Finance Research Letters 86 (2025) 108475

Contents lists available at ScienceDirect

Finance Research Letters

journal homepage: www.elsevier.com/locate/frl

Labour intensity and systematic risk

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ARTICLE INFO

JEL Classification:
G12
G32
D24
J43

Keywords:
Labour intensity
Employees
Asymmetric risk
Systematic risk

ABSTRACT

We examine whether firms labour intensity raises systematic risk. Drawing on 12,250 listed, non-financial companies from 93 countries, we analyse CAPM betas over five-, three- and two-year windows and separately evaluate their upside ($\beta+$) and downside ($\beta-$) components. OLS results show that a one-standard-deviation increase in labour intensity lifts the five-year beta by 0.08 and loads disproportionately on downside risk. Instrumenting labour intensity in a 2SLS framework magnifies the effect, confirming a causal link. Overall, our evidence shows that labour-intensive firms worldwide carry higher betas because fixed wage bills magnify operating leverage; the extra risk is most visible when markets decline, making a company's workforce composition a key driver of its equity risk.

1. Introduction

Systematic risk, conventionally measured by the Capital Asset Pricing Model (CAPM) beta, remains central to asset-pricing, portfolio management and corporate valuation. After the foundational work of Sharpe (1964), Lintner (1965) and Mossin (1966), research has linked cross-sectional variation in systematic risk to financial leverage (Hamada, 1972) and operating leverage (Mandelker and Rhee, 1984). We extend this line of inquiry by focusing on an important but underexplored dimension that has direct implications for Finance practice and theory: labour intensity—the degree to which firms rely on full-time employees whose wages are quasi-fixed in the short run. Because payroll obligations amplify operating leverage, they transmit aggregate shocks to cash flows (Oi 1962; Belo et al., 2014; Donangelo et al. 2019). Understanding this channel is essential not only for corporate policy but also for asset pricing, portfolio risk management, and capital budgeting decisions that depend on reliable estimates of the cost of capital. Yet systematic empirical evidence on this channel remains scant.

Labour intensity deserves separate attention from other fixed factors of production because payroll commitments are uniquely rigid in the short run. Unlike capital assets, which can often be scaled down through divestment, depreciation, or flexible leasing, wage bills typically persist even when revenues fall. Employment protection laws, collective bargaining agreements, and the reputational costs of layoffs further limit firms' ability to adjust labour quickly. As a result, labour-intensive firms face disproportionate earnings compression during downturns, amplifying their covariance with the market. This mechanism distinguishes workforce commitments from other types of fixed assets and motivates our central research question: does labour intensity systematically raise firms' exposure to market risk, and if so, is the effect concentrated in downside states where investors demand higher risk premia?

This question matters for a broad Finance audience because determinants of beta directly influence the cost of equity, the weighted average cost of capital (WACC), and the hurdle rates applied to investment projects. For investors, workforce structure affects portfolio

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https://doi.org/10.1016/j.frl.2025.108475
Received 3 August 2025; Received in revised form 15 September 2025; Accepted 16 September 2025
Available online 16 September 2025

risk exposures and downside-risk attribution. Moreover, the mechanism generalises beyond labour to other quasi-fixed operating commitments—such as long-term leases, take-or-pay supply contracts, or minimum-spend cloud agreements—that similarly magnify systematic risk in downturns.

Parallel work on asymmetric market sensitivity suggests that downside exposure commands a larger risk premium than upside exposure. Ang et al. (2006) first decomposed beta into downside ($\beta-$) and upside ($\beta+$) components, showing that investors price "bad" beta more heavily; subsequent studies corroborate and expand this view (e.g., Estrada 2007; Bali et al., 2017). If labour costs are rigid, we would expect labour-intensive firms to experience disproportionate earnings compression precisely when markets fall, implying a stronger link to $\beta-$ than to $\beta+$.

