Wage Premiums, Shirking Deterrence, Gift Exchange and Employee Quality: Firm Evidence (Preliminary: do not circulate or cite)*

Constança Esteves-Sorenson
Yale University

R. Vincent Pohl
University of Georgia

Ernesto Freitas
Nova University of Lisbon

Draft: February 2016

Abstract

Many incentive schemes rely partially or fully on wages that are both (i) not contingent on workers' output, and (ii) at a premium vis-à-vis market wages. Two main theories for why paying these wages may be efficient for firms is that they provide incentives for the provision of effort via shirking deterrence or gift exchange. A third rationale for paying these wages is that they attract higher-quality workers. The first two theories pose different implications for incentives, but are hard to disentangle in firms because they are usually observationally equivalent. We solve this issue using two novel multiyear personnel datasets from two wage-premium firms where workers transition from long-term probation contracts to permanent "tenured" contracts with strong employment protection. We find that absenteeism, our measure of effort, increases post-tenure: more than doubles for one firm and almost quadruples for another immediately in the period six months post-tenure. This finding is more consistent with shirking deterrence, although it does not rule out gift exchange. Despite the increase in shirking after tenure these wages appear to yield returns: workers at these firms have fewer absences and more schooling compared to workers earning average wages. This latter finding is consistent with selection-of-abler-workers theories. Further, much of the return to paying these premiums—27% in one firm and 82% in the other—appears from their ability to attract better workers. JEL Codes: D03, J31, J41, M52

*We thank Jarus Singh for excellent research assistance. We also thank Jason Abaluck, Joe Altonji, Jim Baron, Judy Chevalier, Florian Ederer, Bob Gibbons, Birger Wernerfelt, Jidong Zhou and seminar participants at the Yale School of Management, Yale Economics Labor, MIT Organizational Economics workshops for helpful discussion and comments.

1 Introduction

Many incentives schemes rely partially or fully on wages that are both (i) not contingent on workers' output and (ii) exceed (are at a premium) vis-à-vis going market wages. The reason why firms may pay these types of wages is the efficiency-wage argument: it may be efficient for firms to pay these wages because they nonetheless result in increases in productivity.[1]

Three different theories—shirking deterrence, gift exchange and selection—argue that these premium wages, despite not being contingent on output, nonetheless boost productivity. Shirking deterrence and gift exchange propose different mechanisms for why these wages provide effort incentives and pose different implications for incentive design. Shirking deterrence (e.g., Shapiro and Stiglitz (1984)) argues that premium wages motivate workers to raise effort in order to avoid being fired and hence lose the present value of the premiums stemming from the repeated employment relationship. Gift exchange (Akerlof (1982)) argues instead that premium wages raise effort because workers' sentiment for the firm leads them to repay the firm's "gift" of excess wages with the "gift" of excess effort. Thus, whereas shirking deterrence implies that principals need to offer workers long-term employment, monitor them to some extent, and threaten to dismiss them if they do not exert the desired effort, gift exchange holds the promise that workers will boost effort even if there is no chance of reemployment, no monitoring, and no threat of dismissal.[2]. A third theory for why these wages may be efficient relies on a selection reasoning, instead of a provision-of-effort-incentives rationale: these wages attract higher-quality workers (e.g., Weiss (1980)), who are more productive and thus with better outside options.

Distinguishing between shirking deterrence and gift exchange in firms is often difficult because they are usually observationally equivalent: due to the repeated nature of employment relationships, workers may exert higher effort to be reemployed at the premium wage or to reciprocate it. The closest test of these theories at a firm is by Cappelli and Chauvin (1991)

[1] Efficiency wages also rationalize involuntary unemployment. We abstract from these macroeconomic implications and focus on the incentives these wages provide, as is typical in the incentives literature. For a description efficiency-wage models and their implications for incentives see Gibbons and Waldman (1999). For a review of efficiency wages theories and their different implications for the structure of labor markets, see, for example, Katz (1986).

[2] As Akerlof (1982, pages 543-544) states: "As a consequence of sentiment for the firm, workers acquire utility for an exchange of "gifts." ... On the worker's side, the "gift" given is work in excess of the minimum work standard; and on the firm's side the "gift" given is wages in excess of what [workers] could receive if they left their current jobs."

who found larger wage premiums versus the market led to fewer disciplinary suspensions.[3] This finding, though consistent with shirking deterrence also dovetailed gift exchange: the fewer suspensions could have been due to workers' desire to be reemployed at the premium or to reciprocate it. Due to data limitations, it was difficult to disentangle the two explanations.

Further, these is scant evidence on the extent to which the three mechanisms above contribute to the gains in productivity associated with paying these wages. Assessing these gains requires productivity and employee-quality data for workers earning premiums and for comparable workers earning average wages, which are often unavailable.

We contribute to this discussion by first distinguishing between shirking deterrence and gift exchange in actual firms. We observe a multiyear panel of workers at two firms where (i) wages are not contingent on output, (ii) workers receive wage premiums, and (iii) workers transition from a sequence of revolving probation contracts with weaker employment protection ("pre-tenure" contracts) to permanent contracts granting stronger employment protection ("tenure" contracts), but where the worker can still be fired. Shirking deterrence implies that effort will decrease post-tenure since the probability that the worker is dismissed if he exerts less effort decreases substantially. Meanwhile, gift exchange implies no change, or even a increase, in effort. If the worker is exerting high effort pre-tenure to reciprocate the wage, than receiving tenure should not change his effort, all else equal; or effort should increase if the worker reciprocates the "gift" of tenure with the "gift" of increased effort.

Second, we assess the returns to paying these premiums for the two firms despite strong employment protections by comparing absences and schooling between workers in the two wage-premium firms against similar workers enjoying average market wages using Portugal's comprehensive yearly census of firms and workers.

We find that absenteeism, our measure of productivity, increases in both firms post-tenure showing a sharp increase immediately in the six months post-tenure, a finding more consistent with shirking deterrence. Despite the increase in shirking post-tenure, these wages appear to yield returns: relative to workers earning market wages, these firms' workers have lower absenteeism, even after tenure, and more schooling. This latter finding is consistent with selection-of-higher-ability-workers theories of efficiency wages. Further, a substantial part of return to paying these wages appears to stem from their ability to attract workers with higher schooling.

Our findings are based on two novel panel personnel datasets from two Portuguese firms

[3]We discuss this paper in more detail later.

paying above-average wages which are not contingent on output: a four-five star hotel chain (between 2004-2010) and a travel agency (between 2000-2010) paying wage premiums of 30% and 10%, respectively, on average. The data include information on absences by type (e.g., maternity leave, sick leave), wage, age, gender, education, professional category (job title) and tenure status for the 99 hotel and 126 travel agency workers tenured during these years.

We use absenteeism as the proxy for effort in keeping with this literature (e.g., Ichino and Maggi (2000), Ichino and Riphahn (2005)) as other effort measures are difficult to observe. Further, absenteeism may lead to substantial productivity losses (e.g., Pauly et al. (2002)).

We solve the difficult issue of estimating the yearly wage premium for each worker at the two firms by using data from a compulsory yearly survey covering all firms with employees in Portugal (350,000 firms and three million employees annually). This survey, which includes industry, job title, wages, absences and demographic information for each worker in Portugal allowed us to calculate the yearly average market wage for workers in the same industry, with the same job title, and gender as those of workers for the two firms (e.g., we computed, at each year, the wage premium for a Receptionists of First Class in our hotel chain by comparing his wages with those of all male hotel Receptionists of First Class in Portugal). Beyond allowing for a wage comparison between the two firms' workers and similar workers in Portugal, this survey also allowed us to compare absences and years of schooling.

We combine the data above with the transition to tenure to distinguish between shirking deterrence and gift exchange. By law, Portuguese workers can be on probation for at most three years or can have at most three same-duration revolving probation contracts, where each contract's minimum duration has to be six months (e.g., the worker can have a sequence of three six-month contracts). At the end of the three contracts or of the three years, whichever comes first, workers are either dismissed or hired with tenure. The only feature of the employment contract that changes with tenure is job security: employees can be dismissed at will pre-tenure by not having one of their temporary contracts renewed whereas post-tenure there is no such means to dismiss workers and thus workers enjoy stronger protection from dismissals. However, the probability of being dismissed is non-trivial.[4]

Further, industry-wide collective bargaining agreements constrain individual wage setting by the firm pre- and post-tenure. These agreements outline the range of professional categories (job titles) allowed within firms and the minimum wage attached to them. Often,

[4]For example, 7% and 33% of all worker dismissals in 2004 in Portugal were unilateral dismissals and mutual-agreement dismissals between workers and firms, respectively (source: Balanço Social, 2004).

as is the case with our firms, these agreements also limit the firms' ability to set different wages for workers with the same job title, by not allowing or greatly restricting individual performance pay. By law, wages also cannot vary by tenure status.

We conceptualize shirking deterrence and gift exchange via a model which yields optimal per-period shirking as a linear function of several variables: whether the worker is tenured; his wage; his wage premium; unobserved time-invariant worker characteristics (such as his discount rate); unobserved-time-invariant yearly factors (e.g., labor market conditions for that year); time at the firm (to control for career concerns); and unobserved time-invariant quarter-of-year effects (e.g., workers' propensity to be sick during the winter quarters).

We estimate workers' optimal shirking as function of the independent variables above using OLS and instrumental variables, both yielding similar estimates. Instrumental variables solve three potential endogeneity issues: first, firms could optimally set each worker's wage to deter shirking (despite the collective bargaining agreement restrictions), in which case wages and shirking could be simultaneously determined per worker, biasing all estimates. Second, the measurement error in shirking (absences measure shirking with error) could be correlated with wages. Third, wages could be measured with error and this error is correlated with the observed wages. We thus instrumented each worker's wage in each year with the minimum wage stipulated in the collective bargaining agreement for workers in his professional category.

We find that absences increase after tenure across all types—from sick leave, family leave, funeral leave to disciplinary suspensions—and across almost all job levels for both firms. Increases start in the period when tenure is announced, which is two months before actual tenure. Though probation periods are long (averaging 18 and over 24 months for hotels and travel agencies, respectively) workers show few absences during them: average absences are 0.22 and 0.12 days per month for hotel and travel agency employees, respectively, pre-tenure announcement. Absences, however, more than double for hotels to 0.53 days per month and almost quadruple for travel agencies to 0.45 days per month, respectively, in the period between the tenure announcement and six months post-tenure (8 months). These results are most consistent with shirking deterrence, though they do not rule out gift exchange.

Further, we find that despite the increase in absences post-tenure these premiums appear to be efficient for firms as their workers have fewer absences, in particular firm-paid absences, and higher levels of schooling than average wage workers. Firm-paid absences post-tenure (the more conservative measure of absences) for hotels and the travel agency are, respectively,

0.25 and 0.24 days per month lower than those for average wage workers. This suggests that though the probability of dismissal is lower post-tenure the disutility from losing the premium is large enough to prevent workers from shirking as much as average wage workers. Further, workers at the premium firms have 1.2 more years of schooling than average wage workers, consistent selection-of-better workers rationales for these wages (e.g., Weiss (1980)). Further, a simple calibration suggests that a substantial return to paying these wages is via their ability to attract workers with higher levels of schooling—about 27% for hotels and 81% for the travel agency. The returns arising from reductions in absences are smaller, at 3-5% hotels and 11-17% for the travel agency.

Our results contribute to the literature on efficiency wages by complementing the efficiency-wage evidence in Cappelli and Chauvin (1991)). They found, using a clever source of variation in a cross section of 78 U.S. plants in 1982, that higher wage premiums at each plant caused fewer disciplinary processes. This finding was consistent with shirking deterrence but could be consistent with gift exchange, as noted. Given the single cross section of plants it was hard to disentangle between the two explanations. Further, they found no evidence of premiums inducing selection of abler workers due to limited data on worker ability. Our panel of workers and the change in tenure status allows us to distinguish shirking deterrence and gift exchange. Further, the national firms-workers census allows us to document that wage premiums appear to enable the hiring of better workers and, in our case, this is an important means through which firms capture the returns to paying these premiums.

We also contribute the large literature on gift exchange as a motivator. Because it is difficult to obtains firms' internal personnel data with measures of productivity, market wages for comparable workers to those employed by wage premium workers and to disentangle shirking deterrence from gift exchange due to the repeated nature of employment relationships, gift exchange has been mostly tested in laboratory and field experiments, where researchers create one-time employment opportunities to disable shirking deterrence's reemployment incentives. This and other features of these experiments—such as employment lasting a few minutes or hours and principals not screening workers—are not typical of labor markets and are perhaps a reason these tests have yielded inconclusive evidence on gift exchange. Recently, Esteves-Sorenson (2015) documented the pay-effort elasticities in the most cited gift-exchange tests and found that after dealing with the confounds that could have led to the conflicting evidence on gift exchange, no evidence for it: workers' behavior was most consistent with a standard principal-agent model.

An open question ensuing this research was that perhaps gift exchange flourishes in environments not captured by existing laboratory and field experiments: ones where (i) workers interact with the wage-premium firm for years, instead of minutes or hours, enabling them to develop the affect for the firm that propitiates gift exchange; and (ii) where firms screen workers that might, given enough time, develop this affect and thus engage in gift exchange. Our finding that shirking increases after tenure in a context where workers receive wage premiums, interact with the firm for years and are screened by it, is more consistent with shirking deterrence. It does not rule out gift exchange, however, as we discuss at the end.

Last, we also add to the literature on the deleterious effects of job protection on worker effort. One important paper in this literature is that by Ichino and Riphahn (2005): using sick leaves as a proxy for shirking, they show that Italian white-collar workers shirk more after tenure than during the pre-tenure three-month probation period and that this increase is not due to career concerns or social norms. Their test focused on the effect of job protection on effort—instead of testing for different mechanisms underpinning efficiency wages and assessing the extent to which these mechanisms contribute to the efficiency of these wages—as they had no wage or wage premium data for their workers.

2 The Portuguese labor environment

Employment protection and screening via probation contracts. Portuguese workers in the period under analysis (2000-2010) enjoyed one of the highest levels of job protection among all OECD countries.[5] Because of the deleterious effects of employment protection—it is more difficult to dismiss tenured workers and thus find better matches for a job, for example—firms are allowed to offer long probation periods in order to learn about workers before tenuring them. All Portuguese firms are thus allowed to offer a sequence of at most three same-length revolving contracts before tenure where the duration of each contract has be at least six months (e.g., firms can offer a sequence of three six-month, eight-month or one-year contracts, for example).

