Global Supply Chain Risk Report

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

Q2 2018

KEY STORY OF THE QUARTER: FEARS OVER BREXIT ARE INCREASING PERCEPTION OF RISK

Fears over Brexit appear to be increasing businesses' perception of the risks in their supply chain, despite evidence suggesting many have taken steps to ready themselves for a post-Brexit environment.

The second quarter of 2018 shows that businesses are still heavily relying on critical or key suppliers (shown by the Supplier Criticality metric), which drives companies' perception of their supply risk.

- **Supplier Criticality** increased 2% over the quarter to a total increase of 12% over the last three quarters.
- **Supplier Financial Risk** remained the same.
- **Global Sourcing Risk** decreased 1% over the quarter but is still 9% higher than two quarters ago.
- **Foreign Exchange Risk** remained the same.

The results also indicate significant differences across sectors:

- The **Construction** sector saw only a slight increase in Global Sourcing Risk (1.1%), while Supplier Financial Risk and Foreign Exchange Risk remained almost the same. However, despite this, buying companies' perception of dependence on suppliers (Supplier Criticality) increased by 2.4%.
- The **Manufacturing** sector experienced continued increases in Global Sourcing Risk and Foreign Exchange Risk in Q2 2018 (by 1.4% and 1.6%, respectively), but the rate of increase slowed dramatically, and Supplier Financial Risk remained static at 23.3%. This could be the result of concerted action to mitigate perceived risks, a narrative supported by a 2% increase through Q2 in perceived reliance on critical suppliers.
- The **Retail** sector has potential cause for concern. This sector has the highest Financial Risk at 24.1%, up 2% from Q1 2018 and 7% compared with the past three quarters. While other risk metrics have seen no change, the shift in Financial Risk suggests increased risk of insolvency in the supplier base.
- The **Infrastructure** sector (which includes Transportation, Communications, Electrific, Gas, and Sanitary Services) reduced Supplier Financial Risk by 3%, Global Sourcing Risk by 21.3%, and Foreign Exchange Risk by 22% during Q2 2018, but concern over reliance on key suppliers remained the same as at the end of Q1 2018.
- The **Wholesale** sector experienced the least change in risk exposure, with very small reductions in Supplier Criticality, Financial Risk, and Global Sourcing Risk. There was no change in Foreign Exchange Risk, but this remains higher than in the other sectors.

These results show that supply chain risks are sector specific, but most metrics suggest that several sectors are taking significant action to reduce their supply chain risk.

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 500,000 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 overall risk exposure and sector-specific 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]

[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

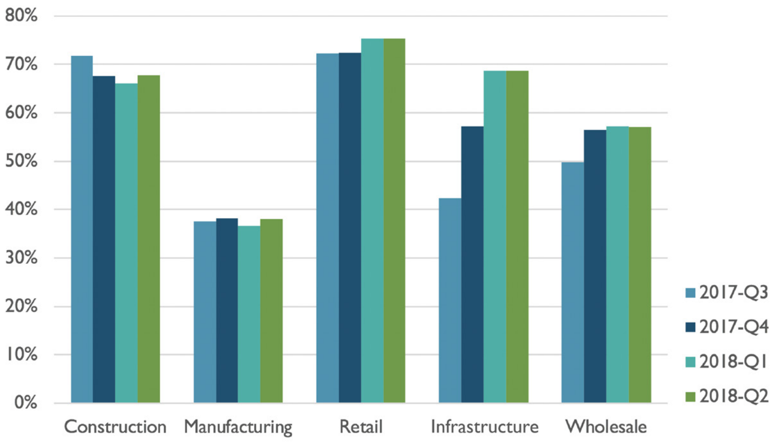
These headline metrics are also broken out to show supply chain risks by industry sector. Overall, no sector appears to have a particularly risky profile, although there are clear differences in the risks they are exposed to, and it is likely that the strategies required for managing risk need to be 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 48.8% ↑

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, Supplier Criticality stands at 48.8%, compared to 47.8% at the beginning of the quarter (April 2018), representing an actual percentage increase of 2%. Added to the combined 9.8% increase over the previous two quarters (Q4 2017 and Q1 2018), this represents a near 12% increase over three consecutive quarters, which shows an increasing trend for buyer dependency on suppliers. This might suggest some consolidation in the supply markets, indicating an increased exposure to risk. However, this quarter the increase is lower than it has been previously and mostly driven by behaviour in the Construction and Manufacturing sectors.