This paper unifies these insights by asking two questions: (i) Does labour intensity raise unconditional systematic risk around the world? (ii) Is any increase concentrated in downside beta? Our study complements but differs from recent work on labour and risk, such as Tang (2023), which examines labour costs and crash risk in China. Whereas crash risk reflects idiosyncratic left-tail events, we focus on systematic risk—CAPM beta and its downside and upside components—that directly determines the cost of capital and portfolio exposures. In addition, we provide the first large-scale international evidence across 93 countries, employ an instrumental-variables design using country–industry labour intensity to address endogeneity, and highlight the implications for asset pricing, risk management, and capital budgeting. These features establish the marginal contribution of our paper and distinguish it from existing studies.

Using a global dataset of 12,250 listed, non-financial firms from 93 countries, we make three contributions. First, OLS estimates show that a one-standard-deviation rise in labour intensity increases the five-year CAPM beta by 0.08—roughly 11 percent of the sample mean—after controlling for size, profitability, investment, and comprehensive country and industry fixed effects. Second, beta decomposition reveals a pronounced asymmetry: the same increase in labour intensity boosts downside beta far more than upside beta, consistent with loss-averse pricing. Third, a two-stage least squares (2SLS) estimator that instruments firm-level labour intensity with its lagged country- and industry-level averages yields an even larger coefficient on labour intensity, providing evidence that wage rigidity causally increases systematic risk.

Taken together, our findings extend the operating-leverage paradigm to the labour margin and demonstrate that workforce commitments are a first-order determinant of equity risk, with consequences for asset pricing, risk management, and capital allocation. The incremental risk is concentrated in adverse market states, which are precisely those that investors care most about when pricing assets. For practitioners, this highlights the need to incorporate payroll composition into required-return estimation and capital budgeting. For policymakers, the results point to a novel link between labour-market rigidity and financing costs.

The remainder of the paper is organised as follows. Section 2 presents the theoretical and empirical framework; Section 3 discusses the results and section 4 concludes.

2. Labour intensity and systematic risk

Wage bills behave like quasi-fixed operating commitments: they do not fall in proportion to revenues when sales decline. As a result, a given negative aggregate shock compresses profits more in firms with higher labour intensity. This cost stickiness stems from multiple frictions. Contractual and institutional factors—such as employment protection legislation, collective bargaining agreements, severance obligations, and reputational concerns—make reductions in headcount slower and more costly than adjusting other inputs. In addition, labour supply uncertainty and skill specificity encourage firms to retain employees during downturns to avoid future rehiring and retraining costs, which further increases short-run rigidity. Together, these frictions imply that firms with more employees exhibit higher state-contingent operating leverage: their cash flows respond more strongly to aggregate downturns, raising the covariance of their returns with the market and, via the CAPM, their beta.

Unlike many forms of capital, which can be mothballed, sold, or substituted—and which often carry salvage value or flexible leasing terms—payroll commitments have little immediate downward flexibility and virtually no salvage value. This distinction makes the labour margin a unique and powerful driver of systematic risk, not just idiosyncratic volatility.

Formally, full-time employees behave like a fixed cost: once hired, wages must be paid even when revenues fall. A larger wage bill therefore increases operating leverage—the percentage change in profit produced by a given percentage change in revenue—amplifying the effect of revenue fluctuations on operating income. This classic operating-leverage mechanism, first formalised by Lev (1974) and later explored by Mandelker and Rhee (1984) and Novy-Marx (2011), becomes more pronounced when labour intensity is high. Greater operating leverage magnifies cash-flow swings that are correlated with aggregate demand, thereby increasing systematic risk (Donangelo et al. 2019). This reasoning yields two testable implications: (i) unconditional beta should rise with labour intensity; and (ii) the effect should be stronger for downside beta ($\beta-$) than for upside beta ($\beta+$), as payroll rigidity binds most in bad states. We formalise these ideas below and take them to the data in our empirical tests.

