

Global Supply Chain Risk Report

Brought to you by Cranfield School of Management and Dun & Bradstreet

Q4 2017





This Global Supply Chain Risk Report is a joint publication by Cranfield School of Management and Dun & Bradstreet. Experts from Cranfield's Centre for Logistics and Supply Chain Management have analysed Dun & Bradstreet's transaction and risk data to create this report, which investigates actual supply chain risks faced by European companies with international footprints.

The report responds to a growing need for reliable information to support supply chain decisions, within an increasingly complex and dynamic business environment. The aim of the report is to provide decision makers with a source of robust evidence and analysis concerning supply chain risks. To do so, we rely on a database of around 600,000 anonymised transactions every quarter between European buyers and suppliers located in more than 150 countries. This allows us to provide a comprehensive picture of global supply chain risks.

The report is broken down into two sections:

- 1. Sectoral Risk Analysis:** a comparison by industry sector of four key metrics: Supplier Criticality, Supplier Financial Risk, Global Sourcing Risk, and Foreign Exchange Risk.
- 2. Supply Chain Risk Grid:** a chart providing a comprehensive overview of risk exposure.

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Cranfield School of Management is one of the oldest and most prestigious business schools in the UK. The Cranfield Centre for Logistics and Supply Chain Management, part of the School of Management, is Europe's largest grouping of faculty specialising in the management of logistics and supply chains. As a major centre of excellence, it has come to be recognised as Europe's leading centre for advanced research and teaching in these important fields. Cranfield's Logistics and Supply Chain Management MSc programme is ranked first outside the US and 11th worldwide in the *Supply Chain Management World* "University 100" annual survey 2016.¹

STORY OF THE QUARTER: A PERIOD OF RELATIVE STABILITY, WITH HIGHER RISK IN SPECIFIC SECTORS

Q4 2017 was a period of relative stability:

- Supplier Criticality increased 7.7 percent compared with the previous quarter
- Supplier Financial Risk increased marginally compared with the previous quarter
- Global Sourcing Risk decreased
- Foreign Exchange Risk increased marginally

Despite the relative stability, the results indicate significant differences across sectors:

- The Construction and Manufacturing sectors are reducing their supply chain risk exposure by using fewer critical suppliers, by reducing supplier financial risk and foreign exchange risk, and by using suppliers located in less risky countries.
- Both the Transportation and Wholesale sectors saw a reduction in risk exposure during the middle of 2017, but this has increased again in the latter half of the year, owing to doing business with more critical suppliers. Nevertheless, these sectors have enjoyed stability in terms of supplier financial risk and reductions in supplier country risk, with only small increases in foreign exchange risk.

This shows that supply chain risks are sector specific, making management practices difficult to apply across industries.

¹ <http://www.scmworld.com/top-supply-chain-universities-question-reputation/?nabe=4527655900938240:1>



SECTION 1: SECTORAL RISK ANALYSIS

The Supply Chain Risk Overview presents four headline metrics, providing different perspectives on the most relevant areas of supply chain risk:

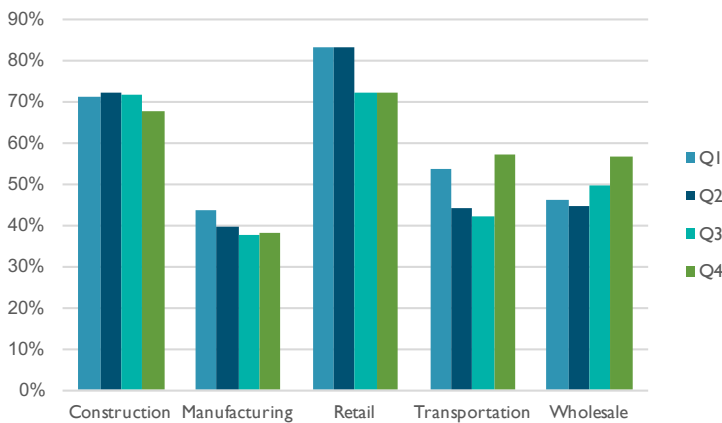
- Supplier Criticality
- Supplier Financial Risk
- Global Sourcing Risk
- Foreign Exchange Risk

These headline metrics are also broken out to show supply chain risks by industry sector. Overall, no sector appears to have a particularly risky profile, although there are clear differences in the risks they are exposed to, and it is likely that the strategies required for managing risk need to be different too. This analysis provides an industry-specific benchmark, which can help managers identify the critical risk in their sectors and compare their own performance against industry norms.