IMAGE 1: SECTORAL ANALYSIS ON SUPPLIER CRITICALITY



As in Q1 2018, Supplier Criticality appears to be highest in the Retail sector (75.2%) but has not increased since Q1 2018. Manufacturing still has the lowest score (38.1%) but has seen an increase from 36.6% in 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 Manufacturing companies tend to have a wider pool of suppliers.

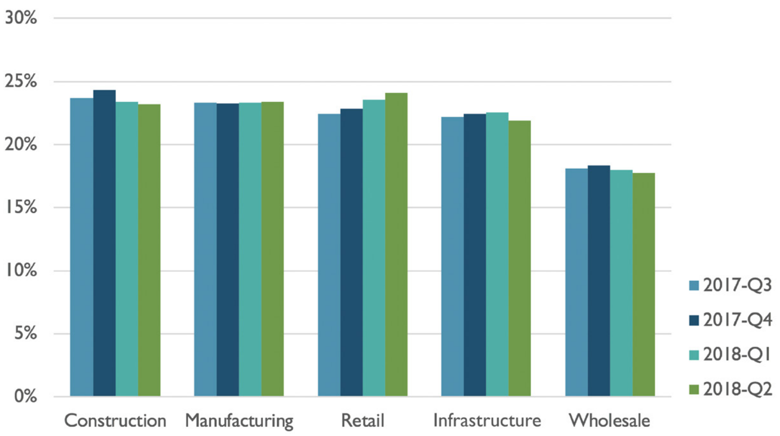
Meanwhile, both Wholesale and Construction sectors have seen little change in Supplier Criticality since beginning of April 2018. The Construction sector did experience a small increase in this metric, though, from 66.1% to 67.7%, bringing it back to the level of two quarters ago. This suggests a marginally greater dependency and exposure to risk, which could be due to supply base consolidation or increased volatility in the supply market.

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 overall current score of 23% shows no change from the previous quarter, though there have been some shifts in Financial Risk within individual sectors.

IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK



Financial Risk is highest in Retail (24.1%), and this has increased by 2% through Q2. Combined with the increases in Q4 2017 and Q1 2018, this represents a 7% increase over the last three quarters, which shows that suppliers' financial stability is steadily reducing. In turn, this increases the exposure to risk for Retail buyers.

All other sectors have seen either no change or a small reduction in Financial Risk. The Infrastructure sector experienced the biggest drop of 3% (taking it to 21.9%, lower than it was three quarters ago, at the beginning of October 2017). This indicates that the financial stability of suppliers to companies in this sector has improved.

Further, the Wholesale sector continues to have the lowest Financial Risk – only 17.8% of buyer–supplier relationships are with high-risk suppliers. This shows that suppliers tend to be financially stable, mitigating risk exposure.

