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From Overseas Value Creation to Common Prosperity: Evidence on the Home-Country Welfare Effects of China's Outward Foreign Direct Investment

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Abstract

Using a balanced panel of 30 Chinese provinces from 2003 to 2020, this study examines the relationship between outward foreign direct investment (OFDI) and common prosperity in the home economy. We construct an entropy-weighted index distinguishing prosperity levels from the sharing of development gains and estimate province and year fixed-effects models with province-clustered standard errors using per capita OFDI stock. OFDI is positively associated with overall common prosperity, with more consistent evidence for prosperity than for sharing across the baseline and most non-IV robustness specifications. Instrumental-variable estimates remain supplementary evidence conditional on instrument validity and inference assumptions. Channel-proxy regressions show positive associations with innovation, human capital, industrial structure, corporate income tax revenue, and public science and technology expenditure, consistent with potential channels rather than established causal mechanisms. Negative export-to-GDP associations do not directly test the proposed overseas market-expansion mechanism. Regionally, positive associations are clearest in eastern China. Spatial models indicate positive indirect associations under both weighting matrices, although their magnitudes are sensitive to spatial structure and sample composition. Destination-weighted geopolitical risk has positive interaction coefficients, whereas global risk provides weak negative-moderation evidence for overall common prosperity and sharing. Overall, the findings connect OFDI's home-country outcomes to the economic and social dimensions of sustainable development by distinguishing improvements in average prosperity from evidence that development gains are broadly shared.

Keywords: outward foreign direct investment; common prosperity; home-country welfare effects; geopolitical risk

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1. Introduction

Common prosperity (CP) is an important component of Chinese modernization. It requires both sustained improvements in economic development and a more equitable distribution of development gains among all members of society. By considering prosperity levels alongside the sharing of development gains, CP. provides a framework for examining the economic and social dimensions of sustainable development. The economic dimension concerns sustained improvements in productive capacity and living standards, while the social dimension concerns access to opportunities and public services and the extent to

which development gains are shared. Assessing the domestic benefits of outward foreign direct investment (OFDI) therefore requires examining both economic expansion and whether improvements in prosperity are accompanied by broader sharing.

As China's open economy has shifted from an approach centered on "bringing in" foreign investment to one that places equal emphasis on "bringing in" and "going global," OFDI has become an important means through which Chinese firms allocate resources globally, expand into international markets, and integrate into global value chains. Unlike inward foreign direct investment, which brings external capital and technology into the domestic economy, OFDI involves the outward deployment of domestic capital. Since the beginning of the 21st century, China's OFDI has grown rapidly, with increasingly diverse investors, industries, and destinations, and China has gradually evolved from a major capital-importing country into an important global source of capital. On the one hand, OFDI may promote CP through reverse technology spillovers, industrial upgrading, improved resource allocation, the repatriation of overseas earnings, and the creation of high-quality employment. On the other hand, capital outflows may undermine CP by relocating production capacity abroad, reducing demand for domestic labor, concentrating returns among capital owners, or leaving profits overseas. How OFDI relates to CP is therefore an important empirical question. Existing studies leave it insufficiently clear whether a positive OFDI–prosperity relationship is accompanied by comparable associations with the sharing of development gains; this study examines that distinction using prosperity and sharing indicators within the same provincial framework.

This study defines its scope as follows: First, it examines the relationship between OFDI activities and domestic CP at the Chinese provincial level. The investment activities considered are direct investments undertaken abroad by enterprises or investors located in China, excluding portfolio investment, bond investment, short-term cross-border capital flows, and purely foreign aid. Second, the outcome of interest is CP in the home country rather than welfare improvements in host countries. Third, the study focuses on the realized scale of OFDI and its associations with domestic economic and social outcomes rather than institutional openness variables such as approval procedures, filing requirements, and negative lists. This deliberate focus on realized investment openness rather than regulatory arrangements limits the study's ability to assess how institutional openness shapes the domestic outcomes of OFDI. Fourth, the concept of CP examined here encompasses both the average prosperity level and the sharing dimension, including improvements among low-income groups, access to public services, and the sharing of development gains.

Using panel data for 30 Chinese provincial-level regions over 2003–2020, we estimate separate province and year fixed-effects regressions for CP, CPL, and CPS, with per capita OFDI stock as the key explanatory variable and five controls. Robustness checks assess the stability of the relationship, and instrumental-variable estimation provides supplementary evidence conditional on instrument validity and inference assumptions, while channel-proxy regressions, regional comparisons, spatial models, and geopolitical-risk interactions examine potential channels and variation across contexts.

2. Literature Review

2.1. Concepts and Measurement of the Core Variables

The two core concepts examined in this study are outward foreign direct investment (OFDI) and common prosperity (CP). OFDI generally refers to cross-border direct investment through which resident investors of a country or region obtain ownership, control, managerial authority, or other lasting interests in an overseas enterprise by establishing a new entity, conducting a merger or acquisition, acquiring an equity stake, increasing capital, or using other means. Unlike portfolio investment, short-term capital flows, and ordinary

trade, OFDI entails long-term interest and an operational-control relationship between the investor and the overseas enterprise. According to the OECD's statistical standard [1], the direct or indirect ownership of at least 10% of the voting power in an overseas enterprise generally constitutes a direct investment relationship. CP does not mean undifferentiated egalitarianism; rather, it refers to achieving broad-based prosperity for all people on the basis of high-quality development. It can be understood in terms of two dimensions: the prosperity level and the sharing dimension. The former emphasizes productivity, income, and development capacity, whereas the latter emphasizes development opportunities, income distribution, and universal access to public services. Although the term "common prosperity" is not widely used outside China, related concepts include shared prosperity, inclusive growth, and shared development. The Asian Development Bank defines inclusive growth as growth that ensures equal access to development opportunities for all segments of society [2]. The United Nations' Human Development Report emphasizes that development should balance average achievements with equity and incorporates income, health, education, and equality indicators into the Human Development Index [3]. Domestic scholarship falls broadly into two categories. The first interprets the substantive dimensions of "sharing" and "prosperity." Li and Yu [4] view CP as a spiral improvement in living standards underpinned by fully developed productive forces and primary, secondary, and tertiary distribution. Li [5] characterizes it as both material and spiritual prosperity and as the sharing of income and services. Liu et al. [6] and Xiao and Hong [7] explain the institutional implications and social structure of CP from political, economic, and social perspectives. Xie and Hou [8] interpret its value objectives and individual well-being from the macro to the micro level, whereas Chao and Ren [9] define it in terms of the subjects, content, and modes of sharing. The second category examines the theoretical attributes of CP. Some scholars consider CP a process-oriented concept involving the achievement of broad-based sharing through the correction of inequality. Other scholars, such as Xi and Cheng [10,11], regard it as an outcome-oriented concept that emphasizes prosperity for all while allowing for "reasonable disparities."

OFDI is primarily measured using three types of indicators: absolute scale, relative intensity, and cumulative scale. OFDI flows capture newly added overseas investment during the current period, whereas OFDI stocks represent overseas assets accumulated through investment over time. To improve comparability across provinces, the literature also uses the ratio of OFDI to regional gross domestic product or OFDI per capita. Hou [12], Chen and Zhu [13], and Wang and Luo [14] measure OFDI using flows, stocks, and relative intensity, respectively. Their studies indicate that the choice of indicator should be guided by the research question: flows more closely reflect current investment decisions, stocks are more suitable for capturing the overseas asset base, and relative and per capita indicators account for differences in economic and population size, respectively.

Domestic research has mainly adopted two approaches to measuring CP. The first constructs multilevel indicator systems centered on sharing and prosperity. For example, Li [5], Liu et al. [6], and Cheng and Sun [11] develop two- to four-tier indicator systems based on the dimensions of prosperity and sharing, covering income, wealth, public services, disparities, and coordination. The second approach incorporates a broader set of dimensions. Chao and Ren [9] consider income and wealth, development capacity, and well-being, whereas Wang et al. [15] and Xiao [16] extend the framework to include ecology, cultural and ethical advancement, and subjective satisfaction. Some scholars, including Ravallion [17], note that including too many indicators may weaken comparability and consistency. Consequently, other studies simplify the measurement framework into two dimensions—a "prosperity index" and a "sharing index"—constructed using per capita income and the Gini coefficient.

2.2. Home-Country Economic and Distributional Outcomes

The existing literature has not reached a complete consensus regarding the home-country effects of OFDI. In a systematic review of 130 empirical studies, Knoerich and Benson [18] report that approximately 71% find positive home-country effects, although the magnitude of these effects varies considerably with investment motives, destinations, industry characteristics, firm capabilities, and the strength of domestic linkages. Regarding economic development, Herzer [19] identifies a positive long-run relationship between OFDI and home-country output. Using instrumental-variable estimation for US multinational enterprises, Desai et al. [20] show that a 10% increase in foreign investment is associated with an average increase of approximately 2.6% in domestic investment, whereas a 10% increase in employee compensation abroad is associated with an average increase of approximately 3.7% in domestic employee compensation. This evidence suggests that overseas operations may complement home-country production when they generate additional markets and cash flows.

Negative evidence focuses primarily on the crowding out of domestic investment, industrial hollowing-out, and employment substitution. Al-Sadig [21] finds that OFDI may depress domestic capital formation in developing and transition economies. Blomström et al. [22] show that when US multinational enterprises relocate labor-intensive production to developing countries, the labor intensity of their home-country production declines. Harrison and McMillan [23] further find that foreign and domestic employment are more likely to substitute for one another when parent firms and their subsidiaries perform similar tasks, whereas the two may be complementary under vertical specialization. Debaere et al. [24] find that investment by Korean firms in less-developed countries reduces home-country employment growth, with more pronounced effects in the short term. However, Barba Navaretti et al. [25] find no evidence that investment by French and Italian firms in low-wage countries necessarily reduces home-country output or employment. Industrial hollowing-out is therefore not a mechanical consequence of OFDI; it is more likely when overseas production replaces existing domestic capacity, domestic procurement linkages are weak, and workers lack opportunities or support to transition into new jobs.

From a distributional perspective, even when OFDI raises aggregate output, it may widen the income gap between capital and labor and the wage gap between high- and low-skilled workers. Head and Ries [26] find that as Japanese manufacturing firms expand overseas production, their domestic activities shift toward more skill-intensive jobs. Becker et al. [27] and Hummels et al. [28] show that offshoring shifts home-country employment toward non-routine tasks requiring higher levels of education and may raise high-skilled wages while depressing low-skilled wages. Wang and Luo [14] identify a stage-dependent relationship between OFDI and home-country income inequality. Consequently, no single coefficient can universally characterize the "magnitude" of OFDI's effect on CP across regions and industries: a positive effect on CPL may coexist with an adverse distributional effect on CPS.

2.3. Channels and Mechanisms Through Which OFDI Affects Common Prosperity

Channels are the vehicles through which overseas activities are transmitted to the domestic economy, such as cross-border mergers and acquisitions, overseas R&D centers, foreign sales networks, parent–subsidiary procurement, and profit repatriation. Mechanisms are the causal processes through which these vehicles alter domestic economic outcomes, such as productivity gains resulting from knowledge internalization, economies of scale generated by foreign demand, substitution effects caused by production relocation, or an expansion of the domestic tax base resulting from profit repatriation. Based on this distinction, the channels through which OFDI affects CP can be grouped into three concep-

tually parallel categories: technology; markets and supply chains; and investment returns and domestic distribution.

First, through the technology channel, firms gain access to host-country technologies and managerial knowledge through cross-border mergers and acquisitions, overseas R&D, strategic alliances, patent collaboration, and international talent mobility. Using patent citations and firm productivity, respectively, Branstetter [29] and Griffith et al. [30] find that overseas R&D activities facilitate knowledge flows back to the home country. The underlying mechanism is that overseas knowledge is transferred internally, absorbed through domestic R&D, and used for further innovation, thereby improving productivity, product quality, and industrial sophistication. Conversely, if intellectual property, core R&D functions, and key personnel remain overseas for an extended period, or if post-acquisition organizational integration fails, technological assets may not benefit the domestic economy. Technological upgrading may also widen the skill premium. Bertrand and Capron [31] and Li et al. [32] show that domestic R&D investment and absorptive capacity are important conditions for converting reverse knowledge flows into sustained productivity gains.

