimate that newly hired skilled workers are about 30% less productive compared to an averaged skilled workers within a firm for about 80 days. Manning (2011) also concludes in his literature survey that the bulk of the hiring costs are the costs associated with training newly hired workers.

¹² In our *Store Manager Survey July 2015* (for details, see Section 3.2) we find that managers spend on average 10% of their time in dealing with turnover.

turnover was viewed as a necessity in the quest to improve quality and operational efficiency.¹³ Third, between 2010 and 2014 the unemployment rate in the country decreased by more than seven percentage points, which increased the hiring costs.¹⁴ The problem gained additional importance as it became evident that because of high cashier turnover, the internal labor market of the firm was jeopardized. In 2014 and 2015, around half of the regional managers and 60% of the store managers were hired from within the firm (the share of managers hired from within the firm was higher in the years before). At a quit rate of around 80%, the talent pool became thin, with the risk of declining quality of managers.

Reflecting top management's initial lack of awareness about the turnover problem (and, more general, HR matters), store managers also tended to disregard the problem. Their KPIs did not include personnel turnover, and the instructions they received about HR were mainly related to the involved paper work. In line with this lack of focus on HR, most of the training store managers received was in dealing with goods, customers, and administration, but not employees. The surveys we carried indicate that a substantial proportion of store managers did not consider HR a focal activity, and many managers did not believe that they would even be able to reduce turnover. We discuss what we find in the surveys in detail in Section 6.

2.4 What store managers can do to bring down personnel turnover

In line with the saying that workers join firms, but leave managers, and given the evidence in Lazear et al. (2015) and Hoffman and Tadelis (2018), we assume that managers can affect the participation decision of a worker. To make clearer the potential channels that we will investigate in the next section, consider the decision of a worker to stay in a firm F as governed by the following simple participation constraint: $w_F + B_F \geq w_M - c_M$.

¹³ Bloom et al. (2012) show that firms in Central European transition countries operate with management practices that are moderately worse than those of Western European countries. They also find that stronger product market competition and higher levels of multinational ownership in those countries is strongly correlated with better management, a finding confirmed by Friebe and Schweiger (2013) who report similar results for different regions in Russia. In line with this we find that the intensified product-market competition encouraged our firm to rethink its management practices and that the foreign owner installed a new top management aiming to increase the firm's performance by improving management practices.

¹⁴ Blatter et al. (2012) estimate that a one-percentage point reduction in the unemployment rate increases hiring costs on average by five percentage points.

Here w_F is a choice variable of the firm, the wage and monetary value of perks; this can be hardly influenced by the store manager. Our firm decided not to raise wages during the treatment period (except for the adjustments made in response to minimum wage regulations applying to all firms in the market). The wage the worker would receive if he or she left the firm to find another job in the labor market, w_M , is outside the reach of a store manager, and so is c_M , the search cost associated with finding a new job. When unemployed, a worker receives an unemployment benefit that is lower than the utility in her job in firm F .¹⁵

What the store manager *can* influence, is B_F , the worker's benefit in the firm, here expressed net of the benefit from working for another firm in the market. Hence, $B_F \geq$ or $<$ zero. Arguably, there are two main ways to affect B_F . The first one is reminiscent of Ashraf et al. (2017): B_F may be (or at least include) the monetary value of making a career, a value that may not be salient for all workers, but one that can be made salient by communication efforts of a manager. The second interpretation is a purely non-monetary one: managers may take actions that make workers feel better about working in the store (compared to alternative jobs). They can increase the intensity of interaction with workers or change these interactions in a qualitative way, by talking in a different way to their employees, inviting them for coffee in the breaks or focusing on their special needs in the workplace. These considerations were the basis for our treatments discussed in the next section.

3. Experiment and surveys

3.1 Experimental treatments

Our experiment was registered on the *AEA* homepage (registration ID: *AEARCTR-0000826*). The description we posted is in Appendix II. We designed three experimental treatments all of which began on September 1st 2015 with a letter addressed to store managers in the respective treatment groups. Shortly thereafter, the COO office made follow-up calls to the managers in all treatment groups, to reinforce the importance of the letters they received. Lastly, at the end of September 2016 we sent a reminder letter to randomly selected store managers.

¹⁵ Note that in our *Cashier Exit Interviews* (discussed in detail Section 3.2) we found that 50% of the cashiers were, three months after leaving, still unemployed; those who already had a new job mainly worked in similar sales and retail jobs, or in other relatively low-skilled jobs.

In our first treatment, labelled *Manage*, the managers received a letter, signed by the firm's CEO and chief HR officer (see Appendix III, Figure B), directing their attention to the costly personnel turnover problem and asking to take action:

We (...) have a personnel turnover of about 90% per year. (...) 50% of those who leave are leaving in the first few months of their employment (...). Each employee's leaving costs us on average 400 Euros¹⁶ – at least. (...) We would like to bring your attention to the problem and ask you to do what you can to bring down turnover. (...) please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program.¹⁷ (...) it is important to train the new hires (...) and have an open ear for problems they may have in the beginning.

Note that the tone of the letter is rather vague; it influences perception about the problems store managers should deal with and provides a nudge that communication with the employees may be important.¹⁸ The treatment provides no explicit incentives, but, since communications from top management are rare, it signaled that employee turnover had become more important. The message entails no precise instruction how to implement; managers received the hint to focus on the workers most likely to leave.¹⁹

In our second treatment, *Career*, we informed employees about career and development opportunities in our study firm. These opportunities range from jobs in

¹⁶ This was a conservative estimate given the administrative costs associated with higher turnover, and correlations between personnel turnover and sales that we observed in the pre-treatment data.

¹⁷ Each new hire is assigned to an experienced colleague who helps him or her in the first few weeks of employment.

¹⁸ Top management told us that store managers rarely engaged in face-to-face interaction with employees. Indeed, in our *Cashier Survey Oct 2015* among control group stores we found that 30% of the store managers had one or no meeting with employees per quarter, and another 30% held only one meeting per month. This appears to be in the same order of magnitude as the evidence from U.S. manufacturing presented in Black and Lynch (2004) who find that less than half of the surveyed establishments report regular meetings to take place.

¹⁹ It is inspiring to see the treatment in the light of Gibbons and Henderson (2012) who relate to Rivkin's concepts of *perception* (knowing that one is behind); *inspiration* (not knowing what to do about it); *motivation* (not having incentives to change); and *implementation* (not being able to get the organization to get it done). Our treatment changed perception and gave some, but little, inspiration; and no explicit motivation (see, for instance, Bandiera et al., 2007, and Manthei et al., 2017) or implementation help.

food manufacturing and IT to operations, and there is also a significant internal labor market within the sales function. Cashiers can be promoted to department managers, and half of the store managers and even regional managers began their careers as cashiers. The posters, employee and store manager letters (see Appendix III, Figure C – E) we sent to the *Career* treatment stores highlight these opportunities. The figures communicated about the internal labor market were taken from the personnel statistics of the company. Unlike in the *Manage* treatment, store managers played no active role in the *Career* treatment; all we asked of them was to inform their employees about career and development opportunities, without any reference to personnel turnover. The third treatment, *Career+Manage*, combined the two treatments described above.

We prepared the materials together with the HR and Marketing department. In the last week of August, we informed top management about the assignment of stores into the different treatment and control groups. A day later, documents were sent to stores. Regional managers had been trained in how to respond to store managers' questions, but treatment status was only revealed to them at the same time as to store managers; they were explicitly instructed by the COO not to take any actions beyond responding to questions. Store managers and cashiers were not aware of our involvement in the project. Thus, our field experiment combines randomization and realism (List and Rasul 2011).

FIGURE 1 ABOUT HERE

The time line of the experiments is depicted in Figure 1, which also provides an overview of the available data which will be discussed in the next sections. We implemented the treatments beginning of September 2015, informed top management about first results late December 2015, and once per quarter hereafter. Our data span a time until December 2016 such that we have 16 post-treatment months of observation, which provides the unique opportunity to provide insights about the long-term effects of the interventions. At the end of September 2016, we sent a reminder to 30 stores each, in the *Manage*, and *Career+Manage* treatment. We use the same letter in both groups (see Appendix III, Figure G):

We are pleased to report a reduction in firm-wide turnover that we believe has been due to the efforts of our store managers such as yourself. (...) turnover is still high. (...) We would like, once again, to draw your attention to the problem, and ask you to do what you can to bring it down.

Please talk to your employees and try to make them feel fully integrated in your team, making use of the buddy (...). (...) it is important to train the new hires (...) and have an open ear for problems they may have (...).

3.2 Survey data

To explore the mechanisms that are underlying the treatment effects, we carried out a battery of surveys. One of the surveys provides quantitative evidence about the time use of managers, the others record qualitative information, in particular, perceptions about the workplace. We use nine different surveys that we carried out at different points in time, and among different target groups: regional managers, store managers, and cashiers. We also use the survey the company generates through exit interviews among cashiers. Using a large number of different instruments with different sources, different groups, and different questions increases the reliability of the qualitative evidence (Bloom and Van Reenen, 2010) and hence responds to the challenges highlighted by Bertrand and Mullainathan (2001). Each method and instrument may have different drawbacks and advantages, but by combining them, we believe to get a rather complete picture of store managers' reaction in response to the intervention.