[5]The OECD Policy Brief of 2004 (page 2) rated Portugal as the country with the highest level employment protection in 2003 among the 28 OECD countries. Germany and Italy ranked 10th and 11th in job protection. The U.S. rated the lowest.

Duration of the probation period. Workers can be on probation for at most three years but they are often on probation for shorter periods.[6] It is costly for firms to fire workers before the end of one of their probation contracts as they are required to pay the worker the wage until the end of the contract (unless they litigate "just cause" for ending it earlier, which is also costly). Thus the optimal length of a single probation contract may be less than one year, so that if the firm decides to dismiss the worker three months into one of the revolving contracts, for example, it does not have to wait nine months to do so. As a result the probation period can be optimally less than three years (if a firm shies away from offering a sequences of three one-year revolving contracts). For example, in our hotel chain, the modal contract sequence during probation was three seven-month revolving probation contracts, though it also offered a sequence of six-month, eight-month, and one-year contracts.[7] At the end of the three contracts or of the three years, whichever comes first, the firm must either dismiss the worker or give him a permanent contract ("tenure" contract).

Employment protection before and after tenure. Before tenure firms can easily dismiss workers by not renewing one of their three contracts. Once a worker is tenured, however, he enjoys very strong employment protection as he can only be unilaterally fired by the firm if the firm documents "just cause". Mirroring the employment protection legislation in Italy and Germany, firing with "just cause" cannot be performance-based, unless there is an abnormal reduction in productivity, which is subjectively assessed. "Just cause" firing offenses include unjustified absences (absences beyond those allowed by law) or harm to other employees. The employer has to document, in writing, a worker's infractions and the reason for dismissal so that the employee, and often the union helping him litigate the dismissal, may respond legally.[8] If the employee wins in court the firm must indemnify him for all damages, pay all wages and benefits since he was dismissed, and either reemploy him or offer a lump sum in lieu of reinstatement. Given the lengthy times of litigation in Portugal, the subjectiveness of what constitutes "just cause" for firing, the uncertainty in the outcomes, and how onerous litigation is for firms if they lose, firms rarely undertake this option: of all

[6] A limit of three years for the probation period was extended to six years between 2004-2009, reverting to the maximum of three years thereafter.

[7] Other reasons why firms may tenure workers before the end of legally allowed probation period that they may need workers to engage in firm-specific human capital investments that workers are only willing to do once they have tenure. Or it may offer abler workers tenure earlier as a means to retain them, for example.

[8] Eurofound on "Portugal-Individual Dismissal (Just Cause), page 2 states "... although dismissals represent only 2 per cent of instances of termination of the contract of unemployment, there is an abundant body of case law on the subject of just cause since legal actions against dismissal make up a substantial portion of labor litigation." (August 14, 2009).

separations between tenured workers and firms in Portugal only a small fraction (e.g. 7% in 2004) occur due to firms' unilaterally firing of individual workers.

Firms resort instead to dismissals by "mutual agreement", where the firm negotiates with the workers severance pay (e.g., 33% firm-worker separations in Portugal in 2004 were "mutual agreement" dismissals).[9] This negotiation involves a "carrot" and "stick": firms offer to pay workers a lump sum if they leave while advising workers that resisting dismissal may have negative consequences (e.g., workers may be moved to worse shifts, change locations etc.).[10] Thus, though tenured workers enjoy stronger employment protection they can still be dismissed and their tenure status is not portable to another firm. In this sense, tenure in Portugal though granting substantially stronger protection relative to the pre-tenure period, does not afford the same protection as academic tenure in the U.S., for example.

As a result, firms use the prolonged probation periods allowed under Portuguese law as a screening mechanism. Only an average of 10% of the Portuguese labor force on temporary contracts at the beginning of a given year attain tenure at the end of that year.[11]

Absences, compensation and tenure. The primary vehicle for shirking by workers are leaves, in particular sick leaves (as is the case with Italy in Ichino and Riphahn (2005)), or leaves due to close relatives' sickness (child, spouse or parent). To justify a leave due to worker or family sickness, workers only need a Social Security or personal doctor's note stating that the worker or family member is sick. Social Security covers 65% of the wage while the worker is sick or assists a family member so the workers loses 35% of the wage.[12] But other absences—e.g., funeral leaves, leaves to strike—also constitute vehicles for shirking and cannot be used by the firm as "just cause" for dismissal. Nonetheless, absences due to worker sickness comprise the chief cause of absenteeism nationally at 46% of workers' absences.[13]

Portuguese law, which attempts to prevent firms from using the long-term probation contracts to exploit workers (e.g., by giving them less pay or fewer benefits during the probation period) dictates that workers' wages and compensation for absences are independent of tenure: all workers with either probation or tenured contracts enjoy the same wage and absences' compensation.

[9]Source: Balanço Social, 2004.

[10]Firms can also fire workers via collective firings: dismissals of five or more employees. These are allowed for business reasons, such as branch closings due to regional economic downturns, but are more rare: only 0.6% of separations (Source: Balanço Social, 2004).

[11]Source: Portuguese Balanço Social, 2004

[12]We provide more details about the absences and how they are compensated in the next section.

[13]Source: Balanço Social, 2004.

Collective bargaining agreements, professional categories and minimum wages. All workers in Portugal who are employees of a firm are covered by a collective bargaining agreement that is negotiated between the unions representing the workers in the industry and the trade associations representing the firms in the industry. Industry-wide collective bargaining agreements detail the type of professional categories (job title) for workers in industry (e.g., Receptionist First Class, Receptionist Second Class etc.), the description of the tasks and the minimum wage for each professional category. If a firm does not belong to the trade association that negotiated the bargaining agreement its workers are nonetheless covered by the agreement by default.

Having given the context in which the two firms under study operate, we now describe the two firms and the workers under study in more detail.

3 Firms Description and Summary Statistics

Hotels. The hotel chain comprises five hotels: two in Lisbon, the capital, two outside of Lisbon but in its vicinity, and one in the center of Portugal. During 2004-2010, the period in our data, total employees averaged 550. We observe 99 workers transitioning from probation contracts to no-term ("tenure") contracts between 2005-2009. Thus an average of 20 workers per year receive tenure representing about 4% of the total labor force. Since our data spans 2004-2010 we observe each worker at least one year before and at least one year after tenure.

Travel Agencies. The travel agency has 17 locations in Portugal. During 2000-2010, the period in our data, total employees averaged 300. We observe 126 workers transitioning from probation contracts to no-term ("tenure") contracts between 2001-2009. Thus an average of 14 workers per year receive tenure representing about 5% of the total labor force. Since our data spans 2000-2010 we also observe each worker at least one year before and at least one year after tenure.

Wage policy for both firms. Both firms pay wages that are not contingent on output and they voluntarily pay wages that exceed average market wages: by 30% for hotels and by 10% for travel agencies. As with all workers in Portugal, each worker at these firms has a professional category or job title dictated by the collective bargaining agreement. The collective bargaining agreement describes the type of job the worker does and the minimum wage associated with that job. For example, a "Receptionist First Class" is in charge of welcoming guests, arranging lodging, registering guest information etc. and must have earned a minimum wage of 600 euros in 2008 if working for a four-star hotel. In the case of hotels,

this minimum stipulated wage varies by hotel rank: 5-star, 4-star, 3-star and 1- and 2-star hotels (e.g., a Receptionist First Class at a 5 star has a higher stipulated minimum wage than a Receptionist First Class at a 1-star hotel).

Either firm is constrained under the collective bargaining agreement to pay similar wages to workers within the same professional category independently of whether they are on probation contracts or tenured contracts. Thus if a worker is hired on probation as a Receptionist First Class he must earn a similar wage to that of a tenured Receptionist First Class.[14]

3.1 Descriptive Statistics

3.2 Hotels

Table 1 shows individual-level summary statistics for the 99 employees who transitioned to tenure between 2005-2009. Their average age at tenure was 30.5 years, 46% were female and their average years of education were 11 (11th grade). During the seven years under analysis (2004-2010) their average employment spell at the firm was more than four years at 50 months. The probation pre-tenure period was 18 months. After tenure, employees stayed at the firm an additional 32 months, on average, until the end of the sample period (2010), at which point the employment spell is censored.

The average probation period of 18 months is substantially shorter than the maximum number of months that Portuguese firms may use for probation, which is typically three years. This dovetails with information that the modal sequence of probation contracts for our hotel chain is a sequence of three seven-month contracts. One reason for this, as noted, is that the firm balances learning about workers during probation with not having to wait too long to dismiss the worker if it realizes, during one of the probation contracts, that the worker is not a good match.

Wage premiums. These workers received a monthly wage of 827 euros enjoying a 30% wage premium relative to the average market wage of 636 euros. Further, their wage exceed by 50% the minimum union wage of 553 euros stipulated in the collective bargaining agreements for hotels of four and five stars. We solved the difficult issue of estimating the annual wage premium vis-à-vis the market wage for the workers in our sample by using Portugal's "Quadros do Pessoal" annual census data. This is a mandatory annual census for

[14]The primary way wages within the same professional category may vary concerns the time in the position: a Receptionist First Class who has been in that position for one year may earn slightly more than a recently promoted Receptionist First Class because the former may have received one inflation adjusted raise in this new, higher paying position, whereas the latter has not.

all firms in Portugal with wage earners. It contains, among other information, data on the wage, gender, professional category and industry of the worker. This annual survey covers 350,000 firms and 3 million employees. We thus estimated the yearly wage premiums for our workers by calculating the difference between each worker's yearly wage and that of the average wage for workers in the same professional category and of the same gender in Portugal.

Overall absences, absences per tenure status and professional category. Average absences per twelve-month period for these workers were eleven days per year, where almost five days were maternity/paternity leaves, closely followed by sick leaves, at four days per year. Other types of absences, which include work-accident leave, paid leave, other leaves, disciplinary suspensions, family assistance leave, funeral leave, leaves due to union activities and strikes, account for two days per year, on average.

Table 2 lists the professional categories of the 99 workers who received tenure and they professional category or job level (1 for the lowest and 13 for the highest) according to the industry-wide collective bargaining agreement. Most workers who received tenure were Waiters Second Class (16 workers) and Receptionist Second Class (11 workers).

Figure 1 shows how absences change relative to the tenure date, excluding those for maternity and paternity leave. While we find an overall increase over time, three patterns stand out. First, until two months before tenure, i.e., until the time when employees are informed they will receive tenure, average monthly absences are around 0.2 to 0.3 days per month. Second, immediately after employees learn they are going to receive tenure (two months before tenure, as noted) the number of absences increases and starts reaching even higher levels in the months post-tenure. There are some fluctuations in absences, partially due to 52% of employees transitioning to tenure at fixed dates (March/April, September or December), but the higher level of absences is sustained for the first two year after tenure. Third, absences increase to over 1.5 days per month for several months of the third year after tenure. For our purposes, the immediate increase starting two months before actual tenure is the most important feature.

Table 3 shows the average monthly absences pre-tenure announcement (2 months before actual tenure) and those in the eight months post-tenure announcement (from the tenure announcement to six months post-tenure). We summarize the data for this narrow window post-tenure announcement as it is unlikely that other factors, other than tenure, may affect worker absences during this time (e.g., changes in wage, wage premiums, peers etc.).

We find a substantial increase in leaves starting after the post-tenure announcement, across all types of leaves and for almost all job levels. Table 3, column (1), shows that prior to the tenure announcement, average non-maternity/paternity leave absences were 0.22 days per month. However, column (2) documents that average absences more than double to 0.53 days per month in the eight months from the tenure announcement to six months post-tenure. Columns (3) through (12) show that the increase in absences occurs across all absence types and across all job levels except the very top ones (Job levels 12 and 13). Because we worried that the increase in sick leaves could result partially from workers having children post-tenure and being more vulnerable to diseases any sick leaves that workers with children incurred in the eight months post-tenure announcement are conservatively counted as maternity/paternity leaves instead of as sick leaves. Thus the increase in non maternity/paternity leaves post-tenure is a conservative estimate of the increase in leaves. Later, we show that our regression results are similar with all workers or the subsample of workers who did not have any children during the sample period.[15]

3.3 Travel Agencies

Travel agency workers show similar patterns to hotel employees. Table 4 shows individual-level summary statistics for the 126 employees who transitioned to tenure between 2001-2009. Although age at tenure, at 30.8 years, is similar to that in the hotel chain there is a higher proportion of female employees in travel agencies: 75% versus 46% in hotels. Travel agency workers are more educated than hotel employees with 13.5 years of schooling (1.5 years more of schooling than high school). Because of the longer ten-year panel—2000-2010—we observe longer employment spells for these workers at 90 months (7.5 years). Travel agency employees are granted tenure after 26 months of employment (slightly over two years) and stay with the firm another 65 months until the end of the sample period (2010), at which point the employment spell is censored.

Wage premiums. These workers received a monthly wage at tenure of 794 euros enjoying a 10% wage premium relative to the average market wage at 722 euros. Further, their

[15]Though children-related illnesses is an important concern, we later show that our results are even stronger in the subsample of workers (both male and female) who did not have children during the employment spell (83% of hotel workers and 70% of travel agency workers). These workers show slightly lower pre-tenure announcement absences than the overall sample, but larger increases in leaves post-tenure announcement. One reason could be that workers with children have more to lose if they are dismissed post-tenure—e.g., are more financially constrained, have more difficulty relocating—which may act as a deterrent on shirking post-tenure relative to workers with no children.

wage exceeded by 45% the minimum union wage stipulated in the industry-wide collective bargaining agreement of 546 euros. The methodology for calculating the wage premium vis-à-vis is the market wage is the same as that for hotels: we compared each worker's yearly wage at the travel agency with that of workers in the same professional category and gender in Portugal for that year using the annual survey data from "Quadros do Pessoal". For example, we compared the yearly wages of a female Tourism Technician First Class at our travel agency to those of all female Tourism Technicians First Class in Portugal for that year.

Overall absences, absences per tenure status and professional category (job title). Average absences per twelve-month period for these workers were twelve days per year, similarly to hotel workers, but where seven days (more than half of leaves) were maternity/paternity leaves, as the travel agency has a higher proportion of women. These were followed by sick leaves at four days per year. Other types of absences, which include unpaid leave, family assistance leave, funeral leave and other leaves account for the remainder one day per year.

