Online Appendix to

"Accounting for employee flows"

We present tables at the end of each appendix.

Online Appendix A – Robustness across size deciles and industries

Table OA1 presents the coefficients for the regressions in Table 4 of the manuscript run for subsamples formed by firm size deciles (Panel A), as well as 10 different industries based on NACE sections (Panel B). A fair amount of consistency of coefficients across the subsamples attests to the robustness of the results of Table 4 of the manuscript by showing that the results are not driven by firms of particular sizes or from particular industries.

Table OA1. Robustness tests across size deciles and industries - Future performance regressed on current employee departures and arrivals

Panel A: Size deciles

Sample:	Size1	Size2	Size3	Size4	Size5	Size6	Size7	Size8	Size9	Size10	Size1	Size2	Size3	Size4	Size5	Size6	Size7	Size8	Size9	Size10
	Prior-year loss firms (Net Earnings$_{t-1}$ < 0)										**Prior-year profit firms (Net Earnings$_{t-1}$ ≥ 0)**									
Panel A1	ΔOperating Earnings $_{t+1}$										ΔOperating Earnings $_{t+1}$									
Employee Departures	0.14***	0.20***	0.14***	0.22***	0.21***	0.16***	0.26***	0.24***	0.16***	0.17***	-0.06***	-0.04**	-0.08***	-0.09***	-0.08***	-0.09***	-0.10***	-0.10***	-0.07***	-0.09***
	(7.69)	(4.46)	(3.36)	(10.88)	(4.51)	(4.26)	(6.34)	(6.54)	(3.26)	(5.55)	(-3.78)	(-2.15)	(-7.81)	(-5.39)	(-6.75)	(-5.25)	(-4.54)	(-6.01)	(-2.99)	(-7.27)
Employee Arrivals	0.04**	-0.03	0.02	0.00	0.04	0.02	-0.01	-0.04*	0.02	-0.03*	0.04***	0.04***	0.06***	0.05***	0.05***	0.06***	0.04***	0.04***	0.02***	0.03***
	(2.05)	(-1.16)	(0.74)	(0.10)	(1.42)	(1.01)	(-0.46)	(-1.81)	(1.05)	(-1.87)	(5.12)	(2.89)	(6.51)	(4.62)	(4.36)	(7.01)	(4.23)	(5.49)	(3.34)	(3.88)
Panel A2	ΔOther Operating Expenses $_{t+1}$										ΔOther Operating Expenses $_{t+1}$									
Employee Departures	-0.58***	-0.64***	-0.61***	-0.65***	-0.69***	-0.70***	-0.73***	-0.78***	-0.74***	-0.69***	-0.44***	-0.40***	-0.47***	-0.48***	-0.50***	-0.49***	-0.50***	-0.49***	-0.52***	-0.41***
	(-18.6)	(-15.2)	(-13.2)	(-15.3)	(-17.7)	(-14.0)	(-12.9)	(-12.6)	(-11.3)	(-13.4)	(-26.7)	(-15.8)	(-16.4)	(-28.3)	(-22.1)	(-21.4)	(-14.9)	(-17.7)	(-15.0)	(-13.4)
Employee Arrivals	0.36***	0.36***	0.36***	0.44***	0.38***	0.38***	0.42***	0.40***	0.32***	0.28***	0.33***	0.35***	0.36***	0.38***	0.38***	0.41***	0.41***	0.43***	0.34***	0.27***
	(18.08)	(12.63)	(20.63)	(16.92)	(14.30)	(17.28)	(11.21)	(14.73)	(8.33)	(8.72)	(19.62)	(20.78)	(18.70)	(23.04)	(18.43)	(16.53)	(16.50)	(20.71)	(20.94)	(10.31)
Panel A3	ΔGross Profit $_{t+1}$										ΔGross Profit $_{t+1}$									
Employee Departures	-0.40***	-0.40***	-0.43***	-0.42***	-0.46***	-0.55***	-0.46***	-0.50***	-0.57***	-0.49***	-0.49***	-0.44***	-0.54***	-0.55***	-0.57***	-0.58***	-0.57***	-0.57***	-0.56***	-0.49***
	(-15.6)	(-5.84)	(-8.10)	(-7.99)	(-8.06)	(-12.1)	(-6.19)	(-7.87)	(-6.90)	(-9.28)	(-21.7)	(-19.3)	(-19.8)	(-29.8)	(-24.2)	(-21.6)	(-13.7)	(-20.2)	(-13.3)	(-16.4)
Employee Arrivals	0.39***	0.33***	0.36***	0.40***	0.44***	0.41***	0.42***	0.36***	0.32***	0.27***	0.38***	0.38***	0.42***	0.41***	0.43***	0.48***	0.45***	0.48***	0.36***	0.30***
	(12.68)	(8.80)	(9.45)	(11.32)	(14.38)	(15.74)	(9.93)	(12.14)	(8.67)	(7.27)	(21.85)	(15.18)	(18.06)	(19.75)	(17.53)	(22.94)	(16.26)	(23.46)	(19.38)	(10.32)
N=	8419	3387	5590	5952	5651	4883	4767	4757	5082	5280	27,630	11,176	18,370	20,896	20,238	17,527	18,119	18,152	18,593	18,951