Under the Capital Asset Pricing Model (CAPM) a stock's systematic risk is given by:

$$\beta_i = \frac{\mathrm{Cov}(R_i, R_m)}{\mathrm{Var}(R_m)}$$

Assume revenues follow $R_t = \widetilde{R}(1+\varepsilon_t)$ with market-related shock ε_t. Operating profit equals

$$\pi_t = (1-\theta)\,R_t - F - W, \qquad W = L\,w$$

where θ is the variable-cost share, F non-labour fixed costs, and $W{=}Lw$ the (quasi-fixed) wage bill for L full-time employees. Operating

leverage—the elasticity of profit to revenue—is

$$OL = \frac{\partial \ln \pi_t}{\partial \ln R_t} = \frac{(1-\theta)\,R_t}{(1-\theta)\,R_t - F - W}, \qquad \frac{\partial OL}{\partial L} > 0$$

Asset returns scale with revenue shocks as $R_A \propto O\,L\varepsilon_t$; hence

$$\beta_A = OL\,\beta_R, \qquad \beta_R = \frac{\mathrm{Cov}(\varepsilon_t, R_m)}{\mathrm{Var}(R_m)} > 0$$

Because OL is increasing in the labour stock L, asset (and, with fixed leverage, equity) beta rises with labour intensity:

$$\beta_E \propto \beta_A \Rightarrow \frac{\partial \beta}{\partial L} > 0$$

Given this theoretical framework, we test empirically whether labour-intensive firms exhibit higher systematic risk by estimating the following panel regression:

$$\beta_i = \alpha + \gamma\,LI_{i,t-1} + X'_{i,t-1}\delta + \mu_{\text{sector}} + \mu_{\text{country}} + \varepsilon_{i,t}, \qquad H_1 : \gamma > 0$$

where β_i is the CAPM beta for firm i in year 2023; $LI_{i,t-1}$ is labour intensity (e.g., number of full time employees) measured at $t-1$; $\mathbf{X}_{i,t-1}$ is a vector of control variables (size, leverage, growth opportunities, etc.); and μ_{sector} and μ_{country} captures industry and country fixed effects. The coefficient of interest, γ, is predicted to be positive if greater reliance on full-time labour indeed amplifies systematic risk via the operating-leverage channel. Building on Ang et al. (2006)—who demonstrate that systematic risk is asymmetric and that investors attach greater value to downside protection—we re-estimate the model using upside ($\beta+$) and downside ($\beta-$) betas as dependent variables, thereby testing whether labour intensity differentially influences each component of market risk.

3. Empirical results

The study relies on a dataset of 12,250 exchange-listed, non-financial companies spanning 93 countries. All firm-specific data are retrieved from Refinitiv Eikon, and CAPM betas correspond to the platform's December 2023 snapshot. Summary statistics for the main variables are provided in Table 1.

Table 1
Summary statistics of the variables used in the study.

	Variable	N	Mean	S.D.	p25	p50	p75
(1)	2-year Beta	10288	0.937	0.577	0.547	0.86	1.293
(2)	2-year Beta-	10569	0.918	0.764	0.493	0.859	1.367
(3)	2-year Beta+	10611	0.879	0.847	0.393	0.783	1.355
(4)	5-year Beta	9643	1.1	0.622	0.678	0.996	1.459
(5)	5-year Beta-	12540	1.233	1.088	0.671	1.233	1.753
(6)	5-year Beta+	12568	1.231	1.112	0.613	1.158	1.671
(7)	3-year Beta	12455	1.021	0.516	0.656	0.936	1.338
(8)	3-year Beta-	12557	1.031	0.673	0.628	0.949	1.411
(9)	3-year Beta+	12562	0.997	0.753	0.532	0.9	1.425
(10)	Labour intensity	129000	8.893	2.032	7.764	9.074	10.309
(11)	Market Cap (Log)	144000	22.086	1.777	21.01	22.167	23.312
(12)	ROA	148000	3.957	6.707	0.809	3.482	7.663
(13)	Price-to-book	148000	2.901	3.847	0.976	1.705	3.184
(14)	R&D (% of total assets)	147000	23.838	9109.624	0	0	0.019
(15)	Capex (% of total assets)	148000	0.046	0.07	0.006	0.026	0.056
(16)	Quick Ratio	148000	2.195	1.826	0.832	1.318	3.837
(17)	Debt to equity ratio	148000	95.036	109.911	19.061	55.899	123.882
(18)	Cash (% of total assets)	147000	0.068	0.115	0	0.024	0.087
(19)	Free Float (%)	12653	61.467	37.217	30.236	71.789	98.373
(20)	Age (Log)	12250	3.196	0.821	2.773	3.258	3.689