Table 5 lists the professional categories (job titles) of the 126 workers who received tenure and their job level (L for the lowest and D for the highest) according to the industry-wide collective bargaining agreement. Each job level contains several professional categories. Most workers who received tenure were Tourism Technicians of either First, Second or Third class (70 workers) and Interns or Apprentices (31 workers), which are workers who are preparing to become Tourism Technicians, for example.

Figure 2 shows average monthly absences, excluding maternity and paternity absences relative to the tenure date. Similarly to hotels, absences start increasing two months before the tenure data, when workers are informed they will receive tenure, but increase more substantially after tenure. Similarly to hotels, we observe fluctuations in absences, but absences nonetheless increase over time.

Table 6 documents a substantial increase leaves after the post-tenure announcement. Table 6, column (1), documents that prior to the tenure announcement, average non-maternity/paternity leave absences were 0.12 days per month. However, column (2) shows that average absences almost quadruple to 0.45 days per month in the eight months from the tenure announcement to six months post-tenure. The pattern in the increase in absences shortly after tenure occurs across all most absence types and across all job levels. Similarly to the hotel chain, we worried that the increase in sick leaves may result from

workers having children in the narrow window post-tenure and thus being more vulnerable to diseases. Though this is less of worry for travel agencies because maternity and paternity leaves pre-tenure announcement are similar to those post-tenure announcement (suggesting workers are having children at similar rates before and after the tenure announcement and thus they should have similar rates of children-related diseases), we nonetheless apply the same conservative measure to sick leaves that we apply to hotels. Thus we conservatively count as maternity/paternity leaves any sick leaves incurred in the eight months post-tenure announcement and thus the increase in non maternity/paternity leaves post-tenure is conservative estimate of the true increase.

Summary for both firms. Overall, these data indicate that during the probation period which is quite long, at over two years for the travel agencies, travel agency workers are able to maintain a low level of absences, at an average of 0.12 days per month pre-tenure announcement. However, between the tenure announcement until six months post-tenure, absences almost quadruple to 0.45 days per month. The pattern is similar for hotels: workers are able to maintain low levels of absences during the probation period of 18 months, at an average of 0.22 per month pre-tenure announcement period. However, from the eight months ranging from the tenure announcement to six months post-tenure, absences more than double to 0.53 days per month.

4 Model for Estimation

Before we proceed to the estimation of the effects of tenure and other factors on shirking, we present a simple model to fix ideas and to provide guidance for our estimation. The model highlights how shirking deterrence and gift exchange may affect workers' shirking. In this model, a worker employed at the wage-premium firm considers the possibility of being dismissed if he shirks, thus losing the present value of the wage premiums at the firm (e.g., Shapiro and Stiglitz (1984), Gibbons and Waldman (1999)). Shirking will decrease in the wage premium, as the opportunity cost of being fired increases, and will increase with tenure. To capture the importance of gift exchange we enrich the preference structure of the worker by assuming that the marginal utility of shirking is decreasing in the wage premium, as implied by Akerlof (1982). In this case, shirking will decrease in the wage premium but via a different mechanism: higher premiums elicit lower shirking through reciprocity, rather than through the opportunity cost of being fired, as in the case with shirking deterrence.

The model also captures other factors that may affect the worker's optimal decision to

shirk: the wage, wage premiums, worker characteristics, such as, individual discount rates and environment characteristics (e.g., a given year's unemployment rate).

4.1 The Agent's Problem

There is a representative worker who lives forever.[16] In any point in time the worker may be employed at the wage-premium firm, or at a firm paying the average market wage, or the worker may be unemployed.

Whenever employed at a wage-premium firm the worker receives a utility flow $U(s_t, w_t) \equiv U_t$, where w_t represents the wage and s_t represents shirking. Because the wage-premium firm pays a wage that is above the average market wage, w_t is above the average market wage (denoted by $\bar{w}_t$). Whenever employed at a firm paying the average market wage the worker receives a utility flow $\bar{U}(s_t, \bar{w}_t) \equiv \bar{U}_t$.

To study how the threat of dismissal affects shirking we assume that a worker employed at the wage-premium firm faces a probability p_t of being dismissed, and if so, a probability q_t of joining a firm paying average market wages and a probability $(1 - q_t)$ of joining the unemployment pool. If the worker is unemployed, he receives unemployment benefits B.

Let V_t represent the present value of being employed at a wage-premium firm and let $\bar{V}_t$ represent the worker's outside option: if he is fired from the wage-premium firm, he either joins the average-wage firm (his expected employment if, after being fired, he becomes reemployed) or the unemployment pool. The worker's expected present value from being employed at a wage-premium firm corresponds to

$$E_t(V_t) = U_t + \delta E_t[(1 - p_t)(V_{t+1} + \mu_{t+1}) + p_t(\bar{V}_{t+1} + \bar{\mu}_{t+1})] \tag{1}$$

where δ is the discount factor and μ_{t+1} and $\bar{\mu}_{t+1}$ represent future uncertainty if employed, respectively, at the wage-premium firm and the average-wage firm.

The worker's expected present value of his outside option corresponds to

$$E_t(\bar{V}_t) = E_t(q_t)\bar{U}_t + E_t(1 - q_t)B + \delta E_t(\bar{V}_{t+1} + \bar{\mu}_{t+1}) \tag{2}$$

To address how the probability of being fired (p_t) affects the shirking decision while still allowing for a tractable linear estimating equation for optimal shirking, we assume that this probability depends mainly on tenure and on other factors, such as time at the firm, but

[16] This is a reasonable approximation as in our data the average worker receives tenure at about 30-31 years of age.

not on shirking. This strong assumption allows us to obtain optimal shirking, the final solution the model, as a simple linear function of several variables. This function will still, nonetheless, capture the intuition that optimal shirking depends on tenure. We thus assume that the probability of being fired is a random variable taking a value between zero and one and with mean

$$E_t(p_t) = \exp^{(-\rho_1 T_t + \gamma_1' x_{1t})} \tag{3}$$

where T_t is an indicator function taking the value 1 if the agent has tenure in period t and 0 if not; x_{1t} represents other variables that may affect the probability of being fired such as the number of months the agent has worked for the wage-premium firm (thus accumulating more firm-specific human capital, for example); and where ρ and the vector γ_1 represent parameters. Notice that when the worker does not have tenure $E_t(p_t|T = 0) = \exp^{(\gamma_1' x_{1t})} > E_t(p_t|T = 1) = \exp^{(-\rho_1 + \gamma_1' x_{1t})}$.[17]

We also assume that if the worker is fired from the wage-premium firm, the likelihood that he is hired by an average-wage firm is not one, but rather is a random variable between zero and one with mean:

$$E_t(q_t) = \exp^{(-s_t + \gamma_2' x_{2t} + \rho_2 T_t)} \tag{4}$$

where s_t represents shirking at time t; x_{2t} represents a vector of other variables that may affect the worker's probability of finding another job, such as unemployment at time t; T represents whether the worker has tenure at time t; and where ρ_2 and the vector γ_2 represent parameters. Notice that the more the worker shirks at the wage-premium firm, the lower his probability of finding another job, even at the average-wage firm, after being fired. This could be due to, for example, the worker receiving a bad reputation. Further, if he is dismissed pre-tenure at the wage-premium firm his likelihood of reemployment at the average-wage firm is lower than that had he had been dismissed post-tenure. We assume that gaining tenure could be, for example, a signal of higher worker quality increasing the likelihood of reemployment after dismissal relative to not having tenure.[18]

[17] $E_t(p_t)$ is never less than zero. To ensure that is is bounded above at one, we can always choose the first element the vector x_{1t} (call it x_{11t}) to be an arbitrary constant such that $\exp^{(-\rho_1 T_t + \gamma_1' x_{1t})}$ is bounded above at one for any data realization. The product of this constant and its respective parameter (call it $\gamma_{11} x_{11t}$) will later be absorbed by the constant in the linear estimation.

[18] As with $E_t(p_t)$, $E_t(q_t)$ is never less than zero. To ensure that is is bounded above at one we can, as with $E_t(p_t)$, choose the first element of x_{2t} to be an arbitrary constant such that $E_t(q_t)$ is bounded above at one for any data realization. The product of this constant and its respective parameter will later be absorbed by the constant in the linear estimation.

Last, we assume that the agent has rational expectations. Thus, for all t, μ_{t+1} and $\bar{\mu}_{t+1}$ are forecasting errors of mean zero, which are independent and thus uncorrelated with p_t for all t. Thus $E_t(p_t\mu_{t+1}) = E_t(p_t)E_t(\mu_{t+1}) = 0$ and similarly for $\bar{\mu}_{t+1}$. Under these assumptions and assuming a steady state, equation (1) can be re-written, as

$$E(V) = \frac{U + \delta E(p)E(\bar{V})}{1 - \delta(1 - E(p))} \tag{5}$$

Similarly, equation (2) can be rewritten in the steady state as

$$E(\bar{V}) = \frac{Eq\bar{U} + E(1-q)B}{(1-\delta)} \tag{6}$$

Replacing (6) into (5) we have

$$E(V) = \frac{1}{[1 - \delta(1 - E(p))](1-\delta)}\left[(1-\delta)U + \delta E(p)E(q)\bar{U} + \delta E(p)E(1-q)B\right]$$

We normalize the utility of being unemployed to zero and thus the agent's problem is to choose s to maximize

$$\max_s \left[(1-\delta)U + \delta E(p)E(q)\bar{U}\right] \tag{7}$$

4.2 Preferences

We add gift exchange by extending the preference structure in the standard agent's problem. *(1) If the agent works at the wage-premium firm*, his utility flow corresponds to

$$U = -\exp\left(\eta w + \alpha(w - \bar{w}) + \gamma_3' x_3\right)\exp\left(-\kappa_1 s\right) + \kappa_2 \exp\left(s\right) \tag{8}$$

where $\kappa_1 < -1$ and $\kappa_2 > 0$. This formulation captures that worker's utility is increasing at a decreasing rate in shirking ($U_s > 0$ and $U_{ss} < 0$) for a range of κ_1 and κ_2.[19] Further, it also captures that several elements may affect the marginal utility from shirking. The first is the wage: agents who receive a higher wage have a lower or higher marginal utility from shirking (i.e., from consuming leisure) depending on the trade-off between income and substitution

[19] Utility is increasing in shirking when $\kappa_2 > -\kappa_1 \exp\left(\eta w + \alpha(w - \bar{w}) + \gamma_3' x_3\right)\exp\left(-s(\kappa_1 + 1)\right)$. As a result, and for convenience, we assume we can rewrite κ_2 as $\kappa_2 \equiv c(-\kappa_1 \exp\left(\eta w + \alpha(w - \bar{w}) + \gamma_3' x_3\right)\exp\left(-s(\kappa_1 + 1)\right))$ where the constant $c > 1$, thus preserving the inequality (recall that $\kappa_1 < -1$).

effects. Therefore, η can be positive or negative.

The second element, $\alpha(w-\bar{w})$, represents gift exchange as in Akerlof (1982). The main idea is that agents who receive a wage higher than the market wage will repay the excess wage with higher effort. In our model, this means that agents who receive a higher wage premium ($w > \bar{w}$) should have a smaller marginal utility of shirking and thus that $\alpha > 0$.

Last, $\gamma_3' x_3$, represents a vector of other factors that can affect agents' marginal utility from shirking, such as time of the year (e.g., there might be higher marginal utility from leisure during the summer, for example). As each effect can be positive or negative, each element of γ_3 can be positive or negative.

(2) If the agent works at the average-wage firm, his utility flow corresponds to

$$\bar{U} = -\exp(\psi_1 \bar{w} + \psi_3' x_3)\exp(-\kappa_1 s) + \kappa_2 \exp(s) \tag{9}$$

4.3 Optimal Shirking

We now solve the agent's problem. From (7), the necessary and sufficient first-order condition with respect to s corresponds to

$$-\frac{\delta}{1-\delta} E(p)E(q)\bar{U}' - E(q)'\bar{U}) = U'$$

Using equations (3), (4), (8) and (9) this first order condition corresponds to

$$\frac{\delta}{1-\delta}\exp(-\rho_1 T + \gamma_1' x_1)\exp(-s + \gamma_2' x_2 + \rho_2 T)[\exp(\psi_1 \bar{w} + \psi_3' x_3)\exp(-\kappa_1 s)(-1-\kappa_1)] = \tag{10}$$
$$= \exp(s)[\kappa_1 \exp(\eta w + \alpha(w-\bar{w}) + \gamma_3' x_3)\exp(-s(\kappa_1+1)) + \kappa_2]$$

Applying ln to both sides, noting η can arbitrarily decomposed as $\eta = (\eta_1 + \psi_1)$ and thus that $\eta w - \psi_1 \bar{w}$ can be written as $\eta_1 w + \psi_1(w-\bar{w})$ yields the optimal shirking equation:

$$s^* = \beta_0 + \rho T - \psi_1(w-\bar{w}) - \alpha(w-\bar{w}) + \eta_1 w + ln\frac{\delta}{1-\delta} + \gamma_1' x_1 + \gamma_2' x_2 + (\psi_3 - \gamma_3)' x_3 \tag{11}$$

where the constant $\beta_0 = -ln(-\kappa_1) + ln(-1-\kappa_1) - ln(c-1)$ and $\rho = \rho_2 - \rho_1$.[20]

[20]The constant $(c-1)$ arises as follows: recall that we assumed that we could rewrite κ_2 as $\kappa_2 \equiv c(-\kappa_1 \exp(\eta w + \alpha(w-\bar{w}) + \gamma_3' x_3)\exp(-s(\kappa_1+1))$ where $c > 1$. Replacing κ_2 in the right hand side of (10) and factoring it we obtain $-\kappa_1(c-1)\exp(s)[\exp(\eta w + \alpha(w-\bar{w}) + \gamma_3' x_3)\exp(-s(\kappa_1+1))]$. We then take the natural log.

The first two terms—ρT and $-\psi_1(w - \bar{w})$—capture the effect of threat of dismissal on shirking. Tenure (T) may lead to higher shirking as workers know that the firing costs by the firm increase. However, higher wage premiums $(w - \bar{w})$ may lead to lower shirking as the worker does not want to be fired–either before or after tenure—and lose the rent from being employed at the higher wage firm.

