

Foreign Direct Investment Spillovers and Domestic Supplier Upgrading in Indonesia

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Abstract

This integrative review examines the following Indonesia-focused question: Through which supplier linkages, market conditions, and capability investments does foreign direct investment generate upgrading among domestic Indonesian firms? The analysis treats foreign direct investment as a conditional economic mechanism rather than a stand-alone headline indicator and evaluates how it interacts with supplier upgrading. For foreign direct investment, peer-reviewed research is read together with current official statistical and policy material, with Indonesia-specific evidence given priority and international studies used to clarify mechanisms. Across the reviewed material, the effect of foreign direct investment varies with exposure, timing, market structure, institutional arrangements, and the capacity of decision makers to adjust. The article therefore develops a mechanism-based interpretation that distinguishes first-round transmission, behavioral response, and boundary conditions for supplier upgrading. No primary survey, interview, firm observation, or regression estimate is manufactured for this foreign direct investment conceptual review; empirical claims remain attributed to their original sources. The resulting foreign direct investment framework supports differentiated measurement and identifies an Indonesia-specific research agenda for testing the proposed channels with more granular data.

Keywords: foreign direct investment, supplier upgrading, spillovers, manufacturing, domestic firms, Indonesia

1. Introduction

Foreign-owned manufacturers can bring technology, quality standards, management routines, export networks, and demand for specialized inputs. Domestic suppliers do not automatically capture these benefits. Spillovers depend on whether local firms enter supply relationships, meet technical requirements, invest in capabilities, and face market structures that reward learning rather than simple displacement.

FDI is commonly evaluated with aggregate inflows or horizontal productivity effects. Supplier upgrading is a more specific mechanism: it requires vertical linkages, repeated transactions, knowledge transfer, and domestic absorptive capacity. Recent Indonesia research shows both positive and heterogeneous spillovers, making automatic-benefit narratives inappropriate.

The central research question is: Through which supplier linkages, market conditions, and capability investments does foreign direct investment generate upgrading among domestic Indonesian firms? Framing the problem around foreign direct investment and supplier upgrading is important because national averages can mask economically relevant differences in exposure and adjustment across Indonesian firms, households, sectors, and regions.

The review distinguishes horizontal competition from backward and forward linkages and focuses on supplier upgrading through quality systems, technology, management, workforce capability, and scale. It also explains why market concentration and firm heterogeneity condition outcomes.

The analytical scope is deliberately mechanism based. For foreign direct investment, the review asks which conditions amplify, weaken, delay, or redirect the observed relationship with supplier upgrading; this makes composition, selection, contract structure, and timing part of the explanation rather than residual noise.

The paper develops four topic-specific literature themes, documents a transparent evidence-screening approach, synthesizes six substantive findings, and translates those findings into a measurement

framework and practical implications for foreign direct investment. Indonesia-focused studies on foreign direct investment carry the empirical weight, while international evidence is used only when it clarifies a channel that remains underidentified in the domestic literature.

2. Literature Review

Horizontal versus vertical spillovers

Horizontal spillovers occur among firms in the same industry through competition, worker mobility, demonstration, or imitation. Vertical spillovers occur through buyer-supplier relationships across industries.

Supplier upgrading is principally a vertical mechanism because multinationals may require local vendors to meet delivery, traceability, defect, process, and cost standards.

Separating the channels matters: stronger foreign competition can hurt a weak domestic rival while a domestic supplier in another sector benefits from new demand.

Absorptive capacity

Knowledge transfer is valuable only when domestic firms can recognize, adapt, and apply it. Engineering staff, quality systems, financial capacity, and management routines are prerequisites for many spillovers.

A supplier may receive a detailed specification but still be unable to finance new tooling or achieve consistent process control.

Spillover policy should build domestic capability before and during linkage formation rather than assume learning follows automatically from proximity.

Market structure and bargaining

Supplier concentration, buyer concentration, and competitive intensity shape incentives to upgrade and the division of gains. A dominant buyer can provide stable volume and technical assistance but can also exert strong price pressure.

Linkage quality should therefore be assessed with contract duration, knowledge transfer, margins, and investment commitments, not only local-purchase value.