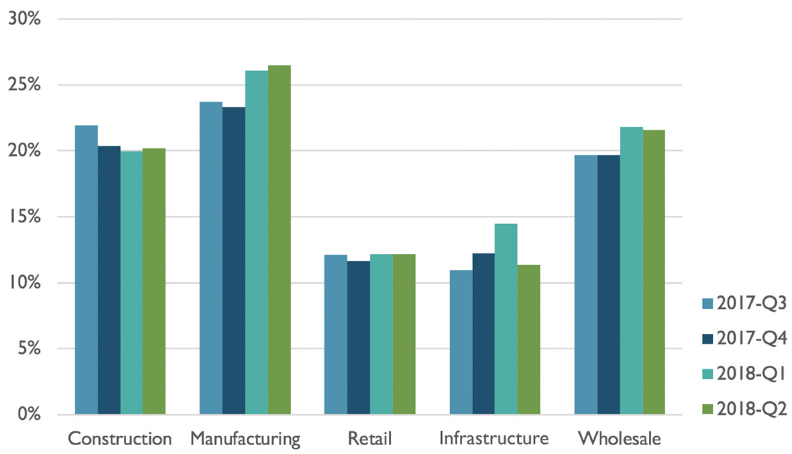
GLOBAL SOURCING RISK 22.6% ⬇

Global Sourcing Risk represents the percentage of buyer–supplier relationships where the supplier is 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 22.6%, down only very slightly from 22.8% in Q1 2018. This is mostly due to significant reduction in Global Sourcing Risk in the Infrastructure sector.

IMAGE 3: SECTORAL ANALYSIS ON GLOBAL SOURCING RISK



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

Only Manufacturing and Wholesale have values above 20%, indicating that they are more exposed to fluctuations in the global marketplace than the other sectors. This could be due to outsourcing and offshoring to low-cost economies, which can be associated with higher Country Risk. However, while Manufacturing saw an increase in Q2 (from 26.1% to 26.5%), it was far less than the 12% increase in Q1, possibly representing a more cautious approach to sourcing.

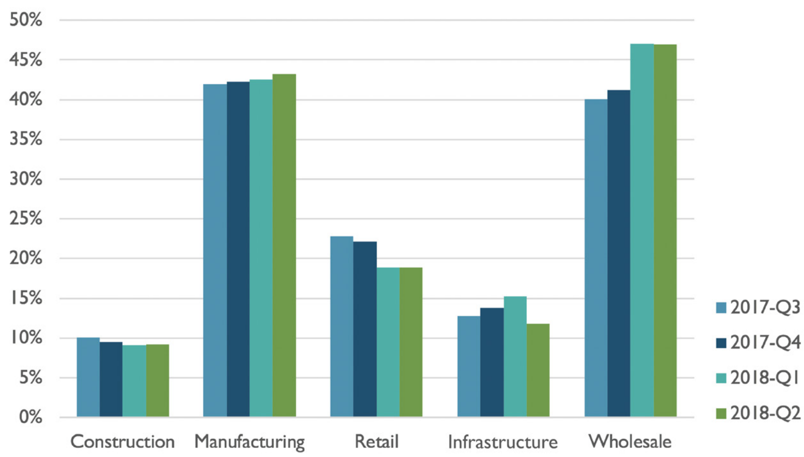
In contrast, the Retail and Infrastructure sectors have the lowest Global Sourcing Risk scores (below 15%), as they tend to use a higher proportion of national or regional suppliers. Infrastructure experienced a dramatic reduction of 21.3% through Q2, taking it almost back to the levels three quarters ago.

FOREIGN EXCHANGE RISK (FX RISK) 33.6% ━

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

The data indicates that 33.6% of the transactions between buyers and suppliers have FX Risk, which represents no overall change from the previous quarter, though there are slight changes within individual sectors. The majority of these involve relatively stable currencies such as the Euro (EUR), British pound (GBP), Swedish krona (SEK), and US dollar (USD).

IMAGE 4: SECTORAL ANALYSIS ON FOREIGN EXCHANGE RISK



Foreign Exchange Risk is highest in the Wholesale sector at 46.9%, but has seen almost no change since Q1.

Manufacturing continues to have the second highest level at 43.3%, and this number has increased steadily over the last three quarters by a total of 3%. These high levels could be explained by increased sourcing from offshore suppliers in low-cost economies.

By contrast, Construction has the lowest Foreign Exchange Risk (9.2%), explained by a predominant sourcing from domestic suppliers.

Infrastructure also sees a low Foreign Exchange Risk at 11.8% – a drop from 15.2% at the end of Q1, representing a 22% reduction and taking it below the level seen three quarters ago.

