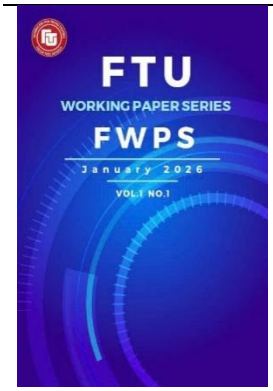

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QUẢN TRỊ RỦI RO HỢP ĐỒNG THÔNG QUA TCE: PHÂN TÍCH NGHIÊN CỨU TÌNH HUỐNG QUAN HỆ ĐỐI TÁC BAE - AGRATI VÀ KHUYẾN NGHỊ CHO CÁC HỢP ĐỒNG DÀI HẠN

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Tóm tắt

Bài viết này xem xét động lực của rủi ro hợp đồng và sự thất bại trong quản trị trong tranh chấp giữa BAE - Agrati thông qua lăng kính phân tích của Kinh tế học Chi phí Giao dịch (Transaction Cost Economics - TCE). Dựa trên các tài liệu của tòa án và dữ liệu thứ cấp, nghiên cứu điều tra cách thức mà hợp đồng cứng nhắc, tính chuyên biệt của tài sản và sự không chắc chắn của thị trường tương tác với nhau để tạo ra sự điều chỉnh sai lệch, hành vi cơ hội và sự kém hiệu quả trong các cơ chế bảo vệ trong mối quan hệ người mua - nhà cung cấp dài hạn. Nghiên cứu xác định bốn nguồn rủi ro hợp đồng chính: rủi ro bị chiếm dụng do tính chuyên biệt của tài sản, sự cứng nhắc do điều khoản bất khả kháng quá nghiêm ngặt, sự điều chỉnh sai lệch dưới điều kiện không chắc chắn và việc tái đàm phán mang tính cơ hội khi xảy ra cú sốc chi phí. Kết quả cho thấy một sự sai lệch cơ bản giữa cấu trúc quản trị và các thuộc tính giao dịch: việc nhấn mạnh tính cứng nhắc trong hợp đồng đã giảm thiểu hành vi cơ hội trước khi ký kết (ex-ante) nhưng lại làm suy yếu sự hợp tác thích ứng sau khi ký kết (ex-post), dẫn đến các cuộc tái đàm phán tốn kém và leo thang pháp lý. Trường hợp này do đó chứng minh rằng sự phụ thuộc quá mức vào các cơ chế bảo vệ chính thức

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có thể biến sự bảo vệ thành ràng buộc. Dựa trên những hiểu biết này, bài viết đề xuất các giải pháp quản trị thích ứng để cân bằng giữa kiểm soát và khả năng thích nghi trong các mối quan hệ cung ứng dài hạn có tính chuyên biệt cao. Qua đó, bài viết đóng góp cho tài liệu TCE bằng cách minh họa cách mà việc bảo vệ quá mức trước khi ký kết có thể tạo ra sự kém hiệu quả sau khi ký kết, đồng thời cung cấp hướng dẫn quản trị cho việc thiết kế các hợp đồng bền vững, dựa trên niềm tin trong điều kiện thị trường biến động.
Từ khóa: kinh tế học chi phí giao dịch (TCE), rủi ro hợp đồng, cơ chế quản trị, quan hệ chuỗi cung ứng

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Abstract

This paper examines the dynamics of contractual risk and governance failure in the BAE - Agrati dispute through the analytical lens of Transaction Cost Economics (TCE). Drawing on court documents and secondary data, it investigates how rigid contracting, asset specificity and market uncertainty interacted to generate maladaptation, opportunism and safeguard inefficiencies in a long-term buyer - supplier relationship. The study identifies four major sources of contractual risk: hold-up due to asset specificity, safeguard-induced rigidity from an overly strict force majeure clause, maladaptation under uncertainty and opportunistic renegotiation under cost shocks. The findings reveal a fundamental misalignment between governance structure and transaction attributes: the contract's emphasis on rigidity minimized opportunism ex-ante but undermined adaptive cooperation ex-post, leading to costly renegotiations and legal escalation. The case thus demonstrates how overreliance on formal safeguards can transform protection into constraint. Based on these insights, the paper proposes adaptive governance solutions to balance control and adaptability in long-term, high-specificity supply relationships. In doing so, it contributes to TCE literature by illustrating how ex-ante overprotection can generate ex-post inefficiency and offers managerial guidance for designing resilient, trust-based contracts under volatile market conditions.

Keywords: transaction cost economics (TCE), contractual risk, governance mechanisms, supply chain relationship

QUẢN TRỊ RỦI RO HỢP ĐỒNG THÔNG QUA TCE: PHÂN TÍCH NGHIÊN CỨU TÌNH HUỐNG QUAN HỆ ĐỐI TÁC BAE - AGRATI VÀ KHUYẾN NGHỊ CHO CÁC HỢP ĐỒNG DÀI HẠN