Second, the market and supply-chain channel depends on the nature of firms' international expansion. Proactive international expansion primarily leverages product, technological, brand, or platform capabilities to develop new markets. If the expansion of overseas distribution channels continues to generate demand for domestically produced final goods, intermediate inputs, equipment, software, and headquarters services, it can promote domestic output and employment through larger orders and economies of scale. Reactive international expansion, by contrast, is driven mainly by tariffs, rules of origin, labor costs, export controls, or geopolitical constraints. Although localized production may preserve markets that would otherwise be lost, it may also replicate and replace domestic production. Head and Ries [33] find that foreign investment is generally complementary to home-country exports, whereas Blonigen [34] shows that intermediate goods are more likely to generate complementarity and the overseas production of final goods is more likely to substitute for home-country exports. The net effect of the market channel therefore depends on whether overseas demand is additional or substitutive, whether key intermediate inputs continue to be procured domestically, and whether R&D, branding, and headquarters functions remain in the home country.

Third, the investment return and domestic distribution channel encompasses multiple forms of income transmission. Under the IMF's balance-of-payments framework [35], direct investment income includes dividends and distributed branch profits, reinvested earnings, and interest income on debt instruments. Firms may also transmit returns through technology licensing fees, management service income, related-party procurement, and intragroup financing. Once overseas earnings enter the domestic economy, they may support growth through corporate reinvestment, R&D, and equipment upgrading and may contribute to distribution and public finance through wages and employment, corporate income tax, and returns on state-owned capital. However, the repatriation of earnings does not necessarily result in broad-based sharing. Dharmapala et al. [36] find that under a US tax holiday for the repatriation of foreign profits, much of the repatriated capital ultimately took the form of shareholder payouts, with no significant increases in domestic investment, employment, or R&D. Tørsløv et al. [37] and Beer et al. [38] document the erosion of home-country tax bases resulting from multinational profit shifting and international tax avoidance. If profits remain overseas for long periods or accrue mainly to a small group of capital owners, OFDI may raise corporate profits without necessarily improving labor income or public finances.

2.4. Research Gap and Contribution

Existing studies show that OFDI can affect output, productivity, exports, employment, and income distribution [14,19–28]. These findings also imply that aggregate gains need not be shared equally. The question addressed here is whether OFDI's positive association with average prosperity is accompanied by a comparable association with provincial indicators of living standards and services available to households at the bottom of the distribution. Jointly examining CPL and CPS makes this distinction explicit within a common provincial framework: a positive association with the composite CP index may be concentrated in its prosperity dimension rather than consistently extending to its sharing dimension. CPS captures the specified living-standard and public-service outcomes; it is not a direct measure of income inequality.

The overseas value creation, domestic absorption, and broad-based sharing framework organizes this comparison without assuming that overseas expansion automatically improves domestic distribution. It separates the generation of economic gains from the conditions under which those gains can reach households and public services. The empirical contribution is to examine the overall index and its two dimensions within the same panel, together with observable channel proxies, regional differences, spatial interdependence, and risk-related variation. The framework guides the interpretation of these results; aggregate provincial data do not directly observe every link in the proposed transmission process.

3. Theoretical Analysis

3.1. Overall Logic Linking OFDI to Common Prosperity

OFDI affects CP through two consecutive stages: value creation and the sharing of development gains. In the first stage, firms generate additional income, productivity gains, and returns on assets through overseas markets and technological and organizational networks. In the second stage, these additional returns are converted into social welfare through domestic investment, supply-chain procurement, wages and employment, taxation, and public services. OFDI can sustainably promote CP only when all three links—overseas value creation, domestic absorption, and broad-based sharing—are present. If overseas investment crowds out domestic investment, replaces domestic production, or leaves profits and technology overseas for extended periods, an increase in firms' global earnings may diverge from CP in the home country.

From the perspective of the development stage, Chinese firms' OFDI is motivated by market-seeking, efficiency-seeking, resource security, and strategic asset acquisition. These different motives determine whether overseas activities complement or substitute for domestic production and how additional earnings are distributed among capital owners, workers, and public finances. OFDI's overall effect is therefore not the simple sum of its positive channels; rather, it is the net outcome obtained by subtracting capital crowding-out, production substitution, failed organizational integration, and risk-related losses from the gains generated through market expansion, technological absorption, and the repatriation of earnings.

Hypothesis 1. *OFDI is positively associated with overall common prosperity in the home country.*

3.2. Technology Acquisition, Industrial Upgrading, and Absorptive Capacity

Technology-seeking OFDI creates channels for technology acquisition through cross-border mergers and acquisitions, overseas R&D centers, joint R&D, and learning in advanced markets. The underlying mechanism is not the mechanical transfer of technological assets. Instead, overseas knowledge is transmitted within the firm, absorbed through domestic R&D, and used for further innovation, thereby improving productivity, product complexity,

and industrial value added. The greater the levels of domestic R&D investment, human capital, and organizational integration capacity, the more readily overseas knowledge can be converted into domestic technological progress and subsequently create high-quality jobs in R&D, engineering design, digital operations, and management. This channel also entails two potential adverse outcomes. First, failures in post-merger integration, restrictions on intellectual property, or the continued offshoring of R&D functions may leave technological assets within overseas entities while the domestic economy retains only low-value-added activities. Second, when technological progress is skill-biased, high-skilled jobs and wages may expand, whereas low-skilled workers may face job losses and the costs of transitioning to new employment. Reverse technology spillovers can therefore improve both CPL and CPS only when control over knowledge, organizational coordination, and domestic absorptive capacity are jointly present.

Hypothesis 2a. *OFDI is positively associated with domestic R&D expenditure and patenting activity.*

Hypothesis 2b. *OFDI is positively associated with domestic human capital.*

Hypothesis 2c. *OFDI is positively associated with high-technology R&D intensity and industrial structure upgrading.*

3.3. Market Expansion and Supply-Chain Transmission as a Potential

According to Dunning's eclectic paradigm of international production [39], firms undertake OFDI for market-seeking, resource-seeking, technology-seeking, and efficiency-seeking motives. These motives have different implications for domestic markets, exports, and supply chains [40,41]. Overseas market expansion offers a potential route through which OFDI may support common prosperity: access to additional customers may generate demand for home-country goods and services, creating opportunities for domestic production, employment, and income. However, localized production abroad may also substitute for domestic exports, so greater overseas activity need not translate into comparable gains in the home economy.

Market-seeking OFDI can expand access to overseas customers through foreign sales offices, trade service platforms, retail outlets, and marketing networks. When this expansion generates demand for domestically produced final goods, intermediate inputs, equipment, software, and professional services, larger domestic orders may support economies of scale, productivity, employment, and household income. These changes may be relevant to CPL, while any improvement in CPS also depends on whether the resulting opportunities and income gains reach a broader population. Conversely, firms seeking to circumvent tariffs, rules of origin, and trade barriers may replicate production capacity in host countries, potentially replacing existing exports. If host-country firms also imitate related products through technological diffusion, export substitution may be intensified [42].

Resource-seeking OFDI may, on the one hand, stimulate exports of the equipment and intermediate inputs required for resource exploration, extraction, and processing. On the other hand, by securing access to overseas energy and raw materials, it may ease domestic resource constraints and lower production costs, thereby strengthening the export competitiveness of domestically manufactured goods. Technology-seeking OFDI may acquire advanced knowledge through cross-border mergers and acquisitions, overseas R&D, and technological collaboration, increasing the technological content, quality, and value added of domestic products and moving domestic industries toward higher positions in the value chain. Efficiency-seeking OFDI typically relocates some production stages to lower-cost countries or regions. Although this may reduce domestic production capacity and low-skilled employment in the relevant products, it may also improve firms' overall

efficiency and export competitiveness by optimizing global resource allocation, reducing total costs, and strengthening headquarters functions.

Market expansion is therefore a potential transmission mechanism rather than an automatic consequence of outward investment. Domestic provision of intermediate inputs, equipment, R&D, brand management, and headquarters services may help overseas sales opportunities translate into home-country orders and employment. Conversely, a shift toward host-country procurement may limit these domestic linkages even when firms' global sales increase. The proposed mechanism concerns the transmission from overseas market access to domestic economic opportunities and, ultimately, common prosperity.

Hypothesis 3. *OFDI may promote common prosperity in the home country through overseas market expansion that supports domestic orders, employment, and income.*

3.4. Investment Returns, Fiscal Revenue Mobilization, and Workers' Share

Overseas operations may generate income for home-country firms through distributed profits, interest, licensing fees, management services, and the supply of domestic goods and services. These cash flows may ease parent firms' financing constraints and support domestic R&D, equipment upgrading, and employee training. Earnings retained abroad, however, need not be transferred to the home economy. Where overseas activity expands taxable domestic income, it may also be associated with greater fiscal resources. Such resources could support education, healthcare, social security, and employment services, although their implications for CPS depend on how revenues are collected and allocated. Overseas expansion may also create opportunities for headquarters employment in R&D, design, supply-chain coordination, and digital operations.

Investment returns do not automatically translate into common prosperity. Profits retained abroad, tax avoidance, and shareholder payouts may limit domestic reinvestment and the resources available to workers and public services. When overseas production substitutes for domestic labor, workers may also bear adjustment costs even if capital owners receive higher returns. These possibilities motivate examining observable fiscal outcomes alongside the broader discussion of investment returns. Per capita corporate income tax revenue serves as an indirect indicator of fiscal revenue mobilization. It does not isolate taxes attributable to overseas earnings or identify profit repatriation. H4a is therefore formulated as a prediction about this observable fiscal indicator, rather than a direct test of earnings returning from abroad. H4b concerns public spending on science and technology.

Hypothesis 4a. *OFDI is positively associated with per capita corporate income tax revenue at the provincial level.*

Hypothesis 4b. *OFDI is positively associated with the allocation of domestic fiscal resources to science and technology.*

3.5. Moderating Effect of Geopolitical Risk

Geopolitical risk is not a fourth transmission channel parallel to technology, markets, and earnings repatriation; rather, it is a boundary condition that simultaneously affects all three channels. War, sanctions, investment screening, export controls, and data restrictions impede technology acquisition. Trade disruptions, consumer boycotts, and logistics constraints weaken market and supply-chain linkages. Expropriation, contract breaches, currency inconvertibility, and restrictions on transfers cause asset impairment, lengthen investment payback periods, and obstruct profit repatriation. Caldara and Iacoviello [43] show that rising geopolitical risk depresses investment and employment. Henisz [44] argues that government opportunism and expropriation risk alter the investment structures

of multinational enterprises, whereas Dai et al. [45] find that exposure to conflict reduces the survival probability of foreign subsidiaries.

Risk governance and domestic absorptive capacity may influence firms' ability to maintain overseas operations and domestic linkages when political conditions deteriorate. Destination diversification, alternative supply arrangements, and political risk insurance are possible means of managing such exposure. For example, MIGA provides insurance against expropriation, war and civil disturbance, breach of contract, currency inconvertibility, and transfer restrictions [46].

Hypothesis 5. *Higher geopolitical risk in host countries weakens the positive relationship between OFDI and common prosperity.*

4. Empirical Design and Data

4.1. Construction of Core Variables and Data Sources

The dependent variable in this study is the common prosperity index (CP). Following the approach adopted by Zeng et al. [47] to construct an evaluation index system for common prosperity, the index comprises two dimensions: prosperity and sharing. Indicator selection follows six principles: scientific validity, comprehensiveness, and diversity; avoiding indicators that merely describe consumption or asset composition; distinguishing common-prosperity outcomes from their determinants; and distinguishing prosperity shared by all from equality alone. The prosperity indicators capture the average level of prosperity among all residents, whereas the sharing indicators reflect the overall distribution of prosperity. Because "the key to achieving prosperity for all lies in the prosperity of households at the bottom of the distribution" [47], the sharing indicators place particular emphasis on the prosperity of these households. The entropy-weighting method is used to assign weights. The prosperity dimension comprises ten indicators: per capita gross domestic product (GDP); per capita disposable income; per capita consumption expenditure; the Engel coefficient; per capita residential electricity consumption; life expectancy at birth; per capita floor area of residential buildings; per capita expenditure on education, culture, and recreation; carbon emissions per unit of per capita GDP; and the number of beds in medical and healthcare institutions per 1000 people. The sharing dimension comprises eight indicators: per capita disposable income of households at the bottom of the distribution; per capita consumption expenditure of households at the bottom of the distribution; the Engel coefficient of households at the bottom of the distribution; per capita residential electricity consumption of households at the bottom of the distribution; the proportion of households with less than 8 m^2 of living space per capita; per capita expenditure on education, culture, and recreation of households at the bottom of the distribution; carbon emissions from agriculture, forestry, and land-use change per unit of per capita GDP; and the number of beds in township health centers per 1000 rural residents. These indicators are aggregated to construct the common prosperity index. In addition, the prosperity level index (CPL) and the sharing dimension index (CPS) are used as secondary dependent variables to examine the associations of outward foreign direct investment with the level and sharing of prosperity, respectively. The detailed indicator design is presented in Table 1.

