
External recruitments and firm performance

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In the context of tournament theory, and drawing on a panel data set of several firms and their employees, evidence is presented of a negative relationship between the share of external recruitments for top management positions and firm productivity.

1. Introduction

Tournament theory (Lazear and Rosen, 1981) suggests that internal promotion generates better incentives than outside hiring. The rationale is straightforward: the scope for promotions as a reward to effort is reduced when a firm places greater reliance on external hires. However, in some cases, outside hirings may prove a better choice if the external candidates are more qualified and/or if the internal candidates collude, sabotage or, in general, exert too little effort (Chen, 2005).

This specific component of the tournament model – the impact of external/internal hirings – has been subject to little empirical analysis so far, despite its theoretical relevance and its importance for human resource management practice (see Eriksson, 1999, for empirical evidence on other aspects of tournament theory). Some related research include Chan (1996), who shows theoretically that, when firms design a contest open to outsiders, internal candidates are favoured over the external applicants (i.e. the latter have to be significantly better to get the job). Moreover, Baker *et al.* (1994) found that entry was concentrated in the lower hierarchical levels and that

progression within the firm (careers) was an important phenomenon, while Bognanno (2001) shows that top level jobs are mainly filled from within the firm. Moreover, studies of managerial succession and firm financial performance indicate that the CEO turnover is negatively related to firm performance (Murphy, 1999; Huson *et al.*, 2004).

Our paper contributes to this literature, focusing on the differences between internal promotions and external hirings to top management positions. We use a matched employer–employee panel covering a large number of Portuguese firms to assess the relationship between the share of top managers hired from outside each firm and its level of worker productivity. This task is feasible because our data are detailed enough to identify all workers for each firm and year and include information on these workers' date of entry into the firm.

Our results indicate that firms that exhibit a higher share of top managers hired from the external labour market also present lower levels of productivity. This result also holds when controlling for a number of additional variables, including a proxy for overall worker mobility in each firm, and lagged productivity levels.

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II. Data

We use the ‘Quadros de Pessoal’ (Personnel Records) data set, a large matched employer–employee panel, covering the universe of Portuguese firms (manufacturing and services sectors) with at least one employee. (See Martins, 2004 for more information on these data.) In particular, in this paper we draw initially on a sample of 80% of those firms for each year. We then focus on firms that are present in our sample uninterruptedly from 1996 to 1999, that have been operating for at least ten years in 1999, and that have at least 50 employees. After also dropping firms with missing or incorrect information, we obtain a data set of 850 different firms, corresponding to about 160 000 workers per year.

Our measures of external hirings are constructed from the analysis of the entire set of employees of each firm and in each year over the period covered. We also consider separately managers that have been promoted in the previous three years from those that have been in their current position for a longer period. Our top managers in 1999 are then classified in the three following groups: those that are always in the same job level and in the same firm from 1996 to 1999 (which we label as ‘incumbents’); those workers that in at least one year from 1996 to 1998 are in a lower job-level but always at the same firm (‘internal hires’); and, finally, those workers that, in at least one year in the period 1996–1998 are not an employee of the firm (‘external hires’).

Descriptive statistics for these and other variables are presented in the appendix. We find, for instance, that the most predominant group is that of ‘incumbents’ (the average share of such top managers across the different firms is 42%), followed by ‘external hires’ (37%) and, finally, ‘internal hires’ (21%). Of course, the exact breakdown between these three categories will depend on the specific tenure thresholds adopted (three years in the case of this paper). However, these descriptive statistics do underline the importance of the external labour market for senior positions at these firms, as admission is definitely not limited to ports of entry at lower job levels (see Lima and Centeno, 2003, for additional evidence on ports of entry using the same data set).

III. Results

As mentioned before, our goal in this paper is to assess whether firm productivity differences are

associated with different shares of incumbents, internal hires and, in particular, external hires across firms. We address this question by considering the following specification of a productivity equation and estimated using OLS:

$$\log prod_i = \alpha + \alpha_1 internal_i + \alpha_2 external_i + X_i' \beta + \varepsilon_i \quad (1)$$

The variables ‘internal’ and ‘external’ refer to the shares of internal and external hires (the dropped category being the share of ‘incumbents’). We are particularly interested in the significance and sign of the α_2 coefficient. Some of the many other factors that may drive differences in productivity across firms and be correlated with the shares of top managers in these different categories, we include in X the average educational attainment and experience levels of all workers, log firm size, the regional location of the firm (five dummies), its industry (ten dummies), dummies for foreign and public-owned firms and the log equity level (a proxy for capital). ε is the error term.

The results are presented in Table 1. Column A indicates a point estimate of -0.3 for the share of external hires (significant at the 5% level) and of 0.02 for the share of internal hires (insignificant at all standard levels). These results indicate that, while the differences in the shares of internal hires do not affect productivity, a greater share of external hires is related to lower productivity levels. Column E, drawing on a similar specification but amalgamating internal hires and incumbents, reaches similar results.

