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Managing supplier risk in the transportation and infrastructure industry

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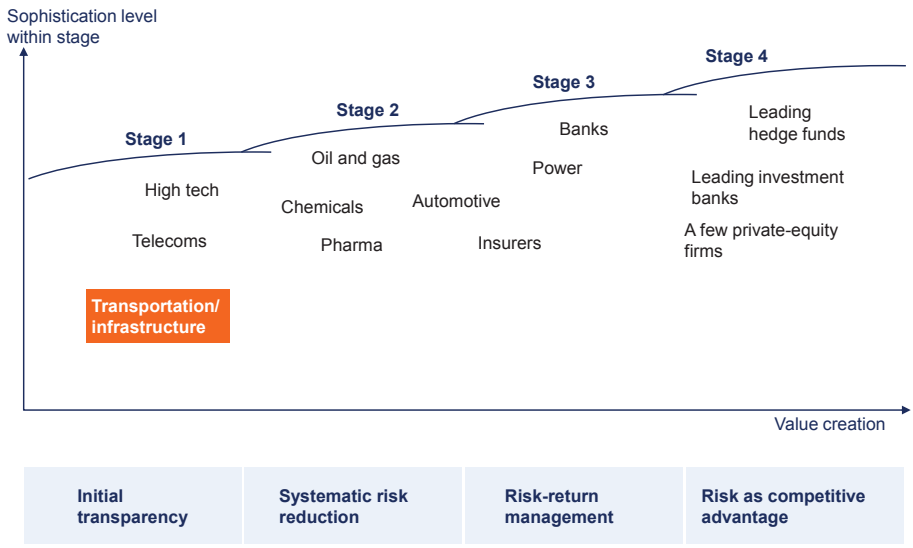
In October 2014, GT Advanced Technologies, a supplier for Apple, filed for bankruptcy. At the time of the filing, the company reportedly only had cash reserves of €67 million—nowhere near the prepayment of about €455 million that Apple had made to the company to build up a factory in Arizona. If and when Apple might recoup its investment is not clear at the time of writing.

Cases like this have made counterparty credit risk a topic of heavy discussion among a broad audience. However, large differences in sophistication levels of risk management can be observed across various industries. While advanced methods for managing and mitigating risks are applied in both the power and financial-services industries, many others still lag behind. Although industries' sophistication levels vary widely, they can generally be positioned in one of four stages of an ongoing evolution (Exhibit 1).

Exhibit 1 Sophistication levels of risk management greatly vary across industries, with transportation and infrastructure lagging behind.



Source: McKinsey analysis

Industries at stage one typically manage their risks mainly just by making them transparent. The power and financial-services industries, on the other hand, provide illustrative examples of risk-management methods being applied at higher stages.

Companies in the power industry have been applying advanced risk-management methods, particularly regarding counterparty credit risk in energy trading. Some of the most sophisticated firms are even looking at establishing systematic valuation of counterparty credit risk through credit-value-adjustment desks, which are used to take counterparties' default risk into account when trades are made. Credit-default-swap (CDS) spreads are used as early-warning indicators for the creditworthiness of counterparties.

In the financial-services industry, credit-risk management is applied across all segments and used to create value. In retail banking, credit pricing for private customers is determined by assessing individual credit risk, and interest-rate premiums can differ by multiple percentage points. Similarly, in corporate banking, credit-risk assessments add to refinancing costs for corporations, and even the counterparty credit risk of national economies is assessed with proxies such as CDS spreads.

The transportation and infrastructure industry is only at the initial transparency stage, with risk-management methods being applied at a rudimentary level. Standardized risk-management methods are often not anchored in the supplier-selection process, although project volumes can be very large and range from hundreds of millions to billions of euros. The counterparty credit risk of suppliers is not systematically assessed in tender processes, although contracts often span decades. Even though leading suppliers are making big efforts to improve their overall project-management skills, there remains ample room for improvement.