The third term—$\alpha(w-\bar{w})$—captures the effect of gift exchange on shirking. Wage premiums may induce lower shirking under gift exchange as the worker reciprocates the gift of the higher wage with lower shirking (instead of being concerned with being fired and losing the rent at the wage-premium firm). This is the sense in which threat of dismissal models and gift exchange are observationally equivalent: wage premiums induce more effort but through two different mechanisms, which are threat of dismissal or reciprocity. Because $-\psi_1$ and $-\alpha$ cannot be separately identified we combine them into $\beta_3 = -\psi_1 - \alpha$.

4.4 Estimation equation

Thus we can simplify equation (11) above to:

$$s = \beta_0 + \beta_1 T + \beta_2 w + \beta_3(w - \bar{w}) + \delta_1 + \gamma_1' x_1 + \gamma_2' x_2 + \Gamma_3' x_3 \tag{12}$$

where T is tenure status; w is the wage and its coefficient (η_1, which was renamed as β_2 for simplicity) can be positive or negative; $w - \bar{w}$ is the wage premium, where $\beta_3 = -\alpha - \psi_1$, as noted; $\delta_1 = ln(\frac{\delta}{1-\delta})$ captures the time-invariant unobserved discount rate for the worker; x_1 are all other factors, beyond tenure, that can influence the probability that the worker is fired; x_2 are all the other factors, beyond shirking and tenure, that affect the probability that the worker finds a job at the average-wage firm if dismissed from the wage-premium firm; and x_3 are all other factors, beyond the current wage, wage premium and wage premium at hiring, that can affect the workers' marginal utility from shirking, where $\Gamma_3 = \psi_3 - \gamma_3$.

We decompose x_1 into time-invariant and time-varying factors. First, x_1 includes a unobserved time-invariant location-specific characteristics ($\phi_{1,1}$), such as profitability of a specific hotel or travel agency branch, as well as worker-specific traits characteristics, such as worker's propensity to be sick and his match with the firm ($\phi_{1,2}$) that may affect the probability that he is dismissed. Because $\phi_{1,1}$ an $\phi_{1,2}$ cannot be separately identified from the unobservable and time-invariant worker discount rate δ_1, these three factors are captured by a worker fixed effect ζ_i.

Second, x_1 includes the observed time-varying natural log of the worker's experience at

the firm (natural log of the time since he has been hired), which captures workers' potential career concerns resulting in decline in effort over time, which could be independent of tenure. Namely, that at the beginning of the employment relationship any signal about the worker's propensity to shirk carries more weight given that the employer is learning about the worker, than a signal later on, when the employer has learned much already about the worker. As a result, workers have an incentive, independently of tenure, to not shirk at be beginning of the employment relationship, as this carries a higher risk of being fired, but rather increase shirking over time. Thus this propensity to shirk is increasing over time, but is increasing at a decreasing rate.

We next decompose x_2 into unobserved year (ζ_y) effects as well as other unobserved idiosyncratic factors (ϵ_1). These effects capture an business cycle factors that could influence the worker's probability of finding another job, such as the unemployment rate.

Last, we decompose x_3 into unobserved quarter effects (ζ_q) as well as other unobserved idiosyncratic factors (ϵ_2). The unobserved quarter effects capture the idea that in some quarters there may be a higher propensity for workers to be sick (e.g., winter quarters) while in others there may be higher marginal utility from shirking because the weather is better (e.g., in the summer quarter of June, July and August).

Thus the final estimation equation becomes, by adding full subscripts for worker, time and location:

$$s_{i,t,l} = \beta_0 + \beta_1 T_{i,t,l} + \beta_2 w_{i,t,l} + \beta_3 (w_{i,t,l} - \bar{w}_{i,t,l}) + \beta_4 \ln(\text{months at firm})_{i,t,l} + \zeta_i + \zeta_y + \zeta_q + \epsilon_{i,t,l} \tag{13}$$

where $i = 1, ..., N$ indexes each worker; $t = 1, ..., T$, the year and month; $l = 1, ..., L$ the worker's location and $\epsilon_{i,t,l}$ aggregates both $\epsilon_{1i,t,l}$, $\epsilon_{2,i,t,l}$.

5 Estimation Results

5.1 Pooled Analysis Ordinary Least Squares and Two-Stage Least Squares

This section estimates the parameters in equation (13), in particular β_1, which identifies the increase shirking pre- and post-tenure. We first identify these parameters using ordinary least squares pooling the data from the two firms to have more power and gather more precise estimates. Later we describe the potential sources of endogeneity, our instrumental variables estimation, and that the instrumental variables estimates do not change substantially relative

to the OLS ones.

Table 7 shows the regression results for the window encompassing all the months pre-tenure announcement until eight months post-tenure announcement (six months after actual tenure). We focus on this narrow post-tenure window so that changes in absences are most likely due to tenure and not other factors, such as different wages, wage premiums, peers etc. Recall that tenure is announced two months before actual tenure and as result absences start increasing slightly at this stage, though they are substantially higher after the tenure contract is signed and the worker receives employment protection.

Before discussing these results in more detail we note the main result: average absences increase by 0.3 days post-tenure announcement relative to the whole period pre-tenure announcement. This effect is robust at either the 1% and 5% levels across specifications. These data are consistent a shirking deterrence model: employees shirk more once firing costs increase. Column (1) shows that average absences in the period between the tenure announcement and six months after tenure increase by 0.33 days per month relative to the whole period pre-tenure announcement (which averages more than one year for either firm) and this result is statistically significant at the 1% level. The standard errors in this analysis and all those that follow are clustered by individual to address the fact that absences could be serially correlated within individual (Bertrand et al. (2004)).

Column (2) controls for the unobserved worker heterogeneity: perhaps the above increase in absences is driven by unobserved time-invariant worker propensities to sickness and/or worker discount rates, which affect leaves pre- and post-tenure. Adding worker fixed effect reduces the effect of tenure on shirking from 0.330 to 0.311 days per month, an estimate that is still statistically significant at the 1% level. Thus unobserved worker heterogeneity does not play a major role in explaining the effect of tenure on absences. Nonetheless, to be conservative we include worker fixed effects in the remaining regressions. Notice that performing the analysis within worker is a more conservative level of analysis that performing the analysis within firm or within firm and location to control for unobserved, time-invariant firm or firm-location factors that could affect a worker's shirking pre- and post- tenure announcement.

Column (3) controls for the wage the worker receives to address the fact that increases in shirking post-tenure announcement could be due, to some extent, to changes in wages depending on whether income effects dominate over substitution effects. Though we minimize the effect of wage changes on shirking post-tenure announcement by picking a narrow win-

dow post-tenure announcement (so that the main factor affecting shirking should be tenure) it could be that wages nonetheless change in this window. For example, if the firm increases wages post-tenure announcement, these may lead workers to consume more leisure because they have higher income. However, the opportunity cost of not coming to work (thus substituting leisure for work) is also higher: for example, sick leaves are only subsidized by 65% by Social Security and thus the worker loses 35% of his wage if he is absent. If income effects dominate over substitution effects, the increase in shirking post-tenure announcement could be due to higher wages and not due to the tenure itself.

Adding the wage does not change the tenure estimate, however: it remains almost the same, increasing slightly to 0.334 days per month (p-value of 0.013). This suggests that the increase in absenteeism post-tenure announcement in not driven by changes in wages. Further, holding constant tenure status, variation in wages within worker, do not appear to affect his consumption of leisure—the coefficient on the wage is negative but not statistically significant (p-value of 0.427)—suggesting that perhaps income and substitution effects cancel each other.

Column (4) adds the wage premium to deal with the fact that increase in shirking post-tenure announcement could also be due, to some extent, to changes in the wage premiums around the tenure date: e.g., the wage premiums post-tenure announcement could be smaller inducing higher shirking because the opportunity cost of being fired declines (under shirking deterrence) or a smaller wage premium elicits lower reciprocity (under gift exchange). Adding the wage premium, however, leaves the coefficient on tenure essentially the same—it decreases slightly to 0.328 (p-value of 0.02)—suggesting the increase in absences is not due to a reduction in wage premiums post-tenure announcement. Further, holding constant tenure status and the worker's wage, variation in wages premiums, within worker, do not appear to affect the worker's propensity to shirk: the estimate on the wage premium is slightly negative but statistically insignificant (p-value of 0.667).

Column (5) adds quarter dummies to address that the increase in shirking post-tenure announcement could be due to seasonality (e.g., tenure announcements occurring during winter quarters of January through March) when workers have higher propensity to be sick or in the summer quarters when there is perhaps higher marginal utility from shirking. Thus the increase in shirking could be due to timing of tenure (in quarters when workers have higher propensity to be sick) than to tenure itself. Including quarter dummies does not change the estimates by much: the estimate on tenure increases slightly to 0.349, a

statistically significant estimate at the 1.5% level.

Column (6) adds year dummies to address the fact that the increase in shirking post-tenure announcement could be due to unobserved changes in the business cycle. For example, the post-tenure window could coincide with declines in the unemployment rate inducing workers to shirk as it is easier to find a job if fired. Year dummies indeed reduce the effect of tenure on shirking slightly to 0.335 days, which is statistically significant at the 1.2% level.

Column (7) adds the log of months since hiring to to address the fact that increases in shirking post-tenure announcement could be driven to not extent, not by tenure but by career concerns. Adding this variable reduces the slightly to 0.301, and still statistically significant at the 1.2% level.

Instrumental Variables. All the estimates we obtained above could be biased, however, by (i) the potential simultaneity in wages and shirking, (ii) error in the measurement wages, and (iii) error in the measurement of shirking. First, the firm may endogenously set wages for each worker to minimize shirking. Thus, that there could be simultaneity in shirking and wages biasing the estimates on *all* variables, including the one on tenure. Though both our firms are constrained by a collective bargaining agreements to pay similar wages to workers in the same professional category, it is possible (though unlikely) that firms are not adhering to this covenant.

Second, it could be that wages are measured with error. Though we observe each worker's wage, it could be that there are other portions of compensation (such as unobserved subsidies, tips etc.) that are unobserved and correlated with the worker's observable wage : perhaps the firm sets unobservable parts of compensation optimally to minimize shirking. Thus, once again shirking and the unobserved portion of the wage would be jointly determined per worker, biasing not only the estimates on the wage but also all other estimates. Notice that if this measurement error in the wage is not correlated with the wage itself, there is no bias in our estimates: they are merely less precise than they should be.

Third, it could be that leaves are an imperfect measure of shirking and that the deviation between true leaves and shirking leaves for each worker could be correlated with that worker's wages. For example, workers earning higher wages, such as hotel managers, may have almost no deviations between true leaves and shirking leaves (they only take leave for legitimate reasons) but workers earning lower wages could have higher deviations from true leaves. Measurement error in shirking if correlated with wages would bias all the estimates including those for tenure.

The instrument. To address the potential bias in the estimates arising from the three issues above, we instrument each worker's individual wage in a given year with the minimum wage negotiated with the union for that year for workers in the same professional category (e.g., we instrument the yearly wage for a worker who is Barman First class at our hotel chain with the minimum wage for Barmen First Class stipulated in the collective bargaining agreement for that year). First, the minimum wage per professional category laid out in the collective bargaining agreements is highly correlated with each worker's wage, as we document below. This is also in keeping with Portuguese firms often using the collective bargaining agreement wage as a reference when setting their wages. However, this minimum wage, which is set for all workers in a professional category is plausibly uncorrelated with each individual worker's propensity to shirk, each individual's worker unobserved compensation, and each individual worker deviations between true and shirking leaves.

Column (8) shows that the tenure coefficient does not change substantially with instrumental variables—it increases slightly to 0.336 and is statistically significant at the 1.1% level—whereas the remainder variables are still statistically insignificant.

Column (9) shows the results of the first stage regression in equation (15) below testing whether the minimum wage negotiated per professional category with the unions is a strong instrument for the wage of an individual workers at our firms. Testing whether this instrument is strong—that it is highly correlated with an individual worker's wage—is important as weak instruments can bias the instrumental variables estimates. Because this test is more transparent if we have only one endogenous variable, we first notice that our estimating equation can be written as:

$$s_{i,t,l} = \beta_0 + \beta_1 T_{i,t,l} + \theta_2 w_{i,t,l} + \beta_3(-\bar{w}_{i,t,l}) + \beta_4 \ln(\text{months at firm})_{i,t,l} + \zeta_i + \zeta_y + \zeta_q + \epsilon_{i,t,l} \quad (14)$$

because $\beta_2 w_{i,t,l} + \beta_3(w_{i,t,l} - \bar{w}_{i,t,l})$ can be written as $(\beta_2 + \beta_3)w_{i,t,l} + \beta_3(-\bar{w}_{i,t,l})$ where $\theta = \beta_2 + \beta_3$. Thus instead of having two endogenous variables (the wage and wage premium) we now only have one: the wage. We thus run the following first stage:

$$w_{i,t,l} = \pi_0 + \pi_1 T_{i,t,l} + \pi_2 \text{union minimum wage}_{i,t,l} + \pi_3(-\bar{w}_{i,t,l}) + \pi_4 \ln(\text{months at firm})_{i,t,l} + \pi_i + \pi_y + \pi_q + \varepsilon_{i,t,l} \quad (15)$$

The minimum wage agreed with the unions for a given professional category and year is

highly correlated with the wage a worker at our firms earns: an increase in the minimum wage negotiated with the unions by one euro increases the worker's wage by 0.65 euros. Further, the F-statistic for this instrument (which is also the square of the t-statistic for the coefficient on the union minimum wage) is 29.49 suggesting that the instrument is highly correlated with the wage.

The fact that the instrumental variable estimates are similar to the OLS ones is consistent with the information that our firms are limited in the amount of discretion they can use in paying individual workers within professional category. Thus it is difficult for them to set wages individually for each worker in order to attain the optimal level of shirking for each worker. Also, it suggests that any unobserved compensation that the firm may be paying to workers is either uncorrelated with the observed wage or with shirking (or both) and thus that systematic measurement error in wages is not biasing the estimates. Last, any deviations between true leaves and shirking leaves appear uncorrelated with the wage.

6 Robustness checks: effect on maternity/paternity leave

One might worry that the increase in non maternity/paternity absences post-tenure can partially due to workers having children during the employment spell, which could make them more vulnerable to diseases post-tenure. Appendix Table A.1 re-runs the analysis above on the subsample of workers who did not have any children during the employment spell (83% of hotel and 70% of travel agency workers). These 170 workers never took any maternity or paternity leave days during the sample period, which are mandatory if a worker has a child. Columns (1) through (8), show that the results for this subsample of workers are similar to but slightly stronger than those for the whole sample: ranging from 0.33-0.36 in the 8 months post-tenure announcement. Thus, potential child-related diseases is not what is driving the sharp increase in absences until six months post-tenure as we had noted in the discussion of the summary statistics.

