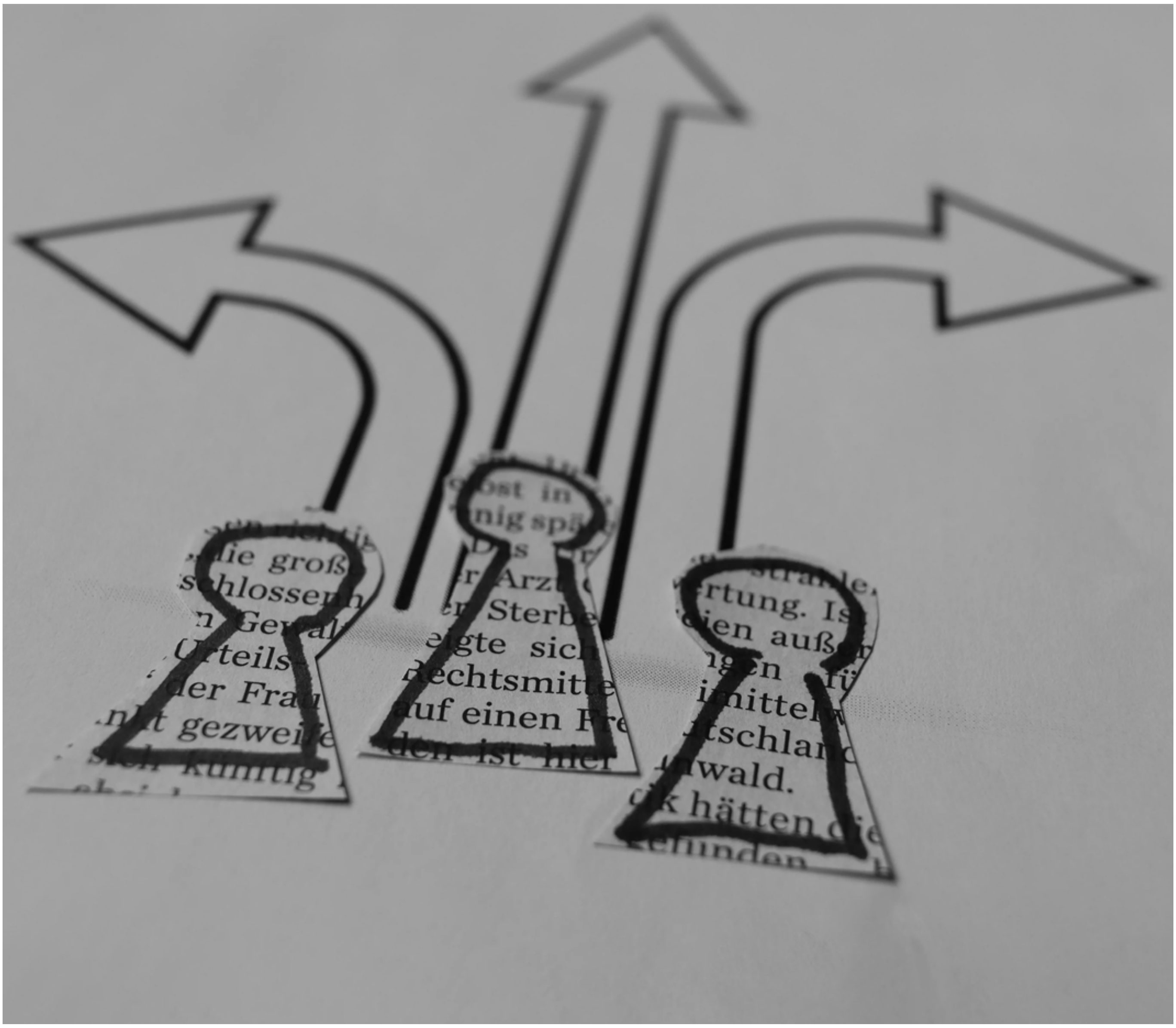
The Competitor

Issue 2 | 2025



IN THIS ISSUE

What really sets game-theoretic negotiation approaches apart from the models you often encounter in practice? Tactics like the "salami tactic" or the so-called "Gandhi strategy" (consistent friendliness, moral pressure) are widespread—just as methods with catchy names like Black Swan Negotiation Tactics. But while many of these approaches primarily aim for marketability, game-theoretic models rest on the principles of economic analysis of strategic interaction.