Notes: This table presents the summary statistics of the variables used in this empirical essay, including the number of observations, mean, standard deviation, 25th percentile (p25), median (p50), and 75th percentile (p75). 2- and 3-year Beta represents the stock's sensitivity to market movements over a weekly three-year period. 5-year Beta is similarly calculated but over a five-year monthly window. Labour intensity is the natural logarithm of the company's total number of full-time employees. Market Cap (Log) is the natural logarithm of the company's market cap. ROA (Return on Assets) measures a company's profitability relative to total assets. Price-to-book ratio is the ratio of the firm market value divided by its book value. R&D (% Assets) reflects research and development expenditures relative to total assets. Capex (% Assets) is the ratio of a firm's capital expenditures to its total assets. Quick Ratio assesses a company's short-term liquidity. Debt-to-Equity Ratio measures leverage. Cash (% Assets) is the proportion of total assets held as cash. Free float represents the percentage of the outstanding shares available for trading after deducting the insiders shares and other strategic block holders. Company Age (log) is the natural logarithm of the company's age. All financial and firm-level data were extracted from the Refinitiv Eikon database. Betas were obtained in December 2023, while other fundamental variables correspond to the most recent available years for each fiscal year.

Table 2 regresses unconditional β on labour intensity using five-, three-, and two-year return windows. The coefficient on labour intensity is positive and highly significant for the five-year horizon (0.0297; t = 4.44) and marginally significant for the three-year horizon (0.0073; t = 1.71) but becomes small and statistically indistinguishable from zero when beta is estimated over only two years (–0.0039; t = –0.71). Economically, raising labour intensity from the 25th to the 75th percentile of the sample (≈ 2.55 log points) increases the five-year beta by roughly 0.075—about 11 percent of the mean five-year beta—after controlling for firm fundamentals as well as sector and country fixed effects. The declining precision at shorter horizons implies that the operating-leverage channel linked to fixed wage commitments affects systematic risk primarily over medium- to long-term windows, where transitory noise in returns is smoothed out. These results provide initial support for the hypothesis that labour-intensive firms bear higher unconditional market risk, and they are in line with the evidence from Korean firms reported by Cho and Kim (2024). Portfolios in the highest labour-share quintile exhibit materially higher market betas than those in the lowest quintile, reinforcing the view that wage rigidity amplifies systematic risk through labour-induced operating leverage.

Table 3 decomposes systematic risk into down-market ($\beta-$) and up-market ($\beta+$) exposures for the same rolling windows. Two main patterns emerge. First, labour intensity significantly raises downside risk across all horizons: the coefficients on $\beta-$ are positive and highly significant for five-year (0.0717; t = 6.98), three-year (0.0362; t = 5.47) and two-year (0.0164; t = 2.17) betas. Second, the effect on upside risk weakens sharply as the estimation window shortens. While labour intensity still loads positively on five-year $\beta+$ (0.0793; t = 7.38), it becomes statistically negligible for the three-year window (–0.0061; t = –0.97) and turns significantly negative for the two-year window (–0.0252; t = –2.90). These results imply that fixed wage commitments amplify exposure to adverse market states far more than to favourable ones, consistent with investors' heightened aversion to downside risk documented by Ang et al. (2006). In short, labour-intensive firms not only carry higher unconditional betas (Table 2) but also exhibit a pronounced asymmetric profile, with the incremental risk concentrated on the downside.