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Bài viết này xem xét động lực của rủi ro hợp đồng và sự thất bại trong quản trị trong tranh chấp giữa BAE - Agrati thông qua lăng kính phân tích của Kinh tế học Chi phí Giao dịch (Transaction Cost Economics - TCE). Dựa trên các tài liệu của tòa án và dữ liệu thứ cấp, nghiên cứu điều tra cách thức mà hợp đồng cứng nhắc, tính chuyên biệt của tài sản và sự không chắc chắn của thị trường tương tác với nhau để tạo ra sự điều chỉnh sai lệch, hành vi cơ hội và sự kém hiệu quả trong các cơ chế bảo vệ trong mối quan hệ người mua - nhà cung cấp dài hạn. Nghiên cứu xác định bốn nguồn rủi ro hợp đồng chính: rủi ro bị chiếm dụng do tính chuyên biệt của tài sản, sự cứng nhắc do điều khoản bất khả kháng quá nghiêm ngặt, sự điều chỉnh sai lệch dưới điều kiện không chắc chắn và việc tái đàm phán mang tính cơ hội khi xảy ra cú sốc chi phí. Kết quả cho thấy một sự sai lệch cơ bản giữa cấu trúc quản trị và các thuộc tính giao dịch: việc nhấn mạnh tính cứng nhắc trong hợp đồng đã giảm thiểu hành vi cơ hội trước khi ký kết (ex-ante) nhưng lại làm suy yếu sự hợp tác thích ứng sau khi ký kết (ex-post), dẫn đến các cuộc tái đàm phán tốn kém và leo thang pháp lý. Trường hợp này do đó chứng minh rằng sự phụ thuộc quá mức vào các cơ chế bảo vệ chính thức có thể biến sự bảo vệ thành ràng buộc. Dựa trên những hiểu biết này, bài viết đề xuất các giải pháp quản trị thích ứng để cân bằng giữa kiểm soát và khả năng thích nghi trong các mối quan hệ cung ứng dài hạn có tính chuyên biệt cao. Qua đó, bài viết đóng góp cho tài liệu TCE bằng cách minh họa cách mà việc bảo vệ quá mức trước khi ký kết có thể tạo ra sự kém hiệu quả sau khi ký kết, đồng thời cung cấp hướng dẫn quản trị cho việc thiết kế các hợp đồng bền vững, dựa trên niềm tin trong điều kiện thị trường biến động.

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I. Introduction

In today's globalized and interdependent industrial environment, managing contractual risk has become a critical governance challenge for firms seeking to sustain efficiency, resilience, and cooperative stability across complex supply chains. Contractual risks frequently arise in long-term buyer - supplier relationships characterized by high asset specificity, technological interdependence, and volatile input markets. Under such conditions, rigid or incomplete contracts can misalign with transaction characteristics, exposing firms to operational disruptions, financial

losses, and costly disputes. These challenges have been extensively examined in the governance literature.

Within the Transaction Cost Economics (TCE) tradition, prior research consistently highlights how asset specificity and uncertainty shape governance effectiveness *(Williamson, 1985)*. Previous study also shows that in long-term contracts, market shocks and input cost volatility can trigger maladaptation when adjustment mechanisms lack flexibility (Klein, 1996), particularly in manufacturing and defense-linked supply chains where technical requirements and interdependence amplify contractual risk.

Despite this foundation, several research gaps remain. First, most studies examine TCE or contractual risk in supply chains separately, with limited attempts to integrate the two when analyzing risk in long-term industrial contracts. Second, existing literature focuses largely on service outsourcing, IT contracting, or OEM - supplier relationships under relatively stable conditions, leaving underexplored how market volatility or large-scale disruptions (COVID-19, geopolitical tensions) influence long-term contract performance. Third, current research tends to emphasize ex-ante contract design rather than providing a full-cycle analysis of contractual risk from negotiation to implementation and dispute escalation.

This study contributes to addressing these gaps by analyzing the BAE Industries v. Agrati S.p.A. case, which centers on a long-term fixed-price requirements contract for specialized automotive components. Designed to ensure price stability and supply continuity, the agreement became increasingly misaligned with environmental volatility when steel prices escalated sharply during the post-COVID period. Agrati's repeated requests for price adjustments and BAE's continued refusal, ultimately culminating in litigation, illustrate how rigid contractual safeguards can fail under conditions of heightened uncertainty.

By using Contractual risk through the TCE lens, the analysis explores how behavioral assumptions and critical transaction attributes interact to shape contractual outcomes. The report underscores the need for adaptive governance mechanisms: balancing ex-ante protection against opportunism with ex-post flexibility, to enhance contractual resilience and to reduce total transaction costs in long-term industrial relationships.

This paper focuses on the BAE - Agrati relationship between 2020 and 2022 when input cost shocks intensified governance misalignment. Using a qualitative case study approach based on legal filings, industry data, and secondary sources, the study applies TCE to trace how transaction characteristics shaped contractual performance and contributed to dispute escalation.

II. Theoretical Framework

2.1. Transaction Cost Economics theory (TCE)

Transaction Cost Economics (TCE) provides a contractual approach to understanding how firms organize and govern exchanges under uncertainty. Initially introduced by Coase (1937) and later formalized by Williamson (1975, 1985, 1989), TCE argues that firms exist to minimize the costs of transacting in the market - specifically, the costs of searching, negotiating, monitoring and enforcing agreements. These transaction costs arise because contracts are inherently incomplete: economic actors are boundedly rational and may behave opportunistically when circumstances change. Hence, TCE focuses on how governance structures - markets, hybrids and hierarchies - are chosen to economize on these costs and safeguard transactions from opportunism.

At its behavioral core, TCE rests on two assumptions: bounded rationality and opportunism *(Williamson, 1985)*. Bounded rationality implies that decision-makers intend to act rationally but are limited in their ability to anticipate and process all possible contingencies. Opportunism refers to self-interest seeking with guile - behaviors such as withholding information or exploiting contractual gaps for personal advantage. Together, these assumptions explain why complete contracting is impossible and why firms must design governance mechanisms that balance control and adaptability.

Williamson (1989) further specifies that three critical transaction attributes determine the appropriate governance structure: asset specificity, uncertainty and frequency. Asset specificity refers to the degree to which investments are specialized to a particular relationship, making redeployment costly or impractical. Uncertainty encompasses both environmental factors, such as market volatility; and behavioral factors, such as partner reliability, that complicate performance. Frequency captures how often transactions occur between the same parties, shaping whether the relationship relies on market exchange, long-term contracting or internal coordination. High asset

specificity, combined with significant uncertainty and frequent interactions, increases the likelihood of adopting non-market governance mechanisms.

Based on these dimensions, Williamson (1985) distinguishes three generic modes of governance: market, hybrid and hierarchy. Market governance involves arm's-length transactions governed by price and competition. Hierarchical governance internalizes transactions within the firm, relying on administrative control. Between them lies the hybrid mode, which blends market and relational features through long-term contracts and private ordering mechanisms. Each mode represents a discrete structural alternative that balances cost efficiency and adaptability in response to transaction characteristics.