Figure 1 provides a time line of all surveys, the group of employees surveyed, the main goal of the survey and the response rates. For simplicity, we will use the following labels for the different surveys in the paper:

- Surveys among cashiers: *Cashier Survey Oct 2015*, *Cashier Survey Sept 2016*, *Cashier Exit Interviews*
- Survey among store managers: *Store Manager Survey July 2015*, *Store Manager Survey Oct 2015*, *Store Manager Survey Jan 2016*, *Store Manager Survey Sept 2016*
- Survey among regional managers: *Regional Manager Survey Oct 2015*, *Regional Manager March 2016*, *Regional Manager Nov 2016*

All surveys were framed as “international surveys by Goethe University in Frankfurt” and a local business school, conducted with the purpose of supporting the “research of the professors involved”. There is only one exception, the *Cashier Exit Interviews*, which were conducted by the HR office of our study firm. In the surveys we carried out, employees and managers were assured that their responses would only be accessible to the researchers, and not to the study firm. *Cashier Survey Oct 2015*,

Store Manager Survey Oct 2015 and the *Regional Manager Survey Oct 2015* were paper and pencil surveys. The questionnaires were put by the employees in sealed envelopes and were collected by an employee working in the stores and sent to a professor at a local business school. All other surveys were phone surveys conducted by a native-speaking student assistant employed by us who was not aware of the treatment status of the stores. The HR office informed the respective group of employees that a team of researchers would contact them over the next few weeks.

Although we did not incentivize the participation in the surveys (except of the *Store Manager Survey Jan 2016*, where we gave one out of ten managers a 25 Euro voucher), the response rates in all surveys were relatively high. The response rates were around 80-100% in the store and regional manager surveys, and around 50-65% in the cashier surveys.²⁰ The survey results will be mostly used in Section 6.

4. Research design

In general, retail firms offer good opportunities to study interactions between managers and employees: interactions are frequent, the technology is simple and standardized, and data are of high quality. Another advantage lies in the propensity of retail firms to almost constantly experiment along various lines, such as price promotions, the presentation of the goods in shelves or other marketing activities. At the time we implemented the experiment, the firm was engaged in ten different experiments, so-called pilot projects. Finally, the work environment is representative for many jobs, retail being one of the largest sectors in the global economy (Cardiff-Hicks et al, 2015; Hortaçsu and Syverson, 2015).

Our administrative data (personnel records, financial and accounting data) span a long period of time, from January 2014 until December 2016. In particular, we used 19 months of pre-treatment data for our randomization. As suggested by Athey and Imbens (2017), we use a stratified procedure in which assignment into the four different groups is carried out along quit rate (our main outcome variable of interest), the location (town or countryside), sales and number of employees (as proxies for store size). Our experiment is sufficiently powered. Based on the pre-treatment distribution of the quit

²⁰ In the *Cashier Survey Sept 2016* and *Cashier Exit Interviews* around 20% of the participants refused to answer the surveys. The other reasons of non-responses were that the phone numbers were incorrect, the HR office had no longer any contact information, or that the cashiers did not pick up the phone after we rang them at least three times.

rate, and the number of measurement periods before and after the treatment, having 60 stores in each treatment group would detect a treatment effect on the quit rate of 2 percentage points with probability 0.9. To see whether the treatment and control groups are balanced, we run the mean equality test on a number of store, manager and cashier characteristics. The results (Table 1) show that the four groups are balanced with respect to the quit rate – the main outcome variable – and almost all of the other characteristics.²¹

We use the ANCOVA estimator (McKenzie, 2012):

$$\begin{aligned} Quit_{it,POST} = & treatment_i \times \beta + month\ fixed\ effect_t \\ & + \delta \cdot \overline{Quit_{i,PRE}} + error_{it}, \end{aligned} \quad (1)$$

where $Quit_{it,POST}$ is the post-treatment cashier quit rate in store i and month t , $treatment_i$ is the treatment dummy vector, $\overline{Quit_{i,PRE}}$ is the average of the cashier quit rate in the pre-treatment period (January 2014 to August 2015) in store i , and $error_{it}$ is the idiosyncratic error term clustered at the store level. The components in vector β are estimates of the effect of each of our treatments. The ANCOVA estimator is a generalization of the difference-in-difference estimator in that it controls for baseline outcome, which, as McKenzie (2012) argues, reduces the variance in the estimated treatment effect. Indeed, ANCOVA is more efficient than difference-in-difference. We therefore use ANCOVA throughout the paper; the main qualitative results are the same when we use a difference-in-difference estimator. For the reminder intervention (in October 2016), we use the same specification (equation 1) except the dependent variable is the quit rate in October 2016 and later.

An alternative to the linear estimator in (1) would be to estimate the treatment effect on the individual decisions to stay or leave with a duration or logit regression; however, since the treatment was on the store level, clustering the individual observations at the store level produces similar estimates and significance statistics.

5. Treatment effects

5.1 Quit rate

Table 2 summarizes the treatment effect over the main treatment period starting in September 2015. We present the effects by quarters. In the first quarter after the

²¹ Exceptions are store average age and share of female cashiers. These differences are unlikely to drive our results because the treatment effects do not depend on either of these variables.

treatments took place, the *Manage* treatment results in a significant reduction in the quit rate in the realm of 25% (i.e. 1.8 percentage points, ppts, compared to the control group). The effects of the other two treatments are smaller in magnitude and statistically insignificant. In the second and third quarters, *Manage* and *Career+Manage* treatments are both statistically significant and reduce the monthly quit rate by 20% to 30%. Over the period of nine months, the effect of the treatments directly involving store managers is tantamount to around one quarter.

Turning to the *Career* treatment, its effects are weaker, in the region of 10-20% of the contemporaneous quit rate in the control group, and are statistically insignificant at the conventional levels in all quarters (p-values between 0.17 and 0.36). However, we cannot reject the null hypothesis of the equality of the effects of *Manage*, *Career* and *Career+Manage* treatments (p-value at least 0.27).

TABLE 2 ABOUT HERE

In the *Manage* treatment, the effects are stable and persistent, while the effect of the *Career+Manage* treatment needs time to pick up. Our explanation for these different dynamics is that in the *Career+Manage* treatment, managers may have needed some time to realize that the *Career* treatment has weak effects, and only later began to engage actively with their cashiers (a point we discuss in more detail in Section 6.2).

All treatment effects peter out in the period between June and September 2016. To try to revive them, we sent a reminder letter with a plea to continue efforts to reduce turnover in the end of September 2016 to 30 stores in the *Manage* and 30 stores in the *Career+Manage* groups (Figure F). By doing so, we were able to differentiate between the treatment effects and (potentially group-specific) time trends, while still having enough power to identify the effects. The results are in Table 3. Comparing the first with the second row, *Manage* and *Career+Manage* group stores that received a reminder show a strong, albeit short-lived, treatment effect. The remaining *Manage* and *Career+Manage* and the *Career* group stores (in which no reminder was sent) do not show any effect. The reminder treatment confirms that the *Manage* treatment effect is replicable. As before, it dies out without being reinforced by corresponding incentives – a point we discuss in more detail in Section 7.

To probe into treatment effect heterogeneity, we condition the average treatment effect over the period of nine months after the treatment on a number of store, cashier and store manager characteristics: (i) pre-treatment store-average cashier age,

gender and quit rate; (ii) store size in headcount, location (big town vs. countryside), local unemployment rate, and whether the store had a new manager during the treatment period; (iii) store manager age and tenure, and (iv) store managers' fixed effects estimated from the quit rate regression in the same way as in Lazear et al. (2015), that is, using manager movements between stores.

The potential heterogeneous treatment effects we listed above are insignificant, with three noteworthy exceptions. First, we find that the treatment effects in *Manage* and *Career+Manage* treatments are significant only in the stores in which there was no manager change between September 2015 and May 2016. Hence, the treatment indeed works through store managers. Second, the treatment effect is significantly larger in smaller stores (even when we control for span of control measured as the number of non-managerial employees per store divided by department manager in each store). Third, the treatment effect is larger in stores managed by managers with a larger fixed effect, that is, a higher quit rate associated with them. We attribute the last two findings to two facets of manager quality. Generally, better managers are likely to be found in larger stores. Managers who are better specifically in managing turnover would have a lower turnover fixed effect. We provide further evidence on manager quality in Appendix I.

5.2 Sales, profits and shrinkage

Looking at the other important KPIs – sales, operational profits and shrinkage – we find no statistically or economically significant effects (see Appendix IV) over the period of nine months after the treatment. At first glance, it is surprising that there is no positive effect of lower quit rates on sales. After all, one motivation for the firm to engage in activities bringing down turnover was to improve sales. The regressions we carried out on historical data also showed a strong correlation between high turnover and lower sales (but these are hampered by endogeneity).²² We provide an explanation of the coincidence of declining personnel turnover and constant objective performance in the following section.

6. Mechanism

²² Regressing changes in log sales in the pre-treatment period on changes in labor input and up to three lags of changes in the quit rate gives the coefficients -0.15, -0.08, -0.12 on the current, first and second lags of changes in the quit rate are.

