Capital Market Disclosure under Supplier Bargaining Considerations*

Yasmin Kuhlmann
yasmin.hoffmann@uni-mannheim.de

Sabrina Popow
sabrina.popow@uni-mannheim.de†

Dirk Simons
simons@bwl.uni-mannheim.de

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Abstract

In the past, supplier selection and contracting was exclusively a means of supply chain management. However, due to recent public and regulatory demands for extended transparency, disclosure interferes with supplier contracting. We highlight interaction effects resulting from sharing demand information with potential suppliers and extended financial disclosure. Our model is a two stage game in which supplier contracting, modeled as an information design game, precedes voluntary capital market disclosure. Sharing information in either of the two stages comes with externalities for the other. Demand information provided to suppliers leaks into the disclosure stage, as information shared once cannot be taken back. Capital market disclosure feeds back into the suppliers' renegotiation decision, as it reveals proprietary bargaining information. We identify conditions under which extended capital market disclosure favors a supplier. We find that the buyer avoids contract renegotiation by withholding certain capital market information.

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†Corresponding author: Chair of Business Administration and Accounting, Postfach, 68131 Mannheim/Germany.

1 Introduction

Supplier selection has always been a crucial aspect of effective supply chain management, but recently growing demands for transparency add to the management task's complexity (see Chen and Slotnick (2015)). Regulatory requirements and public pressure for extended transparency, have altered the strategic calculus of information provision in supply chains. Traditionally, supplier selection is dominated by short-term cost incentives, leading procurement managers to prioritize immediate savings over long-term supplier relationships and supply chain resilience (see Eckl-Dorna (2016)). At the same time, the strategic choice between single and dual sourcing is critical because, although single sourcing reduces coordination costs and can enhance initial buyer leverage, it simultaneously increases buyers' supplier dependence (see Fugger et al. (2016)). Consequently, suppliers in single-sourcing relationships may gain substantial ex-post bargaining power, enabling them to impose renegotiation demands or exert strategic pressure on buyers. Although such frictions exist, they rarely become publicly observable in practice. Nevertheless, there exist two well-documented cases from the automobile industry which serve as an example. In 2016, Volkswagen's termination of a development contract with Car Trim escalated when the supplier demanded substantial compensation for incurred costs. After Volkswagen rejected these claims, Prevent Group subsidiaries halted deliveries of key components, forcing production stoppages across six plants and leaving more than 27,000 employees idle (see Fugger et al. (2016)). Nearly two decades earlier, a similar pattern emerged when sole supplier Kiekert temporarily stopped delivering door-lock systems to Ford during contentious renegotiations, bringing production in Ford's Cologne plants to a standstill and causing damages estimated at over 100 million Deutsche Mark (see Der Tagesspiegel (1998)). Collectively, this demonstrates that buyers have incentives to withhold strategic information about the composition of their supply chains, as disclosure may weaken their bargaining position vis-à-vis suppliers. Yet publicly listed firms must balance this against capital market expectations for transparency. Although regulatory initiatives aim to enhance accountability and inform stakeholders, they may generate unintended consequences when suppliers exploit disclosed information to improve their bargaining power (see Arya et al. (2019); Atanasov (2024)).

In this paper, we analyze how capital market incentives and supplier bargaining forces jointly determine the buyer's optimal reporting and disclosure strategy.[1] Specifically, we identify inter-

[1] We use the term 'reporting' to indicate internal supply chain communication and 'disclosing' for external communication to the capital market.

action effects on (i) strategic supplier selection, (ii) sharing of demand information within the supply chain for the purpose of strategic supply chain contracting and (iii) disclosing demand information when facing a potential renegotiation of contract terms.

We present an analytical setting that links corporate voluntary disclosure to supply chain reporting of buyers' private demand information. Our model is a two stage game in which supplier contracting, modeled as an information design game, precedes voluntary capital market disclosure. Sharing information in either of the two stages comes with externalities for the other. Demand information provided to suppliers leaks into the disclosure stage, as information given once cannot be taken back. Capital market disclosure feeds back into the suppliers' renegotiation decision, as it reveals proprietary bargaining information.

Our results show that, under the joint consideration of capital market incentives and supplier bargaining forces, buyers may forgo capital-market benefits of disclosure to preserve bargaining position vis-à-vis suppliers. This is because withholding allows buyers to commit suppliers to contracts they would reject under full information. To avoid suppliers' costly renegotiation, buyers strategically withhold favorable demand information, sacrificing capital market benefits.

Despite the widespread interest in firms' transparency about their supply chains (see e.g., Christensen (2022); Huang and Watson (2015)), there is limited research exploring interdependencies between strategic information sharing within supply chains, financial disclosure requirements and bargaining effects in the presence of an adverse supplier action. Our paper contributes to the literature as our integrated setting bridges the gap between the supply chain literature and the literature on corporate disclosure. More specifically, we combine supplier contracting with voluntary capital market disclosure, represented by a disclosure setting with the threat of an adverse action (see Wagenhofer (1990)). Further, we apply an information design game to a supplier contracting setting, contributing to the literature on information design games and Bayesian persuasion settings.

In the broader literature on corporate disclosure firms' external disclosure is a trade-off between costs and benefits of transparency (see Verrecchia (1983)). Arya et al. (2019) focuses on the joint impact of vertical supply chain pricing and horizontal competition, demonstrating that supplier opportunism acts as a significant proprietary cost that curtails the traditional incentives for disclosure in oligopolistic markets. Suijs (2007) considers uncertainty about receivers' response to voluntary disclosure. However, the setting focuses on capital market interactions under bidirectional uncertainty, where nondisclosure is driven by the firm's inability to predict

if disclosure will successfully out-compete alternative investment opportunities for an investor's limited capital. Arya et al. (2010) a voluntary disclosure setting where an incumbent firm, operating in multiple independent segments, faces potential entrants. They show that it is the operation in multiple segments that provides a structural hedge that allows firms to credibly withhold granular proprietary details through aggregation. Importantly, while the extant literature typically adopts a multi-receiver paradigm, where a single public disclosure is designed to inform multiple strategic observers simultaneously, our research differentiates itself by modeling two distinct and separate communication channels: a reporting game directed at a supplier and a disclosure game directed at the capital market, where the disclosure outcome is driven by the inherent linkage between these two games rather than an ex-ante broadcast to a combined audience. Some prior studies have begun to consider supply chain linkages more prominently when analyzing disclosure decisions (see e.g., Aghamolla and An (2024); Kalkanci and Plambeck (2020); Xue (2025)). This work, however, has focused primarily on the societal benefits of firms' transparency about their supply chains. In contrast we highlight the strategic implications on information sharing within the supply chain that arise when disclosure empowers suppliers to renegotiate terms.

Our paper also contributes to the literature on vertical information asymmetries in supply chains and strategic information sharing. Information sharing has been well researched as a potential tool to mitigate detrimental effects of vertical information asymmetry in supply chains. Cachon and Fisher (2000) is among the first to analyze shared information in supply chains, comparing supply chain costs for two settings. The traditional model excludes the use of shared information while in the informed setting the supplier knows about the total inventory of the supply chain instead of its own one only. In contrast to their setting with one supplier and multiple retailers, we reverse the procurement setting by considering multiple suppliers and one buyer. Similarly, Li (2002); Guo et al. (2014); Zhang (2002) explore the effect of competition among buyers on their incentives to vertically share demand information and demonstrate that competition effects can prompt the buyer to refrain entirely from sharing information as a strategic decision. In our setting, we refrain from modeling competition among buyers. Chu and Lee (2006) implement a Bayesian game to model a one supplier-one retailer setting, where the retailer decides to disclose or withhold the information. Our setting is similar in that our buyer decides on whether to reveal or not a demand information; however our setting differs as we have multiple suppliers who need to coordinate. Beyond the issue of truthful information sharing, existing work inves-

tigates the operational implications that arise when parties have unequal access to information. Chu et al. (2017) consider a 1:1-setting in which the retailer potentially shares a private demand signal to allow the supplier to adjust capacity. With limited manufacturing capacity, Cachon and Lariviere (1999) illustrate how wholesalers can use their superior information to strategically distort the manufacturer's allocation process. Corbett (2001) adds that information asymmetry reshapes inventory management, as the adoption of consignment stock arrangements lowers cycle stock while raising safety stock requirements. We do not consider capacity decisions, but we have multiple suppliers who must cooperate sometimes to generate sufficient supply. When inventory sharing is permitted, Yan and Zhao (2011) reveals that buyers disclose demand information to each other but refrain from passing it on to the supplier. We extend this literature by examining how the interplay between supply-chain information asymmetries and buyers' capital-market incentives shapes supply chain decisions, internal reporting, and external disclosure. In doing so, we offer a new explanation for why buyers may withhold information from suppliers under vertical information asymmetry: preserving a bargaining advantage in the current period to lower procurement costs.