This table shows the results of estimating equation 1 for 10 subsamples based on firm size. Firm size is measured as deciles of the number of employees.

Panel B: Industries

Sample:	Ind1	Ind2	Ind3	Ind4	Ind5	Ind6	Ind7	Ind8	Ind9	Ind10	Ind1	Ind2	Ind3	Ind4	Ind5	Ind6	Ind7	Ind8	Ind9	Ind10
	Prior-year loss firms (Net Earnings$_{t-1}$ < 0)										**Prior-year profit firms (Net Earnings$_{t-1}$ ≥ 0)**									
Panel B1	ΔOperating Earnings $_{t+1}$										ΔOperating Earnings $_{t+1}$									
Employee Departures	0.00	0.16***	0.05**	0.17***	0.34***	0.15**	0.28***	0.26***	0.43***	0.15*	-0.04	-0.09***	-0.12***	-0.04***	-0.02	-0.04	-0.11**	-0.13***	-0.04	-0.03
	(0.11)	(5.32)	(2.48)	(8.05)	(6.11)	(2.52)	(3.17)	(6.29)	(5.35)	(1.76)	(-0.98)	(-6.92)	(-8.72)	(-4.37)	(-0.56)	(-1.16)	(-2.19)	(-8.06)	(-1.06)	(-0.86)
Employee Arrivals	0.05	0.01	0.08***	0.01	-0.10***	0.01	-0.05	0.04*	0.06	-0.04	0.02	0.06***	0.05***	0.03***	0.02	0.00	0.03	0.07***	0.04	0.00
	(1.62)	(0.79)	(4.30)	(0.81)	(-3.34)	(0.23)	(-1.41)	(1.82)	(0.82)	(-0.63)	(1.42)	(9.60)	(6.47)	(5.72)	(1.27)	(0.09)	(1.17)	(6.95)	(1.56)	(0.10)
Panel B2	ΔOther Operating Expenses $_{t+1}$										ΔOther Operating Expenses $_{t+1}$									
Employee Departures	-0.20***	-0.53***	-0.77***	-0.58***	-0.92***	-0.57***	-0.66***	-0.83***	-0.93***	-0.72***	-0.21***	-0.36***	-0.61***	-0.33***	-0.66***	-0.48***	-0.44***	-0.61***	-0.68***	-0.52***
	(-3.18)	(-16.2)	(-16.7)	(-22.8)	(-10.6)	(-5.67)	(-7.79)	(-19.8)	(-8.03)	(-4.73)	(-3.92)	(-18.7)	(-22.6)	(-29.0)	(-16.4)	(-8.41)	(-7.83)	(-13.5)	(-9.87)	(-6.45)
Employee Arrivals	0.15***	0.30***	0.48***	0.31***	0.44***	0.34***	0.38***	0.44***	0.53***	0.47***	0.17***	0.28***	0.47***	0.27***	0.48***	0.21***	0.27***	0.48***	0.55***	0.35***
	(3.78)	(14.81)	(14.18)	(24.70)	(10.94)	(6.09)	(4.35)	(15.83)	(8.83)	(7.29)	(5.81)	(19.75)	(20.25)	(25.80)	(20.61)	(5.96)	(4.62)	(21.46)	(12.92)	(8.04)
Panel B3	ΔGross Profit $_{t+1}$										ΔGross Profit $_{t+1}$									
Employee Departures	-0.22***	-0.31***	-0.71***	-0.41***	-0.48***	-0.43***	-0.36***	-0.54***	-0.47***	-0.51***	-0.25***	-0.45***	-0.71***	-0.37***	-0.65***	-0.52***	-0.56***	-0.70***	-0.66***	-0.55***
	(-2.86)	(-7.72)	(-17.7)	(-17.2)	(-5.68)	(-3.34)	(-3.18)	(-8.62)	(-3.47)	(-3.16)	(-3.09)	(-17.1)	(-29.5)	(-37.5)	(-12.6)	(-6.97)	(-6.47)	(-14.1)	(-11.9)	(-6.62)
Employee Arrivals	0.20***	0.30***	0.55***	0.32***	0.30***	0.35***	0.35***	0.47***	0.60***	0.37***	0.20***	0.33***	0.52***	0.30***	0.50***	0.21***	0.28***	0.55***	0.60***	0.34***
	(3.59)	(13.23)	(14.94)	(20.87)	(7.12)	(5.28)	(4.14)	(11.53)	(6.91)	(3.47)	(5.32)	(23.99)	(18.62)	(25.81)	(24.68)	(5.89)	(4.13)	(20.11)	(12.79)	(6.61)
N=	1060	14,198	7169	19,454	3442	687	623	5176	988	971	2341	45,712	33,288	67,547	9330	2114	1714	21,856	3518	2232