To summarize, we find that the *Manage* treatment produces substantial and statistically significant effects from the start, the effects of the *Career* treatment are lower in order of magnitude and not statistically significant, while the *Career+Manage* treatment starts with small effects but after a while converges to similar effects as the *Manage* treatment. What can be learnt from our surveys about the underlying mechanism?

6.1 Managers' time use in treatment groups

The firm governs store managers' work through a system of incentivized KPIs and direct orders. The interventions we carried out are "skip-level" communicated from the CEO and the head of HR directly to the store managers. They are likely to affect managers' work, however within the constraints laid upon them by the nature of their work in the stores in which necessarily much time must be spent on dealing with the flow of goods, accounting and reporting, and, to some extent, customer contact. Hence, the question is to what extent the treatments affect time use toward HR activities.

We measure time use before (*Store Manager Survey July 2015*) and after the treatment (*Store Manager Survey Sept 2016*), in a way similar to Bandiera et al. (2016).²³ Managers were asked to indicate how they allocated their time between the following tasks over the last few months: (i) management and control of the flow of goods; (ii) interacting with clients; (iii) administrative work, such as generating and supplying primary accounting data to the central office; (iv) HR activities, such as managing, training and communicating with store employees and dealing with personnel turnover.

We find that, on average, the three treatments cause store managers to spend about 20 minutes per day more on dealing with HR activities (around 30 minutes per day in the *Career* treatment, 20 minutes in the *Manage* treatment, and 10 minutes in the *Career+Manage* treatment; the differences between treatments are not statistically significant). We are likely to underestimate the total effect of the treatment for the following reason: quit rates (at least in the *Manage* and *Career+Manage* treatments) go down substantially, in principle leaving more time for managers to non-HR related activities. What we measure is the net effect of spending more time on some HR

²³ We are aware that the timing of the second survey is not optimal (the treatment effect had already vanished by the time). However, in both the first and the second survey, we explicitly asked managers to "think about the last months", which deals with the problem to some extent.

activities but less time on turnover-related activities (such as reading resumés, interviewing, and doing the paper work).

In all treatments the additional time spent on HR is compensated by less time spent on customers and goods. Importantly, there is no evidence of an increase in the actual hours worked, which information we obtained from the managers' weekly time sheets.

6.2 *What did managers do?*

Before providing detailed evidence on managers' behavior and the perceptions of cashiers, we would like to point out that the treatments differ in terms of the role of the manager as implied by the different communications.

The *Career* treatment asks managers to inform (all) workers' about careers in the firm; in the *Manage* and *Career+Manage* treatment, however, managers were asked to take a much more active role: "do what you can in order to bring down turnover". Moreover, they receive the hint to focus on the workers most likely to leave. The *Career+Manage* is also different from the *Manage* treatment because it assigns to the managers both the role of providing career information to workers, and interacting with the ones most likely to leave to reduce turnover. All of these activities though have to be carried out within a relatively limited time budget (given that the operations of the store must be continued).

6.2.1 *Managers' behavior in the Manage treatment*

Four months after the start of the treatment and roughly in the middle between the first and the second time use survey, our assistant phone-interviewed all store managers in the *Manage*, *Career+Manage* and control group.²⁴ The question she asked in the *Store Manager Survey Jan 2016*, was: *Since last Summer/Autumn, have you done anything in particular that you think may have reduced turnover in your store?* The assistant made detailed notes about the responses of each store manager.

Anecdotally, managers' responses provide a first idea about changing behavior: one store manager said "I became worried about an employee's alcohol problem, visited him at home, suggested a medical treatment"; another store manager described

²⁴ Due to resource constraints, we did not interview the store managers in the *Career* stores in which the treatment effect was low.

that she implemented “more team-building, meetings over coffee/sweets”. In the control group, many store managers said they did not believe they could affect turnover (“I can’t do anything. Turnover is the workers’ fault, not mine!”).

We counted words that relate to the face-to-face interaction between store managers and employees: “attention”, “care”, “talk”, “paying respect”, and find that 56.3% of the store managers use at least one of the words in their response, compared to 27.5% in the control group. “Paying respect” is one of the most often used expressions that managers themselves use to describe their activities undertaken as a consequence of our treatment(s).

To analyse the responses in more depth and to externally validate them, we conducted an evaluation study in the University of Cologne’s experimental laboratory. We showed our assistant’s interview notes to the subjects each of whom earned 8 Euros and asked them to rate those notes based on the following questions:

- “According to the store manager, how possible was it to reduce employee turnover? Rate on a scale from 1 (impossible) to 10 (quite possible).”
- “Has the manager intensified effort to reduce turnover in the last months? (no/yes)”
- “Has the manager talked to employees more over the last few months? (no/yes)”
- “Has the manager talked to specific groups of employees more over the last few months? (no/yes)”

Each subject in the lab rated notes from twenty different store manager interviews, and around ten different subjects rated each interview note. The subjects were not aware of the treatment status of the store managers.

We find that store managers in the *Manage* group (compared to the control group) had stronger beliefs that they can affect turnover (4.6 vs. 3.2) and exerted more effort to reduce turnover (0.47 vs. 0.29) and, in general, talked more to their employees (0.51 vs. 0.27). We also find that they tend to focus their attention on “particular groups of workers” (0.28 vs. 0.16) in line with the CEO’s communication. When we regress these responses in an ordered logit regression on the treatment dummy, we find that the effects are statistically significant (Table 5, Panel A).

TABLE 4 ABOUT HERE

We now turn to the results of the exit interviews, which are available for cashiers who left the firm between 1st July 2015 (i.e., before the treatment) and 15th February 2016. The survey has a response rate of 57%, mainly because one third of the

cashiers could not be reached; most cashiers who were reached agreed to participate. In order to deal with the truncation problem imposed by the end of the exit surveys in February 2016, we only look at those cashiers leaving during the first three months of their tenure (i.e. who enter before 15th November 2015). This is also in line with the communication to the managers that explicitly pointed to the importance of engaging with new workers in the first three months of their employment, because these are more likely to quit. From our analysis, we exclude cashiers who entered before but left after the treatment began (for evident reasons), which leaves us with 535 exit interviews.

The survey contains two questions of particular interest to our paper: (i) how much attention and support did you receive from your supervisor in the first weeks or months when you arrived in the store?; (ii) how much attention and support did you receive from your colleagues in the first weeks or months when you arrived in the store?

In Panel B of Table 5, we report the results from a diff-in-diff ordered logit regression in which the dependent variables are the responses to the above questions coded on a scale from 1 to 5. We find a statistically significant effect in the *Manage* treatment in terms of managerial attention, but no effect in terms of colleagues' attention.

Results of the *Cashier Survey Sept 2016* in which two randomly selected cashiers per store were interviewed about the time per week supervisors spend on talking to them personally, are in Panel C. We do not find significant effects for the entire sample. However the effect in our *Manage* treatment are significant for stores in which managers did not change since the beginning of the treatment, indicating that upon a change of manager, the effects disappear (arguably because the manager was not sufficiently aware of the initial communication). This is in line with our quit rate regressions, in which we only find significant treatment effects in store where managers did not change (Section 5.1).

6.2.2 Managers' behavior in the *Career* and *Career+Manage* treatments

We here briefly report the main differences in terms of managerial behavior, between the *Manage* group and the other treatment groups. First, 32.5% of the managers in the *Store Manager Survey Jan 2016* in the *Career+Manage* treatment used words that relate to face-to-face interaction between managers and cashiers; hence their behavior is more similar to the control group than to the *Manage* group. This is also reflected in the ratings from the external evaluation study: *Career+Manage* managers are

somewhat lower than in the *Manage* group but on average still higher than in the control group. Second, from the exit interviews we learn that former cashiers reported on average slightly more managerial attention in the *Career* and *Career+Manage* treatments, compared to the control group, but the differences are statistically insignificant. Third, the results from the cashier survey for the *Career+Manage* treatment, one year after the treatment, are similar to the ones in the *Manage* treatment. Fourth, using the *Cashier Survey Oct 2015* responses from cashiers, we find a significantly positive effect of the *Career* and *Career+Manage* treatments on cashiers' awareness of career opportunities within the firm (compared to the control group), but no effect in the *Manage* treatment.

6.2.3 Summarizing the qualitative evidence from our treatments

The survey evidence presented above provides a consistent picture: In the *Manage* and *Career+Manage* treatments, we see increasing intensity of interaction with cashiers, however with weaker initial intensity in the short run for *Career+Manage* (but the same long-run effects). Managers seem to be focused on the cashiers they had to believe had the highest risk of quitting, for instance in early stages of employment or the ones with private problems. In the *Career* and *Career+Manage* treatments we find cashiers to be better informed about career opportunities.

By and large, managers react in all treatments, but there are some differences in the patterns of behavior that are in line with the idea that managers play a more active role in the *Manage* and *Career+Manage* treatment, and more of an information provision role in the *Career* treatment (which nonetheless consumes a substantial amount of time).