Table 1. Indicator system and entropy weights for common prosperity.

Primary Dimension	Indicator Type	Secondary Indicator	Unit	Direction	Weight
Prosperity indicators	Core indicators	Per capita gross domestic product	CNY	Positive	0.3523
		Per capita disposable income	CNY	Positive	
		Per capita consumption expenditure	CNY	Positive	
		Engel coefficient	%	Negative	
		Per capita residential electricity consumption	100 million kWh	Positive	
		Life expectancy at birth	Years	Positive	
	Supplementary indicators	Per capita floor area of residential buildings	m^2	Positive	0.1819
		Per capita expenditure on education, culture, and recreation	CNY	Positive	
		Carbon emissions per unit of per capita GDP	t CO_2/CNY	Negative	
		Beds in medical and healthcare institutions per 1000 people	Beds	Positive	
Sharing indicators	Core indicators	Per capita disposable income of households at the bottom of the distribution	CNY	Positive	0.3076
		Per capita consumption expenditure of households at the bottom of the distribution	CNY	Positive	
		Engel coefficient of households at the bottom of the distribution	%	Negative	
		Per capita residential electricity consumption of households at the bottom of the distribution	100 million kWh	Positive	
	Supplementary indicators	Proportion of households with less than 8 m^2 of living space per capita	%	Negative	0.1582
		Per capita expenditure on education, culture, and recreation of households at the bottom of the distribution	CNY	Positive	
		Carbon emissions from agriculture, forestry, and land-use change per unit of per capita GDP	t CO_2/CNY	Negative	
		Beds in township health centers per 1000 rural residents	Beds	Positive	

Note: Weights are calculated jointly for all 18 indicators using the pooled 2002–2020 index-construction sample of 570 province–year observations. The prosperity and sharing weights sum to 0.5342 and 0.4658, respectively. The component indices retain these overall weights without renormalization within each dimension.

The entropy weights are calculated using the complete index-construction sample of 30 provinces over 2002–2020 (570 province–year observations). This sample is distinct from the 2003–2020 regression sample of 540 observations. Let x_{ijt} denote the original value of indicator i in province j and year t, where i = 1, ..., K, j = 1, ..., M, and t = 1, ..., T, with K = 18, M = 30, and T = 19. To make the indicators comparable in scale and direction, min–max normalization is performed over the pooled province–year sample:

$$y_{ijt} = \begin{cases} \dfrac{x_{ijt} - x_i^{\min}}{x_i^{\max} - x_i^{\min}}, & \text{positive indicator,} \\ \dfrac{x_i^{\max} - x_{ijt}}{x_i^{\max} - x_i^{\min}}, & \text{negative indicator.} \end{cases}$$

Here, $x_i$min and $x_i$max are the minimum and maximum of indicator i across all province–year observations, and y_{ijt} lies between zero and one. The share of each normalized observation and the entropy of indicator i are calculated as follows:

$$p_{ijt} = \frac{y_{ijt}}{\sum_{s=1}^{M}\sum_{u=1}^{T} y_{isu}}$$

$$e_i = -\frac{1}{\ln(MT)}\sum_{j=1}^{M}\sum_{t=1}^{T} p_{ijt}\ln\left(p_{ijt}\right)$$

When $p_{ijt} = 0$, $p_{ijt}\ln(p_{ijt})$ is set to zero by the limiting convention. The information utility of indicator i is $1 - e_i$, and its weight is:

$$w_i = \frac{1 - e_i}{\sum_{r=1}^{K}(1 - e_r)}$$

The common prosperity index is the weighted sum of the normalized indicators:

$$CP_{jt} = \sum_{i=1}^{K} w_i y_{ijt}$$

The prosperity and sharing indices are constructed from their respective sets of ten and eight indicators using the same overall weights:

$$CPL_{jt} = \sum_{i\in\mathcal{L}} w_i y_{ijt}, \quad CPS_{jt} = \sum_{i\in\mathcal{S}} w_i y_{ijt}$$

$$CP_{jt} = CPL_{jt} + CPS_{jt}$$

Here, $\mathcal{L}$ and $\mathcal{S}$ denote the prosperity and sharing indicator sets, respectively. The component indices are not reweighted within dimensions: their weights sum to 0.5342 for CPL and 0.4658 for CPS, with a combined total of one. The same pooled-sample normalization and weights are retained when the indices are used for the 2003–2020 regressions.

The explanatory variable is per capita OFDI, measured as the ratio of OFDI stock to the permanent resident population at year-end and transformed as $\ln(1 + \text{OFDIpc})$.

The empirical analysis uses a provincial panel dataset covering 30 provinces in mainland China from 2003 to 2020. Owing to limitations in data continuity, Tibet, Hong Kong, Macao, and Taiwan are excluded, yielding 540 province–year observations. Units are standardized for all nominal monetary indicators according to their respective statistical definitions. The core explanatory variable, per capita OFDI, is logarithmically transformed and winsorized at both the 1st and 99th percentiles (P1/P99). Unless otherwise specified, all non-spatial regressions include province and year fixed effects and use province-clustered robust standard errors. Variable definitions and data sources are presented in Table 2.

4.2. Descriptive Statistics

Table 3 reports descriptive statistics for the 30 provinces over the 2003–2020 period. The common prosperity index (CP) has a mean of 0.2807. The mean of the prosperity level index (CPL) is 0.1547, exceeding the 0.1259 mean of the sharing dimension index (CPS). All three indices span relatively wide ranges, indicating substantial cross-provincial and temporal differences in common prosperity. The winsorized logarithm of per capita OFDI has a mean of 0.1047 and a standard deviation of 0.2082, with values ranging from 0.00003 to 1.2003, thereby revealing pronounced regional variation. The control variables also exhibit sufficient sample variation, providing a sound basis for the subsequent panel regression analysis.

Table 2. Variable definitions and data sources.

Variable	Definition	Construction	Primary Data Source
CP	Common prosperity index	The entropy-weighting method is applied to 18 indicators; CP = CPL + CPS.	China Statistical Yearbook [48] and other specialized yearbooks, population census data, provincial statistical yearbooks, and the EPS database
CPL	Prosperity level index	Constructed using the entropy-weighting method from ten prosperity indicators, including per capita GDP and per capita disposable income.	China Statistical Yearbook and other specialized yearbooks, population census data, provincial statistical yearbooks, and the EPS database
CPS	Sharing level index	Constructed using the entropy-weighting method from eight sharing indicators, including the income and consumption of households at the bottom of the distribution and basic public services.	China Statistical Yearbook and other specialized yearbooks, population census data, provincial statistical yearbooks, and the EPS database
OFDIpc	Per capita OFDI	Ratio of OFDI stock to the permanent resident population at year-end, measured in CNY 10,000 per person.	China Statistical Yearbook and provincial statistical yearbooks
urbanization	Urbanization level	Ratio of the urban population to the total population.	China Statistical Yearbook
transport	Transport infrastructure	Natural logarithm of one plus road mileage.	China Transportation Yearbook, China Statistical Yearbook, and provincial statistical yearbooks
ageing	Population ageing	Ratio of the population aged 65 years and above to the total population.	China Population and Employment Statistics Yearbook and population census data
industry	Industrialization level	Ratio of industrial value added to gross regional product.	China Statistical Yearbook and provincial statistical yearbooks
fd_loan_gdp	Financial development level	Ratio of the outstanding loans of financial institutions to gross regional product.	Almanac of China's Finance and Banking, the People's Bank of China, and provincial statistical yearbooks

Note: The specialized yearbooks used to construct CP mainly include the China Energy Statistical Yearbook, China Population and Employment Statistics Yearbook, China Industry Statistical Yearbook, China Statistical Yearbook on Environment, China Agriculture Yearbook, China City Statistical Yearbook, and China Health Statistical Yearbook. The sample periods for the mechanism and moderating variables are adjusted according to the availability of the underlying data. Throughout the paper, "financial development level" refers to the loan balance-to-GDP ratio rather than the loan-to-deposit ratio.

Table 3. Descriptive statistics of the main variables.

Variable	N	Mean	Standard Deviation	Minimum	Median	Maximum
CP	540	0.2807	0.1624	0.0270	0.2613	0.8133
CPL	540	0.1547	0.0871	0.0143	0.1486	0.4680
CPS	540	0.1259	0.0771	0.0127	0.1135	0.3806
Per capita OFDI	540	0.1047	0.2082	0.00003	0.0298	1.2003
Urbanization level	540	0.5384	0.1460	0.2477	0.5268	0.9377
Transport infrastructure	540	2.4091	0.7402	0.5008	2.6056	3.6998
Population ageing	540	0.1186	0.0254	0.0692	0.1155	0.2031
Industrialization level	540	0.3586	0.0862	0.1001	0.3643	0.5738
Financial development level	540	1.3039	0.4421	0.5886	1.2176	2.7741

Note: The sample is a balanced panel of 30 provinces from 2003 to 2020, comprising 540 observations. The original unit of per capita OFDI is CNY 10,000 per person. The table reports ln(1 + OFDIpc), winsorized at both P1 and P99, as used in the baseline regressions. The sample standard deviation is reported.

4.3. Model Specification

To examine the conditional relationship between per capita OFDI and common prosperity, this study adopts a two-way fixed-effects model with province and year fixed effects as the baseline specification. The model is estimated using within-province variation over time while controlling simultaneously for time-invariant provincial characteristics and annual common shocks affecting all provinces. The specification is as follows:

$$Y_{it} = \alpha + \beta \mathrm{OFDIpc}_{it}^{w} + \gamma' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

In Equation (1), i and t denote province and year, respectively. Y_{it} denotes, in turn, the common prosperity index (CP), prosperity level index (CPL), and sharing dimension index (CPS). Each index is used as the dependent variable in a separate regression. $OFDIpc_{\mathrm{it}}$ denotes per capita OFDI, and β is the core coefficient of interest. X_{it} is a vector of control variables comprising the urbanization level, transport infrastructure, population aging, industrialization level, and financial development level, with γ denoting the corresponding coefficient vector. μ_{i} and λ_{t} denote province and year fixed effects, respectively, and $\varepsilon_{\mathrm{it}}$ is the stochastic disturbance term. Standard errors in the baseline regressions are clustered at the provincial level, allowing for arbitrary serial correlation and heteroskedasticity within each province. Appendix A reports the results using the unwinsorized core explanatory variable.

5. Empirical Results

5.1. Baseline Regression

Table 4 presents the regression results for the relationship between per capita OFDI and the overall common prosperity index and its two subindices. Overall, in the simple OLS regressions without control variables or fixed effects (Columns 1–3), the estimated coefficients of per capita OFDI on the overall common prosperity index, prosperity level, and sharing dimension are 0.554, 0.307, and 0.247, respectively, and are all positive and statistically significant at the 1% level, indicating a strong positive correlation. After province and year fixed effects are included (Columns 4–6), the three coefficients decrease to 0.059, 0.038, and 0.021, respectively. The coefficients for the overall common prosperity index and prosperity level remain significantly positive, whereas that for the sharing dimension is no longer statistically significant. This finding indicates that the strong positive correlation

captured by simple OLS is attributable, to a considerable extent, to persistent cross-provincial differences and common national time trends. Specifically, province fixed effects absorb time-invariant provincial characteristics, such as geographic location, resource endowments, and historical and cultural factors, whereas year fixed effects absorb common shocks, including macroeconomic cycles and nationwide policy changes. After controls for urbanization, transport infrastructure, population aging, industrialization, and financial development are further included (Columns 7–9), the estimated coefficients of per capita OFDI on the overall common prosperity index, prosperity level, and sharing dimension are 0.074, 0.037, and 0.037, respectively. The first two are statistically significant at the 1% level, whereas the coefficient for the sharing dimension is significant at the 10% level. Thus, a one-unit increase in the transformed per capita OFDI variable is associated with increases of 0.074 in common prosperity (CP), 0.037 in the prosperity level (CPL), and 0.037 in the sharing dimension (CPS). The evidence for CPL is more stable across these specifications, whereas the CPS coefficient is insignificant in the fixed-effects specification without controls and only marginally significant with controls. The identical rounded CPL and CPS coefficients in the controlled model do not imply equally strong statistical evidence, nor does the difference in significance establish that their coefficients differ significantly. These results support H1's positive overall association, while providing more consistent evidence for prosperity than for sharing. Overseas market expansion, investment returns, and technological learning offer possible explanations for the relationship between OFDI and prosperity, which will be discussed in detail in the subsequent channel-proxy analysis.

Table 4. Baseline regression results.