Game-theoretic negotiation approaches are not about intuition or sales psychology, but about a formalizable, consistent modeling of decision situations involving multiple actors whose interests are intertwined. They systematically ask:

Who has which options?

What information is available?

What incentive structures drive behavior?

"But people aren't rational!" is a frequent objection, often citing behavioral economics. And yes, many everyday decisions are indeed emotional or heuristic. Yet empirical research shows: the higher the stakes, the more rational participants behave. In major tenders, company sales, or spectrum auctions, decisions are not made on a whim—here, rational-strategic thinking demonstrably pays off.

Game theory doesn't prevail in these situations because people suddenly calculate perfectly, but because rational strategies win out over many repetitions or through professional advice. When the effort of analysis and participation is worth it—as in multi-million-euro contracts—there is a strong willingness to engage seriously with the design of the negotiation or auction process, or to bring in expert support.

In this issue of our newsletter, we illuminate the application of game-theoretic approaches in restructuring processes. Beyond classic levers like reducing material costs, game theory can also deliver valuable insights in divestments and other key negotiations. The crucial factor is to actively assume—and strategically use—the role of process designer whenever possible.

Our case study presents a complex software project in which a company sale was concluded successfully, yielding an extremely gratifying result for our client.

We also explore the question of optimal bundling. Aggregating purchasing volumes is a central negotiation lever for buyers—and can be analyzed on a solid mathematical footing from various perspectives.

With Game Theory Through the Crisis: How Smart Negotiation Design Makes Restructuring Successful

Companies undergoing restructuring face a complex balancing act: securing liquidity, rebuilding trust, and at the same time implementing profound structural changes. In such a situation, one often underestimated success factor comes to the fore—not only what is negotiated, but how. The course and architecture of negotiations can determine the outcome of a turnaround. Whoever actively shapes the rules of the negotiation process influences expectations, steers incentives—and thus gains a strategic edge.

Negotiation leadership in a crisis: the underestimated lever

Negotiations are part of every organization's daily business. But during restructuring, they become more than a means to an end—they turn into a critical success factor. Under time pressure, uncertainty, and external expectations, the design of the negotiation process alone can decide success or failure.

A telling example from the automotive supplier industry illustrates the potential: A Tier-1 supplier had to re-award a high-volume development contract during a comprehensive transformation. Despite great urgency and an explicitly stated goal in the restructuring plan, the initial process dragged. An "innovation day" with potential partners was held—yet without clear structure, transparent criteria, or a binding sense that rules would remain fixed. This arbitrariness severely weakened the company's negotiation position.

The result: little progress, no price pressure, no firm offers. Suppliers speculated on later advantages and had no incentive to make early concessions. Only a targeted intervention—a structured, game-theory-based realignment of the negotiation process—turned the tide. Through clear rules, a binding procedure, and direct comparability of offers, not only was transparency created but the negotiation dynamic itself was fundamentally transformed. The outcome: average savings of over 22 percent compared to the best previous bids—a strong signal to both internal and external stakeholders.

This example shows: Those who actively design the negotiation process can create leeway that directly impacts the result. Especially in restructurings—where uncertainty and pressure dominate—game theory provides valuable tools to define roles, recognize incentive structures, and regain control over the flow of discussions.

Four Application Areas for Game-Theoretic Negotiation Strategies

1. Procurement as a key factor: Reducing material costs effectively

In manufacturing companies with a high share of outsourced services, procurement holds an enormous lever: even moderate cuts in material costs have a disproportionately positive impact on the bottom line. A 15 percent reduction, for example, can translate into a 10 percent relief on revenue—without the political and social resistance that cuts in personnel or overhead often provoke.