Recall that the treatment effect on the quit rate in the *Career+Manage* treatment took some time to pick up (initially the effect is statistically insignificant; see Section 5.1). An interpretation consistent with the qualitative evidence above is that, initially, managers may allocate their time both on providing more attention to those likely to quit and providing information about career opportunities to reduce turnover. Upon learning that the latter tends to affect turnover less than the former, they may have reallocated their time to providing attention.

6.3 Excluding alternative mechanisms

What are the alternative measures that could explain the effects we document? First, managers may change bonus payments. In the statistics we find neither differences in the averages nor in the distribution of bonuses over a period of nine months.²⁵ In our *Store Manager Survey Jan 2016* only three managers from our *Manage* and not a single manager from our *Career+Manage* treatment mentioned that they had changed the allocation of bonuses. Second, managers may refrain from firing incompetent cashiers in order to bring turnover down. In our *Cashier Exit Interviews*, less than 5% of the cashiers report that they left the company “involuntary”. Performing a difference-in-difference analysis on involuntary quit rates, we find no effect in any treatment. Moreover, none of the managers interviewed in the *Store Manager Survey Jan 2016* who belonged to the *Manage* or *Career+Manage* group mentioned that they had changed their firing policies. Third, managers may change their hiring practices. The observable characteristics (age, female) of new hires do not differ between treatment groups. Out of all managers interviewed in the *Store Manager Survey Jan 2016* who belonged to the *Manage* or *Career+Manage* group, only three mentioned that they had changed their hiring processes. Most importantly, while changes in hiring would only be possible with a certain lag, we observe immediate changes both in the initial and the reminder treatment. Fourth, it could be possible that managers reorganized the shift planning to provide benefits to the workers most likely to quit. In the *Store Manager Survey Jan 2016*, only three managers who belong to the *Manage* or *Career+Manage* (and two in the control) group mentioned that they had reorganized the shift planning. Fifth, as shown in Appendix I, our main results are hardly explainable by contamination between stores that are treated in different ways.

7. An organizational economics explanation of the observations

The preceding sections have established: (i) in stores in which managers received a direct communication from top management quit rates decreased substantially; (ii) managers report using more time for HR activities, and both managers and cashiers report changed behavior of store managers, in particular, more intensive communication and interaction practices with those employees who had the highest risk of quitting; (iii) the effect on turnover is persistent over nine months, vanished, but

²⁵ In July 2016, we introduced a field experiment on bonuses in stores, the subject of a companion paper.

appeared again (for a shorter period) after a repetition of the communication; (iv) there are no treatment effects on sales and shrinkage.

7.1 Managerial incentives

We reckon these observations to be consistent with a theory in which store managers' behavior is mainly influenced by incentives, orders of their direct hierarchy (here, regional managers), and communication from the top management. While explicit incentives and orders in the hierarchy were kept constant, our treatment uses the rare instrument of direct top-down skip-level communication. It is likely that such communication (see Dessein and Prat, 2016) affects store managers beliefs about what is important for the firm, and their belief about the firm's performance evaluation, and rewards beyond explicit incentives, here, to be promoted to a larger store, or to regional manager, or receiving a discretionary bonus. Consistent with this view, managers shift attention and effort to activities that are likely to bring personnel turnover down, and we saw in the survey that they did indeed so.

One possibility of rewarding performance in terms of personnel turnover would consist in a discretionary bonus to managers who reduced turnover in their stores. Looking at the store manager bonus before and after the start of the experiment (75 Euros per month, on average), we observe only a small correlation between store manager bonus and quit rate. The estimated correlation between the bonus and quit rate implies a trivial (60 Cent) increase in the monthly bonus corresponding to the 25% decrease in the quit rate caused by the *Manage* and *Career+Manage* treatments. There is no significant direct effect of those treatments on manager bonus, either.

Where there implicit, career, incentives? We can also investigate this: Consider all manager movements in the relevant time span from the beginning of our field experiment until June 2016, the month after the treatment effect vanished. In this period of time, 52 store managers and three regional managers had to be replaced, for a variety of reasons (e.g. store manager turnover, promotions, maternity leave). This would have given the firm scope for career rewards, either by promoting to a larger store, or to regional manager. As a background, recall that the treatment effect is larger in smaller stores, and we know from the top management and our surveys that managers from smaller stores with good sales performance are usually promoted to larger stores (see Appendix I for more details about promotion patterns).

Is there a discernible effect of personnel turnover on how these positions were filled? Notice first that the three regional managers and 13 of the store managers were replaced by people from the external labor market. 21 of the store managers were replaced by store employees who were promoted, and 18 store managers were replaced by other store managers who moved between stores. Out of these 18 store managers – the only moves that could have been a promotion for store managers who had reduced their personnel turnover – ten were from stores in the *Manage* or *Career+Manage* treatment, and eight from *Career* or control treatments. According to the *Regional Manager Survey Nov 2016* (see Appendix I for more details) only one of the managers in the *Manage* or *Career+Manage* was promoted, and four were even demoted. Hence, no career rewards were given to stores that had reduced their personnel turnover, ten months after the treatment.

With neither promotion nor bonuses affected by the treatments, the lack of material reward may be a likely explanation for the treatment effect to vanish after a while. As discussed before, however, when we repeated the treatment, personnel turnover, again, decreased, however only for a short period. It hence seems that the second time, store managers updated their beliefs about the communication faster than before.

7.2 Store performance

Our explanation for why we do not find significant effects on sales in the treatment group of stores is in line with the simple agency framework we have suggested above. Upon receiving the communication about bringing down personnel turnover, managers shift some of their effort to interacting with the cashiers. This may have a certain positive effect on the productivity of the workforce, and would increase sales in the treatment group. However, there is also the direct effect of the reallocation of effort from customers and goods to cashiers which would reduce the sales. What we pick up may be the composite of the two effects.

This also implies that, prior to the intervention, stores may have been run efficiently given the incentivized KPIs, and that there was little if any scope of improving the commercial performance of stores. On the level of the firm, however, high personnel turnover created a number of substantial costs. The most tangible of these costs are the administrative costs associated with recruitment, training and workers' quits. For doing the paper work with entries and exits alone, the firm

employed 24 HR officers, many of which could be reallocated to different tasks because of our treatment. Less tangible, but likely to be more important, were the risks that at excessively high turnover rates, the firm's reputation was damaged, leading to an increasingly thin talent pool for the internal labor market of the firm.

7. Concluding remarks

By communicating to middle managers about the importance of personnel turnover, quit rates decrease by a quarter over a period of nine months. There was no change in the incentive scheme or the underlying KPIs, but nonetheless the effects are quite large. In part, this may be explained by the fact that it appears to be the laggards who react most intensively. It is however also noteworthy that our firm is situated in an Eastern European country formerly part of the Soviet Union, a region with relatively low levels of managerial efficiency (see Bloom et al., 2012, and Friebe and Schweiger, 2013). While the foreign owners had introduced numerous new management practices such as price setting, logistics, product, and customer management, HR was not among the priorities of the company before we began our collaboration.

Our paper shows that enhanced communication matters for one outcome (personnel turnover) without negatively affecting the others (sales, shrinkage). The intervention was profitable for the firm, workers report more intensive interactions with their supervisors which is likely to increase their well-being. If this were not the case, we should observe an increase rather than a decrease in quits, and second, we know from exit interviews that more than 50% of the employees who quit were still unemployed three months after the quit decision. With most of the remaining workers reporting to work in jobs with similar work conditions, it indeed seems so that many workers leave because of bad managers, an effect that was mitigated through our treatment. Moreover, as the reduction in quits led to fewer people being unemployed at any given moment of time, our treatment seems to have positive externalities in terms of lower expenses for unemployment benefits.

One could, however, see the glass to be half empty rather than half full: In contrast to the widespread belief of the management literature (see the survey of Hausknecht and Trevor, 2011) that bringing down turnover from high levels implies higher performance, we find no evidence for such an organizational automatism. The key to understanding why this is (not) the case is that managers shift their time use from other activities to HR, effectively staying on the transformation curve of their store.

Another, related, implication of our research is worth mentioning: a large literature in management makes the point that workplaces in which a transformational rather than transactional leadership style is practiced lead to more job satisfaction. Contributors to this literature are struggling to explain, though, why not all firms adapt such leadership styles. Our results shed doubt on the superiority of a more human leadership style in terms of performance on the store level.²⁶ The only measurable effect in terms of performance is on the headquarter level, while stores do not improve their performance measured in sales and shrinkage just because managers interact more intensively with the workforce. We believe that there hence may be two equilibria that can both do equally well (or badly), at least in retail and other low-skilled sectors. The anecdotal evidence about the coexistence of firms with quite different cultures in the same sector seems to support this interpretation.

Finally, our paper shows that communication from top managers to middle managers can have substantial effects. This conjecture is a commonplace in the management literature (at least since Barnard, 1938). The causal evidence we find for the effect of communication corroborates this conjecture, but it is also noteworthy that the effect has a certain duration, but ultimately fades away. A similar, second, communication has effects of the same magnitude but much shorter duration. To investigate the question of optimal frequency of skip-level communication from the top is a fascinating topic that we leave for future research. Our experiment was inspired by work on managerial attention and strategic focus (Geanakoplos and Milgrom, 1991, Halac and Prat, 2016, Dessein and Santos, 2016) and we would hope that the results may inspire further (theoretical) work on communication as a management tool.