SECTION 2: SUPPLY CHAIN RISK GRID

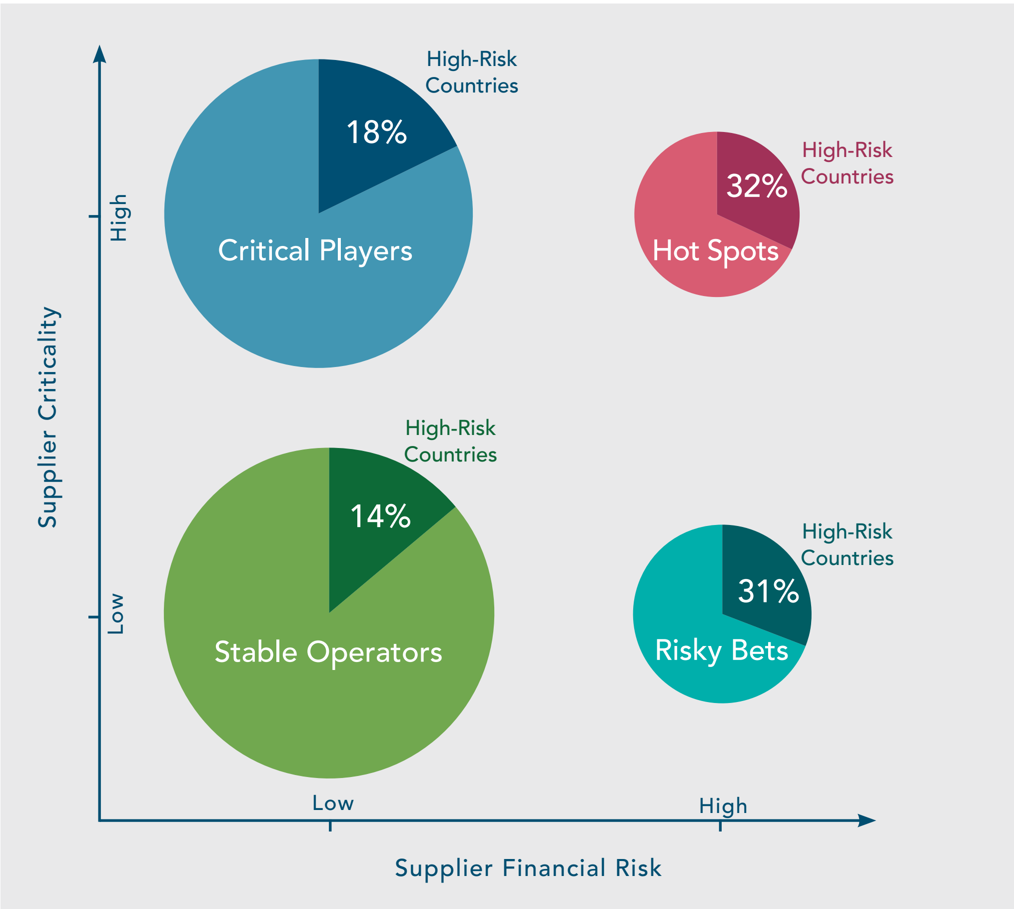
The Supply Chain Risk Grid combines three indicators in a chart to provide a comprehensive overview of risk exposure.

Four quadrants categorise the 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 in order 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% of relationships found in our data are included here, of which nearly one third (32%) have high country risk, which is the same as Q1 2018. 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, 30% of relationships are included in this quadrant (vs. 28% last quarter), and of these, only 18.5% are in high-risk countries (vs. 19% in Q1 2018).
- Risky Bets: The bottom-right corner shows buyer–supplier relationships with non-critical suppliers but high financial risk, which includes 10% of all relationships. This quadrant includes the second-highest proportion (30.5%) of suppliers in high-risk countries and has increased from 29% last quarter.
- Stable Operators: The low-criticality, low-financial-risk quadrant (bottom left) is the safest quadrant and includes the highest proportion of relationships (31%, vs. 32% in Q1 2018 and 33% in Q4 2017). Only 13.6% of these relationships are vendors in a high-risk country (vs. 14% last quarter).

