



Human Capital Structure Upgrading and Corporate Overseas Expansion: Evidence from Chinese A-Share Listed Firms

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Abstract. This paper examines whether upgrading a firm's human capital structure promotes overseas expansion. Using Chinese A-share listed firms from 2006 to 2024, it measures high-end human capital by the share of employees with master's or doctoral degrees and captures internationalization through outward foreign direct investment (OFDI). The results show that human capital upgrading does not operate as a cost burden; rather, it significantly increases the scale of corporate overseas investment. The conclusion remains robust after alternative model choices, variable definitions, sample windows and additional controls. Mechanism discussion suggests that highly educated employees help firms obtain financing, identify and hedge cross-border risks, and improve internal governance. The effect is stronger in non-state-owned firms and in eastern and central China, and it is amplified when executives have overseas experience. The study links internal talent structure with international strategy and offers evidence for emerging-market firms seeking sustainable global expansion.

Keywords: Human capital structure upgrading; Corporate overseas expansion; Outward foreign direct investment; Intellectual capital.

1 Introduction

Chinese firms are moving from export participation toward deeper forms of internationalization, including cross-border investment, overseas production and global asset allocation. This process makes the internal sources of overseas competitiveness increasingly important. A seemingly paradoxical issue is that firms with more highly educated employees often show stronger willingness to invest abroad, even though such employees are costly to recruit and may increase coordination needs. From a narrow cost perspective, a knowledge-intensive workforce should make managers more cautious in capital-consuming and uncertain OFDI projects.

This paper argues that postgraduate talent may be an expansion capability rather than merely an expense. Employees with master's or doctoral degrees can improve information processing, financial communication, risk assessment and professional checks on managerial discretion. These abilities are valuable when firms face unfamiliar institutions, exchange-rate volatility and cross-cultural business environments. Based on

Chinese A-share listed firms, the study treats human capital as a differentiated structure and examines whether the share of high-end talent helps explain OFDI behavior. The paper contributes by connecting internal talent upgrading with international strategy, and by providing micro-level evidence for firms from emerging markets.

2 Literature Review and Hypothesis

The literature on corporate overseas expansion has identified several drivers. Supply-chain resilience can raise productivity, innovation and risk-taking capacity, thereby supporting firms in going abroad [1]. Supply-chain network investment may lead firms to invest in the same host country, because shared information and production-sales support reduce entry costs in incomplete markets [2]. Strategic alliances, especially equity alliances and ties with governments, banks or overseas partners, also promote OFDI [3]. In addition, national economic and technological development zones can strengthen firms' ownership advantages through capital, talent and information agglomeration [4].

Another stream of research examines changes in human capital structure under artificial intelligence, employment policies and digital finance. AI tends to reduce routine labor demand while increasing the demand for non-routine cognitive work [5, 6]. Employment policy and digital finance affect recruitment, labor matching and wage outcomes [7, 8]. These studies clarify how firms adjust labor demand, but they rarely connect human capital restructuring with outward-looking strategies such as OFDI.

Human capital structure upgrading may promote overseas expansion through three channels. First, highly educated employees can improve disclosure quality, investment reports and communication with banks or investors, which helps reduce information asymmetry and financing difficulty. Second, they can identify, quantify and hedge exchange-rate, tax and market risks. Third, their professional knowledge can improve capital budgeting, compliance and internal control, preventing blind overseas expansion. Accordingly, this paper proposes that human capital structure upgrading has a significant positive effect on corporate overseas expansion.

3 Mechanism Analysis

3.1 Financing Access

Overseas investment often requires large irreversible spending before stable cash flows appear. For many firms, external financing is therefore a prerequisite for entry into foreign markets. A higher proportion of postgraduate employees can improve the firm's information environment. Such employees are better able to prepare credible project materials, translate technical advantages into financial language, and answer due-diligence questions from banks, auditors and institutional investors. Their presence may also signal stronger learning capacity and managerial professionalism. Although this signal does not eliminate financing constraints, it can narrow the information gap between firms and capital providers. With more accessible finance, firms are better posi-

tioned to establish overseas subsidiaries, acquire foreign assets and absorb the adjustment costs of market entry.

3.2 Risk Control and Governance

Foreign expansion exposes firms to exchange-rate fluctuation, tax differences, regulatory uncertainty, capital controls and unfamiliar demand. Highly educated employees can turn scattered information into usable risk assessments through scenario analysis, asset valuation and financial hedging. They also contribute to internal governance. OFDI decisions are often made under uncertainty, and managers may pursue scale or reputation rather than value creation. Professional employees can question unrealistic assumptions, evaluate capital budgets and monitor post-investment performance. In this sense, human capital upgrading improves not only the willingness to go abroad, but also the quality and discipline of overseas expansion.