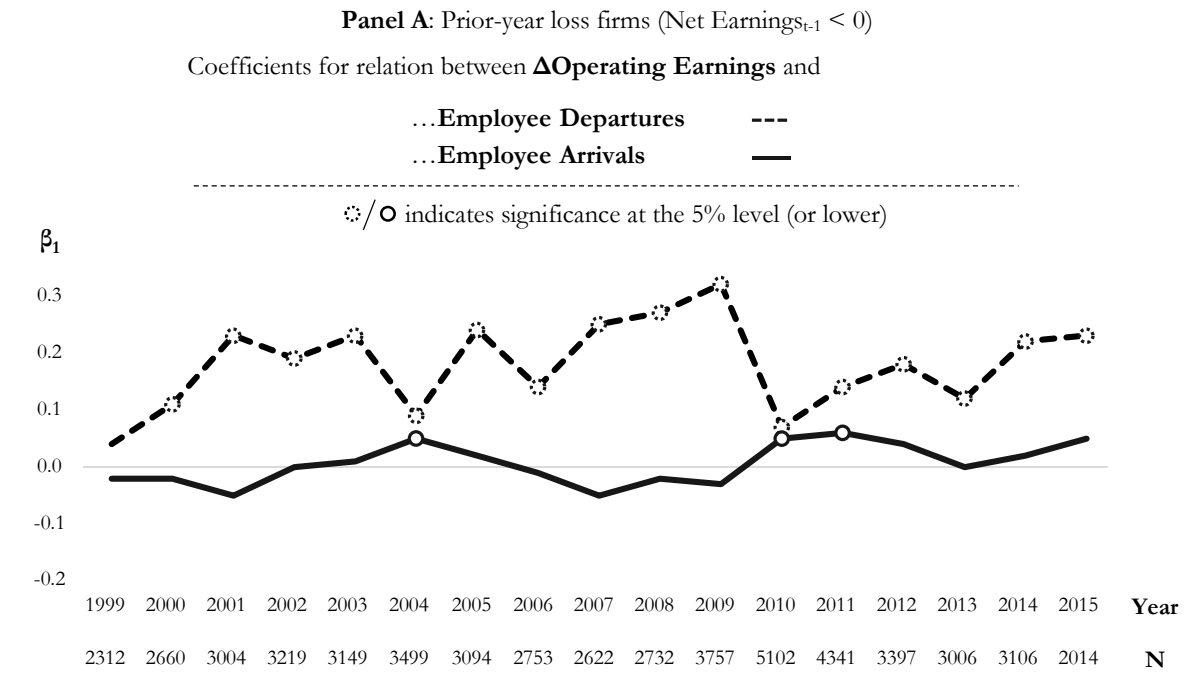
Panel A (B) of this table shows the results of estimating equation 1 for 10 subsamples based on firm size (NACE sections). Firm size in Panel A is measured as deciles of the number of employees. The industries in Panel B are the following: Ind1 = Agriculture, forestry and fishing. Ind2 = Manufacturing, mining and quarrying and other industry. Ind3 = Construction. Ind4 = Whosesale and retail trade, transportation and storage, accommodation and food service activities. Ind5 = Information and communication. Ind6 = Financial and insurance activities. Ind7 = Real estate activities. Ind8 = Professional, scientific, technical, administration and support service activities. Ind9 = Public administration, defense, education, human health and social work activities. Ind10 = Other services.