Variable	Simple OLS			Two-Way Fixed Effects Without Controls			Two-Way Fixed Effects + Controls		
	CP (1)	CPL (2)	CPS (3)	CP (4)	CPL (5)	CPS (6)	CP (7)	CPL (8)	CPS (9)
Per capita OFDI	0.554 *** (23.422)	0.307 *** (25.090)	0.247 *** (20.799)	0.059 ** (2.587)	0.038 *** (3.840)	0.021 (0.805)	0.074 *** (3.135)	0.037 *** (2.935)	0.037 * (1.743)
Urbanization level							0.240 (1.441)	0.056 (0.666)	0.184 (1.466)
Transport infrastructure							−0.014 (−0.789)	−0.005 (−0.575)	−0.010 (−0.876)
Population ageing							−0.300 * (−1.821)	−0.151 * (−1.845)	−0.149 (−1.473)
Industrialization level							−0.038 (−0.566)	−0.015 (−0.432)	−0.022 (−0.541)
Financial development level							−0.032 ** (−2.076)	−0.022 *** (−3.595)	−0.010 (−0.794)
N	540	540	540	540	540	540	540	540	540
R^2	0.505	0.539	0.446	0.983	0.988	0.966	0.985	0.989	0.968
Within R^2	—	—	—	0.114	0.196	0.035	0.201	0.291	0.104
F	548.603	629.486	432.606	6.692	14.742	0.649	5.229	6.964	4.946
Control variables	No	No	No	No	No	No	Yes	Yes	Yes
Province fixed effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province-clustered standard errors	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Note: Parentheses report coefficient t-statistics; the table identifies the specifications using province-clustered standard errors. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

5.2. Robustness Checks and Supplementary IV Analysis

5.2.1. Robustness Checks

The robustness checks use the one-period lag, two-period lag, and mean over the preceding three years of per capita OFDI. The results show that all three measures have positive coefficients for CP and CPL that are statistically significant at the 1% level, whereas their coefficients for CPS are only marginally significant at the 10% level. This finding indicates that the positive association persists under lagged specifications, although evidence for sharing is comparatively weak. When the core explanatory variable is replaced by winsorized per capita OFDI in levels and the inverse hyperbolic sine of per capita OFDI, the coefficients for CP and CPL remain significantly positive, whereas that for CPS remains statistically insignificant. The results obtained using a random-effects model are also broadly consistent in direction. After Beijing, Tianjin, and Shanghai are excluded, the estimated coefficients for CP, CPL, and CPS are 0.104, 0.036, and 0.068, respectively. The coefficients for CP and CPS are significant at the 5% level, whereas that for CPL is significant at the 10% level. The sample size falls from 540 to 486 and the number of clusters from 30 to 27. The standard errors are larger than in the fully controlled baseline, while the point estimates are not generally attenuated. Thus, the baseline findings are not driven solely by Beijing, Tianjin, and Shanghai. Overall, these checks provide more consistent support for the prosperity relationship than for the sharing relationship, although the strength of the evidence varies across specifications.

To assess sensitivity to the weighting method, we construct alternative common prosperity indices using principal component analysis (PCA) separately for the prosperity and sharing dimensions. The same 18 indicators are aligned in direction and standardized over the pooled index-construction sample of 570 observations for 30 provinces in 2002–2020. Within each dimension, we retain the smallest number of principal components that explains at least 80% of total variance. Two components are retained for prosperity, explaining 82.57%, and three for sharing, explaining 84.95%. Scores are weighted by the variance contributions of the retained components and then min–max normalized over the full sample. The original dimension weights of 0.5342 and 0.4658 are retained to construct the PCA-based CPL and CPS indices, whose sum gives the PCA-based CP index. The regressions retain the 2003–2020 estimation sample, the baseline OFDI measure, and province and year fixed effects.

Panel D of Table 5 reports the PCA results, with and without the five baseline controls. With controls, the coefficient on the transformed per capita OFDI variable is 0.0643 for CP and is significant at the 1% level. This provides additional evidence that the positive conditional association for overall common prosperity does not depend entirely on entropy weighting. The CPL and CPS coefficients are 0.0246 and 0.0396, respectively, and both are significant only at the 10% level. The statistical evidence for CPL therefore weakens relative to the entropy-based baseline, while the evidence for CPS remains limited. Without controls, only the CPL coefficient is significant at the 10% level; the CP and CPS coefficients are insignificant. These results show that support for the overall relationship is conditional on the specified controls and that robustness is not equally strong across the two dimensions.

5.2.2. Supplementary IV Analysis

Instrumental-variable approaches have been used to address potential endogeneity in OFDI research; for example, He et al. [49] use destination-weighted construction-permit indicators. Our provincial instrument adapts the historical-openness interaction approach of Sun and Zhang [50] together with the historical-exposure and leave-one-out annual-mean construction used by Zhao et al. [51]. We interact an indicator for provinces containing the first treaty ports with the contemporaneous mean of the baseline OFDI variable in the other provinces. The five ports opened under the 1842 Treaty of Nanjing were Guangzhou, Fuzhou, Xiamen, Ningbo, and Shanghai. Under current provincial boundaries, Port equals one for Guangdong, Fujian, Zhejiang, and Shanghai, and zero otherwise [52]. Let x denote $\ln(1 + \text{OFDIpc})$, winsorized at the pooled 1st and 99th percentiles, where OFDIpc is OFDI stock per year-end resident in CNY 10,000 per person. The unstandardized instrument is the product of Port and the mean of x across the other 29 provinces in the same year; this interaction is then standardized over the full sample. OFDI stocks and year-end resident population use the China Statistical Yearbook and provincial statistical yearbook data employed in the baseline analysis [48]. The relevance argument is that overseas links and market experience associated with historical openness may generate different provincial responses to nationwide OFDI developments. All specifications include the five baseline controls and province and year fixed effects; the structural equation is estimated by IV-GMM with heteroskedasticity-robust standard errors [53]. Before standardization, the instrument is defined as follows:

$$Z_{it} = Port_i \times \frac{\sum_{j \neq i} x_{jt}}{29}$$

Table 6 reports the instrumental-variable estimates. The first-stage coefficient is 0.0327 and is significant at the 1% level, indicating that treaty-port exposure interacted with OFDI in other provinces positively predicts provincial OFDI. The Kleibergen–Paap rk LM statistic is 12.847 ($p = 0.0003$), rejecting underidentification, and the rk Wald F statistic is 11.532. These diagnostics support instrument relevance. The second-stage OFDI coefficients are 0.3106 for CP, 0.1182 for CPL, and 0.1924 for CPS, all positive and significant at the 1% level. Robust Anderson–Rubin-type tests also reject a zero OFDI coefficient for all three outcomes ($p < 0.0001$). Conditional on instrument validity, a 0.1-unit increase in the transformed OFDI variable corresponds to increases of approximately 0.0311, 0.0118, and 0.0192 index points, respectively. These estimates provide complementary evidence of a positive relationship with both prosperity and sharing.

The exclusion restriction requires that, conditional on the controls and fixed effects, the historical-port interaction affects common prosperity through provincial OFDI rather than through other differential responses to nationwide investment changes. Historical port status is predetermined, and leaving out the province avoids including its own OFDI directly in the annual mean. With province-clustered inference, the two-stage least squares (2SLS) estimates are statistically insignificant, and the previously reported 1% significance for CPS no longer holds. We therefore retain the IV estimates as supplementary evidence conditional on instrument validity and interpret them cautiously given weak identification and their sensitivity to trend specifications and inference methods.

Table 5. Robustness check results.

Variable	One-Period Lag			Two-Period Lag			Mean over Preceding Three Years		
	CP (1)	CPL (2)	CPS (3)	CP (4)	CPL (5)	CPS (6)	CP (7)	CPL (8)	CPS (9)
Panel A. Lagged Core Explanatory Variable									
Lagged transformed OFDIpc	0.080 ***	0.041 ***	0.040 *	0.085 ***	0.043 ***	0.042 *	0.087 ***	0.044 ***	0.043 *
	(3.585)	(3.298)	(1.849)	(3.815)	(3.913)	(1.932)	(3.592)	(3.722)	(1.776)
N	510	510	510	480	480	480	450	450	450
R^2	0.986	0.990	0.969	0.986	0.991	0.969	0.986	0.991	0.969
Within R^2	0.207	0.302	0.106	0.214	0.315	0.111	0.215	0.314	0.113
F/Wald χ^2	5.922	7.535	4.023	6.233	8.073	4.169	5.413	7.661	2.905
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Variable	Winsorized OFDIpc			asinh(OFDIpc)		
	CP (10)	CPL (11)	CPS (12)	CP (13)	CPL (14)	CPS (15)
Panel B. Alternative Transformations of the Core Explanatory Variable						
Transformed OFDIpc	0.034 **	0.021 ***	0.012	0.046 **	0.028 ***	0.018
	(2.582)	(3.728)	(1.026)	(2.672)	(3.429)	(1.111)
N	540	540	540	540	540	540
R^2	0.985	0.989	0.967	0.985	0.989	0.968
Within R^2	0.177	0.309	0.072	0.184	0.309	0.078
F/Wald χ^2	4.943	9.019	2.561	4.817	8.075	3.025
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes

Variable	Excluding Beijing, Tianjin, and Shanghai			Random Effects + Year Fixed Effects		
	CP (1)	CPL (2)	CPS (3)	CP (4)	CPL (5)	CPS (6)
Panel C. Alternative Sample and Estimation Model						
Transformed OFDIpc	0.104 **	0.036 *	0.068 **	0.083 ***	0.044 ***	0.038 *
	(2.233)	(1.758)	(2.543)	(4.163)	(3.639)	(1.844)
N	486	486	486	540	540	540
R^2	0.984	0.988	0.977	0.896	0.834	0.890
Within R^2	0.206	0.192	0.226	0.980	0.984	0.960
F/Wald χ^2	3.925	3.653	3.269	41.929	37.971	31.039
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province effects	Fixed effects	Fixed effects	Fixed effects	Random effects	Random effects	Random effects
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes

Variable/Statistic	CP (1) No Controls	CPL (2) No Controls	CPS (3) No Controls	CP (4) Five Controls	CPL (5) Five Controls	CPS (6) Five Controls
Panel D. Alternative Dependent Variables: PCA-Based Common Prosperity Indices						
Transformed OFDIpc	0.037	0.019 *	0.018	0.064 ***	0.025 *	0.040 *
	(1.492)	(1.860)	(0.675)	(3.489)	(1.786)	(1.900)
N	540	540	540	540	540	540
R^2	0.986	0.989	0.966	0.988	0.990	0.970
Within R^2	0.054	0.054	0.028	0.185	0.163	0.144
F	2.225	3.460	0.455	5.138	2.991	2.204
Number of clusters	30	30	30	30	30	30
Five baseline controls	No	No	No	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Test results of the instrumental variable method.

Variables	(1) First Stage OFDI	(2) Second Stage CP	(3) Second Stage CPL	(4) Second Stage CPS
iv_port_loo	0.0327 ***			
	(0.0096)			
OFDI		0.3106 ***	0.1182 ***	0.1924 ***
		(0.0988)	(0.0363)	(0.0702)
Control Variables	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Underidentification test	12.847	12.847	12.847	12.847
	<0.0003>	<0.0003>	<0.0003>	<0.0003>
Weak identification test	11.532	11.532	11.532	11.532
	|16.38|	|16.38|	|16.38|	|16.38|
N	540	540	540	540

Note: Parentheses report heteroskedasticity-robust standard errors: HC1 for the first-stage OLS regression and HC0 for the second-stage GMM regressions; these standard errors are not clustered by province. The underidentification statistic is the Kleibergen–Paap rk LM, with its *p*-value in angle brackets. The weak-identification statistic is the rk Wald F [54]. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

5.3. Regional Heterogeneity

Following the four-region classification of the National Bureau of Statistics of China [55], and excluding Tibet from the 30-province sample, eastern China comprises Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan; central China comprises Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan; western China comprises Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang; and northeastern China comprises Liaoning, Jilin, and Heilongjiang.

To assess whether the conditional association between per capita OFDI and common prosperity varies across regions, this study uses the pooled sample of 30 provinces; introduces interactions between the transformed per capita OFDI variable and indicators for eastern, central, western, and northeastern China; and performs Wald tests of equality of the regional coefficients. The coefficients for CP, CPL, and CPS in eastern China are 0.075, 0.038, and 0.037, respectively. The coefficients for CP and CPL are significant at the 1% level, while that for CPS is marginally significant at the 10% level. The coefficients for central China are positive but imprecisely estimated and statistically insignificant. The western coefficients are negative and insignificant, and the northeastern coefficients are positive and insignificant. The joint tests reject equality of the regional coefficients for CP and CPS only at the 10% level ($p = 0.087$ and 0.086, respectively), while the test for CPL is insignificant. Pairwise comparisons indicate that the eastern and western coefficients differ at the 5% level for CP and CPS. Thus, the clearest statistical evidence of a positive association occurs in eastern China, while evidence of regional differences is limited and concentrated in CP and CPS. These findings do not establish that the association is larger in eastern China than in every other region, or that the CPL coefficients are identical across regions. Differences in domestic absorptive capacity offer a possible interpretation, but this explanation is not directly tested by the regional regressions.The regional heterogeneity regression results are presented in Table 7.