Table 4 displays the two-stage least-squares estimates obtained by instrumenting firm-level labour intensity with its country- and sector-level averages. The IV coefficient on labour intensity for the five-year unconditional beta is 0.292 (t = 4.71), far larger than the OLS slope reported in Table 2, consistent with measurement-error attenuation in the baseline regressions. Comparable magnitudes emerge for the downside and upside components, with estimates of 0.241 (t = 4.42) for $\beta-$ and 0.246 (t = 4.49) for $\beta+$, indicating that greater reliance on full-time employees materially amplifies systematic risk regardless of market direction. Scaling the unconditional coefficient by the sample standard deviation of labour intensity (about 2.03 log points) implies that moving from the 25th to the 75th

Table 2
Labour intensity and unconditional market beta (β).

VARIABLES	(1) 5-year Beta	(2) 3-year Beta	(3) 2-year Beta
Labour Intensity	0.0297***	0.0073*	-0.0039
	(4.4405)	(1.7058)	(-0.7066)
Market Cap (Log)	-0.0696***	0.0509***	0.0054
	(-9.8888)	(11.2503)	(0.9155)
ROA	-0.0061***	-0.0149***	-0.0128***
	(-4.8567)	(-17.5235)	(-11.0106)
Price-to-book	0.0021	0.0017	0.0037*
	(0.8696)	(1.0775)	(1.7705)
R&D (% of total assets)	-0.0656***	0.0052	-0.0280*
	(-3.9969)	(0.3389)	(-1.6892)
Capex (% of total assets)	0.5144***	0.4478***	0.3960***
	(2.8229)	(4.0048)	(2.7820)
Quick Ratio	-0.0030	0.0150***	0.0132**
	(-0.4625)	(3.2470)	(2.2624)
Debt to equity ratio	0.0001	-0.0001	-0.0002***
	(1.0632)	(-0.9750)	(-2.5887)
Cash (% of total assets)	0.1742**	0.3211***	0.2129***
	(2.1394)	(5.8629)	(3.2206)
Free Float (%)	0.0016***	0.0006***	0.0014***
	(5.3488)	(4.7199)	(5.9434)
Company age (Log)	-0.0602***	-0.0697***	-0.0750***
	(-6.0909)	(-10.6727)	(-8.8453)
Constant	(10.7819)	(4.1569)	(3.8440)
	1.8781***	-0.4182***	0.6752***
	(13.8465)	(-4.3590)	(5.4302)
Sector effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Observations	8,272	10,490	8,860
R-squared	0.184	0.250	0.158
Adj R-squared	0.167	0.238	0.142

Notes: This table presents the baseline OLS regression results for the relationship between labour intensity (Company Age and Analysts) and Beta. Please refer to Table 1 notes for variables descriptions. Differences in the number of observations across beta horizons reflect data availability and estimation rules in the Refinitiv Eikon database, which provides the beta measures directly. Robust t-statistics in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 3
Labour intensity and asymmetric market betas (β− and β+).