²⁶ And so does a meta study by Judge and Piccolo (2004) in the industrial psychology literature, which finds strong correlations between transformational leadership and job satisfaction, but low correlations between transformational leadership and performance of groups and organizations.

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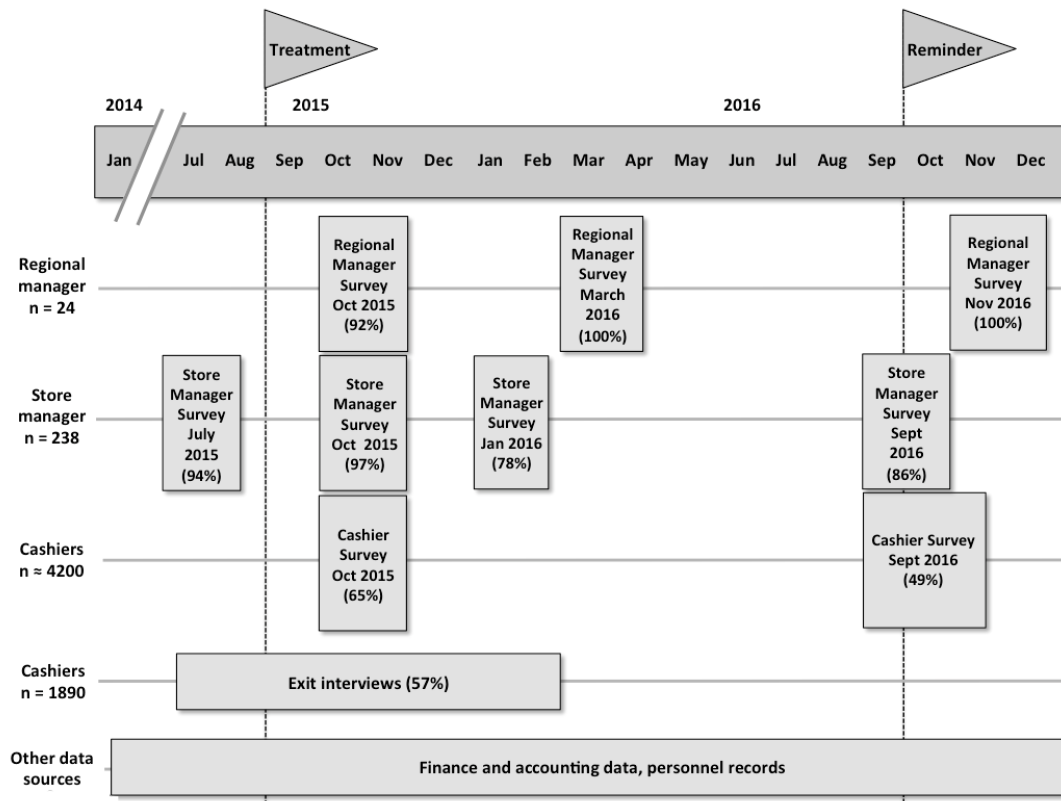
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- Figures and Tables**

Figure 1: Data sets used in the paper



Notes: Response rates in the surveys are in parenthesis. Store manager and cashier surveys were framed as “international surveys in the retail industry”. Exit interviews: We only use data for cashiers who quit in the first three months in the paper (n=945, response rate: 57%). Store Manager Survey January 2016: Eleven store managers were not interviewed as they only recently moved to the store.

Table 1: Descriptive statistics, by treatment group (Jan. 2014 – Aug. 2015)

Panel A: Characteristics of stores						
	All stores (n = 238)	Control (n = 59)	Manage (n = 60)	Career + Manage (n = 59)	Career (n = 60)	Mean equality test p-value
Mean monthly sales	205,557 (154,266)	190,366 (126,874)	208,690 (154,187)	202,306 (145,263)	220,905 (183,930)	0.738
Mean store size (in square meters)	643.36 (371.42)	584.19 (307.35)	653.11 (385.00)	645.36 (358.26)	687.40 (413.06)	0.441
Mean number of employees	24.13 (17.50)	21.97 (14.27)	23.37 (16.14)	25.86 (20.40)	25.30 (18.38)	0.613
Mean monthly shrinkage	5,752 (4,276)	5,340 (3,542)	5,431 (3,718)	6,368 (4,970)	5,860 (4,626)	0.543
Span of control (non-managerial employees per manager)	3.38 (1.56)	3.17 (1.45)	3.45 (1.54)	3.43 (1.68)	3.46 (1.56)	0.551
Location: Town	53.29%	52.73%	48.71%	56.90%	55.89%	0.812
Regional unemployment rate	7.73% (2.33%)	7.44% (2.20%)	7.64% (1.91%)	7.96% (2.85%)	7.89% (2.29%)	0.559
Panel B: Characteristics of store managers						
Mean monthly earnings	939.18 (260.43)	931.13 (256.44)	932.35 (248.89)	950.08 (260.76)	943.29 (274.61)	0.844
Mean age (in years)	40.64 (8.72)	42.22 (6.75)	38.81 (9.01)	41.43 (9.43)	40.51 (8.67)	0.524
Mean tenure (in years)	6.26 (4.38)	6.15 (4.43)	5.75 (4.21)	7.05 (4.69)	6.04 (4.11)	0.773
Share of females	91.10%	87.49%	96.23%	86.85%	93.70%	0.052
Percentage of work time allocated to HR (self-reported)	27.66% (11.08%)	28.16% (11.47%)	25.63% (8.74%)	26.83% (10.99%)	29.93% (12.51%)	0.172
Panel C: Characteristics of cashiers						
Mean monthly quit rate	5.54% (7.68%)	5.73% (7.87%)	5.56% (7.81%)	5.10% (7.12%)	5.76% (7.88%)	0.493
Mean number of cashiers	17.61 (13.04)	16.26 (11.18)	18.13 (13.15)	17.21 (12.33)	18.83 (15.05)	0.712
Mean monthly earning	345.02 (104.98)	347.28 (105.74)	347.87 (104.15)	340.57 (104.48)	343.89 (105.42)	0.474
Mean age (in years)	32.85 (12.68)	31.54 (12.27)	33.14 (12.64)	32.10 (12.68)	34.45 (12.88)	0.004
Mean tenure (in years)	2.26 (2.52)	2.18 (2.56)	2.28 (2.48)	2.24 (2.42)	2.33 (2.61)	0.865
Share of females	88.99%	88.13%	88.18%	89.38%	90.28%	0.514

Notes: Panel A and C: Data are from January 2014 – August 2015; Panel B: Earnings, age, tenure and share of females are from August 2015, percentage of work time allocated to HR is from a pre-treatment store manager survey in July 2015. Number of employees: Excluding store managers

Table 2: Average treatment effects on the quit rate by time period

	Sept. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	June 2016- Sept. 2016
Manage treatment	-0.018** (0.009)	-0.024** (0.013)	-0.019* (0.010)	0.002 (0.010)
Career + Manage treatment	-0.005 (0.009)	-0.021* (0.011)	-0.026** (0.010)	0.006 (0.011)
Career treatment	-0.008 (0.009)	-0.014 (0.013)	-0.016 (0.011)	0.004 (0.010)
Control group average quit rate	0.072 (0.084)	0.075 (0.133)	0.087 (0.093)	0.092 (0.100)

Notes: The specification that generates the results in this table is the ANCOVA estimator (equation 1). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Average treatment effects after sending the reminder

	Oct. 2016	Nov. 2016	Dec. 2016
Manage/Career + Manage treatment: Reminder sent	-0.031** (0.012)	-0.010 (0.015)	0.014 (0.011)
Manage/Career + Manage treatment: No reminder sent	0.012 (0.015)	0.005 (0.016)	-0.017 (0.013)
Career treatment	0.003 (0.017)	0.003 (0.014)	0.003 (0.014)
Control group average quit rate	0.061 (0.086)	0.059 (0.069)	0.051 (0.073)

Notes: The specification that generates the results in this table is the ANCOVA estimator (equation 1). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Responses in our store manager interviews (Panel A), cashier exit interviews (Panel B) and cashier survey (Panel C)