Table 7. Four-region heterogeneity test: pooled-sample interaction model.

Variable	Eastern China			Central China			Western China			Northeastern China		
	CP (1)	CPL (2)	CPS (3)	CP (4)	CPL (5)	CPS (6)	CP (7)	CPL (8)	CPS (9)	CP (10)	CPL (11)	CPS (12)
Transformed OFDIpc	0.075 ***	0.038 ***	0.037 *	0.183	0.120	0.063	−0.124	−0.022	−0.102	0.051	0.024	0.027
	(3.136)	(2.868)	(1.861)	(1.005)	(1.449)	(0.522)	(−1.281)	(−0.529)	(−1.504)	(0.347)	(0.311)	(0.252)
N	540	540	540	540	540	540	540	540	540	540	540	540
R^2	0.986	0.990	0.971	0.986	0.990	0.971	0.986	0.990	0.971	0.986	0.990	0.971
Within R^2	0.280	0.340	0.181	0.280	0.340	0.181	0.280	0.340	0.181	0.280	0.340	0.181
F	4.921	5.252	5.384	4.921	5.252	5.384	4.921	5.252	5.384	4.921	5.252	5.384
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pooled-sample interaction model	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

5.4. Spatial Spillover Effects

Both spatial-weight matrices are time invariant and have zero diagonal elements. For the inverse road-distance matrix, each recorded positive interprovincial distance d_{ij} is converted into an initial weight $a_{ij} = 1/d_{ij}$; diagonal entries and missing distances receive zero weights. Each nonzero row is standardized as $w_{ij} = a_{ij}/\Sigma_j a_{ij}$. The source distance table contains zero placeholders for all 29 links between Hainan and the other provinces. These entries are treated as unavailable distances and assigned zero weights, leaving Hainan with a zero row and column; the zeros do not represent actual zero road distances or an absence of economic connections. Hainan also has a zero row and column in the contiguity matrix. The contiguity matrix represents direct geographic neighbors, whereas inverse-distance weights connect all province pairs with observed positive road distances and give relatively greater weight to nearer provinces. These different linkage structures produce different spatial lags and spatial multipliers, $(I - \rho W)^{-1}$, even after row standardization.

Table 8 reports full-sample spatial Durbin models using geographic contiguity and inverse road-distance weights. The spatial autoregressive coefficients for CP and CPL are significantly positive under both matrices, whereas those for CPS are insignificant. The model-based direct effects of OFDI on CP and CPL are positive and significant at the 1% level under both matrices; the direct CPS effects are insignificant. The indirect effects for CP, CPL, and CPS are 0.142, 0.030, and 0.117 under contiguity weights, all significant at the 1% level. Under inverse road-distance weights, they are 0.520, 0.060, and 0.319; CP and CPS are significant at the 1% level, while CPL is significant at the 10% level. Total effects are positive under both matrices. The estimated indirect associations have similar signs across these two specifications, but their magnitudes depend strongly on the linkage structure: the CP indirect estimate exceeds its contiguity counterpart by more than a factor of three.

The indirect estimate summarizes links to all other provinces and spatial feedback in the fitted model; it is not an estimate for a single neighboring province. Aggregating these cross-provincial links can produce an indirect estimate larger than the average own-province direct estimate. Its size also depends on the spatial coefficients and the chosen weights, so the large estimates should not be treated as fixed policy multipliers or as proof that other provinces receive greater actual benefits. In the full-sample specifications, the significant CPS indirect estimates coexist with insignificant local direct estimates under both matrices. They provide specification-dependent evidence of spatial association, not a demonstrated improvement in sharing or a verified transmission mechanism. Neither geographic matrix directly measures supply-chain, mobility, or knowledge-transfer channels.

Table 8. Spatial Durbin model results.

Variable/Effect	Geographic Contiguity Matrix			Inverse Road-Distance Matrix		
	CP	**CPL**	**CPS**	**CP**	**CPL**	**CPS**
Mean Moran's I (levels)	0.474	0.390	0.513	0.141	0.111	0.153
Years with significant Moran's I for TWFE residuals	5/18	8/18	3/18	8/18	10/18	3/18
Spatial autoregressive coefficient ρ	0.214 ***	0.227 ***	0.075	0.411 ***	0.391 ***	0.039
	(5.127)	(5.427)	(1.520)	(4.524)	(4.411)	(0.326)
Direct effect of OFDI	0.026 ***	0.028 ***	−0.007	0.049 ***	0.034 ***	0.007
	(2.856)	(6.343)	(−1.012)	(5.193)	(7.620)	(1.106)
Indirect effect of OFDI	0.142 ***	0.030 ***	0.117 ***	0.520 ***	0.060 *	0.319 ***
	(8.223)	(3.373)	(10.852)	(6.426)	(1.959)	(8.261)
Total effect of OFDI	0.168 ***	0.058 ***	0.110 ***	0.569 ***	0.094 ***	0.326 ***
	(10.406)	(6.996)	(11.500)	(6.929)	(3.129)	(8.378)
N	540	540	540	540	540	540
Number of provinces	30	30	30	30	30	30
Control variables and their spatial lags	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
SDM-QML	Yes	Yes	Yes	Yes	Yes	Yes

Note: The full sample retains Hainan with zero spatial weights; the road-distance zeros represent unavailable links. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Excluding Hainan retains positive indirect associations for CP, CPL, and CPS under both matrices, but their magnitudes and spatial dependence parameters remain sensitive to the sample change (Appendix B, Table A2).

6. Evidence on Potential Transmission Channels

6.1. Selection of Channel Proxies and Data Sources

This study selects ten proxies covering five areas relevant to the proposed channels: technological innovation, human capital, industrial structure, export linkages, and fiscal resources. R&D expenditure and patent grants measure domestic innovation inputs and outputs; average years of schooling and the share of the population with an associate degree or higher measure educational attainment. Intramural R&D expenditure in high-technology industries relative to GDP and the ratio of tertiary- to secondary-industry value added capture high-technology R&D intensity and industrial structure. The two export-to-GDP ratios measure export dependence under the domestic-source and operating-entity definitions. They provide exploratory indicators of trade linkages rather than a direct test of the market-expansion mechanism proposed in H3. Corporate income tax revenue per capita and local science and technology expenditure relative to GDP capture aggregate fiscal revenue and public science and technology spending. The innovation, human-capital, industrial-structure, and fiscal proxies correspond to the observable predictions in H2a–H2c and H4a–H4b. These indicators do not directly measure overseas knowledge transfers, overseas market access, changes in domestic sourcing, profit repatriation, or workers' participation in overseas gains. In particular, the corporate income tax measure cannot identify the portion of tax revenue originating from overseas earnings.

All mechanism variables are matched to the baseline database at the province-year level. The raw data are drawn primarily from the China Statistical Yearbook on Science and

Technology [56], China Statistics Yearbook on High Technology Industry, China Population and Employment Statistics Yearbook, China Statistical Yearbook [48], Finance Yearbook of China [57], China Statistical Yearbook for Regional Economy, provincial statistical and fiscal yearbooks, the China National Intellectual Property Administration, and the General Administration of Customs of China. Census data and directly reported provincial totals for corporate income tax revenue are used as supplementary sources. To harmonize the statistical definitions, export values are converted into RMB using annual average exchange rates and then divided by regional GDP. Monetary and count variables are transformed as $\ln(1 + x)$, where appropriate, given their distributions, whereas share variables retain their original ratio or percentage scale. The overall study covers 30 provincial-level regions from 2003 to 2020. Because the initial reporting years and data availability differ across variables, however, the effective sample period and sample size vary among the mechanism variables. Only observed values are used; missing values are neither interpolated nor predicted.

6.2. Channel-Proxy Regression Model

Each channel proxy listed in Table 9 is used in turn as the dependent variable. The specification retains the five covariates from the baseline regression, province and year fixed effects, and province-clustered standard errors.

$$M_{it}^{(k)} = \alpha_k + \theta_k \mathrm{OFDI}_{it}^{w} + \gamma_k' X_{it} + \mu_i + \lambda_t + \varepsilon_{it}^{(k)},\ k = 1, \ldots, 10 \quad (2)$$

Table 9. Definitions and descriptive statistics of the channel proxies.

Potential Channel	Variable	Construction and Unit	Sample Period/N	Mean	Standard Deviation	Data Source
Technological innovation channel	rdscale	ln(1 + R&D expenditure) (pre-log unit: RMB 100 million)	2004–2020/510	4.9988	1.4848	China Statistical Yearbook on Science and Technology
	patent	ln(1 + number of grants for the three domestic patent types) (pre-log unit: grants)	2003–2020/540	9.2778	1.7148	China Statistical Yearbook on Science and Technology; China National Intellectual Property Administration
Human capital accumulation	edu	Weighted by the population share at each level of education; years	2003–2020/540	8.8777	1.0030	China Population and Employment Statistics Yearbook; population census data
	college	Share of the permanent resident population with an associate degree or higher; %	2003–2020/540	11.1290	6.2242	China Population and Employment Statistics Yearbook; population census data
Industrial upgrading	hightech	Intramural R&D expenditure in high-technology industries as a share of GDP; percentage points	2009–2020/360	0.2301	0.2166	Original data tables compiled under the definitions of the China Statistics Yearbook on High Technology Industry
	upgrade	Ratio of tertiary-industry to secondary-industry value added; ratio	2003–2020/540	1.1828	0.6455	China Statistical Yearbook; provincial statistical yearbooks
Export linkages (exploratory)	expgdp_s	Exports by domestic source of goods, converted into RMB using the annual average exchange rate and divided by GDP; ratio	2003–2020/540	0.1553	0.1818	General Administration of Customs of China; provincial statistical yearbooks
	expgdp_o	Exports by location of the operating entity, converted into RMB using the annual average exchange rate and divided by GDP; ratio	2003–2020/540	0.1608	0.1801	General Administration of Customs of China; provincial statistical yearbooks

Table 9. *Cont.*

Potential Channel	Variable	Construction and Unit	Sample Period/N	Mean	Standard Deviation	Data Source
Fiscal resources and public investment	CITpc	ln [1 + (corporate income tax revenue/permanent resident population)]; RMB 100 million per 10,000 persons	2003–2013/330	0.0349	0.0526	China Statistical Yearbook for Regional Economy; provincial and municipal statistical yearbooks
	STEgdp	Local government expenditure on science and technology as a share of GDP; ratio	2007–2020/420	0.0043	0.0025	Finance Yearbook of China; China Statistical Yearbook; provincial fiscal yearbooks

Note: Means and standard deviations are calculated using the effective sample for each mechanism equation; the reported standard deviation is the sample standard deviation. hightech is measured in percentage points, whereas expgdp_s, expgdp_o, and STEgdp are ratios that have not been multiplied by 100. For corporate income tax revenue, only reliable, directly reported provincial totals for 2003–2013 are used. Placeholder zeros for fiscal expenditure on science and technology during 2003–2006 are treated as missing. None of the mechanism variables are interpolated.

In Equation (2), i, t, and k denote the province, year, and kth proxy, respectively. $M_{it}^{(k)}$ denotes, in turn, the ten proxies listed in Table 9. $OFDI_{it}^{w}$ is the winsorized natural logarithm of one plus per capita OFDI, and θ_k is the coefficient of interest. X_{it} is a vector of covariates comprising urbanization, transport infrastructure, population aging, industrialization, and financial development, and γ_k is the corresponding vector of coefficients. μ_i and λ_t denote province and year fixed effects, respectively, while $\varepsilon_{it}^{(k)}$ is the idiosyncratic error term. Standard errors are clustered at the province level. Following Jiang [58], we examine OFDI's relationship with each proxy in a separate regression and use the theoretical discussion to consider the proxy's possible connection to common prosperity. These estimates describe conditional associations between OFDI and the proxies. They do not identify causal indirect effects or establish the full transmission from OFDI through a proxy to common prosperity. The export regressions are exploratory and do not directly test H3; the fiscal regressions assess the observable associations specified in H4a–H4b without identifying profit repatriation or the distribution of fiscal benefits. We do not estimate additional outcome-on-proxy regressions, and the channel interpretations remain subject to these limitations.