TCE also differentiates between ex-ante and ex-post transaction costs, consistent with the classification of contractual risks discussed earlier. Ex-ante costs refer to the expenses of drafting and safeguarding agreements, while ex-post costs arise from maladaptation, renegotiation and enforcement after unforeseen events occur *(Williamson, 1985).* Efficient contracting thus requires mechanisms that can adjust to ex-post contingencies *(Williamson, 1989).*

Efficient contracting thus requires mechanisms that can adjust to ex-post contingencies *(Williamson, 1989).* However, when governance structures are misaligned with transaction characteristics, such as when highly specific assets are governed by rigid, fixed-price contracts, firms become exposed to contractual risks. These risks, including price volatility, hold-up and maladaptation, arise not from the absence of contracts, but from their incompleteness and the opportunism they invite under changing conditions.

2.2. Contractual risk in supply chain

Contractual risk in supply chain refers to the potential for performance failures, disputes or inefficiencies that arise from the design, execution or monitoring of inter-firm contracts. In globalized production networks, contracts function as the primary governance mechanism defining the responsibilities, obligations and performance expectations of independent firms *(Heide & John, 1992*). However, because contracts are inherently incomplete, firms face the risk that contractual terms may not capture all future contingencies. This incompleteness stems from bounded rationality and the possibility of opportunistic behavior, two behavioral conditions

emphasized in the literature on inter-firm exchange and remains central to understanding contractual vulnerability in complex supply relationships.

Contractual risks can be broadly divided into ex-ante and ex-post categories, corresponding to different phases of the contracting process *(Crocker & Reynolds, 1993).* Ex-ante risks emerge during negotiation and contract design, when limited foresight, information asymmetry or misaligned incentives result in incomplete or rigid clauses. The absence of adaptive mechanisms, such as price-adjustment or review provisions, may expose firms to volatility or changes in market conditions. Ex-post risks, by contrast, arise during contract execution and enforcement, when unforeseen events lead to maladaptation, opportunistic renegotiation, or disputes over interpretation. These behaviors increase enforcement costs and damage relational trust between contracting parties *(Poppo & Zenger, 2002).*

In supply chain, contractual risks are further amplified by interdependence and asset specificity, where suppliers make dedicated investments tailored to a buyer's requirements *(Klein, Crawford & Alchian, 1978).* Such dependence creates economic lock-in, making adaptation or supplier substitution costly once conditions change. Consequently, rigid or one-sided contractual terms that may be efficient under stable conditions can become a source of inefficiency, tension or conflict in volatile environments.

In summary, contractual risks arise from both structural and behavioral limitations inherent in inter-firm contracting. They evolve across the ex-ante and ex-post stages and are shaped by interdependence, uncertainty and information asymmetry. Recognizing these risks is essential for designing contracts and governance mechanisms that balance control with adaptability and safeguard cooperation within supply chain partnerships.

2.3. Contractual risk through TCE lens

Transaction Cost Economics (TCE) provides a conceptual foundation for analyzing how and why contractual risks emerge in inter-firm relationships. According to TCE, contracts are inherently incomplete because economic actors face bounded rationality, the inability to foresee or specify all future contingencies and may act opportunistically when circumstances change. These behavioral constraints, combined with structural factors such as asset specificity and uncertainty, make long-term agreements vulnerable to governance failures.

From this perspective, contractual risk does not simply refer to breach or non-performance, but to inefficiencies that arise when governance mechanisms are misaligned with transaction characteristics. When rigid or poorly designed contracts cannot accommodate environmental changes, firms incur maladaptation costs through disputes, renegotiations or disruptions. When asset-specific dependencies emerge, parties become exposed to hold-up risks, where one side may exploit the other's sunk investments. And when contractual gaps invite strategic behavior, opportunism risk arises, increasing enforcement and monitoring costs.

In sum, TCE interprets contractual risks as the by-products of incomplete contracting under uncertainty. These risks evolve across both ex-ante (design) and ex-post (execution) phases of exchange, reflecting the ongoing tension between safeguarding efficiency and maintaining adaptability in inter-firm governance.

III. Case Study: The BAE - Agrati partnership

3.1. Case Overview

Agrati Group is an Italian multinational specializing in engineered fasteners and mechanical components for the automotive and industrial sectors. Established in 1939 and headquartered in Veduggio con Colzano, Italy, the company operates over a dozen production facilities across Europe, North America and Asia. Its U.S. subsidiaries, Agrati - Medina, LLC and Agrati - Tiffin, LLC, supply specialty steel-based rivets, bushings and main pivots to Tier-2 customers, including BAE Industries. Agrati's expertise in cold-forged components and precision fastening solutions makes it a critical supplier in automotive production chains where durability and dimensional accuracy are essential. However, its investments in specialized machinery and tooling for customer-specific components create high asset specificity and long-term economic dependence on major clients such as BAE.

BAE Industries, Inc. is a U.S-based manufacturer specializing in precision-engineered metal components and subassemblies for the automotive sector. Headquartered in Auburn Hills, Michigan, the company operates primarily as a Tier-2 supplier, manufacturing automotive parts. These parts are supplied to Tier-1 manufacturers who integrate them into car seats and other vehicle systems before shipping the assemblies to Original Equipment Manufacturers (OEMs) like Stellantis and General Motors (GM). Within this value chain, BAE plays a critical role in ensuring

just-in-time (JIT) production and quality compliance, serving as the sole supplier of several subassemblies for ongoing OEM vehicle programs such as Stellantis's DT and GM's T1XX.

Before the dispute arose, BAE and Agrati had maintained a long-term, mutually dependent supply relationship. Agrati served as BAE's exclusive supplier of specialty steel components required for seat subassemblies, while BAE relied entirely on Agrati's timely deliveries to maintain production for Tier-1 customers. The supply arrangement was formalized through long-term fixed-price requirements contracts, governed by BAE's standard Terms and Conditions (T&Cs). Under these agreements, Agrati was obligated to supply all of BAE's part requirements throughout the life cycle of the applicable OEM vehicle programs, including model updates. The contracts emphasized continuity, price stability and delivery reliability - essential for minimizing production risk in tightly coupled automotive supply chains. Acceptance of these terms was implied once Agrati began manufacturing and shipping materials in response to BAE's purchase orders.