Lastly, we speak to the literature on information design games. Information design is a general framework where a designer commits to an information structure (or signal) to influence the individually optimal behavior of players to achieve a specific objective in a given game (Bergemann and Morris (2019); Kamenica (2019)). In distinction to Bayesian persuasion games, which refer to the benchmark case involving a single information designer (sender) and a single receiver (see Kamenica and Gentzkow (2011)), information design is the broader framework used to characterize play when there are multiple, strategically interacting players (receivers) (see Bergemann and Morris (2019); Mathevet et al. (2020). Methodologically, Bergemann and Morris (2016) introduced the linear programming framework, which characterizes implementable outcomes as Bayes Correlated Equilibria as one approach to solve information design games. Mathevet et al. (2020) generalized the concavification approach from Kamenica and Gentzkow (2011). As we model a setting in which the buyer faces multiple suppliers as receivers of shared information, we consider an information design game.

The remainder of this paper is organized as follows. Section 2 presents the model, Section 3 analyzes the equilibrium outcomes, and Sections 4 provides empirical implications and concludes.

2 Model

2.1 Institutional Context

We consider a single-period multi-player game in which the entrepreneur of a supply chain, hereafter the buyer, contracts with his supply chain partners, hereafter suppliers, from a competitive market. Therefore, the buyer decides whether to share private demand information when inviting potential suppliers to contracting. The potential suppliers decide individually about signing the offered contract depending on the information provided by the buyer. After the supply chain is formed, the buyer decides whether to voluntarily disclose his private demand forecast to the capital market. This information is valuable to investors as it provides forward looking information about demand faced by the buyer and hence allows for a more precise estimate of the period's expected profit. However, publicly disclosing information, hitherto not reported to the supplier, may trigger contract renegotiation before quantities are realized. Phrased differently, the buyer trades off a more favorable capital market valuation against safeguarding from potential renegotiation threats. To motivate our model assumptions, we provide institutional context concerning the buyer's strategic position and resulting procurement decisions, such as the sourcing mode and the contract type. In a similar way, we illustrate the suppliers' decision context determining their signing choice.

Buyer's information advantage about market demand. Given the supply chain setting, the buyer has more detailed information about market demand before inviting suppliers to contracting. This phenomenon also motivates key assumptions in the literature on vertical information asymmetries (see e.g., Li (2002), Ozer and Wei (2006), Yan and Zhao (2011)). This informational advantage can be understood as resulting from proprietary market intelligence due to privileged access to downstream sales information. Such tendencies are in fact empirically observed in many industries where buyers operate closer to final consumer markets than their upstream suppliers (see Metters (1997)). Thus, demand forecasts are a well-fit example for such information advantages. Another prominent example is the *bullwhip effect* established in operations management literature, which describes the phenomenon that demand information becomes increasingly distorted as it moves upstream in the supply chain. Upstream firms face amplified demand variability even when downstream demand is stable (see e.g., Buffa and Miller (1979); Lee et al. (1997)).

Buyer's market power. Our setting reflects a buyer's market, that is, a market environment in which the buyer possesses substantial market power over the supplier and can therefore determine wholesale price and contract type (single or framework). In such markets numerous suppliers typically face a few major buyers, creating substantial dependencies and significant power asymmetries. As an example, consider the automotive industry, where manufacturers effectively determine not only prices but also delivery quantities, production cadence, and scheduling. Thereby buyers indirectly shape the entire planning processes of their partner firms. Many suppliers adjust their capacities, investments, and even personnel structures to these requirements (see e.g., Königshofer (2025)). Overall, the buyer's eminent market power allows for full extraction of rents, limiting the suppliers to a zero profit.

Contract type. Given its information advantage and its strong market power, the buyer is able to determine the contract type. In general two alternative contract types exist: (i) framework contracts and (ii) stand-alone contracts.

Framework contracts are used to avoid repeated negotiations and to fix once-negotiated terms between supplier and buyer over an extended period, thereby providing planning reliability for costs and revenues to both supply chain partners (see e.g., Baron (2025); Eckhard et al. (2009)). Under the framework contract, the buyer and the supplier agree once on a fixed wholesale price that is based on the expected order quantity, and thus on the forcasted demand, but does not depend on the realized order quantity. This implies that the supplier commits to a delivery guarantee at the agreed fixed price for the quantity ordered, and hence for all possible realizations of market demand. The buyer compensates the supplier with a per-unit price that covers the supplier's quantity-dependent production costs in expectation. Such a setting is frequently observed in practice whenever small and medium sized companies (SMEs) are suppliers to large corporations, for example in the automotive industry.

Under a stand-alone contract, the buyer orders a quantity meeting the realized market demand at a unit price negotiated for that specific order. The price in a stand-alone contract depends on the order quantity and ultimately on the realized market demand. Under a stand-alone contract, the buyer compensates the supplier with a per-unit price that covers the supplier's quantity-fixed production costs.

Buyers' procurement strategy. Irrespective of choosing the contract type the buyer also faces the strategic decision under which procurement mode to operate. That is, whether to

rely on a single supplier or to procure from multiple ones. For example, single sourcing was long considered standard practice in the automotive industry. More recently, manufacturers have begun to incorporate double sourcing strategies to reduce their dependence on a single supplier and to limit that supplier's bargaining power (see e.g., Eckl-Dorna (2016); Fugger et al. (2016)). Contracting one or multiple suppliers comes with specific strategic costs and benefits. On the one hand, procuring high quantities from a single supplier can be prohibitively costly and imposes a higher procurement risk. On the other hand, contracting multiple suppliers also comes at increased initial contracting and setup costs (see e.g., Artz and Norman (2002)). Finally, procurement (in)efficiencies can impact buyers' capital market valuation (see, e.g., Biermann and Leromain (2025)).

Suppliers' progressive production costs. Suppliers operate in a perfectly competitive supplier market with a zero-value outside option. As such, any contract ex-ante meets the participation constraint equal to the outside option in expectation. Ex-post, suppliers' profit must be non-negative to avoid market exit.

In our setting, suppliers' production costs take a progressive form. Such cost patterns may arise when higher output requires overtime work, particularly night or weekend shifts that involve premium wages. Progressive costs also emerge when production approaches capacity limits, as machine overuse increases maintenance and repair needs, raw material prices tend to rise when demand exceeds supply, and production processes become less efficient at full utilization.[2] In the automotive industry, complex operational processes and high specialization make these progressive cost patterns especially prevalent (see e.g., Gackstatter et al. (2021)). The industry's just-in-time production principle further reinforces this dynamic because limited buffers in production planning force suppliers to resort to overtime and additional shifts as soon as demand increases (see e.g., Fugger et al. (2016); Königshofer (2025)).