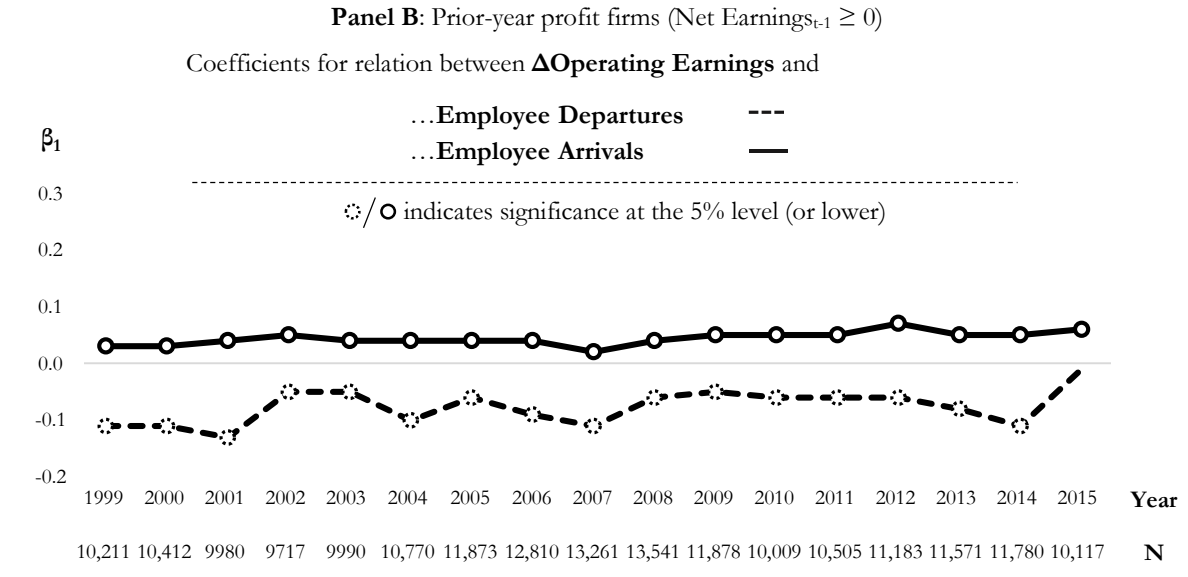
Online Appendix B – Results by prior performance and year

We then rerun our analyses for each year to explore the robustness of the findings over time. For each year, we re-estimate equation 1 for prior-year loss and profit firms. We use only ΔOperating $Earnings_{t+1}$ as dependent variable to preserve space. We plot the 68 coefficient estimates (2 independent variables * 17 years * 2 subsamples) in Figure OA1.