	Mean (SD) response Control	Estimated ologit coefficients; baseline: Control		
		Manage	Career + Manage	Career
Panel A: Differences in free text responses of store managers in the phone interviews, evaluated by ten external evaluators (Jan. 2016; n=129)				
A1. According to the store manager, to what extent is it possible for her/him to reduce employee turnover? (Scale: 1 (not possible) to 10 (possible); LHS variable: Mean scale)	3.191 (1.551)	1.233*** (0.383)	0.516 (0.353)	(NOT SURVEYED)
A2. Has the store manager increased effort to reduce the turnover in the last months compared to the time before? (Scale: Yes or no; LHS variable: share of "yes" responses)	0.293 (0.375)	0.948** (0.393)	0.716* (0.406)	
A3. Has the store manager talked to workers more over the last few months compared to the time before? (Scale: Yes or no; LHS variable: share of "yes" responses)	0.271 (0.340)	1.023** (0.416)	0.353 (0.365)	
A4. Has the store manager talked to particular groups of workers more over the last few months compared to the time before? (Scale: Yes or no; LHS variable: share of "yes" responses)	0.165 (0.234)	0.745* (0.396)	0.651* (0.380)	
Panel B: Difference-in-Difference in the responses of former cashiers who quit in the first three months after being hired in exit interviews (July 2015 - Feb. 2016; n=535)				
B1. How much attention and support did you receive from your supervisor in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.098 (1.036)	0.688* (0.406)	0.452 (0.417)	0.393 (0.412)
B2. How much attention and support did you receive from your colleagues in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.301 (0.913)	-0.060 (0.399)	0.042 (0.444)	0.240 (0.483)
Panel C: Difference in the responses of randomly selected cashiers in phone interviews (Sept. - Oct. 2016)				
How many minutes per week on average does your store manager talk to you personally about work or other issues? (Scale: 0 min (=1), 1-5 min (=2), 6-10 min (=3), 11-30 min (=4), 31-60 min (=5), 61-120 min (=6), >120 min (=7))				
C1. Responses: all cashiers (n=334)	4.322 (1.596)	0.331 (0.347)	0.417 (0.326)	0.085 (0.281)
C2. Responses: cashiers where the store manager is the same since the beginnig of the treatment in Sept 2015 (n=223)	4.228 (1.648)	0.772* (0.415)	0.752* (0.401)	0.041 (0.349)

Notes: Column 1: Mean response for stores in the control group. Standard deviations are in parenthesis. Column 2-4: Coefficients estimated in Ologit estimations. Standard errors (in parenthesis): Robust standard errors in Panel A, standard errors are clustered on store level in Panel B and C. Panel A: We did not interview the store managers in the *Career* treatment group because of time constraints of our student assistants. In Panel C we include a dummy as control that captures whether a store received a reminder at the beginning of October. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Appendix I: Additional analyses

Calculation of the costs of turnover

This section provides details of the *ex ante* calculation of the costs of turnover we carried out. The costs of turnover that we include in our calculations consist of four components: 1) the accounting costs of managing turnover at the store level (e.g., manager time); 2) the accounting costs at the firm level (e.g., the costs of employing HR personnel that deal with turnover); 3) the economic costs of turnover in terms of the effect it has on store profitability; and 4) the economic costs of turnover in terms of its effects on the firm's reputation, human capital accumulation, and the talent pool. The first two components can be easily estimated, the third requires strong assumptions to be statistically estimated, and the fourth cannot be quantified. We base our calculations on the pre-treatment (January 2014-August 2015) average number of quits of 1.2 per store per month, the average cashier salary of 345 Euros per month, the average store manager salary of 940 Euros per month, and the average operational profit (sales minus costs of sales minus wages minus overheads minus shrinkage) of 38,065 Euros per store per month.

Starting with the first component – the accounting costs of turnover accrued to individual stores – we learned from several randomly selected store managers we interviewed in the Spring 2015 that it takes one hour to interview each applicant, which given the hires per applicant rate of 0.4 means 2.5 hours per hire. It takes store manager two hours to instruct each new hire, half an hour to process the paperwork of each leaver, and another half an hour to rewrite the work schedule. Each newly hired worker undergoes a two-day on-the-job training during which he or she is paid but does not work. We assume the costs of training to be the store manager day's salary. Besides, a mentor (another cashier) spends two hours with each newly hired worker. Summing up, each quit takes 40 hours of cashier time and 18 hours of store manager time.

Turning to the second component – costs accrued at the firm level – we learned from interviews with the head of HR that there were twenty-three employees in the HR office whose job was to administer hiring and quits. In our calculations, we assume that their wages are 10% higher than the average wage of cashiers, giving the monthly wage budget of 8,730 Euros. On top of this figure comes the tax wedge of 38.8%, which is the Eurostat 2015 average tax wedge estimate for the eastern EU countries (Eurostat, 2015). Additionally, there are rental costs of the office space required to sit them,

estimated at 10 Euros per sq m per month, which is in the range of office space rates in non-premium locations in the city where our study firm is based. Assuming every employee needs 5 square meter, these costs amount to 1,150 Euros per month.

Summing up, the accounting costs of personnel and cashier and store manager time spent on dealing with the consequences of turnover amount to 292 Euros per store per month, or 244 Euros per quit.

As for the third component of turnover costs – lost profits – we observe a negative correlation between store operational profit and quits. Regressing changes in log operational profit on changes in labor input and up to three lags of changes in the quit rate gives the coefficients -0.18, -0.14, -0.17 on the current, first and second lags of changes in the quit rate. (The coefficients on the deeper lags are small and insignificant.) For reasons of endogeneity (workers leaving at a higher rate the stores that are less productive), these results cannot be interpreted as causal evidence on the effect of quits; a naïve estimate stemming from the regression coefficients would suggest a 4.9% decrease in operational profit ($=0.1*(-0.18-0.14-0.17)$) in response to a permanent increase in the quit rate by 0.1. If the present quit rate went from the pre-treatment average 0.056 down to zero, the operational profits would increase by $38,065*0.49*0.056=1045$ per store per month on average, suggesting that each quit costs 870 Euros in terms of lost sales.

Summing up, the total costs of turnover are $244+870=1114$ Euros per quit, of which 234 Euros are the direct accounting costs. This figure corresponds to just under two-and-a-half months' worth of cashier gross salary. Note that our estimate does not include the costs of uniform and placing job adverts, and, more importantly, the costs turnover brings to the firm's reputation and talent pool (the fourth component).

Different types of managers

We estimate our main specification with the treatment dummies interacted with store average size in employee headcount. Our estimates for the period of September 2015 to September 2016 imply a reduction in the *Manage* (*Manage+Career*) treatment effect of 1.8 (1.4) ppts corresponding to a one-standard-deviation increase in store size. To explain this result, we first check whether it is driven by span of control measured as the number of non-managerial employees per store / department manager in each store. It is not: the interactions between the treatment dummies and store size do not disappear

when we control for the span of control as well as for its interactions with the treatment dummies.

Our explanation to the treatment effect heterogeneity by store size rests on the practice of career management in the firm, according to which, as we were informed by the COO, managers who successfully manage small stores get promoted to larger ones in order to leverage their human capital at larger scales.²⁷ Store managers average monthly earnings in the pre-treatment period were 935 Euros (sd: 273). A ten-percent increase in store size is associated with a 2.6% increase in managers' wages.

Digging deeper into this argument, in the *Regional Manager Survey Nov 2016*, we showed all regional managers the names of all store managers ($n = 79$) who moved between stores in the pre-treatment period, and asked them about the reasons for those movements. In 85% of the cases, regional managers could provide the reason (in 15%, the regional manager responsible for the movement had quit the firm). The two most important reasons for movements were store managers' promotions (51% of the cases) and demotions (15%).²⁸ According to the personnel records, before promoted managers moved, they had on average 17 employees in their store, and in their new stores on average 37 employees; for demoted managers the numbers are 46 before, and 21 employees after the movement. successful managers are promoted to larger stores to increase absolute profits. This provides a first indication that the treatment effect may interact in interesting ways with the quality of the manager, and that it is mainly the weaker managers who respond to the treatment.

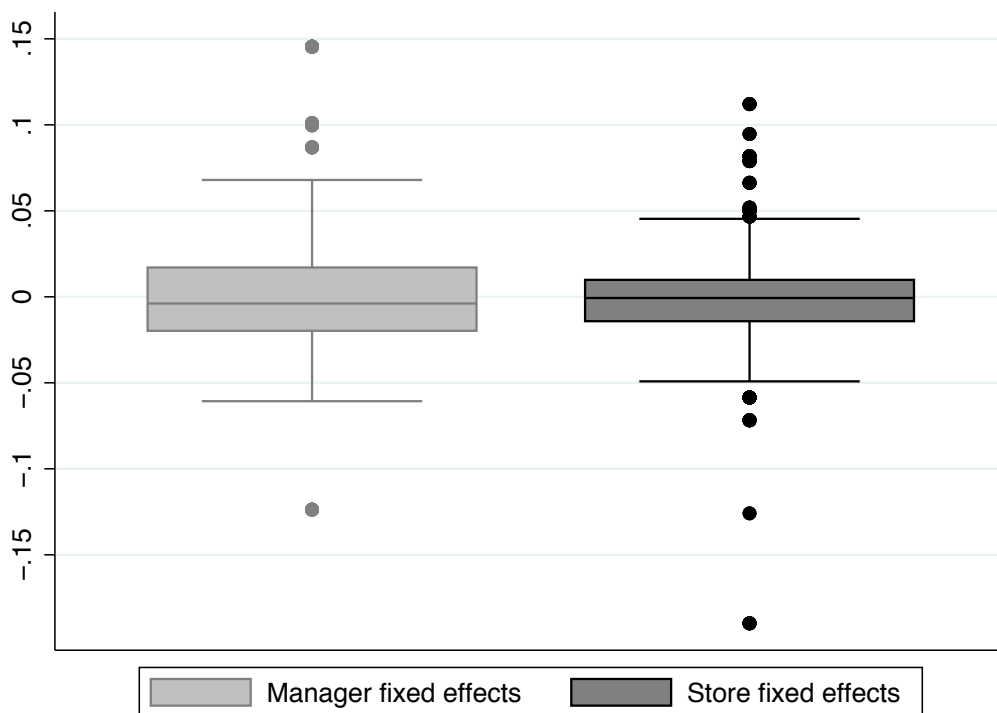
To substantiate this conjecture, we follow Bertrand and Schoar (2003), Lazear et al. (2015), Janke et al (2016), Hoffmann and Tadelis (2018), who all use manager movements to identify manager "fixed effects" in performance. We use the method proposed in Abowd et al. (1999) and implemented in Cornelissen (2008) to estimate the manager and store fixed effects in the quit rate. Figure A shows the distributions of store manager (the box plot on the left) and store fixed effects (the box plot on the right) in the quit rate. In line with the previous literature, the considerable variation in the manager fixed effects indicates that store managers matter for employee turnover.