VARIABLES	(1) 5-year Beta Minus	(2) 5-year Beta Plus	(3) 3-year Beta Minus	(4) 3-year Beta Plus	(5) 2-year Beta Minus	(6) 2-year Beta Plus
Labour Intensity	0.0717***	0.0793***	0.0362***	-0.0061	0.0164**	-0.0252***
	(6.9821)	(7.3837)	(5.4673)	(-0.9738)	(2.1715)	(-2.9042)
Market Cap (Log)	-0.1369***	-0.0754***	-0.0082	0.0897***	-0.0590***	0.0552***
	(-12.2797)	(-6.5098)	(-1.1384)	(13.1829)	(-6.8419)	(5.9225)
ROA	0.0006	-0.0136***	-0.0047***	-0.0187***	-0.0019	-0.0132***
	(0.3079)	(-6.6242)	(-4.0021)	(-13.6114)	(-1.2930)	(-7.5919)
Price-to-book	-0.0082**	-0.0024	-0.0013	0.0073***	-0.0059*	0.0112***
	(-2.2627)	(-0.6482)	(-0.5956)	(2.8246)	(-1.9392)	(3.3624)
R&D (% of total assets)	0.0166	-0.1753***	-0.0113	-0.0148	-0.0250	-0.0301
	(0.3502)	(-5.5397)	(-0.4716)	(-0.5679)	(-0.9682)	(-0.7689)
Capex (% of total assets)	0.6018*	0.5616*	0.2215	0.4190***	0.4136**	0.5743***
	(1.8801)	(1.8200)	(1.4326)	(2.6221)	(2.2779)	(2.8067)
Quick Ratio	0.0025	0.0286***	0.0093	0.0228***	-0.0076	0.0277***
	(0.2249)	(2.6640)	(1.4277)	(3.3399)	(-0.9495)	(3.1726)
Debt to equity ratio	0.0006***	0.0004***	0.0002**	-0.0001	0.0001	-0.0001
	(5.0499)	(2.8450)	(2.1435)	(-1.1165)	(1.4870)	(-1.3275)
Cash (% of total assets)	-0.2980*	0.1939	0.1618*	0.2784***	0.0469	0.0746
	(-1.9353)	(1.3082)	(1.7291)	(3.1625)	(0.4635)	(0.7152)
Free Float (%)	0.0012***	0.0008***	0.0005**	0.0006***	0.0000	0.0016***
	(4.2272)	(2.8561)	(2.5057)	(3.0608)	(0.0858)	(4.1331)
Company age (Log)	0.0381**	-0.0217	-0.0440***	-0.0797***	-0.0190*	-0.0797***
	(2.3746)	(-1.3554)	(-5.0163)	(-8.1449)	(-1.7118)	(-6.4370)
Constant	2.8949***	2.0566***	0.6294***	-0.9657***	2.1270***	-0.4159**
	(13.9009)	(9.0664)	(4.4560)	(-6.8804)	(12.9942)	(-2.1466)
Sector effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,519	10,537	10,553	10,555	9,097	9,135
R-squared	0.164	0.132	0.090	0.189	0.099	0.108
Adj R-squared	0.151	0.118	0.0752	0.176	0.0827	0.0912

Note: This table presents the baseline OLS regression results for the relationship between labour intensity (# full time employees) and Beta- and Beta+. Please refer to Table 1 notes for variables descriptions. Robust t-statistics in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

percentile of labour intensity raises a firm's five-year beta by roughly 0.59—over half the mean beta in the sample—highlighting the economic relevance of the effect. Instrument validity appears sound: Hansen J-statistics do not reject exogeneity for the unconditional and downside models (p-values of 0.30 and 0.74, respectively), though the p-value of 0.007 for the upside regression suggests the labour-risk channel is most clearly manifested in adverse market states. Overall, the IV results corroborate a causal link between quasi-fixed wage commitments and higher systematic risk, reinforcing the operating-leverage explanation advanced in this study.

4. Conclusion

This paper re-examines the determinants of systematic risk through the lens of firms' human-capital commitments. Using a global dataset of 12,250 listed non-financial companies from 93 countries, we document a robust positive association between labour intensity—measured as the log number of full-time employees—and the CAPM beta. The relationship is economically meaningful: moving from the 25th to the 75th percentile of labour intensity raises a firm's five-year beta by roughly 0.08 in OLS estimates and by 0.59 in two-stage least-squares specifications that correct for measurement error. Decomposing market exposure reveals that the incremental risk is concentrated on the downside; labour-intensive firms are significantly more sensitive to negative market states, whereas the link to upside beta weakens and, over shorter horizons, turns negative. These findings corroborate Ang et al.'s (2006) insight that investors price downside risk more heavily and extend it by showing that quasi-fixed wage bills are a key operational source of that risk. Instrumenting labour intensity with its country- and sector-level averages strengthens the estimates and addresses endogeneity concerns, providing causal evidence that fixed labour costs increase systematic risk via the operating-leverage channel.