Also one might also worry that the increase in absences may not hold over time. Appendix Table A.2, columns (1) through (8), show that the increase in absences post-tenure holds in the 14 months post-tenure announcement (12 months post-actual tenure) at 0.22-0.25 days per month (statistically significant at the 1% and 5% levels) reflecting the slight decline in absences after the sharp increase up to six months post-tenure. As Appendix Table A.3, columns (1) through (8) document that the increase is slightly higher at 0.26-0.29 days per month (statistically significant at either the 1% or 5% levels) if we re-run this analysis on the sample of 170 workers who did not have children during the employment spell.

7 Are These Wage Premiums Efficient? Absenteeism Reductions and Schooling

We now assess the extent to which these wages is efficient for firms, despite strong employment protections, which result in more shirking post-tenure. We document that workers two wage-premium firms have fewer absences post-tenure (the most conservative absences measure) and more schooling that same-professional-category-gender workers earning average wages. This is true not only on average but across all job levels.

A comparison of paid absences—absences that where the firm needs to pay the worker his wages as these absences are not covered by Social Security or insurance—-between workers at the two wage premium firms and workers paid market wages shows that paid absences are lower by 0.25 and 0.24 days per month for hotels and travel agencies, respectively. If the wage premiums induce a reduction of shirking, the reduction in paid absences repays the wage premiums by 3-5% in hotels and 11-17% in travel agencies.

A comparison of years of schooling between workers at the two wage premium firms and workers paid market wages, show that workers at the two wage-premium firms have 1.2 more years of schooling than workers earning average wages. The productivity returns from hiring workers with more schooling appear to repay 27% of the wage premium for hotels and 81% of the wage premium for travel agencies. Thus suggests a substantial portion of these wage premiums are paid via the hiring of workers with more schooling, who are more productive.

7.1 Hotel Firm Workers Absenteeism and Schooling comparison versus Hotel Market Wage Workers

Total, unpaid and paid absenteeism. There are two types of absenteeism: paid and unpaid absenteeism. Paid absenteeism are absences were the firm is required to pay the worker his wages while he is absent. Paid absenteeism comprises (i) the first three days of sick leave, wherein the firm is required to pay the worker his wage (any additional days of sick leave are covered by Social Security, by for example, 65% and the remainder comprise lost wages for the worker); (ii) funeral leaves, (iii) part of work-accident leaves (usually 30% as typically insurance companies pay 70%) , (iv) leave for union activities, and (v) strikes, (vi) other leaves (e.g., to donate blood, for medical consultations, school examinations).

Unpaid absenteeism comprises all absences that are not paid by the firm: (i) for maternity and paternity leaves, which are fully funded by Social Security, (ii) sick leaves beyond three days, which are funded Social Security and the worker, (iii) family-assistance leaves, which

are also fully funded by Social Security, (iv) 70% of work-accidents leave (which are paid by an insurance company), and (v) disciplinary suspensions, and (vi) unpaid leave.

Total, unpaid and paid absenteeism for Portuguese comparison workers. The firm-workers annual Census data contains the monthly number of hours of unpaid absences for each worker.[21] Backing out total and paid absenteeism from these data requires a breakdown of unpaid and paid absenteeism for the hotel industry. We use a related database—Balanço Social—which breakdown paid and unpaid absenteeism by finely detailed industry codes. For the hotel industry, between 2004-2010, the 25% of total absences were paid by the firm and 75% of total absences were not paid by the firm.

Comparison of monthly absences between workers in wage premium hotels and market-rate workers. Table 8, column (1) documents the average total, paid and unpaid average monthly absences for workers in hotels during the whole employment spell after the tenure announcement: 1.21, 0.09 and 1.12, respectively. Because absences increase after the tenure announcement, average post-tenure absenteeism is higher and thus more conservative measure of absenteeism than average absenteeism during the whole employment spell, which would include absences pre-tenure which are lower. This measure is also higher, as thus more conservative, that average absences 8 months and 14 months post-tenure announcement (columns (2) and (3), respectively). Column (4) shows the average total, paid and unpaid absenteeism for all workers in Portugal who, in a given year, where in the same professional category and gender as that of the focal firm worker. Because we only observe monthly unpaid absences for comparison Portuguese workers, we compute their total absenteeism by dividing unpaid absenteeism by 0.75 and backing out paid absenteeism (paid absenteeism=total absenteeism-unpaid absenteeism). Though we assume that the 25% paid and 75% unpaid leave breakdown applies to each Portuguese comparison worker (which may not be true as each worker in a given year may have a different breakdown for total absenteeism) we assume that given the large number of workers in Portugal that we are using as a comparison to our workers, the law a large numbers applies and thus this breakdown is approximately true, on average.

Comparison of schooling between workers in wage premium hotels to market rate workers. Table 8 also shows that workers in the wage-premium hotels have 1.2 more year of schooling. Because differences in wages have to ultimately reflect differences in labor

[21] The census of workers and firms collects data on the working hours for each worker during the [October week] and the hours that the worker was absent and that the firm paid for it. The difference between (1) and (2) yields unpaid absenteeism.

productivity, we assess how much more productive is a labor force with 1.2 more years of schooling and see how much of the gain in productivity via schooling repays the wage premium.

Decomposition of how much of the wage premium is repaid by reduced absences and by attracting workers with better schooling. To decompose and bound the the returns from paying wage premiums, we use a typical efficiency-wages setup, but augmented for absences and schooling. Implicit in this framework is that firms have some monopsony power, and thus do not hire labor taking the wage as given, but rather can choose both the wage and the quantity of labor. We set the firm's monthly profit function as follows:

$$\pi_{month} = p * q(s(w), b(w))L - wL - \frac{w}{21}a(w)L \tag{16}$$

The first term is the monthly revenue, which depends on price (p), quantity (q(.)) and the number of workers (L). Quantity q depends on schooling (s), which in turns depends on the monthly wage (w). Output may depend on other factors (b) that depend on the monthly wage. For example, higher wages may reduce turnover (e.g.,Salop (1979), Stiglitz (1985)), thus reducing disruptions to the production function.

The second and third terms are monthly costs for the firm: the monthly wage bill wL and the monthly costs of paid absences, namely the daily wage $\frac{w}{21}$, multiplied by average days of paid absences per month ($a(w)$) multiplied by the the number of workers. The average days of paid absences per month is decreasing in the wage ($\frac{da(w)}{dw} < 0$).

Thus this profit function implies that if the worker is absent, the firm can find a perfect substitute for the worker and thus the only cost it has to bear is paying paying the same wage twice: the wage of the replacement worker and the wage of the worker who is absent (paid absenteeism). We relax this assumption of perfect workers substitutability below to obtain a finer calibration of magnitudes. However, it is worth pointing our that many hotel workers work in shifts and likely work is organized so workers can be transferred to another worker's position while he is absent (e.g., shift workers from different shift to the shift of the existing worker).

Solving for the optimal wage w and quantity of labor L, we obtain the first-order conditions:

$$\frac{d\pi}{dw} = 0 \Rightarrow p\Big(\frac{dq(.)}{ds(w)}\frac{ds(w)}{dw} + \frac{dq(.)}{db(w)}\frac{db(w)}{dw}\Big) = 1 + \frac{1}{21}\Big(a(w) + w\frac{da(w)}{dw}\Big) \tag{17}$$

$$\frac{d\pi}{dL} = 0 \Rightarrow p = \frac{w}{q(.)}(1 + \frac{a(w)}{21}) \tag{18}$$

Substituting for p of 18 in 17 and rearranging we obtain:

$$\frac{w}{q(s(w), b(w))}\Big(\frac{dq(.)}{ds(w)}\frac{ds(w)}{dw} + \frac{dq(.)}{db(w)}\frac{db(w)}{dw}\Big)\Big(1 + \frac{a(w)}{21}\Big) - \Big(\frac{a(w)}{21} + \frac{w}{21}\frac{da(w)}{dw}\Big) = 1$$

Which, by rearranging, we obtain

$$\Big(\underbrace{\frac{\frac{dq(.)}{q(.)}}{\frac{ds}{\frac{dw}{w}}} * d(s)}_{\text{returns from more educated workers}} + \underbrace{\frac{\frac{dq(.)}{q(.)}}{\frac{db}{\frac{dw}{w}}} * d(b)}_{\text{other returns}} \Big)\Big(1 + \frac{a(w)}{21}\Big) - \frac{1}{21}\Big(a(w) + \frac{da(w)}{\frac{dw}{w}}\Big) = 1 \tag{19}$$

This expression mirrors that of the typical efficiency wages condition in that the elasticity of the wage with respect to output is one.[22] This expression allows us to decompose the returns to the wage premium of hiring workers with more schooling and from having fewer paid absences and is quite intuitive.

The first term in brackets represents the returns from paying The first term in brackets represents how the % change in productivity with an increase in one year of schooling over the wage premium ($\frac{dw}{w}$), which is 30%. Because changes in wages have to reflect changes in the marginal product, all else equal, we can use the returns to schooling in the hotel industry is Portugal, which are 6.8% (Biagetti and Scicchitano (2009)) for $\frac{\frac{dq(.)}{q(.)}}{ds}$. Since our hotels employ workers with 1.2 more years of schooling, the first term becomes $\frac{6.8\%}{30\%} * 1.2 = 0.27$. This expression is very intuitive: an increase in 1.2 more years of schooling increases productivity 1.2*6.8% which corresponds to 0.27 of the wage premium of 30%.

[22] We can see this in the simplest setting for efficiency wages. Suppose profit $\pi = pq(w)L - wL$. Then the first order condition with respect to the wage: $\frac{d\pi}{dw} = 0 \Rightarrow p\frac{dq}{dw} = 1$ and the first order condition with respect to labor is $\frac{d\pi}{dL} = 0 \Rightarrow pq(q) = w$, where this later expression is the standard equality between wages and the value of the marginal product of labor. Plugging the second expression into the first results in the standard efficiency wages condition: $\frac{w}{q(w)}\frac{dq(w)}{dw} = 1 \Rightarrow \frac{\frac{dq(w)}{q(w)}}{\frac{dw}{w}} = 1$, where the elasticity of output with respect to the wage is one.

The second term in brackets represents any additional unmeasured benefits of paying higher wages, which we do not observe in our data (e.g., reducing turnover etc.).

The term $(1+\frac{a(w)}{21})$ takes into account the fact that the wage reflects not only the value of the marginal product of labor, but also paid absences. Since $a(w)$, the average paid absences per month for workers paid market rates it is 0.34, this term is negligible: $1 + \frac{0.34}{21} = 1.02$.

The last term $-\frac{1}{21}(a(w) + w\frac{da(w)}{dw})$ represents the returns from paying the premiums, via reductions in paid absences. The intuition behind this expression is simple. If the firm pays market wages, it obtains absences of $a(w) = 0.34$ days per month. If the firms increases the wage by 30% is reduces its absences by 0.25 days per month (0.09-0.34). Thus, the returns to paying wage premiums from reduced paid absences are $-\frac{1}{21}(0.34 + \frac{-0.25}{0.30}) = 0.02$. These returns are small considering that monthly absences only 0.34 days per month and the reduction is by 0.25 days per month. Thus, even though the wage premium manages to reduce absence versus the market by 73% (0.25/0.34), in monetary terms, these returns only repay 2% of the total premium.

Decomposition relaxing the assumption of perfect worker substitutability. We now relax the assumption that when a worker misses work the firm has a perfect substitute. Thus the firm can thus experience output losses due to absenteeism. The modified profit function:

$$\pi_{month} = p * q(s(w), b(w))L(21 - N(w)) - wL - \frac{w}{21}a(w)L \tag{20}$$

This expression differs from 16 that q is now the daily, instead of monthly output and $(21 - N(w))$ represents the total amount of days worked per worker, where $N(w)$ represents the number of days the worker is a no-show $(N(w))$, which depends on the wage. $N(w)$ is thus going to be the sum of paid and unpaid absences.

Solving the first order condition, we obtain a similar expression to 19, with one difference:[23]

[23]For the full derivation, see the appendix

$$\Big(\underbrace{\frac{\frac{dq(.)}{q(.)}}{\frac{dw}{w}} * d(s)}_{\text{returns from more educated workers}} + \underbrace{\frac{\frac{dq(.)}{q(.)}}{\frac{dw}{w}} * d(b)}_{\text{other returns}} - \underbrace{\frac{\frac{dN(w)}{21-N(w)}}{\frac{dw}{w}}}_{\text{returns from reduced output losses}} \Big)\Big(1 + \frac{a(w)}{21}\Big) - \frac{1}{21}\Big(a(w) + \frac{da(w)}{\frac{dw}{w}}\Big) = 1 \tag{21}$$

We now have term that takes into account losses in days worked due to the wage premium ($\frac{\frac{dN(w)}{21-N(w)}}{\frac{dw}{w}}$). Since the average of the sum of paid and unpaid absences are 1.38 days per month for market wage workers ($N(w) = 1.38$), and the reduction in total absences is by 0.17 ($N(w) = 0.17$), the returns to the wage premium from reducing total absences are: $-\frac{\frac{-0.17}{21-1.38}}{0.3} = 3\%$ Reductions in output losses repay only 3% of the wage premium since the reduction in total absences versus the market 0.17 days per month.

Thus these estimates suggest that most of the return to paying higher wages versus market rates, appears to arise more from the ability of the firms to hire better workers than in reductions in absences. Namely, though absences are lower than those in the market, and substantial amount, this differential nonetheless only repays 2%-5% of the premium. However, schooling is 1.2 higher than for similar professional category-gender-year workers, and this differential repays for 27% of the wage premium.

7.2 Travel Agencies Firm Workers Absenteeism and Schooling comparison versus Hotel Market Wage Workers

Comparison of monthly absences and schooling between workers in wage premium travel agency and market-rate workers. Table 9 indicates that workers in the wage premium travel agency have fewer absences—1.10 days per month versus 1.40 for workers earning market rates—and fewer paid absences—0.11 days per month versus 0.35 for market rate workers (columns (1) and (4)). Travel agency workers also have 1.2 more year of schooling than workers earning market rates: they have 13.53 years of schooling compared to 12.33 years of schooling market rate workers. Further, the returns to schooling in the Transportation and Communication Industry in Portugal is also 6.8% (Biagetti and Scicchitano (2009)).