This long-term contracting structure fostered operational stability but also embedded a high level of interdependence between the parties. BAE's production continuity relied on Agrati's compliance with delivery schedules, while Agrati's production efficiency and return on investment depended on sustained orders from BAE. Such structural dependence, while efficient under stable conditions, created potential vulnerabilities to market shocks - particularly under fixed-price terms that limited pricing flexibility in volatile input markets.

However, the relationship began to deteriorate when the global steel market experienced significant price increases between 2020 and 2022, driven by COVID-19 disruptions, supply chain bottlenecks and geopolitical tensions such as the Russia - Ukraine war. Facing a reported 11.7% rise in steel costs, Agrati sought multiple times to renegotiate the contract price. Beginning in July 2021, Agrati requested price increases, which BAE rejected, reaffirming the fixed-price obligations under the existing T&Cs.

After several unsuccessful attempts at negotiation, including letters in December 2021, June 2022, and a failed mediation in July 2022, Agrati ultimately threatened to suspend shipments if BAE did not agree to higher prices. On August 30, 2022, Agrati issued a final notice that it would halt all deliveries effective September 1, 2022, unless BAE accepted both the increased

price and retroactive payments estimated at $188,000 dating back to January 1, 2022. BAE refused, asserting breach of contract and warning that production for its Tier 1 customers would halt by mid-September 2022 due to lack of materials.

As the conflict escalated, BAE filed a lawsuit against Agrati in September 2022 at the U.S. District Court for the Eastern District of Michigan, seeking to maintain supply continuity. The company also requested an emergency court order to prevent shipment suspension. Later that month, the court granted the motion, requiring Agrati to continue delivering the parts while the dispute was being resolved.

This dispute underscores the limitations of rigid contractual arrangements under conditions of market volatility. It reveals how long-term fixed-price agreements, while intended to provide stability, can become sources of conflict when unforeseen environmental shifts render their terms inefficient or unsustainable.

3.2. Risk analysis

Based on the two behavioral assumptions and three critical transaction attributes outlined in Transaction Cost Economics (TCE), the BAE - Agrati case illustrates how these theoretical conditions manifested as concrete contractual vulnerabilities in practice. In the BAE - Agrati relationship, the rigid fixed-price contractual structure, combined with high asset specificity and volatile market conditions, led to governance failures consistent with TCE predictions. Specifically, we identify four major sources of contractual risk as follows:

3.2.1. Hold-up and asset specificity risk

From a Transaction Cost Economics (TCE) perspective, hold-up risk originates primarily in the ex-ante contracting phase, where parties design governance mechanisms under conditions of bounded rationality and incomplete foresight. When contracts fail to anticipate future contingencies or include adaptive safeguards, these initial design choices can later expose one party to opportunistic exploitation once relationship-specific investments are made.

In the BAE - Agrati case, hold-up risk emerged from the combination of high asset specificity and an inflexible contract structure. Agrati served as BAE’s sole supplier of specialty automotive parts: steel-based rivets, bushings and main pivots; while BAE was the exclusive

supplier to Tier-1 manufacturers who, in turn, supplied OEMs such as Stellantis and GM. As recorded in the court filing, *"Agrati is Plaintiff's only supplier for the specialty parts, Plaintiff is the sole supplier for the Tier manufacturers and the Tier-1 manufacturers are the sole suppliers for the OEMs."* (ECF No. 1, Pg ID 4). This single-source structure created a tightly interdependent supply network characterized by strong bilateral dependency and transaction-specific investments, classic markers of high asset specificity under TCE.

These transaction characteristics, while efficient for ensuring quality consistency and coordination, became the foundation for governance vulnerability once environmental conditions shifted. When global steel prices rose by approximately 11.7% due to the combined shocks of the COVID-19 pandemic and the war in Ukraine, Agrati's production costs increased significantly. On June 14, 2022, Agrati sent a letter stating that *"if Plaintiff did not agree to pay the higher prices by June 30, 2022, Agrati would refuse to ship the specialty parts beginning July 1, 2022."* (ECF No. 5, Pg ID 128). This statement reflects a textbook ex-post hold-up—where one party exploits contractual rigidity and dependency to extract economic concessions after the contract has been signed.

The foundation of this risk, however, can be traced back to the ex-ante contracting phase. Under bounded rationality, neither party could fully anticipate the extreme market volatility that would occur during the contract's lifespan. They entered a fixed-price requirements contract, which, while efficient for cost stability in normal conditions, proved highly rigid under unexpected external shocks. The contract lacked adaptive clauses such as escalation mechanisms, renegotiation triggers, or cost-sharing provisions. As a result, once input costs surged, BAE faced substantial exposure to Agrati's strategic behavior, with no contractual safeguard to realign incentives or distribute the burden of unforeseen costs.

At the same time, switching suppliers was practically impossible for BAE in the short term. The court noted that *"Plaintiff maintains that Agrati's parts are unique and not available on the open market, which would take Plaintiff six to eight months to gain an alternative supplier."* (ECF No. 1 25, Pg ID 6). This lock-in condition illustrates the degree of asset specificity in the tooling, technical validation, and OEM testing processes, which made substitution costly and time-consuming. In such settings, dependence transforms from an efficiency source into a bargaining hazard, amplifying exposure to opportunism.

From a TCE standpoint, this situation reflects a misalignment between governance structure and transaction attributes. A contract emphasizing fixed prices and strict enforcement is appropriate only for low-specificity, low-uncertainty transactions. Here, however, the exchange involved both high asset specificity and high environmental uncertainty. The absence of adaptive safeguards converted an efficient ex-ante design into an ex-post constraint, leaving BAE unable to mitigate Agrati's opportunistic threats or renegotiate fairly.

The BAE - Agrati dispute thus exemplifies a classic governance failure predicted by TCE: when transactions with high specificity and uncertainty are governed by rigid, incomplete contracts lacking adaptive or relational safeguards, hold-up risk becomes almost inevitable.