Transportation and infrastructure can be a risky business

In transportation and infrastructure, the need for systematic risk assessments and more sophisticated risk management in supplier selection is obvious. Rail involves technically complex products, such as high-speed trains and complete signaling systems for subway systems. It also represents large volumes per project, commonly ranging from delivery of around 20 trains to more than 600 and financials of €500 million and more. The long-term nature of contracts (both regarding delivery and possible maintenance agreements) complicates the setup further. This makes it clear that suppliers need to be able to service the needs of their customers well into the future.

Of course, these complex circumstances can lead to severe consequences should a project fail.

For instance, a delivery of trains in a Scandinavian country was reportedly more than seven years late, and technical problems severely affected their use. Compensation totaling €300 million had to be paid to the customer. In another case, incompatibility of a signaling system with the subway of a European capital city only came to light two years after the contract had been awarded. The result was a retendering of the contract and an estimated additional cost of more than €120 million.

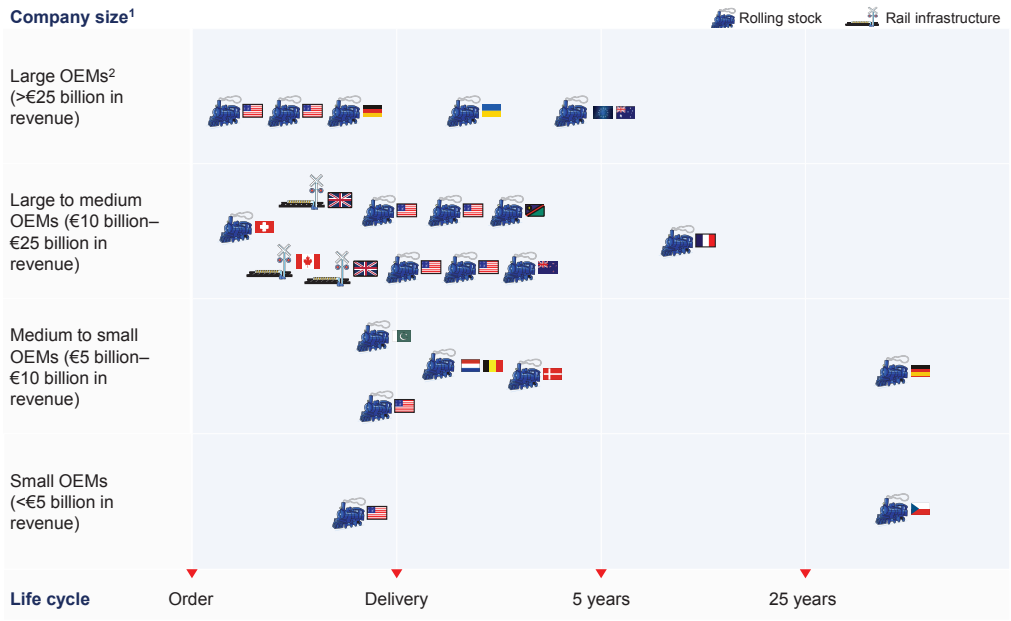
The number, spread, and size of recent failure cases in the rail sector is alarming; operational risk is very common, and projects are prone to disruptions. We have analyzed more than 20 cases, some of them with negative impact of more than €350 million. Project-delivery problems were observed across the sector, affecting all segments (for example, rolling stock and infrastructure), geographies, and various-sized original-equipment manufacturers (OEMs) (Exhibit 2).

The consequences of these operational risks are just as diverse, ranging from long delays in delivery to serious problems with technology and reliability. Customers may be forced to use existing trains or infrastructure longer than planned or suffer revenue losses due to late openings of new lines. In the failure cases investigated, losses for customers ranged up to €200 million. Of course, such numbers don't include the severe reputational consequences that could arise for customers. It does not take much imagination to assess the huge negative effects of delayed or faulty rail systems in connection with large events such as the Olympic Games or World Cup soccer tournaments. Several recently awarded contracts are worth well above €1 billion, so it is clear that the negative impact of failed projects could grow even larger in the future.