Using the results of the these tables in the expression 19 we arrive at the following decomposition:

$$\Big(\underbrace{\frac{6.8\%}{10\%} * 1.2}_{\text{returns from more educated workers}} + \underbrace{\frac{\frac{dq(.)}{q(.)}}{\frac{db}{\frac{dw}{w}}} * d(b)}_{\text{other returns}} - \underbrace{\frac{\frac{-0.3}{21-1.4}}{10\%}}_{\text{returns from reduced output losses}} \Big)\Big(1 + \frac{0.35}{21}\Big) - \frac{1}{21}\Big(0.35 + \frac{-0.24}{10\%}\Big) = 1 \tag{22}$$

In the case of travel agencies, the productivity gains from having a labor force with more schooling—the first term in the equation above—are $\frac{6.8\%}{10\%} * 1.2 = 0.82$. multiplied by the term $1 + \frac{0.35}{21} = 1.016$, which yields an estimate of 0.83. The returns from reducing paid absences (the last term) are $\frac{1}{21}\Big(0.35 + \frac{-0.24}{10\%}\Big) = 0.09$. Thus, schooling and reduction in paid absence pay for 0.92 of the premium. In case the firm cannot find a perfect substitutes for absent workers, then the returns associated from reducing output losses $-\frac{\frac{-0.3}{21-1.4}}{10\%} = 0.15$. This latter term would have the right hand side be larger than 1 at 1.07. However, as we discussed before, we believe these firms are able to find substitutes for absent workers so that they don't lose revenue (e.g. travel bookings), thus rendering this term much smaller or zero.

Nonetheless, the ability to attract workers with more schooling appears to repay for a substantial portion of the wage premium: 0.82.

8 Discussion and Conclusion

We have documented that absences increase substantially after tenure, and this increase starts two months before actual tenure, when tenure is announced: non maternity/paternity absences more than double for the hotel chain to 0.53 days per month and almost quadruple for travel agencies to 0.45 days per month in the eight months between tenure is announced and the six months post-actual tenure. The average increase across the two firms in this time period is 0.48 days per month. Further, absences increase across all types of absences (sick leaves, funeral leaves etc.) and generally across all job levels. The increase is absences post-tenure is maintained over time and not due to workers having children during the employment spell which could render them more vulnerable to diseases post-tenure.

We view the increase in absences post-tenure as a lower bound. As with other Portuguese firms, our firms use the above-mentioned long probation periods to screen workers. Firms know employees will have stronger incentives to shirk post-tenure as the firing costs increase. We assume they also know they face heterogeneous workers in for, example, dis-

count rates, marginal utility for leisure, and taste for reciprocity, which affects employees' marginal propensity to shirk. Firms, however, do not know each worker's type. They thus optimally use the legally-allowed long probation period to solve this information asymmetry, presumably to gather a fairly precise estimate of the type of worker at the time of tenure. Part of the reason for the long probation periods allowed by Portuguese law is the idea that "bad" types cannot sustain mimicking "good" types for the whole probation period. Therefore, our results arise in a sample of tenured workers, after the firm has presumably weeded out those workers more likely to substantially increase shirking post-tenure.

Our results are more consistent with shirking deterrence than with gift exchange: though absences over the fairly long probation period are low, these absences increase sharply when firing costs increase and are detectable immediately in the period six months post-tenure. These results do not rule out gift exchange, however: it could be that gift exchange could be depressing absences before and after tenure as workers reciprocate the higher wage during the employment spell. Thus the level of absences could have been even worse in the absence of gift exchange. Or that, though absences increase steeply and in the short period immediately after the worker attains higher job security, workers compensate the firms by working harder on other job dimensions we cannot observe.

We also find that the wage premium, all else constant, does not affect shirking: shirking in a given month and in a given year by a given worker is not correlated with the wage premium that the worker is enjoying that year. This finding can be reconciled with that in Cappelli and Chauvin (1991), who find that higher wage premiums induce more effort (measured by fewer disciplinary suspensions) by noting that our wage premiums *within worker* vary little: by an average of 3% from year to year (if a worker is enjoying a 30% wage premium in one year, he can experience, on average, a wage premium of 1.33 or 1.26 in the following year). Thus, in our worker-fixed-effects estimation, the wage premiums may not vary enough in order to find a more precise partial correlation between the absences for a worker in a given year-month and the wage premium for that year.[24]

Despite the increase in absences post-tenure these wage premiums to generate returns via reduced absences: average absences post-tenure are still smaller at these firms than average absences for similar workers paid average wages. From the perspective of a shirking deterrence model this can be explained by the fact that though the probability that the

[24]If we remove worker fixed effects the estimates on the wage premium become more precise, though still not statistically significant.

worker is fired declines substantially after tenure as firing costs increase, it is still non-negligible (7% and 33% of separations in Portugal are firings by the firm or by "mutual agreement" between the worker and firm, respectively) and thus the wage premium may be high enough to deter shirking even when probability of dismissal declines post-tenure. Or, the wage premium triggers gift exchange inducing workers to shirk both less pre- and post-tenure leading to fewer average absences that those in the industry.

Another potential return from paying these wages, is hiring better workers: consistent with selection of better workers theories of efficiency wages (Weiss (1980)), we find that our premiums firms are able to hire more educated workers. The returns from hiring more educated workers appear to pay for a substantial portion of the premiums: about 27% for the hotels and about 81% for the travel agencies.

An interesting question is why firms tenure workers earlier than the typical three years allowed by law given that shirking invariably increases post-tenure, though reaching lower levels that those in the industry. As noted, one reason is that firms can offer a sequence of at most three same-length revolving probation contracts before tenuring workers. Given that it is difficult to dismiss workers during one these revolving contracts, firms dismiss workers during probation by waiting until the end of one of the revolving contracts and not renewing it. Thus the hotel chain, for example, tends to offer a sequence of three seven-month revolving contracts to balance learning about the worker against not having to wait many months to dismiss the worker of he is not a good match. This learning is not perfect, however, resulting in the observed increase level of absences post-tenure. But it is not too imperfect either: 34% and 33% of workers in the hotel chain and travel agency, respectively, never take any leaves, either before or after tenure, despite the long sample period (seven years for the hotel chain and ten years for the travel agency).[25] But other motivations could exist for tenuring workers earlier: for example, the worker may be only willing to undertake firm-specific human capital investments if he is tenured. In this case, the firm may be willing to tolerate the risk of some post-tenure shirking in exchange for these investments.

We find that workers at the two wage-premium firms increase their absences sharply immediately after tenure, a finding more consistent with shirking deterrence. Nonetheless, workers still have fewer absences post-tenure than similar workers earning average wages.

[25]The finding that a substantial fraction of screened workers impervious to changes in incentives (in our case, tenure) is in keeping with Nagin et al. (2002) who find that a substantial proportion of workers do not respond to changes in monitoring rates and with Ichino and Riphahn (2005) who find that 42% of workers do not respond to job protection incentives.

They also have higher levels of schooling, lending support to selection theories of efficiency wages. Fewer paid absences and employees with more schooling are two avenues through which firms appear to recover the cost of wage premiums; hiinge workers with more schooling, which are thus more productive, appears to be one of the most substantial returns to paying these wages. Other avenues through which firms may recover these premiums are areas for future research.

References

Akerlof, G. (1982): "Labor Contracts as Partial Gift Exchange," *The Quarterly Journal of Economics*, 543–569.

Bertrand, M., E. Duflo, and S. Mullainathan (2004): "How Much Should We Trust Differences-In-Differences Estimates?" *Quarterly Journal of Economics*, 119, 249–275.

Biagetti, M. and S. Scicchitano (2009): "Inter-industry Wage Premia in Portugal: Evidence from EU-SILC Data," *Economics Bulletin*, 31, 93–99.

Cappelli, P. and K. Chauvin (1991): "An Interplant Test of the Efficiency Wage Hypothesis," *The Quarterly Journal of Economics*, 106, 769–787.

Esteves-Sorenson (2015): "Gift Exchange in the Workplace: Addressing the Conflicting Evidence with a Careful Test," *Working Paper*.

Gibbons, R. and M. Waldman (1999): "Careers in Organizations: Theory and Evidence," *in "Handbook of Labor Economics." eds: Ashenfelter, O. and Card, David. (Elsevier)*, 3.

Ichino, A. and G. Maggi (2000): "Work Environment and Individual Background: Explaining Regional Shirking Differentials in a Large Italian Firm," *Quarterly Journal of Economics*, 115, 1057–1090.

Ichino, A. and R. Riphahn (2005): "The Effect of Employment Protection on Worker Effort: Absenteeism During and After Probation," *Journal of the European Economic Association*, 3, 120–143.

Katz, L. (1986): "Efficiency Wage Theories: A Partial Evaluation," *NBER Macroeconomics Annual*, 1, 235–276.

Nagin, D. S., J. Rebitzer, S. Sanders, and L. Taylor (2002): "Monitoring, Motivation, and Management: The Determinants of Opportunistic Behavior in a Field Experiment," *The American Economic Review*, 92, 850–873.

Pauly, M. V., S. Nicholson, J. Xu, D. Polsky, P. Danzon, J. Murray, and M. L. Berger (2002): "A General Model of the Impact of Absenteeism on Employers and Employees," *Health Economics*, 11, 221–231.

Salop, S. (1979): "A Model of the Natural Rate of Unemployment," *The American Economic Review*, 69, 117–125.

Shapiro, C. and J. Stiglitz (1984): "Equilibrium Unemployment as a Worker Discipline Device," *The American Economic Review*, 74, 433–444.

Stiglitz, J. (1985): "Equilibrium Wage Distributions," *Economic Journal*, 95, 595–618.

Weiss, A. (1980): "Job Queues and Layoffs in Labor Markets with Flexible Wages," *Journal of Political Economy*, 88, 526–538.