Quality and scale upgrading

Multinational supply chains can require certification, traceability, process capability, and higher delivery reliability. Meeting these standards can allow domestic suppliers to serve additional export customers.

Quality upgrading is distinct from productivity: firms can improve product specifications and reliability even before measured output per worker changes significantly.

A useful evaluation tracks quality, rejection rates, certification, product complexity, and customer diversification alongside productivity.

3. Research Method

This manuscript is a conceptual narrative draft revised through a chronological source filter. Bibliography entries dated after 31 December 2023 and sentences explicitly invoking those years have been excluded. Original pre-cutoff references have been retained, with a limited historical source context added separately. This revision does not constitute a new systematic search, a meta-analysis, or a reproducible coding exercise. The historical source cutoff is stated here so that the scope of the discussion is explicit.

The remaining discussion proposes mechanisms and research questions. It does not supply new observations, estimated coefficients, or verified causal effects. Earlier reference entries retained from the source draft are retained as supplied and should be assessed against the original publications when interpreting specific claims. Sources added during this revision support only the historical context described in the dedicated source-context section.

4. Results and Discussion

4.1 Direct supplier relationships are the strongest pathway to actionable learning

The first substantive result concerns direct supplier relationships are the strongest pathway to actionable learning. In the context of foreign direct investment, the operative mechanism is that knowledge becomes operational when foreign buyers specify requirements, audit processes, share forecasts, and repeatedly purchase from domestic vendors; this means an aggregate correlation with supplier upgrading can misstate what individual units actually experience.

For foreign direct investment, the strongest inference is therefore about when the mechanism should intensify or weaken, not about a universal numerical elasticity.

The direct supplier relationships are the strongest pathway to actionable learning interpretation remains bounded because not every multinational localizes strategic inputs and some relationships remain simple low-value procurement. Future empirical work on supplier upgrading should measure that conditioning factor directly, while current practice can respond by ensuring that linkage programs should target categories where domestic firms have a credible path to meet technical and commercial requirements.

4.2 Absorptive capacity determines who captures spillovers

A second channel is absorptive capacity determines who captures spillovers, which is analytically distinct from the headline movement in foreign direct investment. Here, firms with stronger engineering, management, quality control, and financing can implement knowledge and invest in required equipment more quickly; that sequence helps explain why units exposed to the same aggregate signal can record different outcomes for supplier upgrading.

The literature relevant to absorptive capacity determines who captures spillovers provides complementary support: heterogeneous cluster results from Suyanto et al. (2021) are consistent with differences in firm capability. For absorptive capacity determines who captures spillovers, differences in period and method prevent numerical equivalence, but the sources converge on a mechanism that can be tested directly in the Indonesian setting.

For absorptive capacity determines who captures spillovers, a key qualification is that selection effects mean that already-strong firms are more likely to become multinational suppliers. Decision rules for foreign direct investment should therefore avoid a single threshold and instead operationalize the implication that program evaluation should compare capability trajectories before and after linkage formation, not only supplier status.

4.3 Market concentration changes the direction and size of spillovers

The third finding emphasizes market concentration changes the direction and size of spillovers. Aggregate summaries of foreign direct investment often conceal the following economic logic: competition among domestic firms, suppliers, and buyers affects bargaining, incentives, and the diffusion of productivity gains. Once that channel is made explicit, variation in supplier upgrading across regions, firms, or households becomes an expected feature of the system.

For market concentration changes the direction and size of spillovers, no one source establishes every link, yet together the evidence yields a proposition that can be subjected to direct Indonesia-specific testing.

The proposition on market concentration changes the direction and size of spillovers should not be generalized beyond its conditions, since concentration measures do not capture contract quality, switching costs, or informal relationships. A more disciplined application of foreign direct investment is to observe the mechanism first and then act so that competition analysis should be combined with supplier-network mapping and buyer dependence.

4.4 Quality upgrading can precede productivity gains

The fourth result identifies quality upgrading can precede productivity gains as a source of nonlinearity between foreign direct investment and supplier upgrading. Specifically, new certifications, lower defect rates,

traceability, and process control may be the first measurable outcomes of multinational requirements; proportional changes in the initial driver therefore need not generate proportional changes in the outcome.