Voluntary disclosure of demand information to capital markets. Furthermore, in our setting the buyer is a capital-market-oriented firm and therefore maximizes its market valuation, which is determined by disclosed profits as well as anticipated costs from renegotiation. The supplier maximizes the period's profit. Moreover, the supplier is not capital-market-oriented, which is why no disclosure is provided. The interim demand forecast is a voluntary disclosure of the buyer's proprietary demand information. This forecast is publicly disclosed to the capital

[2] Technically, this setting resembles a Gutenberg-style production function (see e.g. Albach (1980)).

market before final quantities are produced but after the supply chain contracting took place. In practice, interim management forecasts, including demand forecasts, are generally provided on a voluntary basis in most stock markets worldwide due to the inherent variability of forward looking information (see Healy and Palepu (2001)). The capital market is modeled as one representative investor, who prices the buyer in response to the disclosure of the interim demand forecast.

2.2 Model

Technically, our model extends the disclosure framework developed by Wagenhofer (1990) with supplier contracting and can be separated into two phases. In the first phase, internal supply chain reporting takes place. This is represented by an information design problem.[3] The buyer strategically decides on the unit procurement wholesale price when offering either a framework contract or a stand-alone contract as a 'take-it-or-leave-it' offer and whether or not to simultaneously share demand information with the potential suppliers. Subsequently the potential suppliers decide on accepting the offered contract individually. The second phase is characterized by a disclosure game with multiple receivers and a potential adverse action. The buyer's ultimate objective is to maximize its market price while the suppliers maximize their current period's profit.

The buyer operates as a monopolist. Hence, the demand for the final product is represented by an inverse linear demand function:

$$\tilde{p}(q) = \tilde{a} - \tilde{b}q, \tag{1}$$

where $\tilde{p}$ denotes the price which is commonly observable in the market by all players, q the sales quantity, $\tilde{a}$ the demand intercept and $\tilde{b}$ the slope parameter. The parameters $\tilde{a}$ and $\tilde{b}$ are uniformly distributed random variables , i.e., $\tilde{a} \sim U[0, \bar{a}]$ and $\tilde{b} \sim U[0, \bar{b}]$. The realization a and b is private knowledge to the buyer, while their distribution is commonly known by all players. The buyer may or may not report the realization a as a demand forecast to shape the subsequent contracting stage. Information about b always remains private knowledge to the buyer. Note that although sharing a demand forecast within the supply chain is an internal

[3] Information design is a general framework where a designer commits to an information structure (or signal) to influence the individually optimal behavior of players to achieve a specific objective in a given game (Bergemann and Morris (2019); Kamenica (2019)). In distinction to Bayesian persuasion games, which typically refer to the benchmark case involving a single information designer (sender) and a single receiver, information design is the broader framework used to characterize play when there are multiple, strategically interacting players (receivers)(see Bergemann and Morris (2019); Mathevet et al. (2020).

communication, we assume reported information becomes publicly available to all players due to information leakage. Therefore, we define the suppliers' information set identical to the public information set as $\mathcal{I}$, $\mathcal{I} \in \{a, \emptyset\}$.

The supplier market consists of n potential suppliers i, $i \in \{1, ..., n\}$, which are homogeneous in their production costs and capacity constraints.[4] Both suppliers produce at progressive costs of

$$c_S(q) = kq^2, \tag{2}$$

which implies that suppliers' marginal costs increase in the quantity q.[5] The supplier cost function is public knowledge which implies that the buyer can exploit this information in the contracting game. Both suppliers are generally equipped to perform the entire production process on their own. However, by design of the progressive cost function, it becomes prohibitively expensive for one supplier to produce the entire quantity requested by the buyer, once the demand parameter a exceeds a certain threshold. This property can be interpreted as an implicit weak capacity constraint that is commonly known to all players.

The buyer offers the profit-maximizing quantity-price pair (q^*, $p(q^*)$) to the consumer market. Further, he faces a competitive supply-market. Accordingly, he offers the cost-compensating wholesale price w^j to the potential suppliers, based on his private information about the market demand a. The buyer's profit is defined as

$$\Pi_B^j = \left[p(q) - w^j\right] q - n\kappa, \tag{3}$$

with the parameter j, $j \in \{S, D\}$, indicating whether the buyer procures the quantity q from one supplier (single sourcing, i.e. $j = S$) or from two suppliers (double sourcing, i.e. $j = D$).[6] The parameter n, $n \in \{1, 2\}$, indicates the number of suppliers contracted. The parameter κ represents a fixed contracting cost per supplier.[7] The procurement contract between the buyer and its supplier(s) specifies an internal per unit price w^j which compensates the supplier for the expected production costs based on the shared information about the demand parameter a

[4] We assume that suppliers operate in a perfectly competitive market. Accordingly, competition drives the equilibrium price down to marginal cost, implying that suppliers earn zero economic profits in equilibrium.

[5] For the traceability of the analysis and without loss of generality we assume $k = 1$.

[6] In the current model, we assume that double sourcing necessitates the buyer to report private information about a.

[7] The parameter κ can be interpreted as the initial cost of contracting a new supplier, including set-up, compliance, and monitoring expenditures. For instance, this represents costs of integrating a supplier into the firm's processes, verifying compliance with the code of conduct, and ensuring adherence to required quality standards.

and is hence determined jointly with the reporting decision at $t = 1$. Note that by observing the buyer's pricing and reporting decision, all players infer the number of suppliers from the structure of the game. In the single sourcing setting the buyer randomizes over which supplier to contract with. A summary of the sequence of events is presented in figure 1.

In the double sourcing setup, the production is executed by both suppliers jointly, where each produces half of the quantity q. Note that, because of the progressive nature of the suppliers' cost functions, the total costs of producing quantity q with a single supplier always exceed those of producing the same quantity with two suppliers, i.e.,

$$c_S^D(q) = 2k\left(\frac{q}{2}\right)^2 = \frac{k}{2}q^2 < kq^2 = c_S^S(q). \tag{4}$$

Upon observing the offered unit price w^j and the buyer's reporting about the demand signal $\tilde{a}$ at $t = 1$, the suppliers decide at $t = 2$ whether to accept the contract offered by the buyer, maximizing their profit function

$$\Pi_S^j = w^j q - c_S(q). \tag{5}$$

The buyer's reporting decision is characterized by the following trade-off: When observing high demand, reporting a to the suppliers is crucial to ensure cost efficient production, yet, for intermediately high demand, reporting signals high expected costs which the buyer can shift to the supplier by remaining silent, exploiting the informational advantage in the contracting phase at $t = 2$.

At $t = 3$, before the final quantity is ordered and after the binding contracts are signed, the buyer has the choice to publicly disclose the demand parameter a to the capital market.[8] Disclosing the demand parameter aims at yielding a higher firm valuation at the capital market by signaling a favorable market outlook and a higher expected profit. However, disclosure may also come with potential renegotiation claims by supplier(s). We denote the proprietary costs from renegotiation triggered by disclosing sufficiently high forecasted demand information a as $R(a)$ or respectively in the case of non-disclosure ($\mathcal{ND}$) by a sufficiently high conditional expectation of a, i.e. $R(\mathbb{E}[a|\mathcal{ND}])$. As such, renegotiation costs in our setting are not constant but are defined as the supplier's loss that would result from fulfilling the framework contract for the realized demand a. This implies that renegotiation occurs whenever the contract becomes onerous and

[8] Observe that, by standard assumption, the buyer has to report and disclose truthfully whenever he speaks out. Disclosure comes at no non-proprietary disclosure cost.

a is disclosed.[9] We denote by a_R the endogenous threshold value of $\tilde{a}$ from which this situation arises, where $a_R \in [\underline{a}, \bar{a}]$. A distinctive feature of our setting is that we derive the threshold a_R endogenously.

The idea behind the endogenous renegotiation threshold is that whenever the supplier, who is contracted at a unit price w^j, learns that realized demand is sufficiently high, public disclosure may reveal that a contract concluded under asymmetric information at $t = 2$ at the unit price w^j yields a total loss through the progressive production costs, i.e., it is ex post inefficient. This gives the supplier an incentive to initiate renegotiation in order to obtain compensation for the incurred loss. Importantly, renegotiation threats can only arise if the buyer did not report at $t = 2$, i.e. if the contract was formed at a fixed price under asymmetric information.