We generally find that the results reported in Section 4.2 (Table 4, our main results per prior year profit and loss firms) are robust over time. Panels A, depicting the results for prior-year loss firms, show that employee departures are positively associated with earnings changes for 16 of 17 years while employee arrivals are insignificantly different from zero for 14 of 17 years. Panel B, depicting the results for prior-year profit firms, show that employee departures are negatively associated with earnings changes for 16 of 17 years while employee arrivals are positively associated with earnings changes for all years.

Figure OA1. Regression coefficients over time





Online Appendix C – Alternative position identifiers

We test whether our results regarding the proportion of departing employees being replaced by new hires of the same position are robust to using alternative identifiers of positions within the firm. The alternative identifiers are the following.

- Salary quartile (Panel A of Table OA2). For each industry-year we sort and rank all employees and allocate them to salary quartiles.
- 1-digit disco codes (10 categories) (Panel C of Table OA2). DISCO codes are 6-digit occupation codes describing the nature of the employment. DISCO codes are available from 2008 and are described in Section 3 of the manuscript and at https://www.dst.dk/en/Statistik/dokumentation/nomenklaturer/disco.
- 2-digit disco codes (48 categories) (Panel B of Table OA2)

Panels A through C of Table OA2 present the results. The inferences reported in the manuscript do not change when we use these alternative position identifiers in the calculation of the proportion of departing employees being replaced by new hires of similar positions.

Table OA2. The interplay between employee departures and arrivals, alternative occupation identifiers

	Prior-year loss firms (Net earnings$_{t-1}$<0)			**Prior-year profit firms (Net earnings$_{t-1}$≥0)**		
Panel A. Salary quartiles.						
	N=48,125			N=161,620		
	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
Employee Departures$_t$	-0.56***	-0.84***	0.25***	-0.71***	-0.64***	-0.08***
	(-24.55)	(-38.82)	(13.63)	(-46.57)	(-36.23)	(-9.58)
Employee Departures$_t$	0.72***	0.82***	-0.09***	0.79***	0.74***	0.06***
× Departures Replaced$_t$	(21.58)	(36.99)	(-6.88)	(24.48)	(23.74)	(5.04)
ΔOperating Earnings$_t$	-0.04	0.23***	-0.32***	-0.16***	0.12**	-0.36***
	(-0.95)	(9.82)	(-17.53)	(-3.14)	(2.53)	(-11.25)
ΔGross Profit$_t$	-0.13***	-0.04	-0.02*	-0.11**	0.00	-0.03
	(-3.64)	(-1.60)	(-1.73)	(-2.33)	(0.10)	(-0.87)
ΔOther Operating Expenses$_t$	0.08**	-0.01	0.01	0.06	-0.06	0.03
	(2.32)	(-0.38)	(0.57)	(1.23)	(-1.26)	(0.98)
ΔCapEx$_t$	0.01	0.01	0.00	0.01	0.01**	-0.01***
	(1.01)	(0.88)	(0.91)	(1.08)	(2.18)	(-3.02)
Δln(TA)$_t$	0.07***	0.18***	-0.10***	0.11***	0.10***	0.01***
	(8.85)	(34.36)	(-18.59)	(15.81)	(23.12)	(3.38)
Year and industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.06	0.17	0.16	0.08	0.11	0.13
Panel B. 1-digit DISCO codes. (Years 2008-2016)						
	N=22,628			N=68,863		
	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
Employee Departures$_t$	-0.51***	-0.81***	0.26***	-0.72***	-0.68***	-0.07***
	(-20.80)	(-27.35)	(8.41)	(-38.75)	(-26.56)	(-4.36)
Employee Departures$_t$	0.66***	0.73***	-0.05**	0.74***	0.69***	0.06***
× Departures Replaced$_t$	(9.56)	(10.29)	(-2.46)	(9.53)	(8.92)	(4.39)
ΔOperating Earnings$_t$	-0.09	0.21***	-0.32***	-0.24***	0.07	-0.37***
	(-1.43)	(6.77)	(-11.36)	(-3.42)	(1.14)	(-7.44)
ΔGross Profit$_t$	-0.11**	-0.02	-0.04**	-0.04	0.06	-0.03
	(-2.13)	(-0.76)	(-2.36)	(-0.65)	(1.08)	(-0.65)
ΔOther Operating Expenses$_t$	0.08*	0.01	0.01	0.02	-0.08*	0.03
	(1.72)	(0.30)	(0.55)	(0.35)	(-1.70)	(0.57)
ΔCapEx$_t$	0.01	0.01	-0.00	0.02**	0.02***	-0.01***
	(1.09)	(1.60)	(-0.37)	(2.46)	(3.41)	(-3.57)
Δln(TA)$_t$	0.07***	0.19***	-0.11***	0.12***	0.11***	0.02***
	(7.38)	(22.18)	(-18.04)	(12.95)	(15.70)	(3.67)
Year and industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.06	0.18	0.18	0.09	0.12	0.14