Restructuring often disrupts established power dynamics and routines—an opportunity to rethink ingrained procurement structures. Especially with suppliers that can be organized competitively, it pays to leverage your rule-setting potential. Bringing in new competitors who were previously excluded can put established suppliers under pressure.

Establishing a central steering team—such as a Project Management Office (PMO)—enables the rigorous implementation of competitive sourcing strategies. The PMO defines binding rules, coordinates decision paths, and ensures clear communication with all stakeholders. Procurement thus becomes an active driver of the turnaround.

2. Payment terms that work: Negotiating liquidity flexibly

In financially tight situations, optimized payment terms are often the quickest route to more liquidity. But standard approaches—like blanket extensions for all suppliers—often miss the mark or even create distortions.

A differentiated, game-theoretic approach segments suppliers by risk profile, market position, and expected response. Based on that, individual proposals are crafted and supported by strategically designed communication. Psychological levers—such as the authority principle (e.g., signing by top management), social reference points (“82 percent have already agreed”), or credible consequence threats—increase the likelihood of success.

Here, too, binding commitments and clear follow-up mechanisms are key to effective implementation.

3. Actively steering sales processes: Realizing value through competition

Divestments are a recurring element of restructuring—whether to generate liquidity or refocus on the core business. Yet under pressure, many companies hand control of the process to potential buyers, often leading to discounts and unfavorable terms.

One case shows how to do it differently: A software-IP sale was deliberately separated from the rest of the company to reach new buyer groups and set up a market-oriented process. Instead of a single fixed price, a multi-stage auction mechanism pitted exclusive bidders against non-exclusive licensees. Through structured rounds, tiered price offers, and a “close-the-gap” mechanism, genuine competitive pressure emerged—yielding a sale price well above average.

At the same time, a common pitfall was avoided: the free-rider effect. Clear rules and transparent scenarios prevented strategic hesitation and created a credible framework for real bids.

4. Playing your hand with capital providers: Analyzing the bank as counterpart

Bank negotiations in restructuring often feel one-sided: the company presents, the bank decides. Yet here, too, a strategic view of the interaction logic pays off. Banks operate under tight constraints from regulation, risk policy, and capital requirements.

Understanding these boundaries allows you to exploit available leeway. Measures such as shareholder commitments, credible equity contributions, or hints at alternative scenarios can strengthen your position. And credible threats (e.g., an orderly insolvency) only carry weight if they are realistic and force the bank to consider the consequences.

Conclusion: Structure Beats Intuition

In times of crisis, good ideas alone are not enough—it's their implementation that counts, and that hinges largely on the quality of negotiation leadership. Game theory provides a practice-tested foundation for this. It helps you understand roles and incentives, shape processes actively, and structure decision situations with precision.

Five key learnings from the field:

1. Negotiation processes can be shaped. In restructuring, pay attention not only to the substance but to the architecture of your talks.

2. The process designer's role is crucial. Whoever sets the rules creates real leeway—regardless of power imbalances.

3. Competition is designable. Even in seemingly fixed supplier situations, you can forge alternatives if you're willing to innovate.

4. Communication is strategy. What you say, when, and by whom often matters more than the message itself.

5. Weak positions hold potential. Understanding the other side's constraints lets you influence outcomes—even without formal power.

Restructuring isn't just a finance project—it's a game with many players. Those who know the rules can change them. By designing negotiations smartly, you can secure decisive advantages under pressure—not through force, but through structure.

Case Study: Strategic Sale of Software IP—How Companies Realize Maximum Market Value

Software is a central asset in the digital age. It drives innovation, secures technological uniqueness, and opens new business models. That makes a rigorous approach vital when companies decide to divest their software intellectual property (IP). How can you achieve the highest possible value, and what pitfalls should you avoid? A practical example from autonomous driving illustrates what matters: a strategically smart sales architecture—and the recognition that the market, not the seller, sets the price.