At $t = 4$ the capital market prices the buyer based on the public information set $\mathcal{I}$. The capital market forms its expectation on the buyer's overall profitability by anticipating both the production and renegotiation outcomes under the two scenarios. Thus, the capital market prices the buyer as

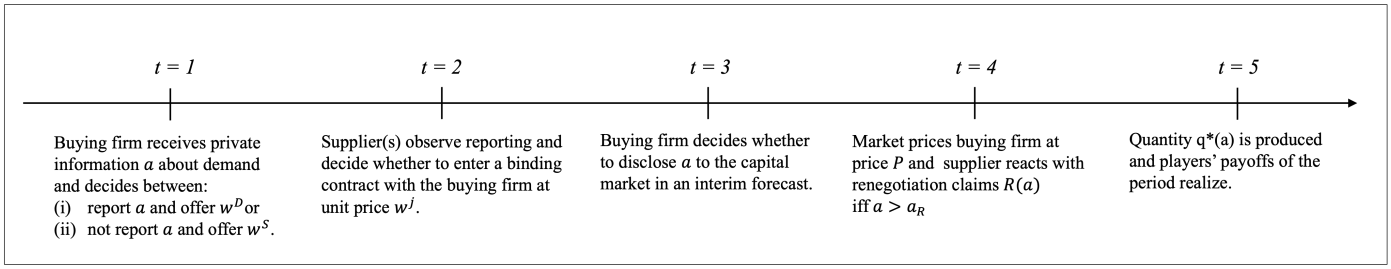
$$P = \mathbb{E}[\Pi_B^j - R(a)|\mathcal{I}], \tag{6}$$

where Π_B^j is determined by the prevailing production mode, i.e. single or double sourcing. Consequently, similar to the firm in Wagenhofer (1990), the buyer faces a trade-off between two competing objectives: (i) deterring supplier(s) from initiating costly renegotiation, and (ii) achieving a high market price. Hence, the buyer's disclosure strategy interacts with its pricing and reporting strategy, balancing these opposing forces.

Finally, at $t = 5$ the period ends, the quantity $q^*(a)$ which maximizes the buyer's profit function, based on the demand a, is produced and all players' payoffs realize. The sequence of events is summarized in Fig. 1.

[9] Our assumption that supplier(s) renegotiate once the framework contract becomes onerous derives as an analogous application from IAS 37.10: "An onerous contract is a contract in which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it." (International Accounting Standards Board (IASB) (2026)

Figure 1: Sequence of events.



3 Equilibrium analysis

We solve the model by backward induction from $t = 3$. Since this is the final stage, it closely resembles the equilibrium analysis in Wagenhofer (1990), with one key difference: strategies in the disclosure game are conditioned on the preceding Bayesian persuasion game and, accordingly, the renegotiation claim $R(a)$ as well as the renegotiation threshold are derived endogenously.

Next, we analyze the suppliers' optimal quantity offers and the buyer's optimal reporting and pricing decision at $t = 2$ and $t = 1$. Together, these strategy profiles constitute the equilibrium of a Bayesian persuasion game in which the buyer acts as the information designer, setting prices and reporting to induce its preferred outcome, coordination or non-coordination among the suppliers, conditional on its private information about the demand parameter a.

Before proceeding with the full backward-induction analysis, we first derive the renegotiation claim $R(a)$ and the corresponding threshold that determines when renegotiation occurs. These primitives follow from the buyer's optimal purchase quantity and the supplier's profit function under single sourcing. We denote this threshold by a_R to emphasize that it is the renegotiation threshold implied by the supplier's profit condition. The claim $R(a)$ and threshold a_R determine when disclosure triggers renegotiation and how large the resulting proprietary cost is. Formally, a_R is the unique demand realization at which the contracted single–sourcing supplier just breaks even under the fixed per–unit price w^S. For all $a \in [a_R, a^*)$, the supplier incurs a loss and renegotiates iff a is disclosed and hence becomes public information. The renegotiation claim $R(a)$ then equals this loss, i.e., the transfer required to restore the supplier to zero profit, implying $R(a) = 0$ for $a < a_R$ and $R(a) > 0$ (increasing in a) on $[a_R, a^*)$. We formally derive a_R and $R(a)$ in Lemma 1 below and use them throughout the following equilibrium analysis. In a later step, we verify that the renegotiation threshold a_R coincides with the upper disclosure threshold.

Lemma 1 (Renegotiation) *Given the buyer's optimal purchase quantity* $q^*(a) = \frac{a-w^S}{2b}$, *the*

supplier's profit under single sourcing is $\Pi_S^S(a) = \frac{(a-w^S)\left[(2b+k)w^S - ka\right]}{4b^2}$. *The supplier renegotiates if and only if* $\Pi_S^S(a) < 0$, *implying the renegotiation claim*

$$R(a) = \max\{0, -\Pi_S^S(a)\} = \max\left\{0,\ \frac{(a-w^S)\left[(ka-(2b+k)w^S\right]}{4b^2}\right\}.$$

Renegotiation occurs iff $a > a_R = \frac{b+2k}{k}\, w^S$.

Proof: See Appendix A.2.

Knowing that for $a < a_R$ no renegotiation occurs, we are able to describe the optimal disclosure strategy for settings with $\overline{a} < a_R$ in Lemma 2 .

Lemma 2 (Full unraveling absent the renegotiation threat) *Given* $\overline{a} < a_R$, *implying that renegotiation costs are zero, i.e.,* $R(a) = 0$ *induces full disclosure.*

Proof: See Appendix A.3

Lemma 2 establishes that absent contracting frictions, the external disclosure game fully unravels. With truthful disclosure and neither non-proprietary nor proprietary costs, the buyer optimally reveals the realized demand parameter a to the capital market, and the equilibrium non-disclosure set is empty. Since a is fully revealed in the external disclosure stage, it is always inferred by the supplier. Consequently, any attempt to withhold information internally cannot preserve informational rents.

Technically, Lemma 2 implies that the internal reporting stage becomes irrelevant for $R(a) = 0$. Thus, whenever reporting and disclosure thresholds exist, they must be endogenously generated by the contracting stage itself.

Lemma 3 (Existence of an (FC, SC)**-type equilibrium)** *There exist parameter constellations* $(k, \kappa, \bar{q})$ *under which the buyer optimally offers a framework contract (FC) under single sourcing and a stand-alone contract (SC) under double sourcing.*

1. *Define the unique procurement quantity* $q_{\text{sep}} = \sqrt{\frac{2\kappa}{k}}$, *at which total production costs under single and double sourcing are equal. For quantities* $q > q_{\text{sep}}$, *double sourcing dominates single sourcing and vice versa.*

2. *Resulting wholesale prices under the framework contract are:*

$$w_{FC}^S = \tfrac{2}{3}k\, q_{\text{sep}} \qquad \textit{and} \qquad w_{FC}^D = \tfrac{1}{3}k\, \frac{\bar{q}^3 - q_{\text{sep}}^3}{\bar{q}^2 + q_{\text{sep}}^2},$$

under the single sourcing and double sourcing procurement mode, respectively.

Under the stand-alone contract, the buyer offers the wholesale prices $w_{SC}^{S} = \frac{ka}{2b+k}$ *and* $w_{SC}^{D} = \frac{ka}{4b+k}$ *, which compensate the supplier for his cost, given quantity* q^**.*

3. *An equilibrium of type* (FC, SC) *can exist if the sufficient condition* $q_{sep} \lesssim \frac{\bar{q}}{2.4856}$ *holds.*

Proof: See Appendix A.4.

Observe that q_{sep} corresponds to the critical demand realization $a^* = p(q_{sep}) + bq_{sep}$, which follows from equation (1). Further, note that a framework contract's wholesale price is fixed, independent of the realization a. Moreover, since all $a < a^*$ are not reported in equilibrium, the supplier accepts the contract, being compensated at cost in expectation but at the risk of making a loss whenever the realized demand lies in the interval $[a_R, a^*)$. We subsequently analyze how the buyer's anticipation of renegotiation claims in response to disclosure endogenously breaks the unraveling logic in Grossman and Hart (1980) and sustains partial reporting and disclosure in equilibrium.