3.2.2. Safeguard-design risk (Force majeure clause as a double-edged sword)

From the perspective of TCE theory, safeguard-design risk originates in the ex-ante contracting phase, where parties attempt to preempt opportunism through contractual safeguards. However, under bounded rationality and environmental uncertainty, such safeguards may be over-designed, effective against opportunism in theory but overly rigid in practice, thereby constraining ex-post adaptability when unforeseen contingencies arise.

In the BAE - Agrati agreement, the force majeure clause functioned as a safeguard but was designed with strict limitations. It explicitly excluded cost fluctuations as qualifying events and imposed a stringent requirement that any notice of force majeure be provided within ten days of the event (Mot. Ex. 3, ECF 5-4 XVIII., Pg ID 48). While this clause was effective in constraining opportunistic claims by Agrati under normal circumstances, it became a source of inefficiency when external shocks, such as post-COVID supply disruptions, steel price volatility, and geopolitical events, occurred. Specifically, Agrati was unable to invoke the clause to renegotiate prices or seek temporary relief, effectively eliminating a potential channel for cooperative adaptation to environmental change.

The high asset specificity of the BAE - Agrati relationship intensified the consequences of this rigid safeguard. BAE relied exclusively on Agrati for steel-based rivets and bushings, and switching to an alternative supplier would require months of retooling, testing, and OEM certification. When external shocks caused steel prices to rise sharply, Agrati faced financial pressure but could not invoke the force majeure clause to renegotiate or seek temporary relief. The

safeguard, although effective ex ante in preventing opportunistic claims, inadvertently restricted adaptive responses, creating ex-post inefficiencies such as delayed shipments, repeated renegotiations, and increased enforcement interventions.

Environmental uncertainty further magnified these effects. Unexpected cost increases altered the cost-benefit balance of the contract, revealing that the ex-ante allocation of risk: fixed pricing combined with a rigid force majeure clause, was misaligned with actual transaction conditions. Agrati's constrained responses, including threats to suspend shipments or demand retroactive price adjustments, demonstrate how overly strict safeguards can produce maladaptation: behavior that is rational under the circumstances but economically inefficient for both parties. These actions directly imposed additional burdens on BAE, increasing the effort and resources required to maintain supply continuity. While the safeguard initially lowered BAE's monitoring costs by reducing the risk of opportunistic behavior, it ultimately generated higher transaction costs associated with renegotiation, enforcement disputes, and production delays.

From a TCE perspective, this case highlights the trade-off between safeguarding and adaptability. Ex-ante, the force majeure clause minimized opportunism by restricting unilateral claims; ex-post, it reduced flexibility and increased total transaction costs when unforeseen contingencies arose. The interaction of bounded rationality, high asset specificity, and environmental uncertainty transformed a protective mechanism into a source of inefficiency. A more flexible safeguard design, such as extended notification windows, structured mediation procedures, or conditional relief options, could have maintained protective effects while enabling adaptive cooperation in response to market shocks.

3.2.3. Uncertainty and maladaptation risk

Maladaptation rarely appears at the drafting table; it surfaces later, when contracts confront real-world uncertainty. In the BAE - Agrati relationship, the ex-post phase exposed the limits of an ex-ante design that failed to anticipate extreme volatility. The very mechanisms intended to secure price stability ultimately constrained both parties' ability to respond effectively to environmental shocks.

The BAE - Agrati fixed-price requirements contract provides a clear illustration of how rigid contractual design under high uncertainty can produce maladaptation costs. The contract

explicitly excluded cost fluctuations under the force majeure clause: *"changes in cost shall not constitute a force majeure event unless notified within ten days"* (Mot. Ex. 3, ECF 5-4 XVIII., Pg ID 48). While this structure ensured price stability ex ante, it reflected bounded rationality: neither party could anticipate the extreme market shocks that occurred between 2020 and 2022, including post-COVID supply chain disruptions, steel price volatility, geopolitical tensions such as the Russia - Ukraine war and lockdowns in China.

The high asset specificity of the relationship intensified the maladaptation risk. BAE depended exclusively on Agrati for steel-based rivets, bushings, and main pivots. Any attempt to switch suppliers would involve months of retooling, testing and OEM validation, effectively locking BAE into the existing supplier. Consequently, when steel prices surged, Agrati faced financial pressure but could not legally invoke the force majeure clause to adjust delivery terms. This misalignment created ex-post maladaptation costs, including:

(1) *Production disruption risk:* Threats to suspend shipments could halt Tier-1 production, delaying deliveries to OEMs.
(2) *Costly renegotiation:* BAE had to engage in repeated negotiations and legal correspondence to maintain supply continuity.
(3) *Governance and enforcement costs:* Court intervention was required to enforce compliance, highlighting the limitations of a rigid ex-ante governance structure.

Environmental uncertainty exacerbated these problems. Unanticipated cost increases shifted the cost-benefit balance of the contract. Because the agreement lacked adaptive pricing or review mechanisms, neither party could adjust efficiently, forcing responses that increased transaction costs rather than preserving cooperative value. Agrati's constrained actions—such as threatening shipment suspension or requesting retroactive price adjustments—reflect a form of maladaptation, where behavior is rational given the circumstances but economically inefficient overall.

In short, the uncertainty and maladaptation risk manifested primarily in the ex-post phase, when environmental shocks collided with rigid contractual provisions. Its root causes, however, lie in ex-ante limitations of foresight and contract design. The BAE–Agrati dispute demonstrates that without built-in adaptive mechanisms, even long-term contracts intended to stabilize

relationships can generate inefficiencies, increase total transaction costs, and threaten operational continuity. This case underscores the TCE insight that governance structures must be carefully aligned with transaction attributes to enable flexible and cooperative responses under volatile conditions.

3.2.4. Opportunism risk

The opportunism risk in the BAE - Agrati relationship surfaced during the ex-post performance phase, when unforeseen market shocks tested the limits of the fixed-price contract. What had been designed for stability ex ante became a source of vulnerability once external conditions shifted dramatically.