SUPPLY CHAIN RISK GRID[2]

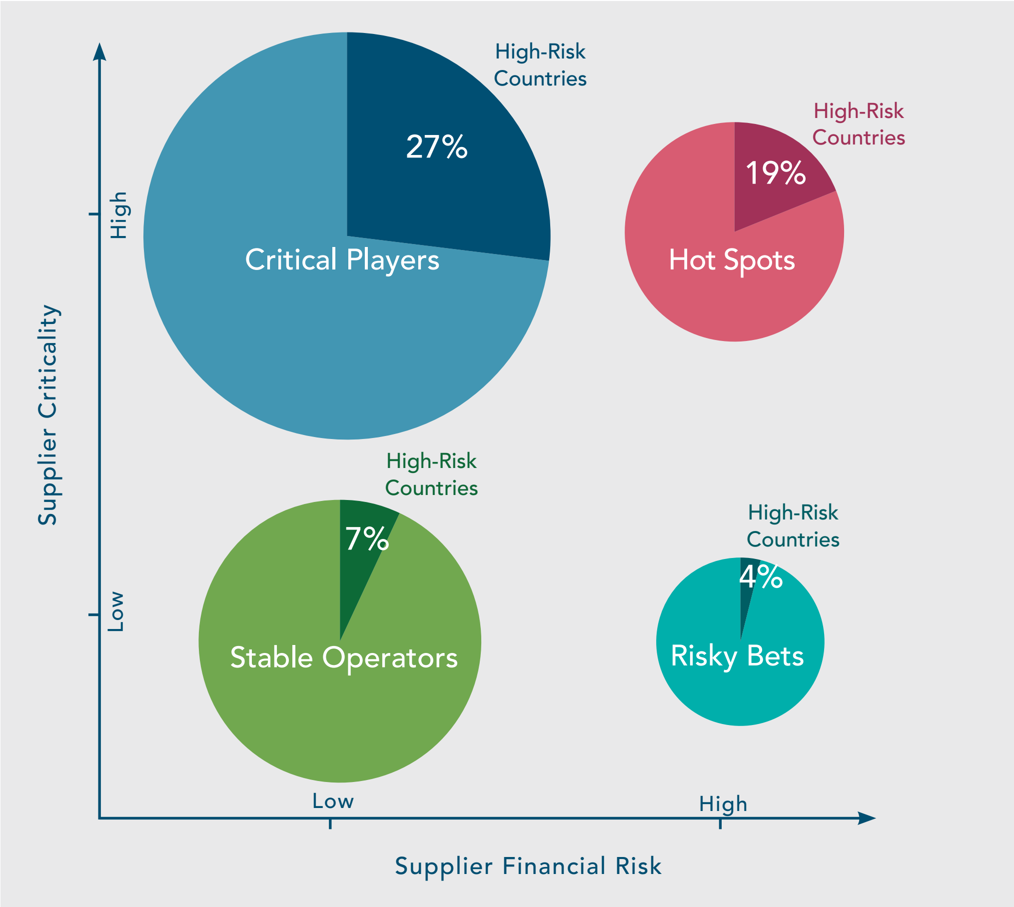


[2] The Supply Chain Risk Grid uses a subset of the core data set, where the data for all three ratings (Criticality, Financial Risk and Country Risk) measures are complete.

SECTOR-SPECIFIC RISK GRIDS

We can also consider the Supply Chain Risk Grid for each sector, to benchmark them against each other and the cross-sector grid above.