Panel C. 2-digit DISCO codes. (Years 2008-2016)

	N=22,628			N=68,863		
	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$	ΔGross Profit$_{t+1}$	ΔOther Operating Expenses$_{t+1}$	ΔOperating Earnings$_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
Employee Departures$_t$	-0.46***	-0.75***	0.26***	-0.66***	-0.62***	-0.06***
	(-21.01)	(-24.30)	(7.84)	(-32.00)	(-23.28)	(-4.04)
Employee Departures$_t$	0.57***	0.64***	-0.06***	0.67***	0.62***	0.06***
× Departures Replaced$_t$	(8.61)	(9.92)	(-2.66)	(8.85)	(8.28)	(4.15)
ΔOperating Earnings$_t$	-0.09	0.21***	-0.32***	-0.23***	0.07	-0.37***
	(-1.44)	(6.82)	(-11.42)	(-3.32)	(1.18)	(-7.43)
ΔGross Profit$_t$	-0.10**	-0.02	-0.04**	-0.04	0.05	-0.03
	(-2.03)	(-0.65)	(-2.38)	(-0.67)	(1.02)	(-0.66)
ΔOther Operating Expenses$_t$	0.08*	0.02	0.01	0.03	-0.07	0.03
	(1.77)	(0.49)	(0.56)	(0.49)	(-1.48)	(0.59)
ΔCapEx$_t$	0.01	0.02*	-0.00	0.02**	0.02***	-0.01***
	(1.12)	(1.66)	(-0.38)	(2.33)	(3.37)	(-3.56)
Δln(TA)$_t$	0.08***	0.20***	-0.11***	0.13***	0.11***	0.02***
	(8.22)	(23.43)	(-19.14)	(15.38)	(19.32)	(3.84)
Year and industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.05	0.17	0.18	0.09	0.11	0.14

This table replicate the results presented in Table 6 of the revised manuscript using alternative occupation identifiers. Grey shading marks the variables of interest. Panel A uses salary quartiles. Panel B uses 1-digit DISCO codes (10 occupation categories). Panel C uses 2-digit DISCO codes (48 occupation categories). Disco codes are available from 2008 and are 6-digit codes that classify occupations and essentially follow the international professional classification system, International Standard Classification of Occupations (ISCO), which is prepared by the International Labor Organization (ILO). The DISCO codes are described here:
https://www.dst.dk/en/Statistik/dokumentation/nomenklaturer/disco.