Value is created in the market, not in the spec sheet

Many companies value their software based on internal criteria like development costs, technical sophistication, or strategic utility. But in reality, only potential buyers' willingness to pay matters. To maximize value, you must understand how markets work—and how to shape them. This involves a careful analysis of the buyer pool, deliberately fostering competition, and a structured negotiation design.

In one case, a sensor-fusion software company's management decided against a full corporate sale. Instead, they carved out the software IP from the operating business—creating leeway to target specific buyer segments.

Balancing Exclusivity and Multi-Use Rights

A central issue in IP transactions is whether to offer an exclusive license or non-exclusive usage. Exclusive buyers will often pay a premium for sole rights; non-exclusive buyers seek lower costs, knowing the technology may go to others.

In the case at hand, interest came from both camps. The challenge was to structure competition without losing either side. This was achieved through a transparent bidding procedure that laid out clear options for both groups—while establishing credible penalties for late or low bids. The result: genuine price pressure.

A "Close-the-Gap" mechanism for non-exclusive licensees further boosted group pressure—reducing strategic hold-outs and accelerating the process.

Game Theory as a Negotiation Tool

A key obstacle in license sales is uncovering prospects' true willingness to pay. This is precisely where game-theoretically inspired methods come into play.

In the case at hand, a multi-stage procedure was used: all potential buyers were first presented with an offer carrying a high "entry" price.

In subsequent rounds, the price levels were lowered—an iterative process that combined information gathering with market feedback.

For non-exclusive licensees, an additional mechanism was introduced: the so-called “close-the-gap” approach. If not all bidders accepted the offer, the remaining participants could jointly raise their bids to bridge the gap and still secure a deal. This heightened group pressure—and reduced strategic hesitation.

Why you can’t fix the price internally

Many tech firms overestimate their ability to set the IP price. Internal factors like development effort or strategic value certainly inform in-house valuations—but buyers care first about perceived benefit. In our example, running parallel exclusive and non-exclusive tracks sparked a market-driven race, forcing bidders to reveal their true willingness to pay or risk exclusion.

Rekommandation

1. **Let the market decide:** Internal assessments matter, but price emerges from demand. A broad, targeted bidder outreach is essential.
2. **Structure creates value:** A well-ordered, professionally managed sales process prevents discounting and opportunistic bids.
3. **Use exclusivity selectively:** Even if you don’t grant it, the option can itself drive up bids.
4. **Carve-out strategically:** Separating IP from operations can unlock new buyer segments.
5. **Engage experts:** Complex negotiation designs benefit from seasoned external support.

Conclusion: Selling software IP is strategically demanding—but also a great opportunity. Those who understand market logic, deliberately create competition, and exploit process design levers can capture values far beyond initial expectations. As this case shows, the right strategy makes for a market-driven, fair, and successful price.

Designing Lots: How Bundling and Lot Sizes Influence Competitive Intensity in Tenders

Multiple lots, more complexity

Most procurement negotiations involve multiple items. This adds complexity, especially when bidders face capacity constraints and economies or diseconomies of scale. One key factor influencing this complexity is lot sizing, an important yet often overlooked aspect of tender design. Contract items can either be bundled into a single package or divided into smaller lots, enabling multiple bidders to secure a portion of the contract.

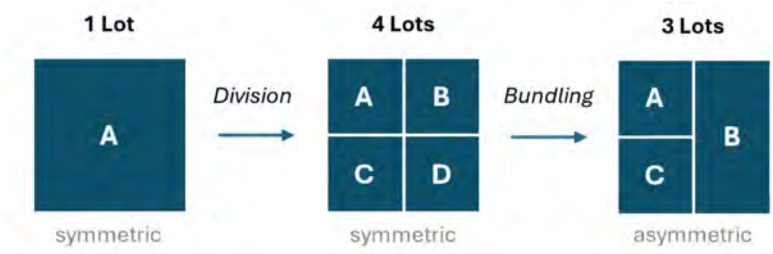


Figure 10: Lots can be divided into smaller lots or bundled into larger lots (packages)

Lot size and quantity significantly influence competition in a tender. Larger contracts are generally more attractive to suppliers, as they allow for greater economies of scale. Once the initial investment is made, fixed costs are distributed over a growing number of units, lowering the cost per unit. Scaling production is essential for making many products affordable.