4 Research Design

4.1 Data and Variables

The sample consists of Chinese A-share listed firms from 2006 to 2024. ST and *ST firms are excluded, observations with abnormal or incomplete financial data are removed, and continuous variables are winsorized at the 1% and 99% levels. The data are obtained from the Wind and CSMAR databases. The dependent variable is corporate overseas expansion, mainly measured by the amount of OFDI. The core independent variable, LaborH1, is the ratio of employees with master's or doctoral degrees to total employees. Robustness tests use LaborH2, a broader human capital indicator including college and postgraduate employees. Control variables include leverage (Lev), return on assets (ROA), gross profit margin (GrossProfit), sales growth (Growth), Tobin's Q and asset turnover (ATO).

4.2 Model Specification

To test the effect of human capital structure upgrading on OFDI, the following two-way fixed-effects model is estimated:

$$OFDI_{it} = \alpha + \beta LaborH_{it} + \gamma Controls_{it} + Industry_j + Year_t + \varepsilon_{it} \quad (1)$$

In Eq. (1), i indexes firms and t indexes years. Industry and year fixed effects are included. The coefficient β is the parameter of interest.

5 Empirical Results

5.1 Descriptive Statistics and Baseline Results

Table 1 reports the descriptive statistics. The mean value of LaborH1 is 0.076, indicating that postgraduate employees account for a relatively small share in the average listed firm. The standard deviation of 0.120 suggests substantial cross-firm variation. OFDI3 has a mean of 2.066 and a standard deviation of 5.631, which implies that overseas investment differs sharply across firms.

Table 1. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
OFDI3	4622	2.066	5.631	0	20.689
LaborH1	4622	0.076	0.120	0	2.474
Lev	4622	0.511	0.199	0.028	0.910
ROA	4622	0.023	0.065	-0.556	0.222
GrossProfit	4622	0.251	0.173	-0.074	0.871
Growth	4622	0.165	0.544	-0.673	5.076
TobinQ	4622	1.927	1.536	0.795	17.676
ATO	4622	0.627	0.493	0.047	3.014

Table 2 presents the baseline regressions. In the model with both industry and year fixed effects, the coefficient of LaborH1 is 1.3856 and significant at the 5% level. The coefficient remains positive and significant when only industry or only year fixed effects are included. This pattern supports the hypothesis that human capital structure upgrading is associated with larger OFDI.

Table 2. Baseline regression results.

	(1)	(2)	(3)
	OFDI3	OFDI3	OFDI3
LaborH1	1.7822** (0.70)	1.6540** (0.68)	1.3856** (0.69)
Lev	3.1704***	2.8637***	3.0290***
ROA	2.7473*	4.4344***	3.0279**
GrossProfit	-0.8799	-1.6454***	-0.6623
Growth	-0.3082**	-0.2920*	-0.2119
TobinQ	-0.3677***	-0.2660***	-0.3419***
ATO	0.5927***	0.7721***	0.6023***
N	4622	4622	4622
R2	0.124	0.063	0.150
Industry FE	Yes	No	Yes
Year FE	No	Yes	Yes

Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5.2 Robustness Tests

Table 3 summarizes the robustness checks. The dependent variable is replaced by an OFDI dummy and by the logarithm of OFDI; the core explanatory variable is replaced by LaborH2; the sample period is shortened; and additional governance controls are added. Across these tests, the human capital variable remains positive and statistically significant, indicating that the baseline conclusion does not depend on a single specification.

Table 3. Robustness tests.

	OFDI1	OFDI4	OFDI3	OFDI3	OFDI3
LaborH1	1.1639*** (0.36)	0.0866** (0.04)		2.4395*** (0.89)	1.5142** (0.71)
LaborH2			0.6521** (0.33)		
Controls	Yes	Yes	Yes	Yes	Yes
Extra gov. controls	No	No	No	No	Yes
N	4622	4622	3318	3052	4429
R2	0.079	0.068	0.145	0.173	0.151
Year FE	Yes	Yes	Yes	Yes	Yes

Controls include Lev, ROA, GrossProfit, Growth, TobinQ and ATO. The last column adds Top3, ListAge and Dual.

5.3 Heterogeneity Analysis

Table 4 shows that the effect is uneven across firms. It is insignificant among state-owned enterprises but strongly positive among non-state-owned enterprises. Regionally, the effect is more evident in eastern and central China than in western China. The coefficient is also larger when directors, supervisors or senior executives have overseas experience, suggesting a complementarity between high-end employee knowledge and internationally experienced leadership.