The buyer seeks to maximize its market price by selecting an optimal disclosure strategy in the external voluntary disclosure game. The firm faces two primary objectives, releasing favorable information to boost its capital market valuation, and deterring suppliers from initiating costly renegotiation, thereby avoiding the proprietary cost $R(a)$. Consequently, if the buyer chooses to disclose the demand forecast a, the firm's market price will be:

$$P^{\mathcal{D}} = \Pi_B^j(q^*) - R(a) \tag{7}$$

Upon non-disclosure, the market price will be:

$$P^{\mathcal{ND}} = \mathbb{E}\left[\Pi_B^j(q^*)|\mathcal{I} = \emptyset\right] - \mathbb{E}[R(a)|\mathcal{I} = \emptyset] \tag{8}$$

Thus, for a disclosure strategy to be part of an equilibrium, the non-disclosure set $\mathcal{ND}$ must be defined such that the firm finds it optimal to disclose any $a \in \mathcal{D}$ and to withhold any $a \in \mathcal{ND}$. The equilibrium non-disclosure set $\mathcal{ND}$ is implicitly given by

$$\mathcal{ND} = \left\{a \mid P^{\mathcal{D}} < P^{\mathcal{ND}}\right\}. \tag{9}$$

We focus primarily on the partial disclosure equilibrium while acknowledging the full disclo-

sure equilibrium.[10] There exists an equilibrium where the buyer always discloses and reports the demand intercept a. The capital market's skeptical beliefs, which assume the worst-case scenario if a is withheld, pressure the firm to reveal all relevant information to maximize its market valuation. Thus, despite the potential proprietary costs from supplier renegotiation, the firm may find it optimal to disclose all information when the benefit of a higher market price outweighs these costs. If demand information is always disclosed at $t = 3$ incentives for withholding a at $t = 1$ vanish and full reporting is the consequence. Lemma 4 formally states this result.

Lemma 4 (Full disclosure) *There always exists an equilibrium with full disclosure and full reporting of demand information a, where non-disclosure and non-reporting never occurs.*

Proof: Analogously to proof of Proposition 1 in Wagenhofer (1990).

In the partial disclosure equilibrium, the firm balances two competing objectives, maximizing its market valuation and avoiding costly renegotiation claims from suppliers. We begin by conjecturing that the buyer adopts a threshold disclosure and reporting strategy, resulting in two non-disclosure (see Wagenhofer (1990)) and one non-reporting interval and confirm this through formal analysis. First, recall from Lemma 3 that for very high realizations of $a > a^*$, by assumption of a progressive supplier cost function, single sourcing becomes prohibitively costly. Hence, double sourcing is preferred in order to satisfy high demand and this information would necessarily have been reported at $t = 1$ to ensure adequate supplier capacity (see footnote 6). For solving the disclosure stage, we identify a^* with the upper disclosure threshold $\hat{\hat{a}}$, above which the market price upon disclosing demand information, $P^{\mathcal{D}}(a > \hat{\hat{a}})$, exceeds the non-disclosure price plus renegotiation costs, $P^{\mathcal{ND}} + R(a)$. This gives the upper disclosure region $\mathcal{D}_2$, as illustrated in figure 2. The upper non-disclosure region $\mathcal{ND}_2$ is bounded by the renegotiation threshold a_R on the left and by $\hat{\hat{a}}$ on the right. Realizations of a within this region will not be disclosed, as they indicate a demand level high enough to trigger renegotiation but not sufficiently high such that positive capital market reactions outweigh costly renegotiation claims. For the lower non-disclosure, $\mathcal{ND}_1$, and disclosure, $\mathcal{D}_1$, region, it is only the capital market's reaction that drives the disclosure decision. Specifically, very low demand realizations $a \in [\underline{a}, \hat{a})$ are withheld to avoid a negative market response, while intermediate values $a \in [\hat{a}, a_R)$ are disclosed. The existence of this disclosure strategy in equilibrium, particularly the non-disclosure and disclosure regions $\mathcal{ND}_1$, $\mathcal{D}_1$, and $\mathcal{ND}_2$, depends on the firm not having reported demand information to

[10] The detailed analysis and proof of both are relegated to the appendix.

potential suppliers earlier, as we assume that this information can and does leak to the capital market. We formalize the equilibrium disclosure strategy in Lemma 5.

Lemma 5 (Partial disclosure) *In equilibrium the buyer adopts a partial disclosure strategy in which the non-disclosure set is composed of two separate intervals,* $\mathcal{ND} = [\underline{a}, \hat{a})$ *and* $[a_R, \hat{\hat{a}})$*, where* $\hat{\hat{a}} = a^*$*,* $\hat{a} = \mathbb{E}[\mathcal{ND}] < a_R$*,* $R(\mathcal{ND}) = 0$*,* $\mathbb{E}[a] < a_R$ *and* $\underline{R} \leq R(a) \leq \bar{R}$*.*

Proof: Analogously to proof of Proposition 2 in Wagenhofer (1990).

To sustain partial disclosure in equilibrium as outlined in Lemma 5, three key conditions must be satisfied. First, the renegotiation costs $R(a)$ must be significant enough to deter the buyer from disclosing favorable demand information within the upper non-disclosure interval. Second, the market price in the absence of disclosure (non-disclosure price) shoul not induce full unraveling. Third, all disclosure and non-disclosure regions, except for the upper disclosure region, must align with the absence of reporting a at $t = 1$.

The equilibrium in the reporting game at $t = 2$ is directly linked to the optimal strategy in the external disclosure game at $t = 3$, as the buyer's decisions in both stages are shaped by the need to manage supplier renegotiation risk and capital market benefits. We formally summarize the joint equilibria in Proposition 1.

Proposition 1 (Joint contracting and disclosure equilibria) *There exist equilibria in which*

1. *the buyer jointly practices single sourcing and offers a framework contract on the interval* $[0, a^*]$ *and jointly practices double sourcing and offers a stand-alone contract on the interval* $[a^*, \overline{a}]$*. The framework contract's wholesale prices equal* $w_{FC}^S = \frac{2}{3}\sqrt{\kappa\, k}$ *and the suppliers' stand-alone contracts' wholesale price equals* $w_{SC}^D = \frac{ka}{4b+k}$*.*

2. *all disclosing firms are priced at their true value. The resulting non-disclosure price equals*

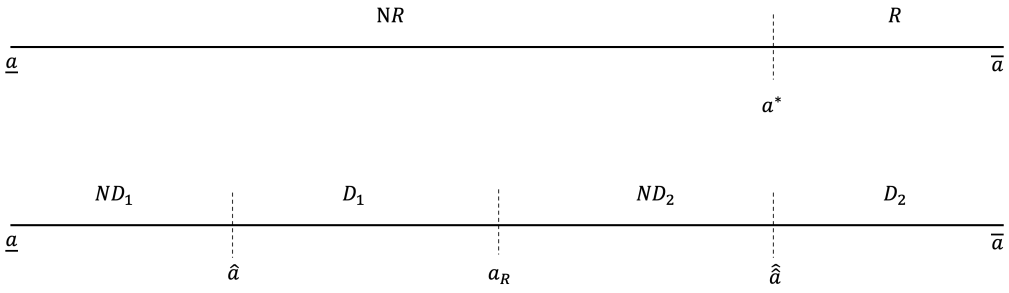
$$P^{\mathcal{ND}} = \frac{1}{\hat{a} + \hat{\hat{a}} - a_R} \left(\int_0^{\hat{a}} \Pi_B^S(a)\, da + \int_{a_R}^{\hat{\hat{a}}} \Pi_B^S(a)\, da \right),$$

3. *the disclosure threshold* $\hat{a}$ *coincides with the reporting threshold* a^**. The reporting threshold is can be expressed as:* $a^* = \frac{2}{3} \frac{\sqrt{\kappa k}\,(4b+k)\left((4b+k) \mp \sqrt{16b^2 - 72b - 9k}\right)}{k(8b+k)}$

Proof: See Appendix A.5.