6.3. Results of the Channel-Proxy Regressions

Table 10 reports the channel-proxy regressions. With the five controls and province and year fixed effects, the coefficients on OFDI for R&D expenditure, patent grants, average years of schooling, the share of the population with an associate degree or higher, high-technology R&D intensity, and the tertiary-to-secondary value-added ratio are 0.460, 0.292, 0.491, 3.644, 0.143, and 0.633, respectively. All are positive and statistically significant, supporting the proxy-level predictions in H2a–H2c. These findings are consistent with stronger domestic innovation, human capital, and changes in industrial structure.

For exports by domestic source of goods and by location of the operating entity, both relative to GDP, the coefficients are −0.234 and −0.239, respectively, and are significant at the 1% level. These estimates indicate a negative conditional association between OFDI and the two export-to-GDP ratios. Lower ratios may reflect changes in exports, GDP, or both; the regressions cannot determine whether overseas production has substituted for domestic exports or whether domestic sourcing has declined. Nor do these ratios directly measure overseas market expansion or the domestic orders, employment, and income associated with it. The results are therefore retained as exploratory evidence concerning potential trade linkages and are not presented as evidence supporting H3. Directly testing the proposed market-expansion mechanism would require additional information linking overseas sales and sourcing to domestic activity and welfare outcomes.

Table 10. Channel-proxy regression results.

Variable	Technological Innovation Channel		Human Capital Accumulation		Industrial Upgrading		Export Linkages (Exploratory)		Fiscal Resources and Public Investment	
	R&D Expenditure (Log) (1)	Patent Grants (Log) (2)	Average Years of Schooling (3)	Share of Population with an Associate Degree or Higher (4)	High-Technology-Industry R&D/GDP (5)	Ratio of Tertiary- to Secondary-Industry Value Added (6)	Exports/GDP by Source of Goods (7)	Exports/GDP by Operating-Entity Location (8)	Per Capita Corporate Income Tax Revenue (Log) (9)	S&T Spending/GDP (10)
OFDIpc	0.460 **	0.292 *	0.491 ***	3.644 ***	0.143 **	0.633 ***	−0.234 ***	−0.239 ***	0.295 **	0.003 ***
	(2.297)	(1.728)	(3.482)	(6.224)	(2.443)	(2.877)	(−3.703)	(−4.104)	(2.235)	(3.143)
Urbanization	4.483 ***	4.723 ***	2.590 ***	−3.119	1.100 ***	−1.118 **	−0.015	0.034	0.047	0.018 ***
	(4.060)	(3.978)	(3.085)	(−0.860)	(2.794)	(−2.293)	(−0.057)	(0.126)	(0.447)	(3.332)
Transport infrastructure	0.114	0.266	−0.005	−0.786 *	0.014	−0.030	0.069 *	0.077 *	−0.023 *	0.001
	(0.933)	(1.560)	(−0.043)	(−1.759)	(0.081)	(−0.225)	(1.828)	(2.043)	(−1.843)	(0.711)
Population aging	−3.214 **	−4.248 **	−1.657	−3.179	−0.050	−0.453	0.269	0.250	−0.648 ***	−0.001
	(−2.280)	(−2.648)	(−1.031)	(−0.510)	(−0.091)	(−0.415)	(0.589)	(0.508)	(−3.741)	(−0.112)
Industrialization	0.705	1.867 *	−0.018	−0.860	0.116	−3.384 ***	0.261 **	0.311 **	−0.151 **	0.001
	(1.156)	(2.032)	(−0.044)	(−0.342)	(0.504)	(−15.049)	(2.209)	(2.540)	(−2.351)	(0.324)
Financial development	−0.357 ***	0.113	−0.089	0.172	−0.064 *	−0.034	−0.042	−0.041	−0.014	−0.000
	(−3.244)	(1.008)	(−0.786)	(0.443)	(−2.021)	(−0.271)	(−1.153)	(−1.142)	(−0.947)	(−0.046)
Constant	1.995 **	4.911 ***	8.163 ***	21.326 ***	−0.529	3.563 ***	−0.050	−0.106	0.270 **	−0.008
	(2.230)	(4.617)	(9.870)	(6.392)	(−1.382)	(6.933)	(−0.392)	(−0.800)	(2.495)	(−1.493)
N	510	540	540	540	360	540	540	540	330	420
Sample period	2004–2020	2003–2020	2003–2020	2003–2020	2009–2020	2003–2020	2003–2020	2003–2020	2003–2013	2007–2020
R^2	0.991	0.985	0.978	0.993	0.950	0.970	0.947	0.940	0.951	0.863
Within R^2	0.371	0.311	0.131	0.549	0.130	0.675	0.439	0.447	0.604	0.111
F	5.303	8.538	6.796	14.710	2.985	56.182	7.325	10.086	10.314	2.938
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of clusters	30	30	30	30	30	30	30	30	30	30

Note: Province-clustered robust *t*-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. The dependent variable in each column is the channel proxy identified in the column heading.

The coefficients for corporate income tax revenue per capita and local science and technology expenditure relative to GDP are 0.295 and 0.003, respectively, and both are significantly positive. These conditional associations are consistent with the observable fiscal predictions in H4a–H4b. The corporate income tax measure covers aggregate provincial receipts and cannot isolate revenue attributable to overseas earnings or establish that profits have been repatriated. Likewise, science and technology spending does not measure how benefits are distributed among workers or households. The results thus provide indirect, exploratory evidence concerning a potential fiscal channel; they do not establish a causal transmission from OFDI through fiscal resources to common prosperity or broad-based sharing.

Taken together, the conditional associations are consistent with several observable predictions concerning innovation, human capital, industrial structure, and fiscal resources. They help organize possible interpretations of the OFDI–CP relationship but do not establish causal transmission mechanisms. The market-expansion mechanism in H3 remains untested by the available proxies. Whether the potential gains discussed in the theoretical framework reach a broader population also depends on domestic employment, distribution, and public policy conditions that are not directly identified by these regressions.

7. Further Analysis

This section examines whether the conditional association between OFDI and common prosperity varies with geopolitical risk. The interaction model includes OFDI, destination-weighted risk, their product, the five baseline controls, and province and year fixed effects. For outcome Y, the slope on OFDI at risk level g is $\beta + \delta g$. We report this slope with pointwise 95% confidence intervals computed from the province-clustered covariance matrix, including the covariance between β and δ.

Destination-weighted GPR combines annual country risk from the Caldara–Iacoviello database [43] with each province's fixed shares of approved overseas investment projects during 2005–2008, obtained from the Directory of Overseas Investment Enterprises. The weights measure project counts, rather than investment amounts or contemporaneous destination allocations. Annual country GPR is obtained by averaging monthly observations; country series are standardized against 1985–2002, and the composite is subsequently standardized across the 360 province–year observations in 2009–2020. Matched destinations account for 69.3% of baseline projects on an unweighted average across provinces, with coverage ranging from 2.5% to 100%. The measure therefore captures only part of destination risk exposure.

The destination-weighted estimates in Table 11 have positive interaction coefficients of 0.020, 0.006, and 0.013 for CP, CPL, and CPS, respectively. They do not support H5's prediction of negative moderation. The fitted OFDI–outcome slope becomes more positive at higher destination-weighted GPR; this does not imply that geopolitical risk increases OFDI or improves welfare. Figure 1 plots the conditional slopes and their 95% confidence intervals across the observed risk distribution. At the 95th percentile of destination risk, the CP and CPL slopes are positive with intervals excluding zero, whereas the CPS interval includes zero.

For comparison, separate models use global GPR on the same 2009–2020 sample. The global series retains its standardization over the 18 annual observations in 2003–2020, and its main effect is absorbed by year fixed effects. The interaction estimates are −0.01965 for CP ($p = 0.060$), −0.00382 for CPL ($p = 0.328$), and −0.01583 for CPS ($p = 0.061$). Global risk thus provides weak evidence of negative moderation for CP and CPS at the 10% level, but no significant evidence for CPL. Figure 2 reports the corresponding conditional slopes.

Global and destination-weighted GPR represent different exposure concepts; their opposite signs do not establish a common negative-moderation result.

Table 11. OFDI–GPR interactions: destination-weighted and global risk on the common 2009–2020 sample.

Variable	Destination CP (1)	Destination CPL (2)	Destination CPS (3)	Global CP (4)	Global CPL (5)	Global CPS (6)
OFDI (x)	0.026	0.017 *	0.010	0.045 **	0.023 **	0.022
	(1.351)	(1.922)	(0.507)	(2.343)	(2.398)	(1.226)
GPR	−0.004	−0.001	−0.002	Absorbed by year FE	Absorbed by year FE	Absorbed by year FE
	(−1.033)	(−1.227)	(−0.801)			
OFDI × GPR	0.020 ***	0.006 **	0.013 ***	−0.020 *	−0.004	−0.016 *
	(3.570)	(2.472)	(3.317)	(−1.960)	(−0.995)	(−1.946)
Constant	0.249 *	0.243 ***	0.006	0.275 **	0.252 ***	0.023
	(1.947)	(4.782)	(0.052)	(2.150)	(4.420)	(0.218)
N	360	360	360	360	360	360
Sample period	2009–2020	2009–2020	2009–2020	2009–2020	2009–2020	2009–2020
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province-clustered standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Number of clusters	30	30	30	30	30	30

Note: Parentheses report t-statistics based on province-clustered robust standard errors. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

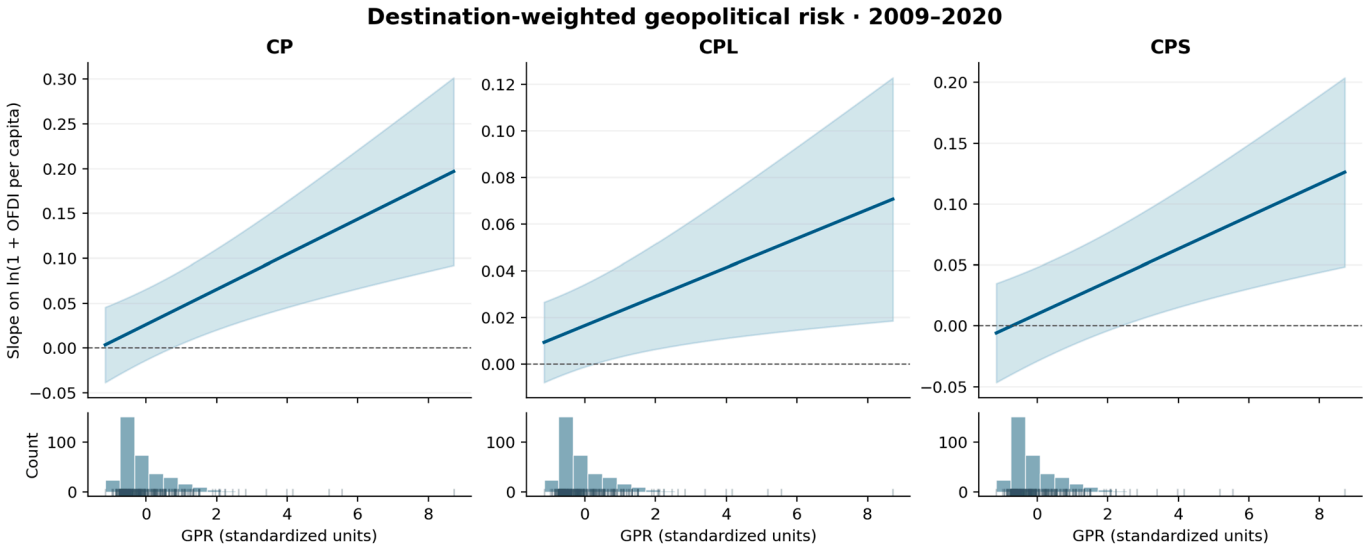


Figure 1. Conditional OFDI–outcome slopes across destination-weighted GPR, 2009–2020. Lines show β + δg; shading gives pointwise 95% confidence intervals using the full province-clustered covariance matrix and t(29) critical value. Histograms and rugs show the risk distribution. Slopes refer to transformed OFDI (x). Models include five controls and province and year fixed effects.