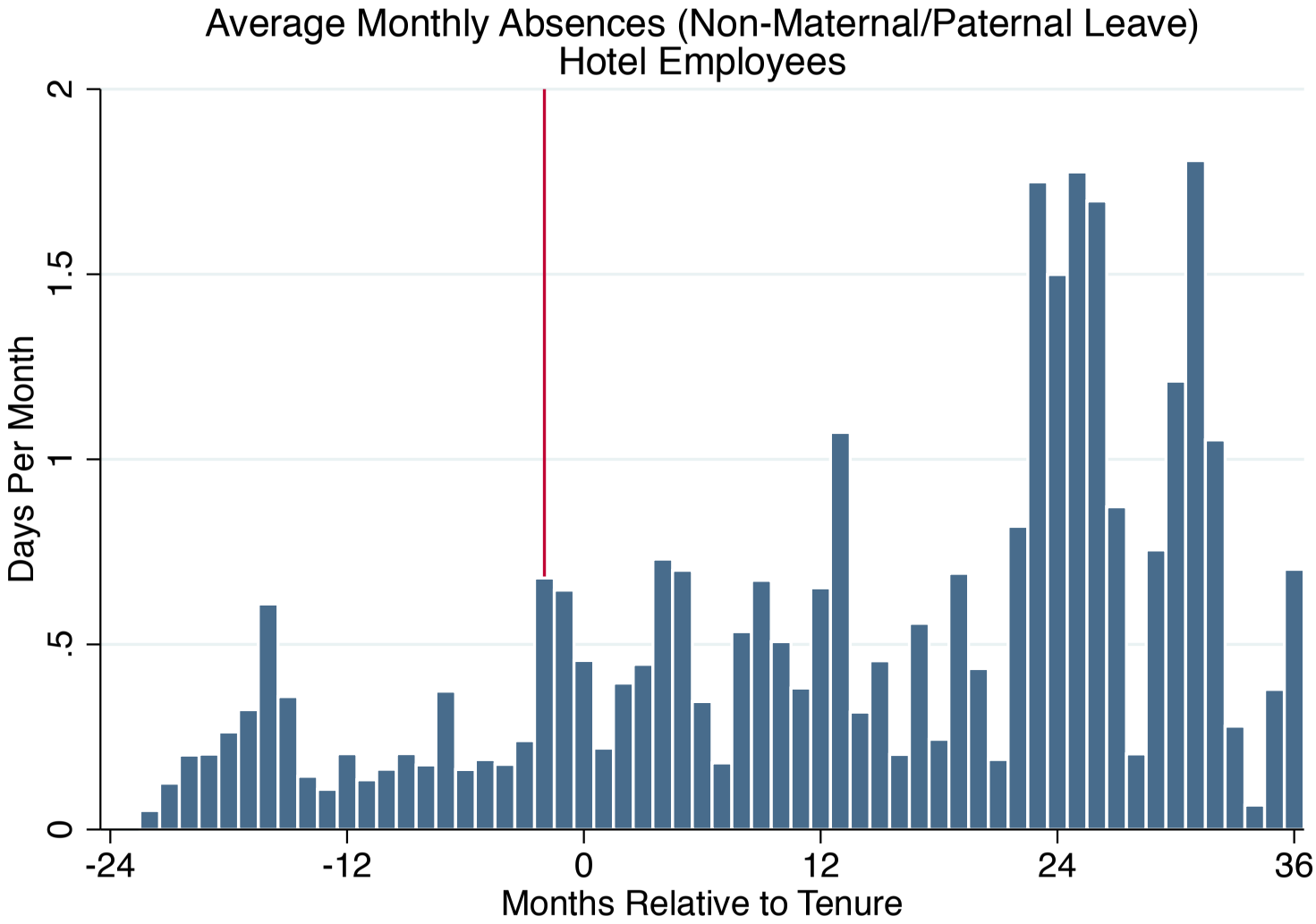

Figure 1: Average Monthly Absences (Non-Maternal/Paternal Leave), Hotels

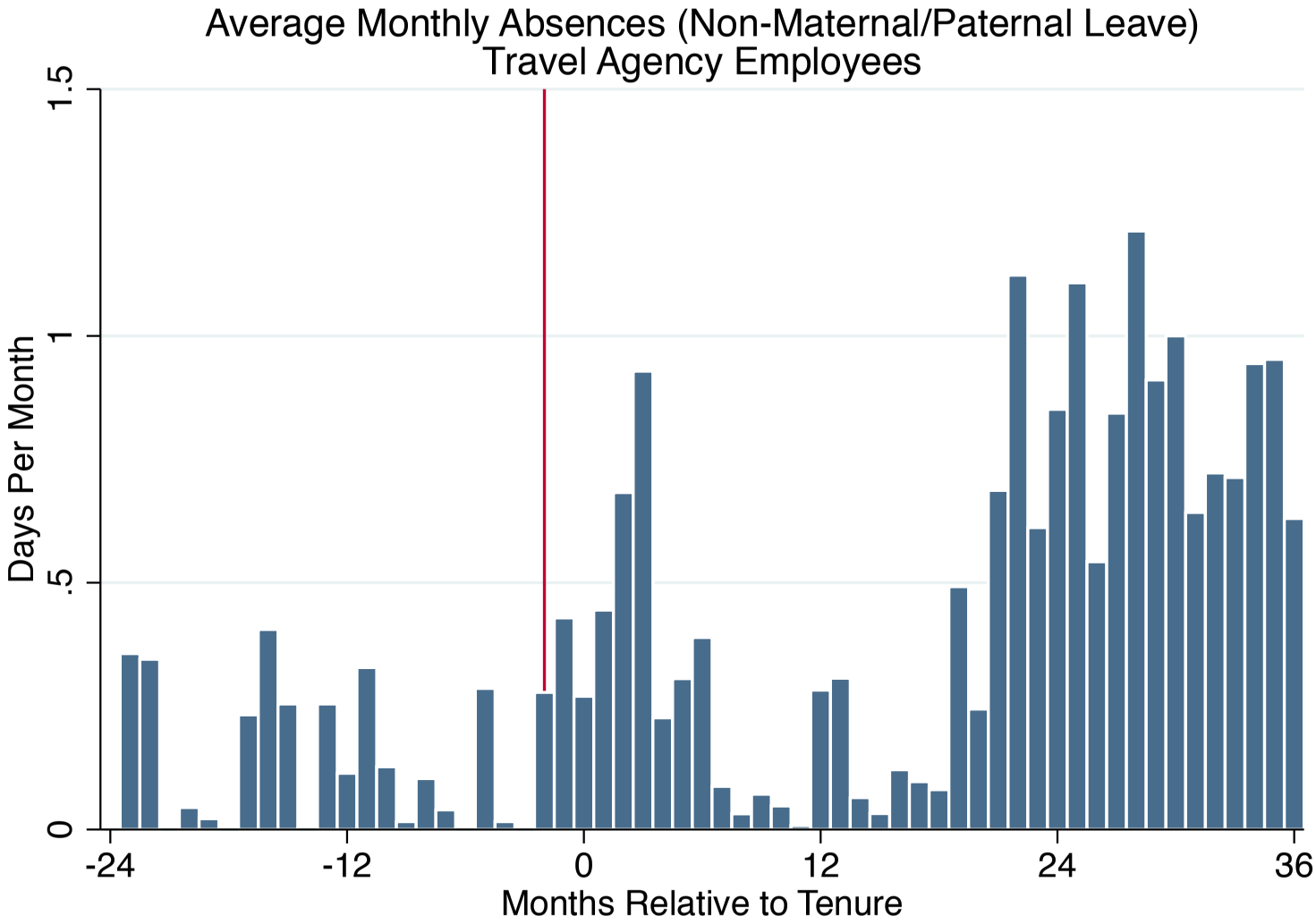

Figure 2: Average Monthly Absences (Non-Maternal/Paternal Leave), Travel Agencies

A Appendix Tables

Table 1: Average Employee Characteristics, Wages, and Annual Absences For Hotel Employees

	Mean	Std. Dev.	Min.	Max.
Age at tenure	30.5	(7.84)	21	61
Female	0.46	(0.50)	0	1
Years of education[1]	10.9	(3.78)	0	17
Employment duration (months)	50.2	(22.0)	12	89
Months worked before tenure	17.8	(9.02)	3	63
Months worked after tenure	32.4	(19.9)	2	76
Monthly wage at tenure	827.0	(286.1)	495.2	2255
Monthly market wage at tenure	636.4	(233.5)	420.3	2161.5
Monthly union minimum wage at tenure[2]	552.5	(122.3)	336	1013
Absences per 12-month period (all absence types)[3]	11.405	(19.388)	0	109
Maternity/paternity leave	5.015	(14.964)	0	76.14
All absences excluding maternity leave	6.390	(13.761)	0	109
Sick leave	4.229	(12.298)	0	101
Work-accident leave	1.020	(4.018)	0	31.67
Unpaid leave	0.575	(1.278)	0	8
Disciplinary suspensions	0.227	(1.259)	0	9
Family assistance leave	0.133	(0.532)	0	4.154
Funeral leave	0.030	(0.154)	0	1.091
Leave for union activities	0.009	(0.086)	0	0.857
Strike	0.007	(0.040)	0	0.312
Other leaves	0.406	(1.899)	0	18
Number of employees		99		
Number of monthly observations		4,970		

Notes: [1]Years of education have a minimum of zero because of one employee who could not read or write.
[2]Monthly union minimum wage: minimum wage for employees in the same professional category (job level) as employees in the firm, resulting from the industry-wide collective agreement.
[3]Average absences are calculated per 12-month period for each employee during his/her entire employment spell.

Table 2: Job Titles and Levels at Tenure, Hotel Employees

	Job Level	Frequency
Kitchen Helper	3	1
Hotel Apprentice	3	1
Reception Apprentice	3	1
Maintenance Apprentice	3	1
Waiter Intern	4	1
Bellboy	5	3
Kitchen Maid	6	4
Cleaner	6	4
Clerk Intern	6	1
Washer	6	2
Barman 2nd Class	8	1
Cook 3rd Class	8	5
Room Maid	8	9
Waiter 2nd Class	8	16
Receptionist 2nd Class	8	11
Sub-Housekeeper	8	2
Footman	8	2
Barman 1st Class	9	1
Cook 2nd Class	9	2
Waiter 1st Class	9	1
Concierge 1st Class	9	1
Receptionist 1st Class	9	8
Junior Sales Promoter	9	1
Clerk 1st Class	10	1
Main Clerk	10	1
Housekeeper	10A	1
Secretary	10A	1
Cook 1st Class	11	2
Marketing Assistant	11	1
Operations Assistant	11	2
Maintenance Assistant	11	1
Banquets Coordinator	11	1
Food and Beverages Coordinator	11	1
Quality, Environment, and Security Technician	11	1
Communications Technician	11	1
Sous-Chef	12	1
Accounting Clerk	12	1
Civil Engineer	12	1
Chef	13	2
Accommodation Director	13	1
Observations		99

Note: Job levels as defined in industry-wide collective agreement and in ascending order. Frequencies at time of tenure.

Table 3: Average Monthly Absences For All Sample Months Before Announcement Tenure and Eight Months After Tenure Announcement (Six Months Post-Tenure), by Tenure Status and Aggregated Job Level, Hotel Employees

	All JL		JL 3/4/5/6		JL 8		JL 9/10/10A/11		JL 12/13	
	(1) Before	(2) After	(3) Before	(4) After	(5) Before	(6) After	(7) Before	(8) After	(9) Before	(10) After
Absences per month (all absence types)	0.339	0.977	0.723	0.527	0.241	1.071	0.213	1.259	0.057	0.034
	(2.014)	(4.434)	(3.757)	(3.077)	(0.902)	(4.171)	(1.040)	(5.648)	(0.388)	(0.123)
Maternity/paternity leave	0.117	0.444	0.453	0	0.020	0.437	0.005	0.786	0	0
	(1.753)	(3.339)	(3.559)	(0)	(0.342)	(3.135)	(0.061)	(4.605)	(0)	(0)
All absences excluding maternity leave	0.222	0.534	0.270	0.527	0.221	0.635	0.209	0.473	0.057	0.034
	(1.014)	(2.998)	(1.301)	(3.077)	(0.835)	(2.850)	(1.033)	(3.382)	(0.388)	(0.123)
Sick leave	0.105	0.404	0.088	0.503	0.130	0.410	0.099	0.403	0	0
	(0.597)	(2.837)	(0.522)	(3.075)	(0.643)	(2.527)	(0.623)	(3.312)	(0)	(0)
Work-accident leave	0.064	0.046	0.154	0.009	0.041	0.099	0.035	0	0	0
	(0.753)	(0.698)	(1.173)	(0.078)	(0.364)	(1.035)	(0.767)	(0)	(0)	(0)
Unpaid leave	0.028	0.045	0.027	0.014	0.026	0.072	0.034	0.033	0	0
	(0.181)	(0.566)	(0.280)	(0.167)	(0.112)	(0.719)	(0.171)	(0.510)	(0)	(0)
Disciplinary suspensions	0.004	0	0	0	0.009	0	0	0	0	0
	(0.152)	(0)	(0)	(0)	(0.237)	(0)	(0)	(0)	(0)	(0)
Family assistance leave	0.005	0.011	0	0	0.003	0.025	0.012	0	0	0
	(0.101)	(0.321)	(0)	(0)	(0.056)	(0.478)	(0.169)	(0)	(0)	(0)
Funeral leave	0.001	0.006	0	0	0.003	0.014	0	0	0	0
	(0.051)	(0.178)	(0)	(0)	(0.079)	(0.265)	(0)	(0)	(0)	(0)
Leave for union activities	0	0	0	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Strike	0	0	0	0	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Other absences	0.015	0.020	0.001	0	0.009	0.014	0.028	0.038	0.057	0.034
	(0.188)	(0.340)	(0.018)	(0)	(0.199)	(0.265)	(0.204)	(0.514)	(0.388)	(0.123)
Number of employees	99	99	18	18	45	45	31	31	5	5
Number of monthly observations	1,560	785	369	144	639	355	491	246	61	40

Notes: Employee-month-level means and standard deviations (in parentheses) for monthly absences.
See Table 2 for job levels and corresponding professional categories.

Table 4: Average Employee Characteristics, Wages, and Annual Absences For Travel Agency Employees

	Mean	Std. Dev.	Min.	Max.
Age at tenure	30.8	(6.44)	22	59
Female	0.75	(0.44)	0	1
Years of education	13.5	(2.19)	9	16
Employment duration (months)	90.6	(24.2)	47	132
Months worked before tenure	25.9	(8.22)	10	49
Months worked after tenure	64.6	(26.2)	12	114
Monthly wage at tenure	793.5	(298.8)	367.6	2110
Monthly market wage at tenure	722.0	(225.8)	386.8	1810.6
Monthly union minimum wage at tenure[1]	546.3	(105.9)	334.2	837
Absences per 12-month period (all absence types)[2]	11.853	(16.878)	0	90
Maternity/paternity leave	7.295	(12.932)	0	57.15
All absences excluding maternity leave	4.557	(11.244)	0	90
Sick leave	3.925	(11.258)	0	90
Unpaid leave	0.084	(0.443)	0	3.750
Family assistance leave	0.254	(0.573)	0	3.818
Funeral leave	0.058	(0.183)	0	1.034
Other leaves	0.237	(0.700)	0	5.786
Number of employees		126		
Number of monthly observations		11,411		

Notes: [1]Monthly union wage: minimum wage for employees in the same professional category (job level) as employees in the firm, resulting from the industry-wide collective agreement.
[2]Average absences are calculated per 12-month period for each employee during his/her entire employment spell.

Table 5: Job Titles and Levels at Tenure, Travel Agency Employees

	Job Level	Frequency
Bellboy	L	3
Intern	J	16
Attendant	I	1
Aprentice to Administrative/Tourism Technician	I	15
Telephone Operator	I	1
Informatic Technician	I	1
Assistant	H	6
Administrative Technician, 3rd Class	G	7
Tourism Technician, 3rd Class	G	27
Tourism Technician, 2nd Class	F	24
Tourism Technician, 1st Class	E	19
Section Chief	D	5
Computer Programmer	D	1
Number of Employees		126

Notes: Job levels as defined in industry-wide collective agreement and in ascending order. Frequencies at time of tenure.

Table 6: Average Monthly Absences For All Sample Months Before Announcement Tenure and Eight Months After Tenure Announcement (Six Months Post-Tenure), by Tenure Status and Aggregated Job Level, Travel Agency Employees

	All JL		JL H/I/K/L/M		JL G	
	(1) Before	(2) After	(3) Before	(4) After	(5) Before	(6) After
Absences per month (all absence types)	0.569	1.009	0.602	1.437	0.542	1.109
	(3.875)	(5.018)	(3.974)	(6.063)	(3.801)	(5.324)
Maternity/paternity leave	0.450	0.563	0.432	1.042	0.529	0.428
	(3.566)	(3.937)	(3.509)	(5.282)	(3.797)	(3.510)
All absences excluding maternity leave	0.118	0.445	0.170	0.394	0.013	0.681
	(1.551)	(3.177)	(1.904)	(3.068)	(0.194)	(4.075)
Sick leave	0.107	0.401	0.157	0.369	0	0.609
	(1.534)	(3.144)	(1.882)	(3.054)	(0)	(4.044)
Unpaid leave	0.003	0	0.006	0	0	0
	(0.146)	(0)	(0.225)	(0)	(0)	(0)
Family assistance leave	0.002	0.019	0	0.012	0.006	0.024
	(0.081)	(0.342)	(0)	(0.220)	(0.159)	(0.280)
Funeral leave	0	0.012	0	0	0	0.033
	(0)	(0.223)	(0)	(0)	(0)	(0.388)
Other leaves	0.007	0.013	0.007	0.014	0.006	0.015
	(0.131)	(0.221)	(0.122)	(0.247)	(0.112)	(0.243)
Number of employees	126	126	43	43	35	34
Number of monthly observations	3,017	1,008	1,265	331	635	271

	JL F		JL E		JL B/D	
	(7) Before	(8) After	(9) Before	(10) After	(11) Before	(12) After
Absences per month (all absence types)	0.175	0.199	0.945	1.074	1.041	0.327
	(1.943)	(1.373)	(5.092)	(5.259)	(5.286)	(2.055)
Maternity/paternity leave	0.051	0	0.818	0.611	0.967	0
	(1.231)	(0)	(4.795)	(4.099)	(5.277)	(0)
All absences excluding maternity leave	0.125	0.199	0.127	0.463	0.074	0.327
	(1.508)	(1.373)	(1.774)	(3.380)	(0.484)	(2.055)
Sick leave	0.125	0.170	0.122	0.411	0.016	0.273
	(1.508)	(1.316)	(1.771)	(3.317)	(0.181)	(2.023)
Unpaid leave	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)
Family assistance leave	0	0	0.005	0.051	0	0
	(0)	(0)	(0.100)	(0.680)	(0)	(0)
Funeral leave	0	0.017	0	0	0	0
	(0)	(0.226)	(0)	(0)	(0)	(0)
Other leaves	0	0.011	0	0	0.057	0.055
	(0)	(0.151)	(0)	(0)	(0.451)	(0.405)
Number of employees	23	24	19	19	6	6
Number of monthly observations	594	176	401	175	122	55

Notes: Employee-month-level means and standard deviations (in parentheses) for monthly absences.
See Table 5 for job levels and corresponding professional categories.