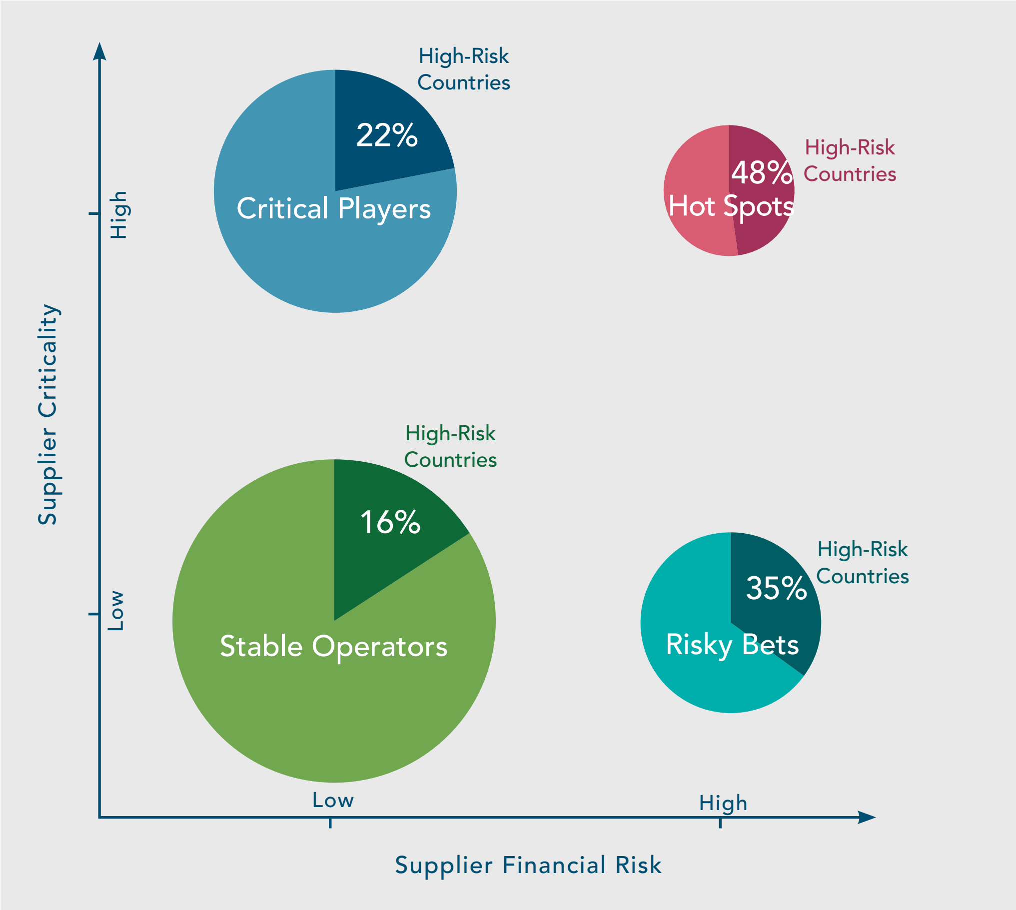
SUPPLY CHAIN RISK GRID: CONSTRUCTION



For Construction, the Supply Chain Risk Grid shows that the biggest proportion (48%) of suppliers are in the Critical Players quadrant (vs. the cross-sector grid where Stable Operators as the largest quadrant). In addition, a high proportion (27%) are in high-risk countries. This suggests that companies should consider mitigating risk from critical players by sourcing from low-risk countries and/or reducing criticality of suppliers by encouraging new entrants into the supply market and dual-sourcing.

Further, compared to the cross-sector grid, a high proportion of suppliers are in the Hot Spot quadrant (13% compared to 8%), although the exposure to risk appears to be mitigated by a lower proportion of suppliers in high-risk countries. This is still of great concern. This indicates that buying companies should carefully check the financial stability of supplier companies in the Hot Spot quadrant, maybe dual-source to mitigate the risk and consider sourcing from more financially stable suppliers.