Figure 2 illustrates the joint reporting and disclosure outcome. The lower panel details the equilibrium disclosure regions as formally described in in Lemma 5 and Proposition 1, while the upper panel depicts the necessary condition for the internal reporting game in Lemma 3 and Proposition 1.

Figure 2: Equilibrium reporting and disclosure areas.



The upper panel refers to the internal contracting game. The lower panel depicts the equilibrium disclosure and non-disclosure intervals in the external capital market disclosure game. We denote non-disclosure (non-reporting) areas with $\mathcal{ND}$ ($\mathcal{NR}$) and disclosure (reporting) areas with $\mathcal{D}$ ($\mathcal{R}$).

In the contracting game at $t = 2$, the key incentive not to report $a < a^*$ at $t = 1$ is the option value associated with non-reporting in the external disclosure game later on in $\mathcal{ND}_2$. In this interval, the buyer can exploit his informational advantage by committing the suppliers to a wholesale price w^S_{FC} below the break-even price implied by the realized demand. If a was reported, the supplier would have rejected such a contract at $t = 2$. Under non-reporting, however, the supplier accepts, as the fixed price w^S_{FC} compensates the supplier's total cost *in expectation*, lacking knowledge of the true realization of a.

In the disclosure game at $t = 3$, given the buyer's optimal partial disclosure strategy, suppliers cannot learn if the demand lies in the critical interval $\mathcal{ND}_2$. Instead, recipients interpret non-disclosure as a signal of low or moderately high demand, i.e., they conjecture that $a \in \{\mathcal{ND}_1, \mathcal{ND}_2\}$. If demand is low ($a \in \mathcal{ND}_1$), the lump-sum price w^S_{FC} exceeds the suppliers' production costs, such that renegotiation would be detrimental for the supplier. By contrast, if demand is moderately high ($a \in \mathcal{ND}_2$), w^S_{FC} falls short of production costs, making renegotiation beneficial. The suppliers' and capital market's inability to distinguish between these two cases prevents full-unraveling at the disclosure stage. Accordingly, the equilibrium non-disclosure set $\mathcal{ND}$ is composed of two intervals in which renegotiation never occurs, i.e., $R(\mathcal{ND}) = 0$, allowing the buyer to preserve an informational advantage and deter the supplier from costly renegotiation, at the sacrifice of capital market benefits from disclosing moderately high demand realizations.

For reporting high demand ($a > a^*$) at $t = 2$, contracting and capital market incentives are aligned. First, as in Wagenhofer (1990), capital market benefits induce the buyer to disclose high demand realizations whenever a exceeds the disclosure threshold $\hat{\hat{a}}$, as shown in Lemma 5. Second, if the buyer learns that demand is high, single sourcing becomes prohibitively costly due to the suppliers' convex production costs, as described in Lemma 3. This creates an incentive to report high demand signals before contracting and to set the price w_{SC}^D in order to induce supplier cooperation. Since suppliers are compensated at cost under the pricing regime w_{SC}^D, which is applied whenever $a > a^*$, there is no renegotiation incentive for high demand realizations and hence no incentive to withhold demand information in equilibrium. Taken together, the buyer has no reason to conceal high demand ($a > a^*$), while he does not report any other demand realization ($a < a^*$) to exploit his informational advantage. Accordingly, he is willing to give up capital market benefits to avoid costly renegotiation, choosing a partial reporting and disclosure strategy.

4 Conclusion

We develop a novel framework linking internal reporting, procurement contracting, and external disclosure, and analyze how these decisions interact when suppliers can react strategically to disclosed information. Our model shows that disclosure does not only serve investors but may also reshape the distribution of bargaining power in buyer–supplier relationships. We derive a partial disclosure equilibrium in which the buyer's reporting, pricing, and disclosure strategies are jointly determined by the trade-off between market valuation and the risk of supplier renegotiation. Given the option to exploit their informational advantage in the contracting stage by withholding demand information, buyers have the option to commit suppliers to contracts that would not be accepted under full information. Once external disclosure takes place, however, suppliers may initiate costly renegotiation, inducing the buyer to forgo capital market benefits by not disclosing favorable demand information in order to protect its contractual position.

While our current analysis is limited to a voluntary disclosure setting, the results suggest that mandatory transparency requirements may entail unintended real effects on supply chain coordination and contractual efficiency. Future research can extend our model in several directions: First, by varying the manager's objective function to capture different weights on short-term profits relative to expected future renegotiation claims, thereby allowing an analysis of manage-

rial myopia; second, by studying scenarios in which the capital market penalizes single sourcing, for example in the presence of supply security concerns. By integrating a supply chain contracting game with a disclosure game in capital markets, our paper extends classical disclosure models by endogenizing the role of supplier bargaining power and provides a novel perspective on the implications of buyer's strategic transparency.

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A Appendix

A.1 List of Variables

$\tilde{a}$	Intercept of the inverse demand function
a^*	Reporting threshold
a_R	Renegotiation threshold
$\tilde{b}$	Slope of the inverse demand function
$c_S^j(q)$	Supplier production costs, given production mode j
$\mathcal{I} \in \{a, \emptyset\}$	Suppliers' and capital market's final information set
$j \in \{S, D\}$	Procurement mode; S=single sourcing, D=double sourcing
κ	Setup cost per supplier
$\mathcal{ND}$	Non-disclosure set
$P(a)$	Buyer's capital market price
$\tilde{p}(q)$	Inverse product market demand function
$\Pi_B^j(q)$	Buyer's profit function
$\Pi_S^j(q)$	Supplier's profit function
$\tilde{q}(p)$	Product market demand function
q^*	Optimal quantity which the buyer purchases from the supplier
q_{sep}	Critical quantity from which the cost of single sourcing exceed the costs of double sourcing
$R(a)$	Renegotiation claim
$w_{FC(SC)}^j$	Wholesale price under the framework contract (stand-alone contract), given procurement mode j

A.2 Proof of Lemma 1

We prove Lemma 1 by explicitly deriving the renegotiation claim $R(a)$ and the associated renegotiation threshold a_R. The proof proceeds in three steps:

1. Determine the buyer's equilibrium purchase quantity $q^*(a)$ under single sourcing.
2. Compute the supplier's profit depending on demand realization a and characterize the conditions under which renegotiation occurs.
3. Identify the unique value a_R (later denoted a_R) at which the supplier's profit equals zero. Verify the existence of a marginal loss point $a' = K'$ preceding it.

As a result $R(a)$ and a_R are endogenously determined.

1. Buyer's purchased equilibrium quantity q^*: Consider the inverse demand function:

$$p(q) = a - bq, \text{ with } a > 0 \text{ and } b > 0.$$

The buyer's profit is then given by:

$$\begin{aligned} \Pi_B^j(q) &= \left[p(q) - w^j\right] q - n_j\kappa \\ &= aq - bq^2 - w^j q - n_j\kappa \end{aligned} \tag{A.1}$$

Deriving Π_B^j with respect to q gives the profit-maximizing purchase quantity, $q^*(a)$:[11]

$$\begin{aligned} \frac{\partial \Pi_B^j}{\partial q} &= a - 2bq - w^j \stackrel{!}{=} 0 \\ \Rightarrow q^*(a) &= \frac{a - w^j}{2b} \end{aligned} \tag{A.2}$$

The equilibrium price is the inverse demand at q^*:

$$p(q^*) = a - bq^* = a - b\left(\frac{a - w^j}{2b}\right) = \frac{a + w^j}{2} \tag{A.3}$$

Inserting q^* in (A.1) gives the optimal buyer profit:

$$\Pi_B^{j\,*}(a) = \left(\frac{a + w^j}{2} - w^j\right) \frac{a - w^j}{2b} - n_j\kappa = \frac{(a - w^j)^2}{4b} - n_j\kappa. \tag{A.4}$$

2. Supplier's renegotiation claim: Given the buyer's best response (A.2), the supplier's renegotiation claim $R(a)$ equals the supplier's loss under single-sourcing with unit price w^S for $a \in [K, a^*)$, i.e., the transfer required to restore the supplier to zero profit.