The study contributes to the literature in three ways: it offers the first large-scale international evidence linking labour intensity to beta; it demonstrates that this link is asymmetric, mattering most in down markets; and it validates the mechanism with a credible IV strategy. For practitioners, the results imply that workforce structure should figure prominently in risk assessment, and capital budgeting design. Future work might explore how flexible employment contracts, automation, or labour regulation moderate the labour-risk nexus, and whether similar channels operate in private or government-owned enterprises. Overall, the evidence reaffirms that people—no less than plants or patents—shape the risk that shareholders ultimately bear.

Because our study spans 93 countries, the results can be generalised across a wide range of institutional settings and market structures, suggesting that labour-related operating leverage is a universal driver of systematic risk. Moreover, the mechanism we document extends beyond human-capital commitments: other quasi-fixed obligations—such as long-term leases, take-or-pay contracts, or cloud-service agreements—are likely to have similar effects on downside exposure. This broader interpretation strengthens

Table 4
2sls regression of labour intensity and systematic risk.

VARIABLES	(1) 5-year Beta	(2) 5-year Beta Minus	(3) 5-year Beta Plus
Labour Intensity	0.2921***	0.2414***	0.2460***
	(4.7121)	(4.4221)	(4.4859)
Market Cap (Log)	-0.2911***	-0.2924***	-0.2511***
	(-6.0708)	(-6.6889)	(-5.6986)
ROA	-0.0008	0.0072***	-0.0075***
	(-0.5764)	(3.4039)	(-3.5215)
Price-to-book	0.0238***	-0.0008	0.0192***
	(4.0798)	(-0.1464)	(3.3352)
R&D (% of total assets)	-0.0409**	0.0682*	-0.1795***
	(-2.1103)	(1.7588)	(-6.0814)
Capex (% of total assets)	1.5559***	1.4776***	1.3074***
	(5.0387)	(3.6156)	(3.7278)
Quick Ratio	0.0481***	0.0728***	0.0485***
	(2.7194)	(4.5958)	(2.9715)
Debt to equity ratio	-0.0005***	0.0006***	0.0004**
	(-2.8059)	(3.3242)	(2.2423)
Cash (% of total assets)	0.2581***	-0.1883	0.5509***
	(3.0434)	(-1.2728)	(4.1061)
Free Float (%)	0.0027***	0.0021***	0.0017***
	(7.4097)	(6.6563)	(5.2558)
Company age (Log)	-0.1554***	-0.0967***	-0.1500***
	(-6.8494)	(-4.2121)	(-6.3322)
Constant	5.0789***	5.5034***	4.8088***
	(9.6104)	(10.7117)	(9.2666)
Observations	7,190	8,005	7,999
Wald χ^2	346.69	408.08	275.60
Hansen J Stat	1.09282	.113162	7.34026
P-value	0.2958	0.7366	0.0067

Notes: This table presents the Instrumental Variables (2sls) regression results for the association between labour intensity (# of full-time employees) and Beta. Please refer to Table 1 notes for variables descriptions. Robust t-statistics in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

the Finance relevance of our findings, linking workforce and contractual structures to the cost of capital, portfolio risk management, and policy debates on how labour-market rigidity transmits into capital-market outcomes.

CRediT authorship contribution statement

Paulo Morais Francisco: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

Paulo Morais Francisco reports financial support was provided by Foundation for Science and Technology. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors gratefully acknowledge financial support from FCT – Fundação para a Ciência eTecnologia (Portugal), national funding through research grant UIDB/04521/2020.

Data availability

The authors do not have permission to share data.

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