SUPPLY CHAIN RISK GRID: MANUFACTURING



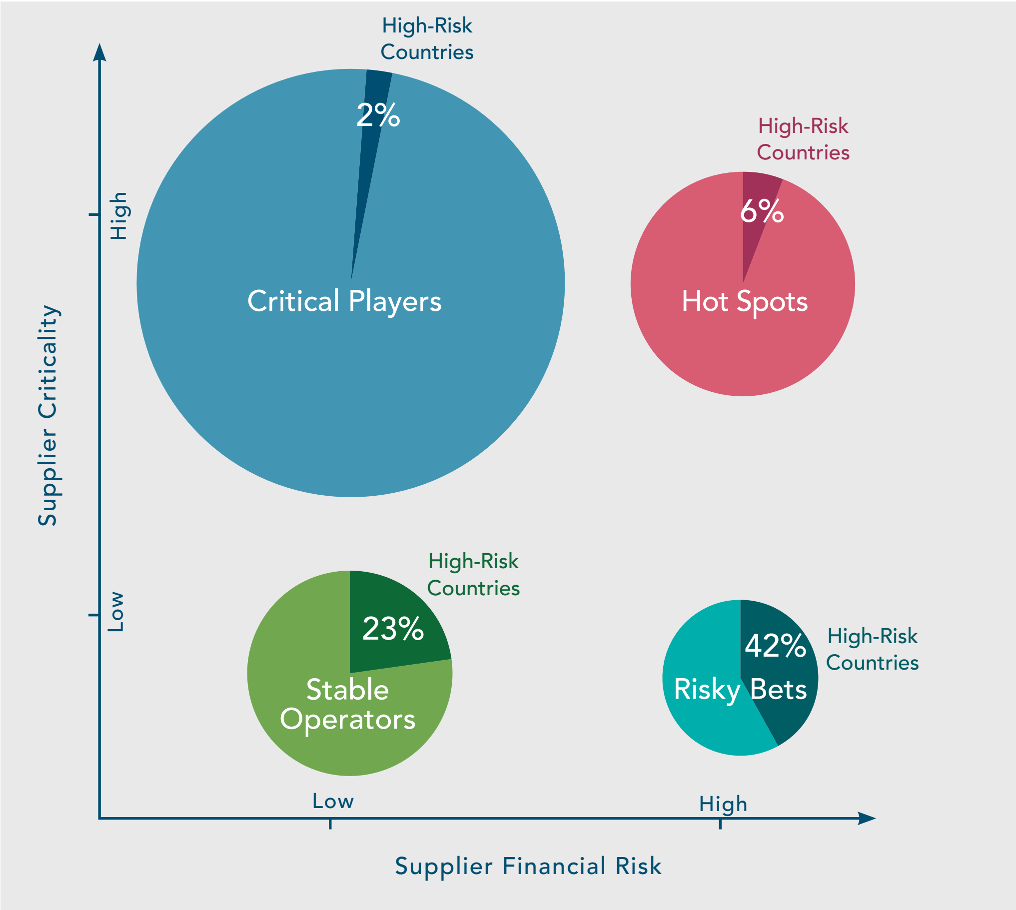
For Manufacturing, the Supply Chain Risk Grid shows that the biggest proportion of suppliers (38%) are in the Stable Operators quadrant, and this is the highest of all sectors and even higher than the cross-sector grid. This suggests a low risk exposure.

Further, the proportion of relationships in the Hot Spot quadrant is the lowest at 6%; however, a very high proportion of these suppliers (48%) are in high-risk countries, indicating that risk is being amplified by global sourcing.

Moreover, the proportion of relationships in the Risky Bet quadrant is the highest for all the sectors at 12%, and a large 35% of these suppliers are in high-risk countries.

Considering the proportions of suppliers across the four quadrants, this represents a relatively low exposure to risk; however, the proportion of suppliers in high-risk countries is very high, particularly in the Hot Spot and Risky Bet quadrants. This is no doubt driven by outsourcing and offshoring strategies aimed at driving down manufacturing costs. Buying companies should consider sourcing from lower-risk countries, particularly for Hotspot suppliers, because the total cost of manufacture – which includes shipping and inventories built to buffer against unreliable deliveries, lack of responsiveness, and quality issues – may not be significantly higher.