Table 7: Monthly Absences Regressions For Hotel and Travel Agency Employees: All Months Before Tenure Announcement to Eight Months After Tenure Announcement (Six Months Post-Tenure)

Dependent variable:	Monthly absences excluding maternity leave								Wage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Specification:	OLS	FE	FE	FE	FE	FE	FE	FE-IV	FE
Tenure	0.3303***	0.3110***	0.3341**	0.3279**	0.3492**	0.3347**	0.3048**	0.3364**	13.1784***
	(0.1180)	(0.1111)	(0.1332)	(0.1400)	(0.1419)	(0.1363)	(0.1239)	(0.1312)	(2.5798)
Wage			−0.0005	−0.0003	−0.0008	−0.0007	−0.0012	−0.0030	
			(0.0006)	(0.0008)	(0.0009)	(0.0009)	(0.0012)	(0.0020)	
Wage premium				−0.0003	−0.0000	−0.0002	0.0000		
				(0.0006)	(0.0006)	(0.0007)	(0.0007)		
Log-months after hiring							0.0558	0.0950	15.5504***
							(0.0498)	(0.0722)	(2.2747)
Market wage × (−1)								−0.0004	0.0177
								(0.0007)	(0.0654)
Union min. wage									0.7520***
									(0.1047)
Constant	0.1538***	0.1592***	0.5167	0.4123	0.7024	0.6808	0.9529	1.9489	327.3980***
	(0.0299)	(0.0313)	(0.4275)	(0.5485)	(0.6012)	(0.6925)	(0.8346)	(1.4195)	(46.7821)
Individual FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter dummies	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Year dummies	No	No	No	No	No	Yes	Yes	Yes	Yes
R-squared	0.005	0.005	0.005	0.005	0.006	0.008	0.008		0.521
Number of employees	225	225	225	225	225	225	225	225	225
Monthly observations	6,369	6,369	6,369	6,369	6,369	6,369	6,369	6,369	6,369

Notes: All wages are on the monthly level and in Euros. Column (9) shows coefficient estimates from the first-stage regression corresponding to the FE-IV regression in column (8). Standard errors clustered by employee in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Average Monthly Absences and Years of Schooling of Hotel Employees After Tenure and for the Universe of Portuguese Hotel Employees

	Firm's Employees			Comparison Sample
	(1) All Months	(2) 8 Months	(3) 14 Months	(4)
Average total monthly absences	1.21	0.98	0.87	1.38
	(2.17)	(2.94)	(2.27)	(0.11)
Average monthly paid leave	0.09	0.05	0.05	0.34
	(0.29)	(0.24)	(0.21)	(0.03)
Average monthly unpaid leave	1.12	0.93	0.82	1.03
	(2.16)	(2.94)	(2.27)	(0.08)
Years of schooling	10.89			9.69
	(3.78)			(1.55)
Observations	99	99	99	99

Notes: Employee-level means and standard deviations (in parentheses). The comparison sample consists of the universe of Portuguese employees in the hotel industry who are matched to the firm's employees on job title and gender (see text for details). Paid leaves include the first 3 days of sick leave, funeral leave, 30% of work-accident leaves, strike, and leave for union activities. All/8/14 months refers to sample period after tenure announcement (see text for details).

Table 9: Average Monthly Absences and Years of Schooling of Travel Agency Employees After Tenure and for the Universe of Portuguese Travel Agency Employees

	Firm's Employees			Comparison Sample
	(1) All Months	(2) 8 Months	(3) 14 Months	(4)
Average total monthly absences	1.10	1.01	0.97	1.40
	(1.72)	(3.11)	(2.72)	(0.09)
Average monthly paid leave	0.11	0.10	0.08	0.35
	(0.16)	(0.26)	(0.18)	(0.02)
Average monthly unpaid leave	1.00	0.91	0.89	1.05
	(1.62)	(2.96)	(2.60)	(0.07)
Years of schooling	13.53			12.33
	(2.19)			(0.97)
Observations	126	126	126	126

Notes: Employee-level means and standard deviations (in parentheses). The comparison sample consists of the universe of Portuguese employees in the travel agency industry who are matched to the firm's employees on job title and gender (see text for details). Paid leaves include the first 3 days of sick leave, funeral leave, and other leaves. All/8/14 months refers to sample period after tenure announcement (see text for details).

Table 10: Average Monthly Absences of Travel Agency Employees and Comparable Workers in Portugal, by Job Level

	JL H/I/K/L/M		JL G		JL F		JL E		JL B/D	
	(1) Firm	(2) Portugal	(3) Firm	(4) Portugal	(5) Firm	(6) Portugal	(7) Firm	(8) Portugal	(9) Firm	(10) Portugal
Average total monthly absences	1.33	1.37	0.98	1.41	1.48	1.42	0.36	1.40	1.51	1.42
	(1.71)	(0.09)	(1.29)	(0.07)	(2.50)	(0.11)	(0.49)	(0.09)	(2.79)	(0.09)
Average monthly paid leave	0.03	0.34	0.02	0.35	0.05	0.35	0.04	0.35	0.03	0.35
	(0.10)	(0.02)	(0.04)	(0.02)	(0.09)	(0.03)	(0.09)	(0.02)	(0.06)	(0.02)
Average monthly unpaid leave	1.30	1.03	0.96	1.06	1.43	1.06	0.32	1.05	1.48	1.06
	(1.72)	(0.07)	(1.30)	(0.05)	(2.50)	(0.08)	(0.46)	(0.07)	(2.80)	(0.07)
Years of schooling	12.90	11.87	13.91	12.67	13.67	12.89	14.24	12.42	12.43	11.89
	(2.42)	(1.14)	(2.11)	(0.68)	(2.06)	(0.65)	(1.67)	(0.54)	(2.07)	(0.89)
Observations	41	41	35	35	21	21	21	21	7	7

Notes: Employee-level means and standard deviations (in parentheses). Workers in the same industry in all of Portugal are matched on job title and gender (see text for details). Paid leaves include the first 3 days of sick leave, funeral leave, 30% of work-accident leaves, strike, and leave for union activities. Firm employee absences are measured during all months after tenure.

Table 11: Average Monthly Absences of Hotel Employees and Comparable Workers in Portugal, by Job Level

	JL 3/4/5/6		JL 8		JL 9/10/10A/11		JL 12/13	
	(1) Firm	(2) Portugal	(3) Firm	(4) Portugal	(5) Firm	(6) Portugal	(7) Firm	(8) Portugal
Average total monthly absences	0.67	1.42	1.38	1.38	1.35	1.36	0.67	1.31
	(0.91)	(0.10)	(1.97)	(0.10)	(2.95)	(0.12)	(1.34)	(0.09)
Average monthly paid leave	0.15	0.36	0.07	0.35	0.08	0.34	0.03	0.33
	(0.43)	(0.03)	(0.17)	(0.02)	(0.36)	(0.03)	(0.06)	(0.02)
Average monthly unpaid leave	0.52	1.07	1.31	1.04	1.28	1.02	0.64	0.98
	(0.78)	(0.08)	(1.95)	(0.07)	(2.96)	(0.09)	(1.35)	(0.07)
Years of schooling	7.35	8.82	10.14	9.57	13.58	10.17	12.80	10.94
	(4.11)	(1.50)	(2.91)	(1.43)	(2.85)	(1.56)	(1.79)	(1.15)
Observations	18	18	45	45	31	31	5	5

Notes: Employee-level means and standard deviations (in parentheses). Workers in the same industry in all of Portugal are matched on job title and gender (see text for details). Paid leaves inlcude the first 3 days of sick leave, funeral leave, 70% of work-accident leaves, strike, and leave for union activities. Firm employee absences are measured during all months after tenure.

Table A.1: Monthly Absences Regressions For Hotel and Travel Agency Employees Without Children During the Sample Period: All Months Before Tenure Announcement to Eight Months After Tenure Announcement (Six Months Post-Tenure)

Dependent variable:	Monthly absences excluding maternity leave								Wage
Specification:	(1) OLS	(2) FE	(3) FE	(4) FE	(5) FE	(6) FE	(7) FE	(8) FE-IV	(9) FE
Tenure	0.3616**	0.3295**	0.3514**	0.3480**	0.3650**	0.3603**	0.3363**	0.3571**	12.9156***
	(0.1413)	(0.1312)	(0.1598)	(0.1674)	(0.1660)	(0.1588)	(0.1399)	(0.1464)	(3.0478)
Wage			−0.0004	−0.0003	−0.0008	−0.0007	−0.0011	−0.0024	
			(0.0007)	(0.0009)	(0.0010)	(0.0011)	(0.0014)	(0.0019)	
Wage premium				−0.0001	0.0001	−0.0002	−0.0001		
				(0.0007)	(0.0007)	(0.0007)	(0.0008)		
Log-months after hiring							0.0441	0.0724	15.1686***
							(0.0617)	(0.0789)	(2.6202)
Market wage × (−1)								−0.0004	0.0411
								(0.0007)	(0.0705)
Union min. wage									0.8541***
									(0.1105)
Constant	0.1389***	0.1482***	0.4806	0.4253	0.7426	0.7237	0.9276	1.6015	285.3896***
	(0.0336)	(0.0377)	(0.5109)	(0.6416)	(0.6893)	(0.8104)	(0.9847)	(1.4067)	(48.4769)
Individual FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter dummies	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Year dummies	No	No	No	No	No	Yes	Yes	Yes	Yes
R-squared	0.007	0.006	0.006	0.006	0.009	0.012	0.012		0.557
Number of employees	170	170	170	170	170	170	170	170	170
Monthly observations	4,709	4,709	4,709	4,709	4,709	4,709	4,709	4,709	4,709

Notes: All wages are on the monthly level and in Euros. Column (9) shows coefficient estimates from the first-stage regression corresponding to the FE-IV regression in column (8). Standard errors clustered by employee in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Monthly Absences Regressions For Hotel and Travel Agency Employees: All Months Before Tenure Announcement to 14 Months After Tenure Announcement (12 Months Post-Tenure)

Dependent variable:	Monthly absences excluding maternity leave								Wage
Specification:	(1) OLS	(2) FE	(3) FE	(4) FE	(5) FE	(6) FE	(7) FE	(8) FE-IV	(9) FE
Tenure	0.2294***	0.2150***	0.2273**	0.2271**	0.2449**	0.2308**	0.2204**	0.2365**	15.2064***
	(0.0757)	(0.0707)	(0.0911)	(0.0978)	(0.1000)	(0.1000)	(0.0944)	(0.1028)	(2.8546)
Wage			−0.0002	−0.0002	−0.0005	−0.0004	−0.0005	−0.0012	
			(0.0005)	(0.0006)	(0.0007)	(0.0007)	(0.0009)	(0.0016)	
Wage premium				−0.0000	0.0001	0.0001	0.0001		
				(0.0004)	(0.0004)	(0.0005)	(0.0005)		
Log-months after hiring							0.0157	0.0331	16.3029***
							(0.0409)	(0.0596)	(2.2290)
Market wage × (−1)								−0.0001	−0.0057
								(0.0005)	(0.0623)
Union min. wage									0.6851***
									(0.1063)
Constant	0.1538***	0.1596***	0.3234	0.3208	0.5119	0.4236	0.4786	0.9161	349.4415***
	(0.0299)	(0.0286)	(0.3570)	(0.4357)	(0.4788)	(0.5540)	(0.6108)	(1.1355)	(45.8969)
Individual FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter dummies	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Year dummies	No	No	No	No	No	Yes	Yes	Yes	Yes
R-squared	0.003	0.003	0.003	0.003	0.004	0.005	0.005		0.556
Number of employees	225	225	225	225	225	225	225	225	225
Monthly observations	7,681	7,681	7,681	7,681	7,681	7,681	7,681	7,681	7,681

Notes: All wages are on the monthly level and in Euros. Column (9) shows coefficient estimates from the first-stage regression corresponding to the FE-IV regression in column (8). Standard errors clustered by employee in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Monthly Absences Regressions For Hotel and Travel Agency Employees Without Children During the Sample Period: All Months Before Tenure Announcement to 14 Months After Tenure Announcement (12 Months Post-Tenure)

Dependent variable:	Monthly absences excluding maternity leave								Wage
Specification:	(1) OLS	(2) FE	(3) FE	(4) FE	(5) FE	(6) FE	(7) FE	(8) FE-IV	(9) FE
Tenure	0.2782***	0.2546***	0.2559**	0.2596**	0.2759**	0.2696**	0.2719***	0.2838**	14.8355***
	(0.0897)	(0.0821)	(0.1080)	(0.1164)	(0.1175)	(0.1163)	(0.1042)	(0.1125)	(3.4070)
Wage			−0.0000	−0.0001	−0.0004	−0.0003	−0.0002	−0.0008	
			(0.0006)	(0.0007)	(0.0008)	(0.0008)	(0.0010)	(0.0015)	
Wage premium				0.0001	0.0002	0.0001	0.0001		
				(0.0005)	(0.0005)	(0.0005)	(0.0006)		
Log-months after hiring							−0.0035	0.0106	16.0492***
							(0.0494)	(0.0640)	(2.6284)
Market wage × (−1)								−0.0001	0.0220
								(0.0005)	(0.0680)
Union min. wage									0.7957***
									(0.1105)
Constant	0.1389***	0.1486***	0.1660	0.2124	0.4174	0.3184	0.3066	0.6396	305.7947***
	(0.0336)	(0.0337)	(0.4136)	(0.5149)	(0.5571)	(0.6339)	(0.7068)	(1.1102)	(47.6500)
Individual FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter dummies	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Year dummies	No	No	No	No	No	Yes	Yes	Yes	Yes
R-squared	0.005	0.004	0.004	0.004	0.006	0.008	0.008		0.582
Number of employees	170	170	170	170	170	170	170	170	170
Monthly observations	5,691	5,691	5,691	5,691	5,691	5,691	5,691	5,691	5,691

Notes: All wages are on the monthly level and in Euros. Column (9) shows coefficient estimates from the first-stage regression corresponding to the FE-IV regression in column (8). Standard errors clustered by employee in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.