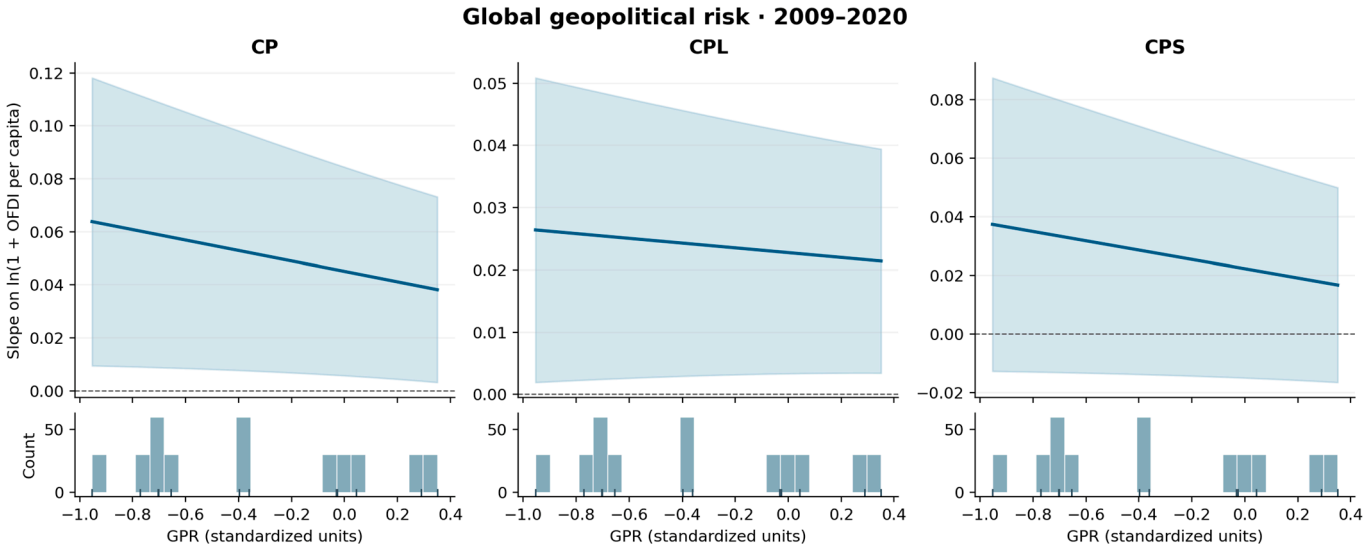


Figure 2. Conditional OFDI–outcome slopes across the observed global GPR range, 2009–2020. Lines show $\beta + \delta g$ and shaded bands are pointwise 95% confidence intervals from the full province-clustered covariance matrix with a $t(29)$ critical value. Histograms and rugs show observed risk support. Slopes refer to the transformed OFDI regressor x, not untransformed investment. All models include the five controls and province and year fixed effects.

Several considerations may help explain the positive destination risk interactions. First, the OFDI regressor measures accumulated investment stock, which need not respond immediately to a reduction in new investment during the current year. Moreover, the interaction tests whether the OFDI–CP relationship varies with risk, not whether risk reduces the volume of OFDI. Second, existing overseas markets, supply networks, or income sources may buffer some firms against adverse conditions, making established overseas operations relevant to domestic outcomes during periods of greater risk. Third, omitted provincial factors and extreme observations may also influence the estimates. These are possible interpretations rather than mechanisms established by the regressions. Accordingly, the positive interactions remain inconsistent with H5 and should not be interpreted as benefits from heightened geopolitical risk.

8. Research Conclusions and Policy Recommendations

8.1. Research Conclusions

Using provincial panel data for 2003–2020, this study examines whether OFDI is associated with both higher prosperity and broader sharing of development gains. The fixed-effects estimates show a positive association with overall common prosperity. Support for the prosperity dimension is more consistent across the baseline and most non-IV robustness specifications, whereas the sharing relationship is weaker and more sensitive to variable definitions and sample choices. The PCA-based results support the overall association with controls, although both component coefficients are only marginally significant. In the historical-port IV exercise, the positive IV-GMM estimates are significant with non-clustered robust inference, whereas the province-clustered 2SLS estimates are insignificant. These results are retained as supplementary evidence conditional on instrument validity and inference assumptions; they do not confirm causality or establish stronger evidence for sharing.

The channel-proxy regressions provide evidence consistent with possible links involving innovation, human capital, industrial structure, and fiscal resources. OFDI is positively associated with R&D expenditure, patenting, educational attainment, high-technology R&D

intensity, the tertiary-to-secondary value-added ratio, corporate income tax revenue per capita, and public science and technology expenditure. These findings correspond to the observable predictions in H2a–H2c and H4a–H4b but do not establish causal transmission to common prosperity. In particular, aggregate tax receipts do not identify overseas earnings or their repatriation. The negative export-to-GDP associations describe lower export ratios without identifying overseas market expansion or its domestic employment and income implications. They are therefore exploratory evidence on trade linkages, and H3 remains untested with the available proxies.

The positive OFDI associations are clearest in eastern China, while estimates for the other regions are imprecise. Formal comparisons provide limited evidence of regional differences, concentrated in overall common prosperity and sharing. Spatial Durbin models indicate positive indirect associations under both contiguity and inverse road-distance weights, but their magnitudes vary substantially with the weighting matrix. Excluding Hainan preserves their positive signs while changing their magnitudes and the spatial dependence pattern for sharing. The insignificant direct CPS estimates in the full sample further limit claims about broad-based welfare improvements. These results call for attention to provincial conditions and cross-provincial connections without treating the spatial estimates as fixed policy multipliers.

Geopolitical-risk results differ by exposure measure. Positive destination-weighted interactions do not support H5's predicted negative moderation, whereas global risk provides weak negative-moderation evidence for CP and CPS, but not CPL. Neither result establishes that geopolitical risk itself improves or reduces welfare. Taken together, the study connects the home-country outcomes of OFDI to the economic and social dimensions of sustainable development through a framework linking overseas value creation, domestic absorption, and broad-based sharing. Its central contribution is to distinguish improved average prosperity from evidence that gains reach a broader population. Provincial aggregates cannot trace firm-level knowledge transfers, domestic sourcing, earnings repatriation, or the allocation of gains to workers and households, nor is CPS a direct measure of reduced income inequality. Firm and household data would help test these links and strengthen causal identification.

8.2. Policy Recommendations

The findings support several priorities for policy assessment. First, evaluate outward investment using separate indicators of average prosperity and outcomes among disadvantaged households, rather than treating growth in OFDI or the composite CP index as sufficient evidence of broad-based sharing. The weaker and more specification-sensitive CPS results make it useful to monitor household income and consumption, employment outcomes, and access to public services alongside aggregate economic performance. The regressions do not, however, identify which redistribution instrument would be most effective.

Second, take regional differences and cross-provincial connections into account when assessing the domestic outcomes of OFDI. The clearest positive associations occur in eastern China, while estimates for other regions are less precise. This pattern supports assessment of local conditions before transferring policy experience across regions; it does not establish a specific investment allocation rule. Positive estimated indirect associations motivate attention to interprovincial linkages, but their sensitivity to the weighting matrix and treatment of Hainan precludes treating the estimated spillover magnitudes as fixed policy multipliers.

Broader proposals follow from the theoretical channels and should be evaluated as such. Improving domestic research capacity, workforce skills, and links between overseas operations and domestic suppliers may help translate overseas activity into domestic gains. Policies facilitating lawful earnings repatriation and productive domestic reinvestment, and

arrangements through which workers participate in those gains, are also possible options. The present proxy regressions do not establish the effectiveness of these instruments. Their design should therefore be supported by project, firm, and household evidence, rather than inferred directly from provincial R&D, tax revenue, or export ratios.

Finally, risk assessment should distinguish global geopolitical conditions from exposure to particular destinations. The opposing interaction signs do not justify a general claim that geopolitical risk either improves or weakens all domestic benefits from OFDI. Better reporting of destination exposures, overseas operating conditions, and links to domestic employment and income would support risk monitoring. Diversification and political risk insurance remain theoretically motivated options.

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Abbreviations

GMM	Generalized method of moments
CP	Common prosperity index
CPL	Prosperity level index
CPS	Sharing dimension index
GDP	Gross domestic product
GPR	Geopolitical risk
IV	Instrumental variable
OFDI	Outward foreign direct investment
QML	Quasi-maximum likelihood
R&D	Research and development
S&T	Science and technology
SDM	Spatial Durbin model
TWFE	Two-way fixed effects
PCA	Principal component analysis

Appendix A. Results Using the Unwinsorized OFDI Regressor

To assess sensitivity to winsorization, Table A1 reports the regressions using ln(1 + OFDIpc) without winsorizing this variable. OFDIpc is OFDI stock per resident, measured in CNY 10,000 per person. The logarithmic transformation is retained, but the original log values are not capped at either tail. The sample, five control variables, province and year fixed effects, and province-clustered standard errors are the same as in the fully controlled baseline specification. All three regressions use the same 540 observations for 30 provinces over 2003–2020.

Without winsorization, the positive associations of OFDI with overall common prosperity and the prosperity level remain statistically significant, whereas its association with

the sharing dimension is no longer significant. These results suggest that the findings for overall common prosperity and the prosperity level are relatively robust to the choice of winsorization, while the statistical evidence for the sharing dimension is weaker and more sensitive to the treatment of extreme values.

Table A1. Two-way fixed-effects results using unwinsorized ln(1 + OFDIpc).

Variable	CP (1)	CPL (2)	CPS (3)
Per capita OFDI	0.065 ***	0.038 ***	0.027
	(2.766)	(3.374)	(1.211)
Urbanization level	0.236	0.074	0.162
	(1.357)	(0.908)	(1.304)
Transport infrastructure	−0.015	−0.004	−0.010
	(−0.807)	(−0.559)	(−0.912)
Population ageing	−0.331 **	−0.156 *	−0.175 *
	(−2.062)	(−1.908)	(−1.792)
Industrialization level	−0.038	−0.016	−0.022
	(−0.563)	(−0.462)	(−0.524)
Financial development level	−0.032 **	−0.022 ***	−0.011
	(−2.069)	(−3.545)	(−0.824)
N	540	540	540
R^2	0.985	0.989	0.968
Within R^2	0.190	0.312	0.083
F	4.884	7.880	3.336
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Province-clustered standard errors	Yes	Yes	Yes

Note: The dependent variables are the entropy-based CP, CPL, and CPS indices, each estimated in a separate regression. Parentheses report t statistics based on province-clustered robust standard errors. Two-sided *p*-values use a Student t distribution with 29 degrees of freedom. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The F statistic tests the joint significance of the OFDI regressor and the five controls using province-clustered standard errors. Within R^2 is calculated after removing province and year effects.

Appendix B. Spatial Sensitivity to Excluding Hainan

To assess sensitivity to Hainan's zero spatial weights, we also exclude Hainan and re-estimate both models using the 29-province submatrices, with the same row-standardization rule and the original variable transformations. The weights among the remaining provinces are unchanged apart from numerical precision, and the estimation sample decreases from 540 to 522 observations.

Table A2 reports the estimates excluding Hainan. Positive direct estimates for CP and CPL remain significant at the 1% level, and indirect estimates remain positive for all three outcomes under both matrices. However, the magnitudes and spatial dependence parameters are sensitive to the sample change. Under road-distance weights, the CPS indirect estimate decreases from 0.3192 to 0.1821, approximately 43%, while its spatial autoregressive coefficient changes from an insignificant 0.0393 to −0.3220 ($p = 0.0345$). The road-distance CPS direct estimate is only marginally significant (0.0106; $p = 0.0987$), and its contiguity counterpart remains insignificant. The road-distance CPL indirect estimate also increases from 0.0604 to 0.1247. The positive indirect association therefore survives this sample check, but neither its magnitude nor the spatial pattern of sharing can be considered invariant to the treatment of Hainan.

Table A2. Spatial Durbin model results excluding Hainan.