SUPPLIER CRITICALITY 46.4% ↑

The Supplier Criticality score represents the proportion of buyer-supplier relationships where the supplier is considered critical or key by the buyer company. This indicates a company's perceived degree of dependency on its suppliers.

Currently it stands at 46.4 percent compared with 43.1 percent at the beginning of the quarter (October 2017); the arrow next to the score illustrates this marginal increase. This increase shows that buyers feel slightly more dependent on their suppliers, which might suggest partnership relationships rather than transactional ones, indicating an increased exposure to risk.



Supplier Criticality appears to be highest in the Retail sector (Q4 72.4%), yet stable, while Manufacturing has the lowest score (38.1%) which follows the same pattern as the previous quarter.

This means that companies in the Retail industry consider most of their buyer-supplier relationships to be with suppliers that are critical or key, indicating significant supplier dependency. Conversely, the Manufacturing sector appears less dependent on individual suppliers, probably because companies tend to have a wider pool of suppliers. In the meantime, both the Transportation and Wholesale sectors have seen an overall increase in Supplier Criticality, suggesting a greater dependency and exposure to risk.

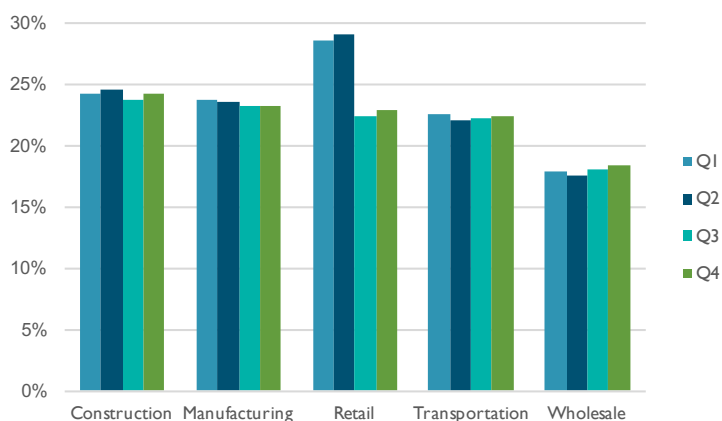
IMAGE 1: SECTORAL ANALYSIS ON SUPPLIER CRITICALITY

Note: Between June and July there was a change in the data set for retail companies, which shows as a step change between Q2 and Q3.

FINANCIAL RISK 23% ↑

Supplier Financial Risk refers to the percentage of buyer-supplier relationships where the supplier has a high or very high financial risk score, according to Dun & Bradstreet ratings.

The current score of 23 percent shows a marginal increase from 22.8 percent in the previous quarter.



Financial Risk is highest in Construction (Q4 24.3%), which could be explained by the fact that up to 95 percent of construction firms operating in the EU are small and medium-sized enterprises (SMEs).

On the other hand, results for the Wholesale sector indicate only 18.3 percent of buyer-supplier relationships are with suppliers that have high Financial Risk. This shows that despite this sector's dependency on suppliers, these tend to be financially stable, and therefore the risk exposure is mitigated.

This contrasts with the Transport sector, where 22.4 percent of suppliers have high Financial Risk and Supplier Criticality has also increased markedly towards the end of 2017, indicating increased risk exposure.

IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK

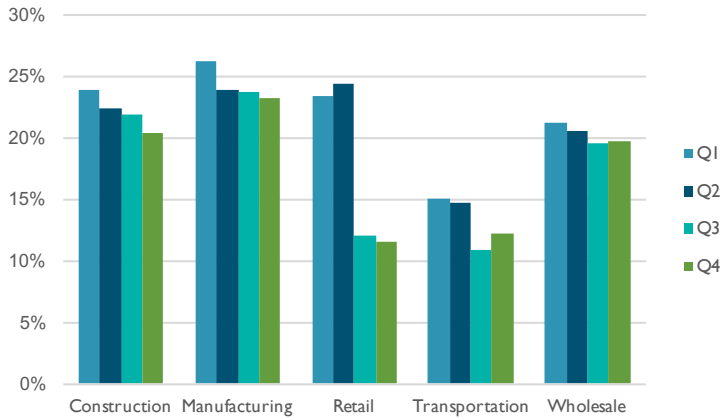
Note: Between June and July there was a change in the data set for retail companies, which shows as a step change between Q2 and Q3.

GLOBAL SOURCING RISK 20.6% ↓

Global Sourcing Risk represents the percentage of buyer-supplier relationships where the supplier is located in a country with a Country Risk higher than 4, as assessed by Dun & Bradstreet.