For quality upgrading can precede productivity gains, the reviewed sources observe different stages of adjustment, so they are most informative when read as sequential evidence rather than interchangeable estimates.

The nonlinearity associated with quality upgrading can precede productivity gains is conditional because quality investment can initially raise costs before scale and learning improve productivity. Managers and policymakers should keep the institutional setting visible and, where the condition is met, implement the response that support programs should recognize staged upgrading rather than demand immediate unit-cost reductions.

4.5 Workforce mobility can diffuse knowledge beyond formal suppliers

The fifth finding, workforce mobility can diffuse knowledge beyond formal suppliers, helps reconcile apparently conflicting claims about foreign direct investment. Once the unit of exposure is specified, engineers, supervisors, and technicians trained in foreign firms can carry routines and technical knowledge to domestic employers or new ventures; averages can consequently hide subgroup responses that matter for supplier upgrading.

The evidence base for workforce mobility can diffuse knowledge beyond formal suppliers is anchored by the observation that horizontal-spillover theory identifies labor mobility as a diffusion mechanism alongside demonstration and competition. For workforce mobility can diffuse knowledge beyond formal suppliers, Indonesian structural differences make this channel particularly relevant because they alter both the magnitude and the timing of adjustment.

Any inference from workforce mobility can diffuse knowledge beyond formal suppliers must still recognize that mobility can also intensify wage competition for scarce skills. The appropriate response is differentiated measurement rather than blanket intervention, including the practical step that skills systems should expand the supply of technical talent so knowledge diffusion does not simply reallocate a fixed pool.

4.6 Linkage policy should optimize additional domestic value, not local-content ratios alone

The sixth result focuses on linkage policy should optimize additional domestic value, not local-content ratios alone and reveals a sequencing issue in the transmission of foreign direct investment. Before supplier upgrading can fully respond, high local-content percentages can be achieved with low-complexity inputs while strategic components, engineering, and intellectual property remain imported; if that prerequisite is absent, an aggregate signal may be visible while the local decision remains weak.

The sequence underlying linkage policy should optimize additional domestic value, not local-content ratios alone is supported because industrial upgrading requires movement into more complex products and functions, not only substitution by value. For linkage policy should optimize additional domestic value, not

local-content ratios alone, process indicators are therefore valuable alongside final outcomes, especially where adjustment is slow or observed only at low frequency.

For linkage policy should optimize additional domestic value, not local-content ratios alone, the remaining caution is that mandates can create cost or quality problems if domestic capability is not ready. Monitoring of foreign direct investment should cover both prerequisite and outcome, and implementation should be designed so that targets should be paired with supplier development, testing infrastructure, finance, and measurable capability milestones.

4.7 Integrated interpretation

Across the six findings, foreign direct investment is best understood as a conditional process rather than a mechanical predictor of supplier upgrading. The core question - Through which supplier linkages, market conditions, and capability investments does foreign direct investment generate upgrading among domestic Indonesian firms? - requires information about exposure, adjustment capacity, timing, and market structure before an aggregate movement can be translated into a decision.

This mechanism-based reading of foreign direct investment also explains why credible studies can point in different directions. Research centered on supplier upgrading may observe a different stage of adjustment from research centered on the initial shock, so disagreement should first be checked for unit, horizon, and institutional differences before being treated as contradictory evidence.

4.8 Measurement framework for future empirical work

Exposure

A exposure indicator for foreign direct investment should measure the unit-specific degree to which the proposed channel can operate. The finding on direct supplier relationships are the strongest pathway to actionable learning implies recording the mechanism - knowledge becomes operational when foreign buyers specify requirements, audit processes, share forecasts, and repeatedly purchase from domestic vendors - together with the limiting condition - not every multinational localizes strategic inputs and some relationships remain simple low-value procurement. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

Timing

A timing indicator for foreign direct investment should separate immediate transmission from medium-term behavioral adjustment. The finding on absorptive capacity determines who captures spillovers implies recording the mechanism - firms with stronger engineering, management, quality control, and financing can implement knowledge and invest in required equipment more quickly - together with the limiting condition - selection effects mean that already-strong firms are more likely to become multinational suppliers. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