Variable/Effect	Geographic Contiguity Matrix			Inverse Road-Distance Matrix		
	CP	CPL	CPS	CP	CPL	CPS
Spatial autoregressive coefficient ρ	0.261 ***	0.362 ***	0.008	0.344 ***	0.511 ***	−0.322 **
	(4.803)	(6.701)	(0.134)	(2.970)	(5.271)	(−2.114)
Direct effect of OFDI	0.025 ***	0.026 ***	−0.003	0.049 ***	0.034 ***	0.011 *
	(2.604)	(5.692)	(−0.376)	(5.186)	(7.540)	(1.651)
Indirect effect of OFDI	0.162 ***	0.056 ***	0.098 ***	0.456 ***	0.125 **	0.182 ***
	(6.569)	(4.278)	(6.854)	(4.051)	(2.170)	(5.258)
Total effect of OFDI	0.187 ***	0.081 ***	0.095 ***	0.505 ***	0.159 ***	0.193 ***
	(8.096)	(6.440)	(8.067)	(4.453)	(2.750)	(5.883)
N	522	522	522	522	522	522
Number of provinces	29	29	29	29	29	29
Control variables and their spatial lags	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
SDM-QML	Yes	Yes	Yes	Yes	Yes	Yes

Note: The sample excludes Hainan (29 provinces; 522 observations, 2003–2020) and the corresponding rows and columns of both weight matrices. Row standardization, variable transformations, full-sample winsorization, controls, spatial lags, fixed effects, QML estimation, and inference follow Table 8. Parentheses report z-statistics; standard errors are not province-clustered. Effects describe conditional associations rather than established causal spillovers. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

References

1. OECD. *OECD Benchmark Definition of Foreign Direct Investment*, 4th ed.; OECD Publishing: Paris, France, 2014.
2. Asian Development Bank. *Key Indicators for Asia and the Pacific 2014: Framework of Inclusive Growth Indicators*, 4th ed.; Asian Development Bank: Mandaluyong City, Philippines, 2014.
3. United Nations Development Programme. *Human Development Report 2010: The Real Wealth of Nations—Pathways to Human Development*; Palgrave Macmillan: New York, NY, USA, 2010.
4. Li, J.; Yu, W. Statistical monitoring and evaluation of common prosperity: A discussion. *Stat. Res.* **2022**, *39*, 3–17. (In Chinese) [CrossRef]
5. Li, S. The goals of common prosperity and the choice of implementation pathways. *Econ. Res. J.* **2021**, *56*, 4–13. (In Chinese)
6. Liu, P.; Qian, T.; Huang, X.; Dong, X. The connotation, realization pathways, and measurement methods of common prosperity. *Manag. World* **2021**, *37*, 117–129. (In Chinese) [CrossRef]
7. Xiao, J.; Hong, H. Conceptual clarification, challenges, and pathways for common prosperity. *Enterp. Econ.* **2022**, *41*, 5–15. (In Chinese) [CrossRef]
8. Xie, A.; Hou, Q. Common prosperity in the new development stage: Theoretical connotations, indicator measurement, and three logical relationships. *Hebei Acad. J.* **2022**, *42*, 131–139. (In Chinese)
9. Chao, X.; Ren, B. The theoretical connotation of common prosperity and the construction of its evaluation indicator system in the new development stage. *Res. Financ. Econ. Issues* **2022**, 3–11. (In Chinese) [CrossRef]
10. Xi, H.; Wang, R.; Zhu, Y.; Yu, S. The common prosperity index: China's current situation and pathways for advancement. *J. Hainan Univ. (Humanit. Soc. Sci.)* **2022**, *40*, 45–57. (In Chinese)
11. Cheng, C.; Sun, P. The meaning and measurement of common prosperity. *Jianghan Trib.* **2023**, 46–53. (In Chinese)
12. Hou, W. Determinants of regional differences in China's outward foreign direct investment: An empirical analysis based on provincial panel data. *J. Shanghai Univ. Int. Bus. Econ.* **2014**, *21*, 47–57. (In Chinese) [CrossRef]
13. Chen, L.; Zhu, Y. An empirical study of the impact of financial development on China's outward foreign direct investment. *J. East China Norm. Univ. (Humanit. Soc. Sci.)* **2017**, *49*, 117–124. (In Chinese) [CrossRef]
14. Wang, Y.; Luo, N. The effect of outward foreign direct investment on income inequality in the home country: Evidence from cross-country panel data. *Chin. J. Manag. Sci.* **2019**, *27*, 1–12. (In Chinese) [CrossRef]
15. Wang, Y.H.; Huo, Z.H.; Li, D.P.; Zhang, M. Evaluation of common prosperity level and regional difference analysis along the Yangtze River Economic Belt. *Int. J. Environ. Res. Public Health* **2022**, *19*, 11851. [CrossRef]

16. Xiao, R. A preliminary study of the indicator system for China's common prosperity goal. *Price Theory Pract.* **2022**, *9*, 21–25. (In Chinese)
17. Ravallion, M. On multidimensional indices of poverty. *J. Econ. Inequal.* **2011**, *9*, 235–248. [CrossRef]
18. Knoerich, J.; Benson, D. Home-country effects of outward foreign direct investment: A systematic review of empirical and policy evidence. *Int. Bus. Rev.* **2026**, *35*, 102529. [CrossRef]
19. Herzer, D. The long-run relationship between outward FDI and domestic output: Evidence from panel data. *Econ. Lett.* **2008**, *100*, 146–149. [CrossRef]
20. Desai, M.A.; Foley, C.F.; Hines, J.R. Domestic effects of the foreign activities of US multinationals. *Am. Econ. J. Econ. Policy* **2009**, *1*, 181–203. [CrossRef]
21. Al-Sadig, A. *Outward Foreign Direct Investment and Domestic Investment: The Case of Developing Countries*; IMF Working Paper No. 13/52; International Monetary Fund: Washington, DC, USA, 2013.
22. Blomström, M.; Fors, G.; Lipsey, R.E. Foreign direct investment and employment: Home country experience in the United States and Sweden. *Econ. J.* **1997**, *107*, 1787–1797. [CrossRef]
23. Harrison, A.; McMillan, M. Offshoring jobs? Multinationals and U.S. manufacturing employment. *Rev. Econ. Stat.* **2011**, *93*, 857–875. [CrossRef]
24. Debaere, P.; Lee, H.; Lee, J. It matters where you go: Outward foreign direct investment and multinational employment growth at home. *J. Dev. Econ.* **2010**, *91*, 301–309. [CrossRef]
25. Barba Navaretti, G.; Castellani, D.; Disdier, A.C. How does investing in cheap labour countries affect performance at home? Firm-level evidence from France and Italy. *Oxf. Econ. Pap.* **2010**, *62*, 234–260. [CrossRef]
26. Head, K.; Ries, J. Offshore production and skill upgrading by Japanese manufacturing firms. *J. Int. Econ.* **2002**, *58*, 81–105. [CrossRef]
27. Becker, S.O.; Ekholm, K.; Muendler, M.A. Offshoring and the onshore composition of tasks and skills. *J. Int. Econ.* **2013**, *90*, 91–106. [CrossRef]
28. Hummels, D.; Jørgensen, R.; Munch, J.R.; Xiang, C. The wage effects of offshoring: Evidence from Danish matched worker-firm data. *Am. Econ. Rev.* **2014**, *104*, 1597–1629. [CrossRef]
29. Branstetter, L. Is foreign direct investment a channel of knowledge spillovers? Evidence from Japan's FDI in the United States. *J. Int. Econ.* **2006**, *68*, 325–344. [CrossRef]
30. Griffith, R.; Harrison, R.; Van Reenen, J. How special is the special relationship? Using the impact of U.S. R&D spillovers on U.K. firms as a test of technology sourcing. *Am. Econ. Rev.* **2006**, *96*, 1859–1875. [CrossRef]
31. Bertrand, O.; Capron, L. Productivity enhancement at home via cross-border acquisitions: The roles of learning and contemporaneous domestic investments. *Strateg. Manag. J.* **2015**, *36*, 640–658. [CrossRef]
32. Li, L.; Liu, X.; Yuan, D.; Yu, M. Does outward FDI generate higher productivity for emerging economy MNEs? Micro-level evidence from Chinese manufacturing firms. *Int. Bus. Rev.* **2017**, *26*, 839–854. [CrossRef]
33. Head, K.; Ries, J. Overseas investment and firm exports. *Rev. Int. Econ.* **2001**, *9*, 108–122. [CrossRef]
34. Blonigen, B.A. In search of substitution between foreign production and exports. *J. Int. Econ.* **2001**, *53*, 81–104. [CrossRef]
35. International Monetary Fund. *Balance of Payments and International Investment Position Manual*, 6th ed.; International Monetary Fund: Washington, DC, USA, 2009.
36. Dharmapala, D.; Foley, C.F.; Forbes, K.J. Watch what I do, not what I say: The unintended consequences of the Homeland Investment Act. *J. Financ.* **2011**, *66*, 753–787. [CrossRef]
37. Tørsløv, T.R.; Wier, L.S.; Zucman, G. The missing profits of nations. *Rev. Econ. Stud.* **2023**, *90*, 1499–1534. [CrossRef]
38. Beer, S.; De Mooij, R.; Liu, L. International corporate tax avoidance: A review of the channels, magnitudes, and blind spots. *J. Econ. Surv.* **2020**, *34*, 660–688. [CrossRef]
39. Dunning, J.H. The eclectic paradigm of international production: A restatement and some possible extensions. *J. Int. Bus. Stud.* **1988**, *19*, 1–31. [CrossRef]
40. Buckley, P.J.; Clegg, L.J.; Cross, A.R.; Liu, X.; Voss, H.; Zheng, P. The determinants of Chinese outward foreign direct investment. *J. Int. Bus. Stud.* **2007**, *38*, 499–518. Erratum in *J. Int. Bus. Stud.* **2009**, *40*, 353–354. https://doi.org/10.1057/jibs.2008.102. [CrossRef]
41. Ramasamy, B.; Yeung, M.; Laforet, S. China's outward foreign direct investment: Location choice and firm ownership. *J. World Bus.* **2012**, *47*, 17–25. [CrossRef]
42. Liu, X.; Buck, T.; Shu, C. Chinese economic development, the next stage: Outward FDI? *Int. Bus. Rev.* **2005**, *14*, 97–115. [CrossRef]
43. Caldara, D.; Iacoviello, M. Measuring geopolitical risk. *Am. Econ. Rev.* **2022**, *112*, 1194–1225. [CrossRef]
44. Henisz, W.J. The institutional environment for multinational investment. *J. Law Econ. Organ.* **2000**, *16*, 334–364. [CrossRef]
45. Dai, L.; Eden, L.; Beamish, P.W. Place, space, and geographical exposure: Foreign subsidiary survival in conflict zones. *J. Int. Bus. Stud.* **2013**, *44*, 554–578. [CrossRef]
46. Multilateral Investment Guarantee Agency. Political Risk Insurance. Available online: https://www.miga.org/political-risk-insurance (accessed on 20 July 2026).

47. Zeng, G.; Su, S.; Xu, Z. On the construction of an evaluation indicator system for common prosperity. *Jianghan Trib.* **2025**, *2*, 5–12. (In Chinese)
48. National Bureau of Statistics of China. China Statistical Yearbook (2003–2021) [Database/Online]. Available online: https://www.stats.gov.cn/sj/ndsj/ (accessed on 11 July 2026). (In Chinese)
49. He, P.; Feng, X.; Lin, F. How Does China's Outward Foreign Direct Investment Affect Exports? A Study Using Destination-Weighted Construction Permits as an Instrumental Variable. *J. Cent. Univ. Financ. Econ.* **2017**, *2*, 110–119. (In Chinese)
50. Sun, C.; Zhang, W. Outward Foreign Direct Investment and Industrial Green Transformation: An Empirical Study Based on Provincial Panel Data in China. *J. Beijing Inst. Technol. (Soc. Sci. Ed.)* **2022**, *24*, 103–117. (In Chinese) [CrossRef]
51. Zhao, R.; Zeng, G.; Pan, X.; Liu, H. Informal Institutions, Cultural Orientation, and Inclusive Growth in a Complex Socioeconomic System: Evidence from China. *Systems* **2026**, *14*, 1211. [CrossRef]
52. The Palace Museum. Treaty of Nanjing. Available online: https://www.dpm.org.cn/lemmas/241863.html (accessed on 1 October 2026). (In Chinese)
53. Baum, C.F.; Schaffer, M.E.; Stillman, S. Enhanced Routines for Instrumental Variables/Generalized Method of Moments Estimation and Testing. *Stata J.* **2007**, *7*, 465–506. [CrossRef]
54. Stock, J.H.; Yogo, M. Testing for Weak Instruments in Linear IV Regression. In *Identification and Inference for Econometric Models*; Cambridge University Press: New York, NY, USA, 2005; pp. 80–108. [CrossRef]
55. National Bureau of Statistics of China. How Are China's Economic Regions Classified? 2021. Available online: https://www.stats.gov.cn/zt_18555/zthd/lhfw/2021/rdwt/202302/t20230214_1903926.html (accessed on 1 October 2026). (In Chinese)
56. National Bureau of Statistics of China; Ministry of Science and Technology of China. *China Statistical Yearbook on Science and Technology (2003–2021)*; China Statistics Press: Beijing, China, 2003–2021. (In Chinese)
57. Editorial Board of the China Finance Yearbook. *China Finance Yearbook (2003–2021)*; China Finance Magazine: Beijing, China, 2003–2021. (In Chinese)
58. Jiang, T. Mediation and moderation effects in empirical studies of causal inference. *China Ind. Econ.* **2022**, 100–120. (In Chinese) [CrossRef]

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