Project risk translates into counterparty credit risk

It is necessary for customers to protect themselves, and project contracts typically contain clauses defining guarantees, penalties, and compensation covering delivery or quality. The large project volumes mean that these payments can be very high.

Exhibit 2 Recent examples show severe failures across the full life cycle.



1 Based on revenue for companies as a whole; revenue numbers for 2013.
2 Original-equipment manufacturers.
Source: S&P Capital IQ; McKinsey analysis

However, providing financial safeguards against failure could increase financial pressure on suppliers during projects, straining their capabilities and ultimately even leading to a supplier defaulting. In this case, contractual agreements and safeguards could become worthless, and suppliers would be unable to make deliveries or pay the contractual penalties or compensation. Compounding this situation is the added cost of reannouncing tenders, selecting new suppliers, and facing negative publicity. In later project phases, defaults could even result in an inability to replace existing equipment with the same type or limited availability of spare parts.

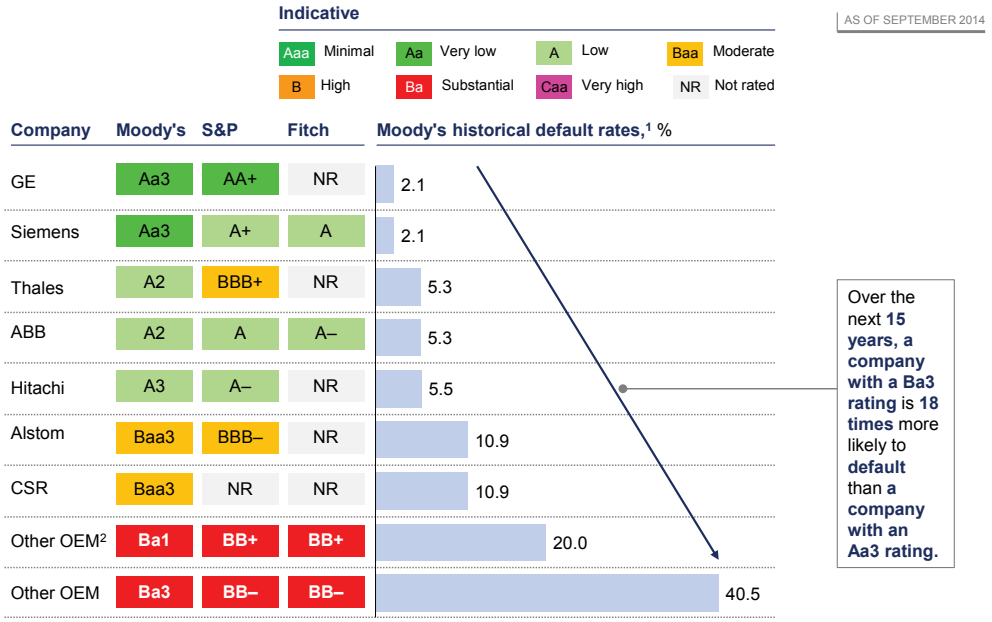
The good news is that customers don't have to accept the default risk and blindly hope for the best when selecting a supplier. Effective methods for assessing this risk are available and routinely applied in other industries.

Applying a rating system to rail suppliers

Credit ratings represent the default risk of an issuer's debt, that is, the probability that an issuer will not be able to meet its financial obligations. Ranging from Aaa (minimal credit risk) to C (already in default) in the system applied by Moody's, credit ratings are widely used in the financial-services industry and beyond as a standard measure to assess the risk associated with an investment. Regulators of institutional investors and some pension funds require minimum ratings to determine which investments the funds are allowed to make.

If we look at the rating of competitors in the rail sector, we can see big differences among the companies (Exhibit 3).

Exhibit 3 Credit ratings vary among rail OEMs.