In the BAE Industries v. Agrati dispute, opportunism risk became evident once the global steel market experienced an 11.7% price increase between 2020 and 2022. Agrati, as the sole supplier of specialized steel-based rivets, bushings, and pivots, demanded higher prices despite being bound by a long-term fixed-price requirements contract. The agreement incorporated in BAE's Terms and Conditions ("T&Cs"), required Agrati to supply all of BAE's needs *"for the duration of the OEMs' production life,"* and explicitly stated that *"changes in cost or components will not constitute a force majeure event."* This rigid structure, established during the ex-ante contracting phase, reflected bounded rationality: both parties could not anticipate extreme external shocks and therefore did not incorporate adaptive clauses to allocate risks under volatile market conditions.

Once steel prices surged, Agrati exploited this gap in the contract to extract economic rents. On June 14, 2022, Agrati issued an ultimatum: unless BAE agreed to pay higher prices by June 30, shipments would cease. Subsequently, Agrati demanded retroactive payments totaling approximately $188,000 for deliveries dating back to January 1, 2022. This behavior exemplifies ex-post opportunism, whereby a party leverages the dependence created by high asset specificity, BAE could not quickly switch suppliers due to tooling, OEM approval and production lead times to gain additional benefits beyond what was agreed ex ante.

The situation illustrates how transaction-specific investments and lock-in intensify opportunistic risks. BAE's exclusive reliance on Agrati's custom parts meant that any delay or refusal to supply could immediately disrupt Tier-1 production, cascading down to OEMs such as

Stellantis and GM. In TCE terms, the cost of opportunism is magnified because high asset specificity increases the bargaining leverage of the dependent party (Agrati), and the lack of contractual flexibility prevents BAE from mitigating exposure through formal mechanisms.

Environmental uncertainty further exacerbated this risk. Market disruptions caused by COVID-19, geopolitical tensions (e.g., the Ukraine war), and inflation created conditions in which input costs became unpredictable. Without adaptive mechanisms, such as index-based pricing or renegotiation triggers, BAE was fully exposed to cost volatility, and Agrati's opportunistic claims were enabled. This dynamic reflects the TCE insight that ex-ante governance decisions, such as selecting rigid, fixed-price contracts for high-specificity, high-uncertainty transactions, directly shape the likelihood and severity of ex-post opportunism.

Agrati's legal defense invoking impracticability that performance had become excessively costly was ultimately rejected. The court emphasized, *"the simple fact that a contract has become unprofitable… is insufficient to establish impracticability."* Legally, this underscores the principle that fixed-price contracts are designed to allocate risk to the supplier, while economically, it highlights that opportunistic attempts to renegotiate ex post represent governance failures, not legitimate adaptation.

The BAE - Agrati dispute thus illustrates how contractual incompleteness, combined with asset specificity and environmental uncertainty, enables opportunistic behavior, which increases ex-post transaction costs, disrupts supply continuity, and exposes a misalignment between governance mechanisms and transaction attributes, a core insight of Transaction Cost Economics.

3.3. Parties' approaches to risk management

3.3.1. Negotiation

When the dispute first surfaced in mid-2022, both parties attempted to manage rising transaction costs through negotiation and mediation - a relational governance response consistent with Transaction Cost Economics (TCE). Agrati's June 23, 2022 request for mediation, followed by the session on July 18, 2022, represented an effort to restore contractual alignment under changed market conditions without fully abandoning the existing relationship. From a TCE

perspective, this reflects an ex post adaptive response aimed at reducing maladaptation costs and preserving specific investments in tooling, qualification, and production continuity.

However, the negotiation framework was constrained by the rigid contractual safeguards and by mutual distrust resulting from opportunistic behavior. BAE maintained its reliance on strict enforcement of the fixed-price clause and refused to accept retroactive payments, while Agrati sought relief through informal price adjustments. The mediation failed because the governance structure lacked built-in cooperative mechanisms, such as cost-sharing formulas or renegotiation triggers, that could balance ex ante safeguards with ex post flexibility.

Consequently, the negotiation stage did not prevent escalation but instead served as a costly signaling phase, confirming each party's strategic position. Agrati's insistence on price increases, despite the absence of a contractual basis, reinforced BAE's perception of opportunism; conversely, BAE's strict interpretation of the force majeure clause signaled unwillingness to accommodate environmental shocks. As TCE predicts, when relational adaptation mechanisms are absent, disputes tend to migrate from private renegotiation to formal adjudication, transforming a governance problem into a legal one.

3.3.2. Litigation

After the failure of negotiation, BAE filed for a Temporary Restraining Order (TRO) and preliminary injunction in September 2022 to compel Agrati to resume shipments. Litigation thus became the final, formal governance mechanism used to manage risk. Under TCE, resorting to litigation is a last-resort safeguard, it protects contractual integrity but at significantly higher transaction costs, including legal fees, time delays, and reputational damage.

In this case, litigation succeeded in compelling Agrati's short-term compliance but did not alter the underlying economic reality. The court's ruling reaffirmed the validity of BAE's fixed-price requirements contract and rejected Agrati's impracticability defense. However, this outcome was functionally equivalent to what BAE could have achieved through negotiation or mediated settlement: continued performance under the original price terms.

Thus, while litigation ensured contract enforcement ex post, it also exemplified the high-cost governance mode that TCE warns against. The process consumed management resources,

delayed supply continuity, and further eroded relational capital between the firms. Both parties incurred substantial ex post transaction costs: legal expenses, production disruption, and opportunity costs, without achieving a superior outcome to what cooperative renegotiation might have yielded.

3.3.3. Discussion

The BAE - Agrati dispute illustrates a sequential shift in contractual risk management, from attempted adaptive coordination through negotiation to formal enforcement through litigation. Initially, negotiation represented an effort to restore contractual balance amid cost shocks; however, this attempt failed due to the rigidity of the fixed-price terms and the absence of relational trust between the parties. As a result, the conflict escalated into litigation, where legal enforcement replaced cooperation as the dominant governance mechanism.