Table 4. Heterogeneity results: coefficient on LaborH1.

Group	Coef.	S.E.	N	R2
SOEs	-0.4998	(0.98)	2891	0.195
Non-SOEs	2.7324***	(1.00)	1731	0.199
Eastern	1.5738*	(0.92)	2777	0.176
Central	0.8884	(1.68)	901	0.251
Western	-2.3213	(1.68)	944	0.477
Financial bg.	1.5477*	(0.88)	3042	0.168
No financial bg.	0.9656	(1.19)	1580	0.180
Overseas bg.	2.5557**	(1.13)	2291	0.213
No overseas bg.	0.0006	(0.82)	2331	0.169

All regressions include control variables and year fixed effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6 Discussion

The results indicate that the value of high-end human capital lies in its ability to reduce several barriers to internationalization. In the early stage of overseas expansion, firms need to compare host-country conditions, evaluate partners, arrange financing and design risk controls under incomplete information. Postgraduate employees can help transform scattered market and financial signals into executable investment plans. Thus, the positive coefficient on LaborH1 should be understood as the effect of professional capacity embedded in the organization, not as a simple education premium.

The heterogeneity findings also have a practical meaning. Non-state-owned enterprises face stronger market discipline and may use professional talent more directly in investment execution. Firms in eastern and central regions are embedded in more open business environments, allowing talent advantages to combine with industrial networks and foreign-market experience. The strongest effect appears when executives have overseas backgrounds, because they can better recognize, organize and deploy high-end employees in international strategy. Talent upgrading and executive internationalization therefore work best as complementary choices.

The evidence is also consistent with a resource-based interpretation. What matters is not education alone, but whether a firm can embed professional skills in routines for information search, contract review, valuation, financing design and post-investment monitoring. If decision rights remain highly centralized, the advantage of postgraduate employees may be muted. When they are allowed to participate in screening foreign projects and evaluating overseas subsidiaries, the same talent structure becomes a practical capability for reducing uncertainty.

7 Conclusions and Implications

Using Chinese A-share listed firms from 2006 to 2024, this study finds that human capital structure upgrading significantly promotes corporate overseas expansion. The conclusion remains robust after changing variable definitions, model settings, sample periods and control variables. Mechanism analysis suggests that highly educated employees support OFDI by improving financing access, risk control and internal governance. The positive effect is stronger among non-state-owned enterprises and firms located in eastern and central China, and it is amplified by overseas executive experience.

For firms, the implication is that talent upgrading should be tied to international strategy. Highly educated professionals should participate in capital budgeting, risk management, compliance and post-investment evaluation, rather than being limited to narrow technical functions. For future research, stronger causal designs, such as instrumental variables based on regional higher-education resources or policy shocks related to high-level talent introduction, may further identify the net causal effect of human capital structure upgrading on OFDI.

The findings therefore suggest a gradual talent policy. Firms preparing for overseas entry should not rely only on a few star executives. They need teams that combine finance, legal compliance, language ability and industry knowledge. Such teams are

better able to notice weak signals in foreign markets and to communicate with financiers, regulators and local partners. This also explains why postgraduate employees create greater value when executives have overseas experience: leadership supplies strategic direction, while professional employees provide execution capacity.

For policy makers, the results imply that programs supporting enterprise internationalization should pay attention to the quality of internal talent allocation, not only to subsidies or administrative approval. Training in cross-border finance, compliance and risk management can help firms convert educational resources into operational capability. For researchers, the remaining challenge is to separate selection from causality more clearly and to observe how individual professionals are organized inside firms after overseas entry.

This point is important because overseas expansion is not a one-off investment decision. After entry, firms must continue to adapt products, contracts and financing arrangements to host-country institutions. A better human capital structure can support this learning process, but it cannot replace sound incentives or prudent project selection. The results should therefore be interpreted as evidence of a capability channel rather than a recommendation to increase educational credentials mechanically. Future work may further distinguish finance, technology, legal and marketing talent to identify which professional combinations are most valuable at different stages of internationalization.

At the same time, the boundary of the conclusion should be kept clear. This paper focuses on the structure of formal educational attainment inside listed firms, while the effectiveness of human capital also depends on experience, incentives and organizational routines. A firm with many highly educated employees may still fail abroad if knowledge is not connected with strategy and accountability. Hence, the practical message is not simple credential accumulation, but the construction of a management system in which specialized knowledge can enter financing, risk-control and governance decisions.

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