[11] The second-order derivative $\frac{\partial^2 \Pi_B^j}{\partial q^2} = -2b < 0$ indicates a maximizer.

The supplier profit under single sourcing, $\Pi_S^S(a)$, is:

$$\begin{aligned}\Pi_S^S(a) &= w^S\, q^*(a) - k\,[q^*(a)]^2 \\ &= \left[w^S - k\,\frac{a-w^S}{2b}\right]\left[\frac{a-w^S}{2b}\right] \\ &= \frac{(a-w^S)\left[(2b+k)w^S - ka\right]}{4b^2}\end{aligned} \tag{A.5}$$

By concavity, the supplier's profit function $\Pi_S^S(a)$ has two roots. Hence, (A.5) is non-negative for $a \in [w^S, \frac{2b+k}{k}w^S]$. For all a outside this interval, (A.5) is negative, implying a positive renegotiation claim.

From equation (A.5) it follows that the renegotiation claim is

$$R(a) = \max\{0, -\Pi_S(a)\} = \max\left\{0,\ \frac{(a-w^S)\ \left[ka - (2b+k)w^S\right]}{4b^2}\right\}. \tag{A.6}$$

3. Renegotiation threshold a_R. Observe that it must hold $a \geq w^s$ by non-negativity of the equilibrium quantity q^* in equation A.2. Thus, $a < w^s$ is by definition non-existent. As a consequence there exists a unique renegotiation threshold

$$a_R = \frac{2b+k}{k}w^S \tag{A.7}$$

and $\forall a > a_R$ renegotiation takes place under single sourcing.

A.3 Proof of Lemma 2

Since we assume that disclosure is truthful and comes at no non-proprietary costs, see footnote 8, the only difference in assumptions compared to Grossman and Hart (1980) comes from proprietary disclosure costs, i.e., our renegotiation costs. Assuming $R(a) = 0$, our setting completely resembles Grossman and Hart (1980) implying full disclosure.

A.4 Proof of Lemma 3

In the reporting game the buyer has three strategic choices. He decides over

1. the procurement mode, i.e., single or double sourcing,

2. the wholesale price, for the respective contract

3. which contract to offer, i.e., framework (FC) or a stand-alone (SC) contract.

We proof in the following three steps that there exist cases where the framework contract (FC) is preferred under single sourcing while the stand-alone contract (SC) is preferred under double sourcing:

1. Identifying the optimal procurement mode. We determine the critical procurement quantity q_{sep} and implicitly the critical forecasted demand a such that[12]

$$\text{for } q \begin{cases} > q_{sep} \implies \text{Double-sourcing} \\ < q_{sep} \implies \text{Single-sourcing} \end{cases}$$

From the buyer's perspective, costs of single sourcing, $c_B^S = kq^2 + \kappa$, consist of the production costs, as inferred from (2), and the contracting costs. Analogously, the costs of double sourcing are $c_B^D = \frac{k}{2}q^2 + 2\kappa$. Thus, single sourcing is preferred, iff:

$$\begin{aligned} kq^2 + \kappa &< \frac{k}{2}q^2 + 2\kappa \\ q_{sep} &< \sqrt{\frac{2\kappa}{k}} \end{aligned} \tag{A.8}$$

2. Identifying the optimal wholesale price under each production mode and contract.

   - Framework contract under single sourcing. Under single sourcing (i.e., $q < q_{sep}$), the contract sets the supplier's profit, Π_S^S, as indicated in equation (5), in expectation to zero, by offering the wholesale price w_{FC}^S:

$$\begin{aligned} E[\Pi_S^S] &= \frac{1}{q_{sep}} \int_0^{q_{sep}} \left(w\,q - k\,q^2\right)\, dq = 0 \\ &\Leftrightarrow \frac{1}{q_{sep}} \left[\frac{1}{2}wq^2 - \frac{1}{3}kq^3\right]_0^{q_{sep}} = 0 \\ &\Leftrightarrow q_{sep}^2 \left(\frac{1}{2}w - \frac{1}{3}kq_{sep}\right) = 0 \end{aligned} \tag{A.9}$$

     Rearranging (A.9) yields the wholesale price for framework contracts under single sourcing:

$$w_{FC}^S = \frac{2}{3}kq_{sep} = \frac{2}{3}\sqrt{\kappa k} \tag{A.10}$$

[12] We perform this step absent disclosure incentives and procurement mode choice. Therefore, the expression is correct.

- Framework contract under double sourcing. Under double sourcing, i.e., $q > q_{sep}$, each supplier produces half of the quantity. Hence, each supplier faces possible demand realizations from the interval $a \in [\frac{q_{sep}}{2}; \frac{\bar{q}}{2}]$. Analogously, each supplier's expected profit, Π_S^D, must be zero:

$$
\begin{aligned}
E[\Pi_S^D] &= \frac{1}{\frac{1}{2}\bar{q} - \frac{1}{2}q_{sep}} \int_{\frac{1}{2}\bar{q}}^{\frac{1}{2}q_{sep}} \left(wq - kq^2\right)\, dq = 0 \\
\Leftrightarrow \quad & \frac{1}{\frac{1}{2}\bar{q} - \frac{1}{2}q_{sep}} \left[\frac{1}{2}wq^2 - \frac{1}{3}kq^3\right]_{\frac{1}{2}q_{sep}}^{\frac{1}{2}\bar{q}} = 0 \\
\Leftrightarrow \quad & \frac{1}{\frac{1}{2}(\bar{q} - q_{sep})} \left[\frac{1}{2}w\left(\frac{\bar{q}}{2}\right)^2 - \frac{1}{3}k\left(\frac{\bar{q}}{2}\right)^3 - \frac{1}{2}w\left(\frac{q_{sep}}{2}\right)^2 + \frac{1}{3}k\left(\frac{q_{sep}}{2}\right)^3\right] = 0 \qquad \text{(A.11)}
\end{aligned}
$$

  Solving equation (A.11) for the framework contract price under double sourcing, w_{FC}^D gives:

$$
w_{FC}^D = \frac{1}{3}k\left(\frac{\bar{q}^3 - q_{sep}^3}{\bar{q}^2 + q_{sep^2}}\right) \qquad \text{(A.12)}
$$

- Stand-alone contract under single sourcing. The wholesale price compensated for the actual production costs of $q^*(a)$ as defined in equation (2). Formally, inserting (2) and (A.2) in (5) gives the break even condition:

$$
\begin{aligned}
\Pi_S^S &= w^S q^* - kq^{*2} \stackrel{!}{=} 0 \qquad \text{(A.13)} \\
&= w^S \frac{a - w^S}{2b} - k\left(\frac{a - w^S}{2b}\right)^2 \stackrel{!}{=} 0.
\end{aligned}
$$

  Solving for w_{SC}^S yields:

$$
\begin{aligned}
\frac{w^S}{2b} &= \frac{k\left(a - w^S\right)}{4b^2} \\
\Leftrightarrow \quad w_{SC}^S &= \frac{ka}{2b + k} \qquad \text{(A.14)}
\end{aligned}
$$

- Stand-alone contract under double sourcing. The wholesale price compensated for the actual production costs of $\frac{q^*(a)}{2}$ as defined in equation (4). Formally, inserting (4) and

(A.2) in (5) gives the break even condition:

$$\begin{aligned}\Pi_S^D &= w^D q^* - \frac{k}{2} q^{*2} \stackrel{!}{=} 0 \\ &= w^D \frac{a - w^D}{2b} - \frac{k}{2} \left(\frac{a - w^D}{2b} \right)^2 \stackrel{!}{=} 0.\end{aligned} \tag{A.15}$$

Solving for w_{SC}^D yields:

$$\begin{aligned}\frac{w^D}{2b} &= \frac{k\left(a - w^D\right)}{8b^2} \\ \Leftrightarrow \quad w_{SC}^D &= \frac{ka}{4b + k}\end{aligned} \tag{A.16}$$

3. Determine the optimal contract offered by the buyer. More precisely, the existence of an equilibrium of the type (FC, SC) will be proven, i.e., under single sourcing the framework contract is preferred to the stand-alone contract for the buyer and under double sourcing vice versa.