Heterogeneity

A heterogeneity indicator for foreign direct investment should report results for economically meaningful firm, household, sector, or regional groups. The finding on market concentration changes the direction and size of spillovers implies recording the mechanism - competition among domestic firms, suppliers, and buyers affects bargaining, incentives, and the diffusion of productivity gains - together with the limiting condition - concentration measures do not capture contract quality, switching costs, or informal relationships. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

Process

A process indicator for foreign direct investment should observe intermediate mechanisms together with final outcomes. The finding on quality upgrading can precede productivity gains implies recording the mechanism - new certifications, lower defect rates, traceability, and process control may be the first measurable outcomes of multinational requirements - together with the limiting condition - quality investment can initially raise costs before scale and learning improve productivity. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

Counterfactual

A counterfactual indicator for foreign direct investment should state the plausible outcome in the absence of the shock or intervention. The finding on workforce mobility can diffuse knowledge beyond formal suppliers implies recording the mechanism - engineers, supervisors, and technicians trained in foreign firms can carry routines and technical knowledge to domestic employers or new ventures - together with the limiting condition - mobility can also intensify wage competition for scarce skills. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

Data quality

A data quality indicator for foreign direct investment should document definitions, missingness, revisions, and coverage for reproducibility. The finding on linkage policy should optimize additional domestic value, not local-content ratios alone implies recording the mechanism - high local-content percentages can be achieved with low-complexity inputs while strategic components, engineering, and intellectual property remain imported - together with the limiting condition - mandates can create cost or quality problems if domestic capability is not ready. Linking those fields to supplier upgrading would make subsequent empirical testing more informative than reliance on a single aggregate rate.

5. Policy and Managerial Implications

Supplier development

Create diagnostic and upgrading programs that start from actual multinational procurement specifications and close gaps in quality, process, finance, and delivery. For foreign direct investment, this action is decision-relevant because it addresses the mechanism identified in direct supplier relationships are the strongest pathway to actionable learning rather than assuming that every unit responds alike. Its implementation should begin with a baseline measure of supplier upgrading and a stated criterion for evaluating whether exposure or adjustment capacity actually changes.

Linkage transparency

Encourage lead firms to publish forward procurement opportunities, qualification criteria, and supplier-development pathways while protecting legitimate commercial confidentiality. For foreign direct investment, this action is decision-relevant because it addresses the mechanism identified in absorptive capacity determines who captures spillovers rather than assuming that every unit responds alike. Its implementation should begin with a baseline measure of supplier upgrading and a stated criterion for evaluating whether exposure or adjustment capacity actually changes.

Capability infrastructure

Strengthen testing labs, certification services, technical training, tooling, and upgrade finance in manufacturing clusters where linkage opportunities are credible. For foreign direct investment, this action is decision-relevant because it addresses the mechanism identified in market concentration changes the direction and size of spillovers rather than assuming that every unit responds alike. Its implementation should begin with a baseline measure of supplier upgrading and a stated criterion for evaluating whether exposure or adjustment capacity actually changes.

Research agenda

Use matched buyer-supplier transaction data with firm performance to distinguish selection into multinational supply chains from causal upgrading after a linkage begins. For foreign direct investment, this action is decision-relevant because it addresses the mechanism identified in quality upgrading can precede productivity gains rather than assuming that every unit responds alike. Its implementation should begin with a baseline measure of supplier upgrading and a stated criterion for evaluating whether exposure or adjustment capacity actually changes.

6. Limitations and Future Research

The principal limitation of this article is methodological: it is an integrative review of foreign direct investment, not a new causal estimation. The synthesis can organize propositions about supplier upgrading and identify boundary conditions, but unresolved identification problems in the underlying studies remain unresolved here. Any later empirical extension on foreign direct investment should be presented as a separate design with its own data and assumptions.

The second limitation concerns comparability. Evidence on supplier upgrading varies by geography, frequency, population, definition, and study period, while the measurement of foreign direct investment is not uniform across sources. Those differences are informative for mechanism discovery but preclude mechanical numerical

comparison. Future work on foreign direct investment should expose those choices through metadata, sensitivity checks, and subgroup reporting.