²⁷ This is an argument reminiscent of the theories of Lucas (1978), Rosen (1982), Garicano (2000) and many others; for empirical evidence see, for instance, Garicano and Hubbard (2007), Smeets et al (2016).

²⁸ In the remaining cases, store managers were interim managers (9%; e.g. because the of parental leave or sickness of store managers), the manager moved privately (9%), the store was closed (5%) or other reasons were given (6%).

Interacting the *Manage* and *Career+Manage* treatment dummies with the estimated store manager fixed effects we find that a one-standard-deviation change in the manager fixed effect (i.e., one-standard-deviation decrease in manager quality as measured by ability to deal with turnover) is associated with a 2.9 ppt larger effect of the *Manage* treatment and a 1.6 ppt larger effect of the *Career+Manage* treatment. Although the latter results need to be taken with some care given the endogeneity of manager movements between stores from which manager fixed effects are estimated (a problem applying to of all the related literature), the mass of the evidence reported in this section strongly suggests the importance of differences in manager quality for the efficacy of our treatments.

Figure A: Box plots of manager and store fixed effects from the quit rate regression



Spillovers

A robustness concern applies to many field experiments and also to ours: there could be spillovers between different groups of stores. There are two types of potential spillovers. First, stores managers in the control group may imitate what stores in the

treatment groups are doing, which would lead to an *underestimation* of the treatment effects. Second, store managers in the control group may feel discouraged about the fact that they were not included in the treatment groups, and interact less with their employees. This would lead to an *overestimation* of the treatment effects.

We believe that treatment spillovers, positive or negative, are unlikely for the following reasons. First, our treatments did not affect any material aspects of the store manager job, such as salary. If they did, we would see changes in store manager turnover, which we did not observe. Second, store managers in our study firm are used to experiments. For example, when we started our treatment, there were twelve other pilot projects run by the firm in subsamples of stores, experimenting with prices, logistics, marketing and products. Yet, neither in the past nor in our treatment period store managers complained about inclusion or non-exclusion in pilot projects to the regional managers or top management. Third, in the absence of material effects on store manager livelihood, it is unlikely that the managers in the control stores would continue being uneasy for the entire nine-month period during which we observed significant treatment effects.

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Appendix II: AEA RCT Registry (August 31st, 2015)

Friebel, Guido, Matthias Heinz and Nick Zubanov (2015), “The impact of employer-employee communication on employee turnover.”

We run a field experiment to investigate the impact of employer-employee communications on employee turnover. Our study firm – a network of 238 retail stores located in an Eastern European EU member state – has been troubled with store staff turnover averaging at 90% per year, a figure high even for the retail sector standards. Turnover is expensive, costing about 400 Euros per quit worth of time spent finding and training up a replacement. Low pay and limited career options have been blamed for high store staff turnover.

Yet, the fact that half of the leaving staff quit within the first three months on the job suggests that turnover could be reduced by better induction into the firm, which we believe can be accomplished through improved employer-employee communications. Hence, our first experimental treatment, labeled “job induction”, is to send a letter signed by the firm CEO to the treatment group store managers motivating them to do what they can to reduce staff turnover. In particular, the letter mentions the importance of helping employees fully integrate into their teams, of training new hires, and of having an open ear for the concerns workers may have, especially in the beginning of their tenure.

Our second treatment, labeled “career communication”, is about communication with the staff regarding career options at our study firm. Although career options for store staff are perceived as limited, the facts are that a considerable proportion of store and regional managers were promoted from cashiers, and that our study firm offers a variety of careers in its HR, logistics, finance and production divisions (we do not cover these in our experiment). Employees in the stores selected for our second treatment receive letters emphasizing these facts and encouraging them to contact a specially appointed HR officer for information on career possibilities.

Finally, our third treatment combines the above two so that we can learn whether job induction and career communication are substitutes, complements or neutral to each other in their effect on staff turnover.

We select employees into treatments or control group by store using stratified randomization. In addition to store average quit rate, which is our outcome variable, we balance the treatment and control group in terms of store sales, size and location, as these characteristics are correlated with staff turnover. We work with store and regional managers to ensure that we can detect and minimize information spillovers between stores in different treatment groups. The field experiments starts on September 01st, 2015.

Appendix III: Materials

Figure B: Store manager letter in the *Manage* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods, customer service and refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY! However, much remains to be done for FIRM NAME to achieve the leading position. We would like to ask you for your help in dealing with an important problem that many stores are facing on a daily basis.

It is about personnel turnover. We currently have a personnel turnover of around 90% per year. We also know that 50% of those who leave are leaving in the first few months of their employment at FIRM NAME. Each employee's leaving costs us on average 400 Euros – at least.

This turnover severely impedes your efforts of improving the quality of our products and services. In this case, a biggest part of your job is for searching new employees and training them. Also, all organized training, such as practice sessions and leadership clubs, are not effective as they should be.

We would like to bring your attention to the problem and ask you to do what you can, in order to bring down the turnover. In particular, please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

PICTURE, NAME AND
SIGNATURE OF THE HEAD OF HR

Note: In the letter we communicated a personnel turnover of 90% because the respective figure was computed using the quit rates in 2015, which were particularly high. In the entire pre-treatment period, the monthly quit rates were around 6%.

Figure C: Poster in the *Career* treatment

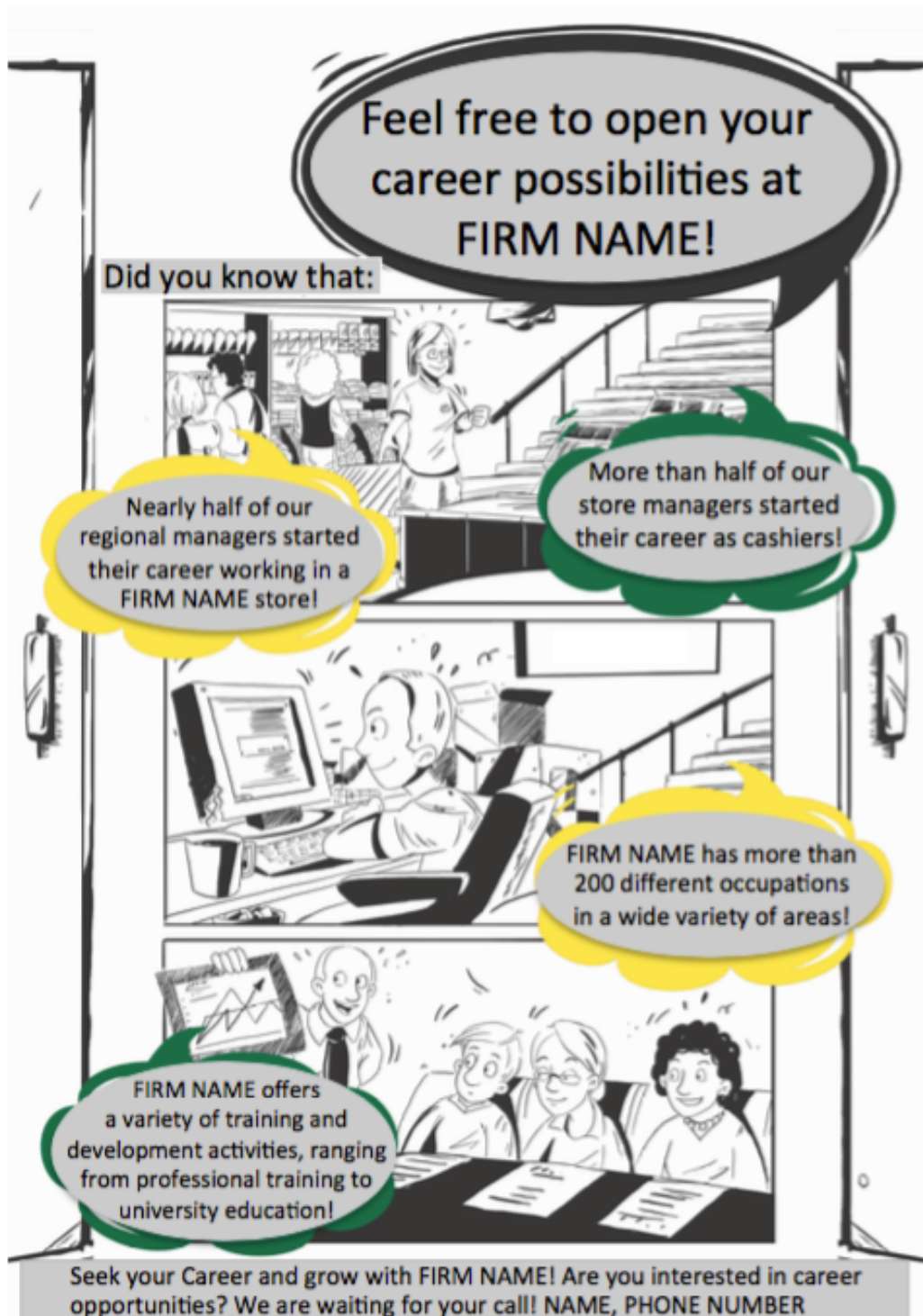


Figure D: Employee letter in the *Carreer* treatment

[LOGO OF THE FIRM]

Your Career Opportunities at FIRM NAME!