   (A.10) and (A.12) imply the necessary condition for an (FC, SC) -type equilibrium:

$$\begin{aligned} w_{FC}^D &> w_{FC}^S \\ \Leftrightarrow \frac{\bar{q}^3 - q_{sep}^3}{\bar{q}^2 + q_{sep}^2} &> 2q_{sep}\end{aligned} \tag{A.17}$$

   Substituting $x := \frac{\bar{q}}{q_{sep}}$ for $q_{sep} \neq 0$ in (A.17) results in a cubic inequality. Numerically solving gives the unique root:

$$q_{sep} = \sqrt{\frac{2\kappa}{k}} \lesssim \frac{\bar{q}}{2.4856} \tag{A.18}$$

   Appropriately choosing the parameters κ, k, and $\bar{q}$ ensures the existence of a (FC, SC)-type equilibrium.

A.5 Proof of Proposition 1

1. Follows immediately from Lemma 3.

2. The disclosure intervals follow from Lemma 5. Given the truth-telling condition, disclosing

firms are priced at their true value according to (6). The non-disclosure price is:

$$P^{\mathcal{ND}} \;=\; \mathbb{E}\Big[\Pi_B^j(a) \mid a \in \mathcal{ND}\Big] \;-\; \mathbb{E}[R(a) \mid a \in \mathcal{ND}] = \frac{\int_{\mathcal{ND}} \Pi_B^j(a)\, f(a)\, da}{\int_{\mathcal{ND}} f(a)\, da} \quad \text{(A.19)}$$

Specifically, the non-disclosure price becomes:

$$P^{\mathcal{ND}} = \frac{1}{(\hat{a}-0)+(\hat{\hat{a}}-a_R)} \left(\int_0^{\hat{a}} \Pi_B^S(a)\, da + \int_{a_R}^{\hat{\hat{a}}} \Pi_B^S(a)\, da \right). \quad \text{(A.20)}$$

(A.4) gives the buyer's profit. Inserting the wholesale price w_{FC}^S from (A.10) in (A.4) modifies (A.20):

$$\begin{aligned} P^{\mathcal{ND}} &= \frac{1}{\hat{a}+\hat{\hat{a}}-a_R} \left[\int_0^{\hat{a}} \left(\frac{(a-\frac{2}{3}\sqrt{\kappa k})^2}{4b} - \kappa \right) da + \int_{a_R}^{\hat{\hat{a}}} \left(\frac{(a-\frac{2}{3}\sqrt{\kappa k})^2}{4b} - \kappa \right) da \right] \\ &= \frac{1}{\hat{a}+\hat{\hat{a}}-a_R} \Bigg[\left[\frac{1}{4b} \left(\frac{1}{3}\hat{a}^3 - \frac{2}{3}\sqrt{\kappa k}\,\hat{a}^2 - \frac{4}{9}\kappa k\,\hat{a} \right) - \kappa \hat{a} \right] \\ &+ \left[\frac{1}{4b} \left(\frac{1}{3}\hat{\hat{a}}^3 - \frac{2}{3}\sqrt{\kappa k}\,\hat{\hat{a}}^2 - \frac{4}{9}\kappa k\,\hat{\hat{a}} \right) - \kappa \hat{\hat{a}} \right] \\ &- \left[\frac{1}{4b} \left(\frac{1}{3}a_R^3 - \frac{2}{3}\sqrt{\kappa k}\,a_R^2 - \frac{4}{9}\kappa k\,a_R \right) - \kappa a_R \right] \Bigg] \end{aligned}$$

3. At the optimal reporting threshold $\hat{\hat{a}}$, the buyer is indifferent in terms of profit between single and double sourcing. Specifically, given the contracting wholesale prices w_{FC}^S and w_{SC}^D, which ensure cost efficient production, the buyer ensures profit efficiency when making the decision to report private knowledge a. Moreover, the optimal reporting decision ensures that the supplier earns zero profit.

   Profit-efficiency requires:

$$\begin{aligned} \frac{(a-w_{SC}^D)^2}{4} - 2\kappa \;&=\; \frac{(a-w_{FC}^S)^2}{4} - \kappa. \quad \text{(A.21)} \\ \Leftrightarrow 4\kappa &= \left(a^2 - 2a w_{SC}^D + (w_{SC}^D)^2\right) - \left(a^2 - 2a w_{FC}^S + (w_{FC}^S)^2\right) \end{aligned}$$

   Using the difference of squares identity, $(X^2-Y^2) = (X-Y)(X+Y)$ with $X = (a-w_{SC}^D)$

and $Y = (a - w_{FC}^S)$, we can rewrite the left-hand side:

$$\begin{aligned}(a - w_{SC}^D)^2 - (a - w_{FC}^S)^2 &= \left((a - w_{SC}^D) - (a - w_{FC}^S)\right)\left((a - w_{SC}^D) + (a - w_{FC}^S)\right) \\ &= (w_{FC}^S - w_{SC}^D)\,(2a - w_{SC}^D - w_{FC}^S)\end{aligned}$$

Hence, A.21 becomes:

$$\begin{aligned}4\kappa &= (w_{FC}^S - w_{SC}^D)\,(2a - w_{SC}^D - w_{FC}^S) \\ a &= \frac{2\kappa}{w_{FC}^S - w_{SC}^D} + \frac{w_{SC}^D}{2} + \frac{w_{FC}^S}{2}\end{aligned} \tag{A.22}$$

Substituting (A.16) in (A.22), defining $D = (4b + k)$ and solving for a:

$$\begin{aligned}a &= \frac{2\kappa}{w_{FC}^S - \frac{ka}{D}} + \frac{1}{2}\left(w_{FC}^S + \frac{ka}{D}\right) \\ \Leftrightarrow a\left(w_{FC}^S - \frac{ka}{D}\right) &= 2\kappa + \frac{1}{2}\left(w_{FC}^S + \frac{ka}{D}\right)\left(w_{FC}^S - \frac{ka}{D}\right) \\ \Leftrightarrow 0 &= \left(\frac{k^2}{2D^2} - \frac{k}{D}\right)a^2 + w_{FC}^S a - \left(2\kappa + \frac{(w_{FC}^S)^2}{2}\right) \\ \Leftrightarrow a &= \frac{-w_{FC}^S \pm \sqrt{(w_{FC}^S)^2 + 4\left(\frac{k^2}{2D^2} - \frac{k}{D}\right)\left(2\kappa + \frac{(w_{FC}^S)^2}{2}\right)}}{2\left(\frac{k^2}{2D^2} - \frac{k}{D}\right)}\end{aligned} \tag{A.23}$$

Substituting (A.10) and D in (A.23) yields the final expression for a:

$$a = \frac{2}{3}\,\frac{\sqrt{\kappa k}\,(4b + k)\left((4b + k) \mp \sqrt{16b^2 - 72b - 9k}\right)}{k(8b + k)} \tag{A.24}$$

The reporting threshold in (A.24) ensures (1) cost efficient production by (A.8) (2) profit efficient reporting by (A.21) and (3) zero profit for the supplier(s) by (A.9) and (A.11). Any pair $(\hat{a}, \hat{\hat{a}})$ satisfying the above equations constitutes an equilibrium set of disclosure thresholds for the given (w_{FC}^S, a_R).