1 Moody's 15-year cumulative default probabilities for rating, 2014 data.
2 Original-equipment manufacturer.
Source: Moody's; S&P; Fitch; McKinsey analysis

Some OEMs receive high ratings from the large agencies and are therefore considered very safe. But the lower end of the scale paints a dramatically different picture.

As there are large rail OEMs with Moody's ratings of Ba1 to Ba3, implying 15-year default probabilities based on historical default rates of between 20 and 40.5 percent, it becomes clear that a supplier default during a rail project is a real risk. The fact that rail-supply contracts can easily span decades further supports this point. Since project volumes of €500 million and more are common, the resulting capital intensity also implies great risks, particularly for OEMs with relatively weak financial strength. This is mainly due to two reasons:

- These firms typically don't have the large amounts of cash or equity on hand to react flexibly and cover the possible high follow-up costs of failures.

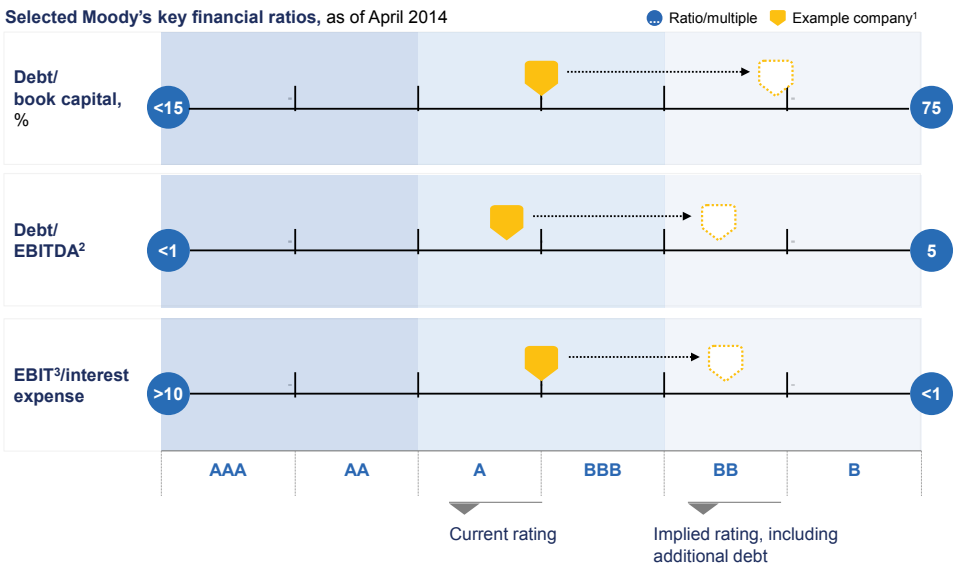
- If projects are financed solely or in large part with external capital, this added debt negatively affects key financial indicators and adversely affects the supplier's creditworthiness. Paradoxically, this means that the mere awarding of a large project to a financially stretched OEM can actually put it in a more difficult financial position.

While the first effect is already included in how credit ratings are calculated, the second one is not considered by the large agencies. Therefore, the default risk of an OEM in the context of a large project can actually be much higher than implied by the current rating (Exhibit 4).

Ratings can be integrated systematically as part of risk management

Given the implications and probabilities of supplier defaults in the rail sector, the need to integrate a systematic assessment of credit risk into the supplier-selection process is clear. Various tender-awarding authorities have already started to include minimum rating requirements for provided guarantees, a measure which could help to reduce risk across the industry.

Exhibit 4 These are the example effects of €100 million additional debt on a smaller company.



1 Assumed additional debt of €100 million.
2 Earnings before interest, taxes, depreciation, and amortization.
3 Earnings before interest and taxes.
Source: Moody's; McKinsey analysis

Building on this, the introduction of a minimum rating requirement for suppliers when submitting tender requests would be one good way to integrate a credit-risk assessment from the start. This would help customers effectively mitigate supplier credit risk during projects (Exhibit 5).