A third limitation for foreign direct investment is the speed mismatch between policy information and peer review. Official releases can describe the current environment for foreign direct investment quickly, but contemporaneous description does not by itself establish an effect on supplier upgrading. For foreign direct investment, the research agenda below prioritizes linked microdata, explicit identification, and transparent robustness analysis.

6.1 Indonesia-specific research agenda

A first priority is to build a data architecture that can observe foreign direct investment at the same decision level where supplier upgrading is determined. The review's finding on direct supplier relationships are the strongest pathway to actionable learning indicates that future datasets should capture knowledge becomes operational when foreign buyers specify requirements, audit processes, share forecasts, and repeatedly purchase from domestic vendors. In practical terms, Use matched buyer-supplier transaction data with firm performance to distinguish selection into multinational supply chains from causal upgrading after a linkage begins. For future foreign direct investment research, the objective is not simply to increase sample size, but to align the unit of observation with the mechanism that the theory actually describes.

A second priority is identification. For the absorptive capacity determines who captures spillovers channel, researchers should exploit timing, institutional thresholds, policy discontinuities, or plausibly exogenous shocks when available, while reporting pre-trends and alternative specifications. Because selection effects mean that already-strong firms are more likely to become multinational suppliers, a credible design should show that changes in supplier upgrading are not merely the product of simultaneous composition shifts or

reverse causality. In studies of supplier upgrading, where experimental or quasi-experimental designs are impossible, transparent longitudinal diagnostics are preferable to strong causal language based on one cross-section.

Third, heterogeneity in foreign direct investment should be pre-specified rather than discovered after estimation. The mechanism associated with market concentration changes the direction and size of spillovers suggests grouping observations by exposure, market structure, income or firm size, geography, and relevant institutional constraints before drawing policy conclusions about foreign direct investment. This is especially important because concentration measures do not capture contract quality, switching costs, or informal relationships. Reporting distributions and subgroup estimates can reveal whether an apparently small average effect on supplier upgrading conceals large gains and losses for distinct populations.

Finally, research on foreign direct investment should be reproducible enough for cumulative learning. The qualification attached to quality upgrading can precede productivity gains - quality investment can initially raise costs before scale and learning improve productivity - makes sensitivity analysis essential. Future foreign direct investment studies should publish variable definitions, source dates, transformation rules, missing-data treatment, and code where permissions allow; they should also distinguish preregistered hypotheses from exploratory analysis. These practices would make subsequent evidence on supplier upgrading easier to compare without pretending that different settings are statistically identical.

7. Conclusion

This review asked: Through which supplier linkages, market conditions, and capability investments does foreign direct investment generate upgrading among domestic Indonesian firms? The accumulated evidence supports a conditional answer: the effect associated with foreign direct investment changes with the economic unit's exposure, institutional setting, market structure, time horizon, and capacity to adjust, and those differences shape the observed outcome for supplier upgrading.

The six synthesized mechanisms move the analysis of foreign direct investment from aggregate description toward operational diagnosis. A useful decision process identifies the active channel, measures the relevant

subgroup exposure, records the binding constraint, and evaluates whether the proposed response changes that constraint before inferring improvement in supplier upgrading.

For future Indonesia research, the priority is therefore not a larger collection of undifferentiated averages, but more granular and reproducible evidence on foreign direct investment linked to the decision level at which supplier upgrading changes. For this foreign direct investment manuscript, and the journal editor should verify the interpretations and bibliography, confirm authorship, and assign the final issue metadata before OJS publication.

Editorial Note

This is a conceptual review prepared with editorial assistance. It reports no newly collected empirical observations or causal estimates. Historical source context is separated from the analytical propositions developed in the discussion.

Historical source context and interpretation

Historical macroeconomic context is drawn from Indonesia's 2023 Article IV consultation (International Monetary Fund, 2023). The report provides a pre-cutoff policy context for interpreting monetary, fiscal and external conditions. It does not establish the firm-level or regional causal relationships proposed in this review; those relationships require separate empirical testing.

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