From a Transaction Cost Economics (TCE) perspective, both stages reflected responses to the same underlying governance failure, contractual maladaptation under uncertainty, but differed in their efficiency outcomes. A negotiated adjustment, if supported by adaptive clauses such as price-indexation or renegotiation triggers, could have minimized total transaction costs by preserving cooperation. In contrast, litigation ensured compliance only at the expense of greater cost and the breakdown of the long-term relationship, exemplifying the classic TCE trade-off between safeguarding and adaptability.

Ultimately, the outcome of the dispute confirmed that formal legal enforcement did not generate additional economic value beyond what could have been achieved through negotiated adaptation. This case reinforces a central insight of TCE: when contracts lack adaptive flexibility, disputes escalate from relational problem-solving to judicial enforcement, transforming coordination costs into litigation costs. The BAE - Agrati experience demonstrates that under conditions of asset specificity and uncertainty, effective risk management requires hybrid governance structures that balance formal safeguards with adaptive cooperation.

IV. Recommendations

4.1. Recommendations for BAE & Agrati

To strengthen long-term cooperation and prevent a repeat of the BAE - Agrati dispute, both parties should redesign their governance structure with a balance of safeguarding and adaptability.

First, given the high asset specificity and mutual dependence in this relationship, the parties should integrate flexible risk-sharing mechanisms into future contracts. Price-adjustment formulas tied to objective indices (e.g., steel or energy prices) and contingency-triggered renegotiation windows would prevent cost shocks from escalating into disputes, while reducing incentives for opportunistic behavior.

Second, the force majeure and safeguard provisions should be restructured to distinguish between physical impossibility and economic hardship. Replacing rigid 10-day notification requirements with a two-step process: initial notice followed by formal documentation, which would make the contract more workable under volatile market conditions. Joint review committees or cross-functional risk-monitoring teams can help interpret these clauses, evaluate disruptions and coordinate consistent responses.

Third, the parties should establish hybrid governance mechanisms that combine formal rules with relational trust. Shared KPIs, transparent cost reporting, and regular performance or risk-review meetings can reduce information asymmetry and strengthen coordination during both ex-ante planning and ex-post adjustment. This form of structured collaboration reduces maladaptation risk and supports predictable, cooperative decision-making during periods of uncertainty.

Finally, both BAE and Agrati should take steps to mitigate opportunism by embedding clear breach consequences, multi-step dispute-resolution paths (negotiation → mediation → expert determination) and aligned incentives focusing on joint performance and supply continuity. By combining flexible contracting, reciprocal safeguards, and ongoing coordination, the partnership can reduce transaction costs, maintain operational stability and enhance resilience in future long-term contracting.

4.2. Recommendations for managing risk in long-term contractual partnerships

4.2.1. Managing hold-up and asset specificity risk (Ex-ante phase)

The BAE - Agrati case highlights two interrelated risks commonly observed in long-term industrial supply relationships: asset specificity risk and hold-up risk. From the lens of Transaction Cost Economics (TCE), this situation reflects a misalignment between asset-specific investments and the governance structure, a rigid fixed-price contract that failed to accommodate changing circumstances, ultimately increasing total transaction costs.

To mitigate these risks, contract designers and managers should implement governance mechanisms that align with the high specificity of the transaction. One effective measure is the inclusion of risk-sharing and escalation clauses tied to objective indices such as steel prices or energy costs. Such clauses allow contractual prices to adjust automatically in response to cost fluctuations, reducing incentives for opportunistic renegotiation. Transparent cost-adjustment formulas also help ensure that both parties share risk symmetrically, maintaining fairness and predictability even under volatile conditions. These measures transform the contract from a rigid safeguard into a dynamic coordination tool, preserving efficiency without undermining control.

For manufacturing firms or buyers, addressing hold-up risk requires proactive sourcing strategies. Even in contexts with highly specialized inputs, buyers can establish qualified secondary suppliers or invest in modular production processes that enable partial substitution. This strategic redundancy increases bargaining power, reduces dependence on a single supplier, and limits the potential for opportunistic behavior. While initial costs may be significant, such measures function as insurance against lock-in and ensure continuity in the face of market volatility.

Suppliers, on the other hand, must manage their exposure to asset specificity risk by engaging in collaborative planning and cost transparency with buyers. Openly sharing production schedules, raw material trends, and anticipated cost changes allows suppliers to justify adjustments with verifiable data while reducing information asymmetry. Joint forecasting and planning mechanisms strengthen relational governance, build mutual trust, and enable cooperative responses to external shocks. In the BAE - Agrati case, the absence of such practices exacerbated the conflict, as both parties operated under incomplete information and rigid assumptions.

The broader implication drawn from this case is that managing hold-up and asset specificity risk is not about eliminating dependence but about governing it effectively. Transactional

efficiency in high-specificity relationships depends on embedding flexibility, transparency, and reciprocity into contract design. By addressing these risks at the ex-ante phase, firms can transform potential vulnerabilities into structured interdependence, where cooperation rather than coercion becomes the foundation for long-term stability and cost efficiency.

4.2.2. Enhancing safeguard design (Force majeure as a flexible mechanism)

The BAE - Agrati dispute illustrates that rigid safeguard mechanisms, such as strictly defined force majeure clauses, can become sources of inefficiency when environmental shocks occur. While intended to prevent opportunistic behavior, overly narrow definitions of force majeure and strict notification requirements limited both parties' ability to adapt to unforeseen cost fluctuations and supply disruptions. From a Transaction Cost Economics (TCE) perspective, this highlights the importance of aligning safeguard design with the uncertainty and asset specificity inherent in the transaction. A safeguard that is effective under normal conditions may hinder cooperative adaptation when external shocks arise, increasing ex-post transaction costs.

To address these challenges, contract designers and managers should redefine force majeure and hardship clauses to distinguish between physical impossibility and economic impracticability, and embed structured renegotiation protocols. For example, mandatory notice periods, verification of cost changes, and involvement of third-party mediation before performance suspension can provide clear, fair pathways to adjust obligations without escalating conflict. This approach ensures that safeguard mechanisms remain protective against opportunism while retaining flexibility for adaptation.