A minimum rating could be individually defined in line with the customer's risk appetite. The main and most important advantage of using a minimum rating would be that it allows customers to control and lower the risk of supplier default during a project (for example, by setting the threshold to A1, implying a 15-year default probability based upon historical default rates of 3.9 percent). In tenders with a minimum rating requirement, only suppliers fulfilling the defined level of creditworthiness would qualify to submit offers for the respective projects. This would help mitigate the risk of selecting a supplier with a high default probability.

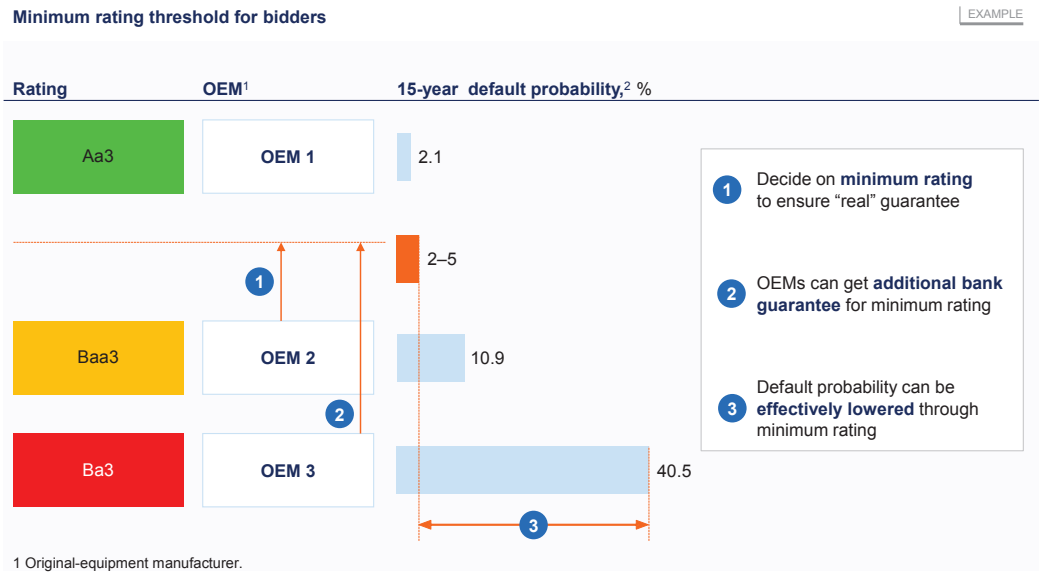
The use of a minimum rating would generate additional positive effects:

- increased transparency of the relevant supplier pool
- increased efficiency of credit-risk assessment
- possible monitoring of counterparties through the project lifetime

The European Investment Bank recommends that bidders for public-private-partnership projects are asked to provide evidence that a minimum investment-grade rating, A3, is achievable in order to drive investor demand.

Integrating a minimum credit-rating requirement in supplier selection would not mean completely barring certain OEMs from participating in such tenders. To compensate for their lower ratings, OEMs could acquire guarantees from banks that meet the minimum rating requirement and thus qualify to submit a tender.

Exhibit 5 A required minimum rating of the guarantor can reduce the risk cost.



1 Original-equipment manufacturer.
2 Moody's historical default rates.
Source: McKinsey analysis

Of the 15 largest project-finance banks as of 2013, by deal volume, 9 would achieve the minimum rating of A1 assumed in the example and would be able to provide guarantees to lower-rated OEMs. The advantages of such a setup are obvious to customers. While they would be able to receive offers from all interested OEMs, their credit-risk exposure would be more manageable and limited, due to the respective bank guarantees. For OEMs, however, this practice would lead to additional costs depending upon the level of risk premiums that the guaranteeing banks require. Of course, apart from purchasing insurance, OEMs can also take various measures to improve their credit ratings. Potential measures include the following:

- lowering their leverage
- diversifying their business
- growing through M&A activity