In order to check the robustness of these findings, we also sought to control for other variables whose omission may be distorting our results. For instance, it may be the case that our external hiring variable is picking up the effect of general worker turnover in the firm, and that such latter turnover is also likely to be more widespread in firms that are less productive. We then measured worker turnover by computing the share of the workforce in 1997 that is also employed in the same firm in 1996 and 1998 (a measure of worker ‘stability’, therefore). Including this latter variable in our equation, specifications B and F indicate that there is a positive but not significant relationship between productivity and worker stability. More importantly, the sign and significance of the external hirings variable is unchanged, and the point estimate falls by only a small amount.

In order to further assess the robustness of the findings, we also tried to instrument the variable indicating the share of external hirings. Following Martins (2004), we considered the share of top *and middle* managers approaching retirement age as a

Table 1. Regressions of firm productivity
Dependent variable: log sales per worker, 1999

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Internal hires (top management)	0.019 (0.145)	0.018 (0.145)	0.045 (0.139)	0.044 (0.139)				
External hires (top management)	-0.301 (0.126)*	-0.277 (0.134)*	-0.323 (0.120)**	-0.251 (0.128) ⁺	-0.308 (0.117)**	-0.283 (0.125)*	-0.338 (0.111)**	-0.265 (0.120)*
Worker stability		0.131 (0.251)		0.405 (0.247)		0.132 (0.251)		0.406 (0.247)
Log sales per worker, 1996			0.33 (0.033)**	0.335 (0.033)**			0.33 (0.033)**	0.335 (0.033)**
Observations	850	850	824	824	850	850	824	824
R-squared	0.31	0.31	0.39	0.39	0.31	0.31	0.39	0.39

(Source: authors calculations based on Quadros de Pessoa).

Notes: Internal hires indicates the share of top managers in 1999 that were promoted to that position over the previous 3 years.

External hires indicates the share of top managers in 1999 that were appointed to that position from outside the firm.

The comparison group for the previous two categories are top managers which held the same position for at least 3 years.

All specifications include controls for education, experience, firm size, industry, region, foreign/public, and equity.

Standard errors in brackets (⁺ significant at 10%; *significant at 5%; **significant at 1%).

source of exogenous turnover. However, although this instrument displayed the expected positive coefficient in the first-level regression (i.e. the more top and middle managers near retirement age, the more likely that the firm draws on external hires to fill its top management positions), its coefficient was not significant at standard levels. The coefficient of external hires in the main equation was also insignificant, although still indicating a (large) negative effect of external hires upon productivity.¹

Another issue that would affect the interpretation of our findings is reverse causation: firms with larger shares of external hirings may have lower productivity because, as indicated in the introduction, worker collusion – leading to low productivity – would disrupt internal tournaments and prompt the firm to resort to external hirings (Parrino, 1997, finds that CEO external hires are more likely when the firm performs poorly relative to their competitors).

We address this possibility by including a control for productivity levels at the beginning of the period considered in our analysis (1996). We try in this way to hold constant the degree of collusion or related practices that jeopardise performance, so that we can better assess the impact of external hirings since 1996 upon the productivity levels displayed by the firm in 1999. While lagged productivity has a strong positive correlation with current productivity, the inclusion of this control variable does not lead to important changes in the size and significance of the external hirings variable (columns C and G). Similar results arise when we include simultaneously controls for turnover and lagged productivity (columns D and H), which generate a coefficient for external hirings of about -0.25 .

IV. Conclusions

Using a rich matched employer–employee data set, we examine the relationship between external hirings

for top management positions and firm productivity. Our evidence indicates that this relationship is negative. In particular, the results suggest that an increase of 10 percentage points in the share of top managers that are hired from outside the firm translates into a decrease of about 2.5% in productivity per worker. This result is also shown to be robust to controls for lagged levels of productivity and the overall degree of worker turnover in the firm.

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¹ These IV results and the complete set of results for the other specifications are available upon request. All results are also robust to regressions using weights proportional to firm size and the inclusion of different combinations of the control variables in X .

Appendix – Descriptive Statistics, Firm-year Variables

Variable	Obs.	Mean	Std. dev.	Min	Max
<i>Log sales per worker (1999)</i>	850	9.39	1.16	1.94	13.93
<i>Log sales per worker (1996)</i>	824	9.17	1.13	2.13	13.49
<i>Firm size</i>	850	177.60	258.40	50	3314
<i>Schooling</i>	850	12.02	3.41	2	17
<i>Experience</i>	850	27.06	9.41	6	65
<i>Foreign</i>	850	0.10	0.29	0	1
<i>Public</i>	850	0.01	0.11	0	1
<i>Internal hires</i>	850	0.22	0.26	0	1
<i>Incumbents</i>	850	0.42	0.33	0	1
<i>External hires</i>	850	0.36	0.31	0	1
<i>Worker stability</i>	850	0.67	0.16	0	0.97

Source: Quadros de Pessoal data (authors calculations).