Dun & Bradstreet's Country Risk Indicator is a composite index encapsulating the risk posed by country-wide factors on the predictability of export payments and investment returns. It ranges between 1 and 7, where higher values of the index suggest higher risk.

Currently, the Global Sourcing Risk indicator stands at 20.6 percent, down from 20.9 percent in the previous quarter. This may be due to a more cautious approach to sourcing.



Global Sourcing Risk shows all sectors having indicator values below 30 percent, which means they have relatively low exposure in high-risk countries.

Manufacturing and Construction have values above 20 percent. This indicates they are more exposed to fluctuations in the global marketplace.

In contrast, the Retail, Wholesale, and Transportation sectors have the lowest scores, as they tend to use a higher proportion of national or regional suppliers.

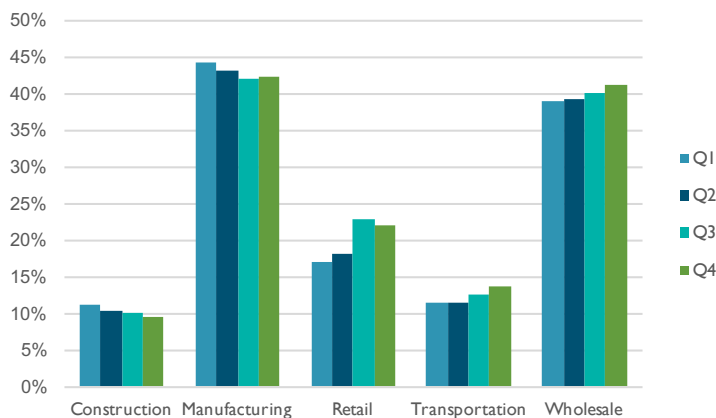
IMAGE 3: SECTORAL ANALYSIS ON GLOBAL SOURCING RISK

Note: Between June and July there was a change in the data set for retail companies, which shows as a step change between Q2 and Q3.

FOREIGN EXCHANGE RISK (FX RISK) 33.7% ↑

Foreign Exchange Rate Risk represents the percentage of buyer-supplier relationships where the transaction is between different currencies.

The data indicates that 33.7 percent of the transactions have FX risk, compared with 33.6 percent in the previous quarter. The majority of these involve relatively stable currencies such as Euro (EUR), British pound (GBP), krona (SEK), and US dollar (USD).



Foreign Exchange Risk is highest in the Manufacturing sector at 42.3 percent in Q4 2017 and is showing a slight upward trend from 41.9 percent in Q3. This can be explained by the continuing approach to offshore manufacturing to lower-cost economies. By contrast, Construction has the lowest Foreign Exchange Risk (9.5%), explained by the predominant sourcing from domestic suppliers.

Transportation also has a low foreign exchange risk, but an increasing Supplier Criticality and a Supplier Financial Risk that remains high. This suggests that this sector might benefit from more systematic risk assessment in supplier selection.

IMAGE 4: SECTORAL ANALYSIS ON FOREIGN EXCHANGE RISK

Note: Between June and July there was a change in the data set for retail companies, which shows as a step change between Q2 and Q3.