Impact on total offered capacity

However, bundling can also limit participation by smaller suppliers, potentially reducing competition. Consider a scenario with two bidders (A and B) and three indivisible lots, 1, 2, and 3:

Lot / Bidder	Initial bids		Minimum price	No. of bidders	Total capacity offered
	A	B			
1	26	28	26	2	54
2	27	-	27	1	27
3	28	27	27	2	55
Total	81	55	80	2	136

One way to evaluate the impact of bundling is by analyzing its effect on total capacity offered. Since bidders' costs or submitted initial bids can serve as an indicator of capacity, total capacity offered can be estimated by summing these values across lots. As exact cost information is typically unavailable, estimates are usually required.

We can now assess how bundling affects total capacity offered.

- Bundling all lots together would exclude bidder B, reducing total capacity to 81.
- The only bundling scenario that preserves total capacity is combining lots 1 and 3 while keeping lot 2 separate.

To assess the impact of bundling on competitive intensity (*CI*), we propose an indicator that measures the change in total capacity offered. This indicator is calculated as the ratio of total capacity after bundling to total capacity before bundling:

$$\mathrm{CI}_1 = \frac{\sum_{j=1}^{L} C_j}{\sum_{i=1}^{l} C_i}$$

where:

- L = number of lots after bundling
- l = number of lots before bundling
- C_j = capacity of lot after bundling
- C_i = capacity of lot before bundling

If all lots are merged into a single lot, the indicator takes a value of $CI_1 = \frac{81}{136} = 0.59$, indicating reduced competition. If only lots 1 and 3 are bundled, the indicator takes a value of $CI_1 = \frac{136}{136} = 1$, as total capacity offered remains unchanged.

Another key factor is the cost difference between bundling and selecting individual lots (cherry-picking). Cherry-picking refers to selecting the lowest-priced options at the smallest level of division without bundling. This effect will be incorporated into the formula later. At current prices, bundling lots 1 and 3 would result in bidder A winning them for a combined total of 54, while lot 2 is won for 27. This leads to a slightly higher total cost of 81, compared to 80 under the cherry-picking approach.

A reduced combinatorial approach

To describe different bundling scenarios, we use the following notation:

- (1,2,3) → Lots 1,2 and 3 are merged into a single lot
- (1,3) → Lots 1 and 3 are grouped together
- (1) + (2) + (3) → Each lot is offered separately, meaning no bundling at all.

Lot / Bidder	Initial bids		Minimum price	No. of bidders	Total capacity offered
	A	B			
1	26	28	26	2	53
2	27	-	27	1	27
3	28	27	27	2	55
(1, 3)	54	55	54	2	109
(1, 2, 3)	81	-	81	1	81

As bundle prices are unknown in this scenario, the optimal bundling combination remains uncertain. A practical approach is to include both bundled packages and single lots in the negotiation simultaneously, effectively turning the process into a reduced combinatorial auction. This allows market forces to determine the most efficient outcome.

An unrestricted combinatorial auction allows bidders to fully express cost interdependencies across different items. However, its complexity grows exponentially as the number of possible bid combinations increases. For example, in a tender with seven items and four bidders, each bidder can submit up to 2^7-1=127 possible bids, resulting in a total of 508 potential bids across all bidders. Due to this complexity, a reduced combinatorial auction or predetermined bundling by the buyer is often a more practical alternative.

Number of Lots vs. Number of Bidders: Designing a Game of Musical Chairs in Procurement

It is also worth considering the number and symmetry of lots in relation to the number of bidders.

Lot / Bidder	Initial bids			Minimum price	No. of bidders	Total capacity offered
	A	B	C			
1	15	17	11	11	3	43
2	10	12	11	10	3	33
3	14	9	12	9	3	35

Table 5: When the number of lots is equal or larger than the number of bidders the effect on competition tends to be negative.