Online Appendix D – Arrivals and departures versus growth

Firms do not disclose much standardized information beyond the number of employees. We therefore test whether information on the underlying employee flows, employee arrivals and departures, improves earnings prediction, compared to having information on only employee growth (the change in the number of employees scaled by the number of employee at the beginning of the year). Table OA3 presents the results. Panel A presents the regression results. Panel B compares the out-of-sample prediction accuracy of using (1) either Employee Arrivals and Employee Departures or (2) Employee Growth. Column 1 of Panel B predicts operating earnings changes for the subsamples prior-year profit and loss firms while Column 2 predicts operating earnings changes using a pooled sample. The model using Employee Departures and Employee Arrivals predicts operating earnings changes more accurately than the model using Employee Growth. Information on employee departures and arrivals hence add information to the prediction of operating earnings that is incremental to employee information that is disclosed in firms' annual reports.

Table OA3. Arrivals and departures versus growth

	Prior-year loss firms (Net Earnings$_{t-1}$<0) N=53,768		**Prior-year profit firms (Net Earnings$_{t-1}$≥0) N=189,652**	

Panel A. Regression results (N=243,420)

Dependent variable:	ΔOperating Earnings$_{t+1}$			
	(1)	(2)	(3)	(4)
Employee Departures$_t$	0.18***		-0.08***	
	(9.38)		(-10.98)	
Employee Arrivals$_t$	0.01		0.04***	
	(0.88)		(13.16)	
Employee Growth$_t$		-0.02**		0.05***
		(-2.47)		(20.17)
ΔOperating Earnings$_t$	-0.31***	-0.32***	-0.35***	-0.35***
	(-16.19)	(-15.93)	(-11.68)	(-11.60)
ΔGross Profit$_t$	-0.02*	-0.02*	-0.03	-0.03
	(-1.80)	(-1.75)	(-0.92)	(-0.96)
ΔOther Operating Expenses$_t$	0.01	0.01	0.03	0.03
	(0.71)	(0.52)	(0.92)	(0.94)
ΔCapEx$_t$	0.00	0.00	-0.01***	-0.01***
	(0.88)	(0.54)	(-3.20)	(-3.20)
Δln(TA)$_t$	-0.10***	-0.10***	0.01*	0.01
	(-17.96)	(-17.48)	(1.88)	(1.62)
Year and industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.15	0.14	0.12	0.12
F-test (vs. controls only), *p*-value	<0.01***	0.01**	<0.01***	<0.01***

Panel B. Out-of-sample ΔOperating Earnings$_{t+1}$ prediction accuracy, rolling prediction windows (N=230,852)

	(1)	(2)
Model 1		
Conditioning by prior-year loss/profit?	Yes	No
Control variables	X	X
Employee Growth	X	X
Model 2		
Conditioning by prior-year loss/profit?	Yes	No
Control variables	X	X
Employee Arrivals	X	X
Employee Departures	X	X
Test statistic	DM	DM
MSPE diff (1 minus 2) × 100	0.0064***	0.0033***
	(7.61)	(5.16)

This table reports the results of estimating equation 1. Panel A shows the regression results for subsamples of prior-year loss firms (columns 1 and 2) and prior-year profit firms (columns 3 and 4). Odd (even) columns use Employee Arrivals and Employee Departures (Employee Growth) as the independent variables of interest. Panel B shows the out-of-sample ΔOperating Earnings$_{t+1}$ prediction accuracy measures of different models using rolling prediction windows. The prediction accuracy is measured by the mean squared prediction error (MSPE). Diebold-Mariano, DM, statistics are used to compare out-of-sample predictions for the non-nested models. A positive (negative) test statistic implies that Model 2 (Model 1) is the superior prediction model. The control variables include the accounting variables

ΔOperating Earnings$_t$, ΔGross Profit$_t$, ΔOther Operating Expenses$_t$, ΔCapEx$_t$, and Δln(TA). Appendix A defines the variables. All variables are winsorized at the first and 99th percentiles. Values in brackets represent t-statistics. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Standard errors in Panel A are clustered by firm and year. The regressions are estimated with industry and year fixed effects in Panel A and industry fixed effects in Panel B.