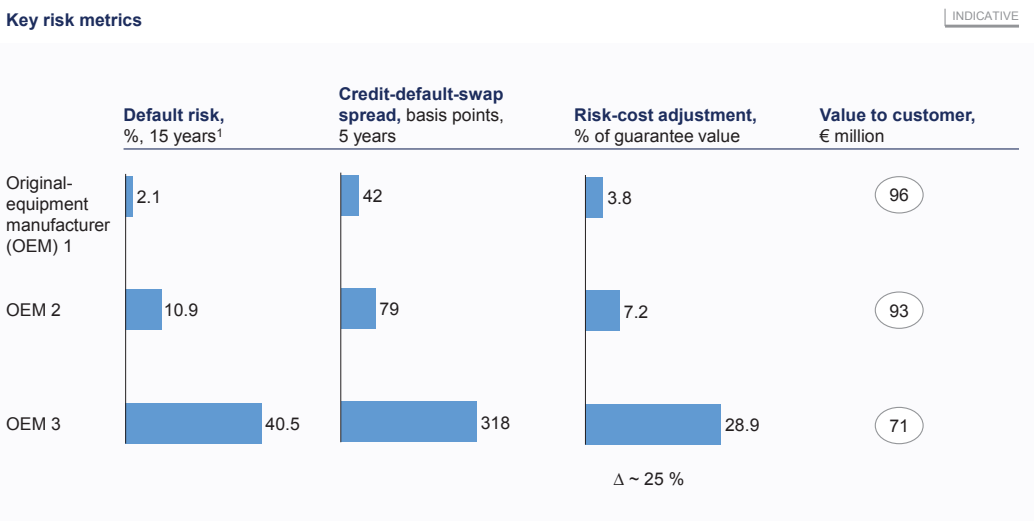
Assessing the true value of a guarantee

A closely related layer of systematic risk assessment in supplier-selection decisions would be the standardized risk-adjusted valuation of guarantees provided by suppliers (Exhibit 6).

As the indicative calculation in the exhibit shows, the pricing of CDS spreads is closely correlated to the default probabilities based upon historical default rates. Using a discount factor, the price for such insurance can be calculated for the complete lifetime of a contract.

For a customer heading a large rail project, the purchase of CDS spreads is a way to ensure receipt of the guarantee sums specified in contracts even if a supplier should default. However, the price of this insurance instrument naturally depends upon the creditworthiness of the supplier. Thus, the actual value of any guarantee given needs to be adjusted by the individual credit risk of a supplier.

Exhibit 6 Assuming a guarantee value of €100 million, the value to the customer can differ by more than €25 million, depending upon the OEM.



1 Moody's historical default rates.
Source: Bloomberg; Moody's; McKinsey analysis

For a guarantee value of €100 million with a 15-year lifetime, the indicative sample calculation shows that the actual value can be decreased by more than €25 million in insurance premiums, depending upon the supplier providing it. Even if the customer decides not to buy insurance, the resulting opportunity cost of being exposed to a larger risk should be incorporated into the guarantee sum provided. In addition to creating transparency of the risk associated with a certain supplier, the resulting risk-adjusted guarantee value is an effective way to integrate risk assessments into the supplier-selection process.

Considering the large risks associated with suppliers in the rail sector, the need for integrating systematic risk-management tools into the supplier-selection process is clear. As operational risks are widespread and the creditworthiness of some rail suppliers is low, customers can be exposed to high credit risks and possibly large follow-up costs in the case of failed projects.

An effective measure for mitigating these risks and creating transparency for customers is to integrate supplier credit-rating assessments into the supplier-selection process. This would entail making mandatory minimum ratings part of the tender process. In addition to the main advantage of enabling customers to take control of their credit-risk exposure, such a standard would generate further positive effects. These include increased transparency of risks existing in the market and a more efficient way of selecting suppliers, because only the relevant pool of highly rated suppliers would qualify for the narrower selection. Customers of large railway projects should take advantage of the risk-assessment methods and systems already being applied in other industries and use them to avoid risks that they actually have the ability to control.

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