The number and symmetry of lots relative to the number of bidders are important factors in tender design. When the number of lots matches or exceeds the number of bidders, competition tends to weaken. The number of winnable lots should generally be lower than the number of bidders. If the number of bidders equals the number of lots—especially in repeated negotiations—tacit collusion becomes more likely, allowing bidders to coordinate so that each wins one lot. A potential indicator of collusion in the above example is the relatively large gap between the lowest and second-lowest bids, combined with only small differences among the loosing bids.

When the number of lots is significantly smaller than the number of bidders, collusion becomes more difficult, as some bidders will inevitably fail to secure a lot. However, collusion remains possible but requires more complex strategies, such as rotational winning or compensation payments. Additionally, competitive pressure tends to rise as bidders face a greater risk of not securing any lot. Lot size asymmetry further intensifies competition. The ratio of the number of bidders (N) to the number of lots (L) serves as an indicator of competitive intensity in the tender (Grimm et al., 2006):

$$CI_2 = \frac{N}{L}$$

An Integrated Measure of Tender Competition

A integrated measure of competitive intensity is given by:

$$CI = CI_1 \cdot CI_2 = \frac{N}{L} \cdot \frac{\sum_{j=1}^{L} C_j}{\sum_{i=1}^{l} C_i}$$

This measure can be further extended by incorporating the change in costs relative to the cherry-picking solution, using initial bids when available:

$$CI_3 = \frac{\sum_{j=1}^{L} \min(B_i)}{\sum_{i=1}^{l} \min(B_j)}$$

where:

- (B_i): minimum bid for lot before bundling
- (B_j): minimum bid for lot after bundling

The extended competitive intensity measure is then given by:

$$CI = CI_1 \cdot CI_2 + (CI_3 - 1) \cdot g = \frac{N}{L} \cdot \frac{\sum_{j=1}^{L} C_j}{\sum_{i=1}^{l} C_i} + \left(\frac{\sum_{j=1}^{L} \min(B_i)}{\sum_{i=1}^{l} \min(B_j)} \right) \cdot g$$

where is an adjustment factor that calibrates the impact of price changes in the competitive intensity measure, based on initial bids.

We now apply the formula to the data in Table 4. The total offered capacity is 111 and remains unchanged regardless of bundling, as all bidders can supply all lots. Thus, in all rows. The trade-off lies in reducing the number of lots while accounting for potential price increases based on current bids.

To describe different ways of grouping items in a tender, we use the following notation:

- **(1,2,3)** → All items (or lots) are combined into **one large bundle**.
- **(1,2), (3)** → Some items are **grouped together** (e.g., 1 and 2), while others remain separate (e.g., 3).
- **(1), (2), (3)** → Each item is **offered individually**, with no bundling.

Lots	CI1	CI2	CI3	Total Cost	Integrated CI				
					g=5	g=10	g=15	g=20	g=25
(1,2,3)	1	3,0	0,9	34	2,4	1,8	1,2	0,6	0,1
(1,2), (3)	1	1,5	1,0	31	1,3	1,2	1,0	0,9	0,7
(1,3), (2)	1	1,5	0,9	33	1,0	0,6	0,1	-0,3	-0,8
(2,3), (1)	1	1,5	0,9	32	1,2	0,9	0,6	0,3	-0,1
(1), (2), (3)	1	1,0	1,0	30	1,0	1,0	1,0	1,0	1,0

For high values of g, the unbundled scenario (1), (2), (3) maintains the highest competitive intensity. Lower values of g favour bundling all lots into a single lot (1,2,3), which effectively results in a single supplier.

Among the two-lot bundling scenarios, (1,2) + (3) emerge as the best option, as this approach reduces the number of lots, maintains total capacity, and results in only a minor cost increase compared to the cherry-picking approach.

Bundling involves multiple trade-offs. A structured, quantitative approach that calculates and evaluates differences can support more informed decision-making.

The Competitor

Questions, feedback, criticism, topic ideas or new signups?

Please send them to
newsletter@competitio.de