Dear NAME OF THE EMPLOYEE,

We are grateful for your dedication and daily work in reaching our main goal - to become the best and most attractive to costumer grocery store in COUNTRY! We believe that while achieving this common goal, every employee (without exception) have ability to grow.

Our company offers many different career opportunities for each employee – that is why FIRM NAME is a great place for every employee who seeks a career. We would like to share some facts with you.

Did you know

- More than half of our store managers started their career as cashiers!
- Nearly half of our regional managers started their career working in an FIRM NAME store!
- Almost all Shift Managers and Unit Managers started their work at the cash-desk!
- FIRM NAME is employed more than 200 different occupations in a wide variety of areas – production, logistics, marketing, IT, finance, HR, Commerce!
- FIRM NAME sponsors a variety of training and development activities for its employees, ranging from professional training to university education and also provides the opportunity to participate in various projects!

After starting to work in higher position there will be not only substantial wage increase, but also you can develop your professional activities, leadership skills and to grow as a person.

Are you interested in career opportunities? We are waiting for your call on internal: NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT
Seek your Career and grow with FIRM NAME!

Yours sincerely,

FIRM NAME

Figure E: Store manager letter in the *Career* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods and stores, for instance by refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY.

However, much remains to be done in this direction. As the next step in our strategy for FIRM NAME to achieve the leading position, we are introducing a new initiative to make career opportunities at FIRM NAME more visible to its employees.

Such opportunities are ample. For instance, 52% of the current store managers started their career as cashiers. Furthermore, along with a substantial wage and status increase, a promotion brings additional opportunities to develop professionally and to exercise leadership at work.

Enclosed you will find letters in separate envelopes that are addressed to each individual employee, as well two posters. We kindly ask you to do the following:

- Place one poster (the A4 size) on the staff information board.
- Place the other poster (the A3 size) where most store employees can see it, for example, in the staff common lounge.
- Arrange the meeting with all employees, for instance, in the morning. If not everyone can attend this meeting, please arrange another meeting so that everyone is informed.
- During the meeting(s) please read the letter aloud to ensure everyone is informed.
- Hand over the addressed envelope to each employee.

You will also find a few extra copies of the employee letter, to be given to newly hired employees. Please make additional copies if needed.

You can call NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT in case you have questions. Also let the employees know that they can call us with their questions.

Yours sincerely,

FIRM NAME

Figure F: Store manager letter in the *Career+Manage* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods, customer service and refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY!

However, much remains to be done for FIRM NAME to achieve the leading position. We would like to ask you for your help in dealing with an important problem that many stores are facing on a daily basis.

It is about personnel turnover. We currently have a personnel fluctuation of around 90% per year. We also know that 50% of those who leave are leaving in the first few months of their employment at FIRM NAME. Each employee's leaving costs us on average 400 Euros – at least.

This turnover severely impedes your efforts of improving the quality of our products and services. In this case, a biggest part of your job is for searching new employees and training them. Also, all organized training, such as practice sessions and leadership clubs, are not effective as they should be.

We would like to bring your attention to the problem and ask you to do what you can, in order to bring down the turnover. In particular, please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning.

In order to inform every employee about career opportunities in our company we have written a personal letter to each of your employees (you will find all letters in this envelope).

We believe, that FIRM NAME is a great place for the ones who seek career options and we are glad that we can suggest broad opportunities for that. For instance, 52% of the current store managers started their career as cashiers, Unit managers or in the other positions. We want to bring your attention, that along with a substantial wage increase, a promotion brings additional opportunities to develop professional activities and to exercise leadership at work and to grow as a person.

Please do the following as soon as possible with the posters and letters in this envelope:

- Place one poster (the A4 size) on the staff information board.

- Place the other poster (the A3 size) where most store employees can see it, for example, in the staff common lounge.
- Arrange the meeting with all employees (If not everyone can attend this meeting, please arrange another one so that everyone is informed and during the meeting please read the letter aloud to ensure everyone is informed.
- Hand over the addressed envelope to each employee.

You will also find a few extra copies of the employee letter, to be given to newly hired employees. Please make additional copies if needed.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

PICTURE, NAME AND
SIGNATURE OF THE HEAD OF HR

Figure G: Store manager letter in the *Reminder* treatments

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

You /your store received a letter from us, in September 2015, asking you to do what they can to reduce turnover. We are pleased to report a substantial reduction in firm-wide turnover, that we believe has been due to the efforts of our store managers such as yourself. We are grateful for this!

However, turnover is still high. Dealing with quits and searching and training new employees takes time and other valuable resources away from important activities around the store. Besides, organized training, such as practice sessions and leadership clubs, are not as effective as they should be when people often come and go.

We would like, once again, to draw your attention to the problem of turnover, and ask you to do what you can to bring it down. Please talk to your employees and try to make them feel fully integrated in your team, making use of the buddy program among our other HR initiatives. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning as well as throughout their employment.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

PICTURE, NAME AND
SIGNATURE OF THE HEAD OF HR

Appendix IV: Additional estimation results

In this section, we report treatment effects on sales, operational profits, and shrinkage (Tables A, B and C). All effects are statistically insignificant, except for the borderline significant effect of the *Manage* treatment on sales in June-September 2016 (p-value: 0.096). Notice that this period saw a major marketing campaign and a change in the way bonuses were awarded to store staff (a companion project of ours), which led to a massive increase – around 10% on average, going up to 30% in some stores – in monthly sales compared to the same period in 2015. This change has also resulted in more “noise” in sales, which likely generated outliers that affected the average treatment effect on sales in June-September 2016. Identifying these outliers is hard; however, the effect on sales goes to statistical insignificance (p-value at least 0.230) once we control for the stores in which the new bonus system was introduced. All in all, the regression results for spring and summer 2016 have to be taken with some care.

**Table A: Average treatment effects on store operational profits
in the main treatment period**

	Sept. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	June 2016- Sept. 2016
Manage treatment	-0.024 (0.027)	-0.018 (0.025)	-0.018 (0.025)	0.036 (0.032)
Career + Manage treatment	-0.019 (0.027)	-0.026 (0.025)	-0.008 (0.026)	-0.014 (0.029)
Career treatment	-0.003 (0.026)	0.017 (0.027)	0.019 (0.025)	0.029 (0.030)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). The observations with annual sales growth above the top 1% (+110%) and below the bottom 1% (-42%) are excluded from the sales regression; these observations come from stores that underwent renovation and were thus closed part of the time. Controls include headcount, store size in square meters, share of fresh products, dummies for location and exposure to LIDL. * p<0.1, ** p<0.05, *** p<0.01.

Table B: Average treatment effects on sales in the main treatment period

	Sept. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	June 2016- Sept. 2016
Manage treatment	0.003 (0.019)	-0.003 (0.020)	-0.002 (0.018)	0.036* (0.022)
Career + Manage treatment	-0.003 (0.014)	-0.005 (0.017)	-0.002 (0.018)	-0.009 (0.020)
Career treatment	0.019 (0.016)	0.023 (0.019)	0.027 (0.019)	0.032 (0.022)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). The observations with annual sales growth above the top 1% (+57%) and below the bottom 1% (-30%) are excluded from the sales regression; these observations come from stores that underwent renovation and were thus closed part of the time. Controls include headcount, store size in square meters, share of fresh products, dummies for location and exposure to LIDL. * p<0.1, ** p<0.05, *** p<0.01.

Table C: Average treatment effects on shrinkage (relative to sales) in the main treatment period

	Sept. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	June 2016- Sept. 2016
Manage treatment	0.005 (0.030)	0.026 (0.035)	-0.000 (0.035)	-0.037 (0.036)
Career + Manage treatment	0.007 (0.029)	0.001 (0.032)	0.001 (0.035)	0.006 (0.031)
Career treatment	0.031 (0.030)	0.031 (0.032)	0.007 (0.040)	0.017 (0.036)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). Controls include location, exposure to Lidl, stores size in square meters and headcount. * p<0.1, ** p<0.05, *** p<0.01.