SECTION 2: SUPPLY CHAIN RISK GRID

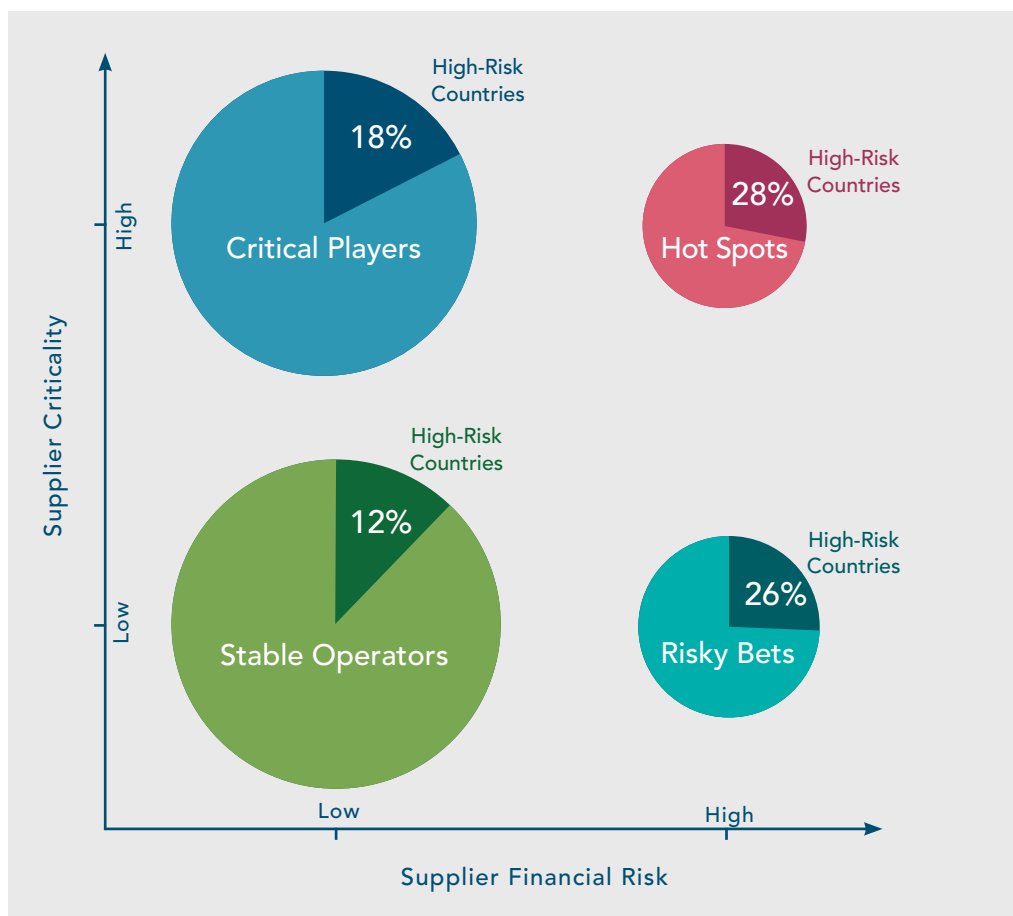
The Supply Chain Risk Grid combines three indicators in a chart to provide a comprehensive overview of risk exposure.

Four quadrants categorise buyer-supplier relationship by Supplier Criticality and Supplier Financial Risk. In addition, a pie chart in each quadrant shows the percentage of suppliers in high-risk countries.

It can be useful for a company to consider the proportions of its own specific buyer-supplier relationships located in each of the quadrants, to understand its own exposure to risk and the implications for risk management.

- **Hot Spots:** The top-right quadrant includes buyer-supplier relationships with high Supplier Criticality and high Financial Risk. Overall, 8 percent of relationships found in our data are included here, of which more than a quarter (28%) have high Country Risk. Suppliers in this top corner are a concern and should be the focus of attention.
- **Critical Players:** The top-left quadrant includes buyer-supplier relationships with critical suppliers but low financial risk. Overall, 28 percent of relationships are included in this quadrant and, of these, only 18 percent are in high-risk countries.
- **Risky Bets:** The bottom-right corner shows buyer-supplier relationships with non-critical suppliers but high financial risk, which includes 10 percent of all relationships. This includes the second-highest proportion (26%) in high-risk countries.
- **Stable Operators:** The low-criticality, low-financial-risk quadrant (bottom-left) is the safest quadrant and includes the highest proportion of relationships (33%). Only 12 percent of these vendors are in a high-risk country.

SUPPLY CHAIN RISK GRID²



² The Supply Chain Risk Grid uses a subset of the core data set, where the data for all three ratings (criticality, financial risk and country risk) measures are complete.

GLOSSARY AND METHODOLOGY

Supplier Criticality: The percentage of unique buyer-supplier relationships where the buyer categorises the supplier as critical or key. A larger number represents a greater perceived exposure to risks from the supply base.

Supplier Financial Risk: The percentage of unique buyer-supplier relationships where the supplier has a Risk Rating of 3 or 4 (higher-than-average risk or high risk) according to Dun & Bradstreet financial risk scales. This provides an overall indicator of risk from suppliers.

Global Sourcing Risk: The percentage of unique buyer-supplier relationships where the supplier is located in a country with Country Risk higher than 4 using the Dun & Bradstreet Country Risk scale, which ranks countries from 1 to 7 in terms of risk, where 1 is the lowest risk and 7 the highest.

Foreign Exchange Risk: The percentage of unique buyer-supplier relationships where the buyer's currency in the transaction is different from the supplier's currency. A higher percentage indicates higher exposure to foreign exchange fluctuations.

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DATA

Dun & Bradstreet data for Q4 2017 included 83,422 buyer-supplier relationships, which informed the calculation of Supply Chain Risk indices: Supplier Criticality, Financial Risk, Global Sourcing Risk, and Foreign Exchange Risk. The number of relationships in each sector was as follows:

Construction	7,723 unique relationships
Manufacturing	54,786 unique relationships
Retail	3,629 unique relationships
Transportation	13,177 unique relationships
Wholesale	4,107 unique relationships

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