For buyers and manufacturing firms, institutionalizing joint review committees to interpret safeguard clauses and coordinate responses to unexpected disruptions can enhance both efficiency and trust. These committees can monitor cost trends, evaluate the necessity for temporary relief, and implement pre-agreed adjustment procedures, allowing for faster, cooperative decision-making. By engaging actively with suppliers through such structures, buyers reduce the risk that rigid safeguards will inadvertently escalate operational and contractual challenges.

Suppliers, in turn, benefit from participating in transparent, cooperative processes that allow them to justify adjustments based on verifiable data, such as raw material price increases or

production delays. By aligning safeguard responses with objective evidence and joint governance protocols, suppliers can maintain credibility and reduce the perception of opportunism, while preserving ongoing business relationships.

The BAE - Agrati case demonstrates that effective safeguard design requires balancing protection against opportunism with adaptive flexibility. By embedding structured, cooperative and transparent mechanisms into force majeure or hardship clauses, firms can reduce ex-post transaction costs, maintain operational continuity and enhance the long-term stability of high-specificity supply relationships.

4.2.3. Structuring hybrid governance for repeated transactions

The BAE - Agrati case highlights how rigid contractual arrangements without adaptive mechanisms can amplify uncertainty and maladaptation risks during the ex-post phase. From a Transaction Cost Economics (TCE) perspective, this illustrates that ex-ante governance choices directly shape the severity of ex-post maladaptation, as rigid structures fail to accommodate volatile market conditions.

To mitigate these risks, contract managers should integrate adaptive mechanisms into contracts, such as clauses linking price adjustments to objective indices, periodic review windows or contingency-triggered renegotiation protocols. These mechanisms provide predictable pathways for addressing unexpected cost changes without resorting to adversarial disputes.

For buyers and manufacturing firms, establishing joint governance structures, such as steering committees or cross-functional risk-monitoring teams, can enhance visibility and coordination. By monitoring cost trends, supply chain bottlenecks, and production risks in real time, these committees can implement pre-agreed contingency measures, reducing both operational disruption and the need for reactive negotiations.

Suppliers also benefit from transparent, collaborative information sharing with buyers. By providing timely updates on production constraints, raw material trends, and anticipated cost changes, suppliers strengthen trust and align expectations. This reduces the potential for perceived opportunism and enables both parties to make economically efficient adjustments, rather than resorting to coercive or ad-hoc measures.

The broader implication of the BAE - Agrati case is that transactional stability in high-specificity relationships requires flexibility as well as formal safeguards. Embedding adaptive mechanisms into contracts and establishing collaborative governance structures allows firms to respond to uncertainty efficiently, turning potential ex-post maladaptation into structured and predictable coordination. By doing so, companies can sustain cooperation, protect supply continuity and maintain cost-effective operations even under volatile market conditions.

4.2.4. Mitigating opportunism risk

The BAE–Agrati case demonstrates that opportunism risk arises when one party leverages contractual rigidity or dependency to extract concessions after the contract has been signed. In long-term, high-specificity supply relationships, opportunistic behavior often emerges under conditions of environmental volatility or asymmetric bargaining power, increasing ex-post transaction costs and threatening supply continuity. In the BAE - Agrati dispute, Agrati's demand for retroactive price adjustments and threats to suspend deliveries exemplifies how contractual incompleteness combined with high asset specificity can create incentives for opportunistic behavior.

To address these risks, contract designers and managers should embed clear enforcement and penalty mechanisms within contracts, explicitly defining breach consequences and structured dispute-resolution processes. Predictable sanctions reduce incentives for opportunistic renegotiation and provide both parties with confidence that contractual commitments will be honored.

For buyers and manufacturing firms, strengthening relational governance alongside formal contractual provisions is critical. Regular performance reviews, shared key performance indicators (KPIs), and transparent communication channels cultivate trust, align expectations, and reduce the likelihood that one party will exploit dependency for unilateral gain. These relational norms complement formal safeguards and provide a cooperative framework for managing conflicts that may arise due to unforeseen cost or operational changes.

Suppliers can also mitigate opportunism risk by aligning incentives with joint performance metrics, such as delivery reliability, quality standards, and cost stability. When both parties benefit from cooperative outcomes, the perceived need for opportunistic behavior diminishes. Transparent

reporting and proactive communication further reinforce mutual accountability and reduce the potential for ex-post disputes.

The broader lesson from the BAE–Agrati case is that opportunism is not merely a moral hazard but a predictable consequence of misaligned governance and transaction attributes. By combining enforceable contractual provisions with relational governance and aligned incentives, firms can reduce ex-post opportunistic behavior, lower total transaction costs, and sustain cooperative, long-term supplier-buyer relationships.

V. Conclusion

This study applied the Transaction Cost Economics (TCE) framework to analyze the BAE - Agrati dispute, highlighting how contractual risk manifests in long-term, high-specificity supply relationships. The case demonstrates that the conflict arose not from the absence of a contract, but from misalignment between governance structures and transaction attributes: rigid fixed-price terms were ill-suited to a relationship characterized by high asset specificity, uncertainty, and interdependence. Under these conditions, the parties experienced hold-up, safeguard-induced rigidity, maladaptation, and opportunism, which increased total transaction costs and disrupted operational continuity.

Attempts at negotiation and mediation represented ex-post adaptive efforts but were constrained by the inflexibility of the contract and lack of relational trust, eventually leading to litigation. This progression illustrates a key TCE insight: when contracts lack built-in adaptability, governance shifts from cooperative coordination to costly formal enforcement, producing compliance without preserving cooperation.

The findings reinforce the importance of hybrid governance structures, flexible contract clauses, and relational mechanisms that balance ex-ante protection with ex-post adaptability. Conceptually, the study extends TCE by showing that maladaptation can emerge not only from opportunistic behavior but also from over-designed protective clauses that limit flexibility. Practically, firms in high-specificity, uncertain environments can reduce contractual risk by embedding adaptive pricing mechanisms, structured renegotiation procedures, joint governance committees, and transparent information-sharing protocols.

Future research could explore how firms across industries implement such adaptive governance to manage contractual risk under volatile market conditions and long-term inter-firm dependencies.

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