SUPPLY CHAIN RISK GRID: RETAIL

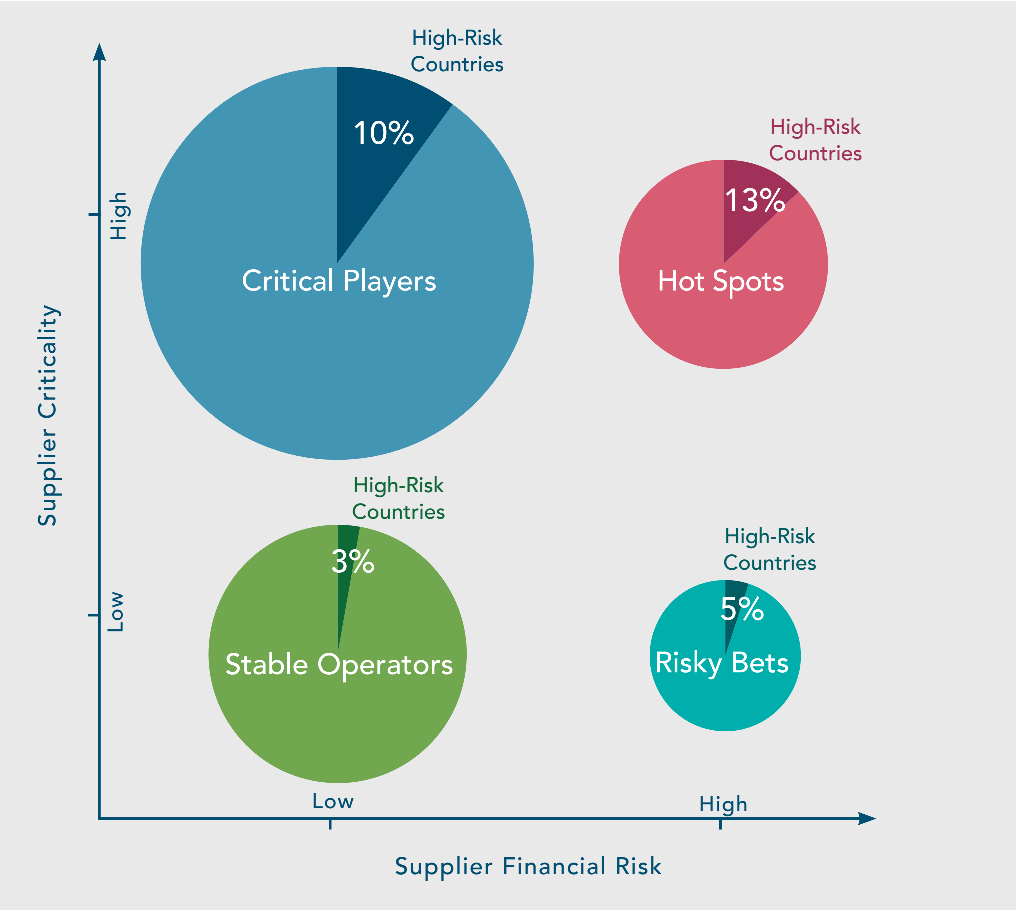


For the Retail sector, the Supply Chain Risk Grid shows that the biggest proportion (54%) of suppliers are in the Critical Players quadrant. This is the highest of all sectors and higher than the cross-sector grid.

However, this risk is significantly mitigated by only 2% of these suppliers being in high-risk countries – the lowest of all sectors. Similarly, the proportion of suppliers in the Hot Spot quadrant is higher than all other sectors at 14%, but the proportion of these in high-risk countries is low again at just 6%. Nevertheless, it is still of great concern and indicates that for suppliers in the Hot Spot quadrant, buying companies should carefully check the financial stability of supplier companies, maybe dual-source to mitigate the risk, and consider sourcing from more financially stable suppliers.

A high proportion (42%) of suppliers in the Risky Bet quadrant are in high-risk countries, and this is probably due to sourcing from low-cost countries, which can also increase Supplier Financial Risk. Having said this, suppliers in the Risky Bet quadrant are unlikely to be critical, thereby mitigating the risk of sourcing from high-risk countries. If cost pressures allow it in the highly competitive retail market, buying companies may consider sourcing from lower-risk countries or at least from suppliers that are more financially stable.

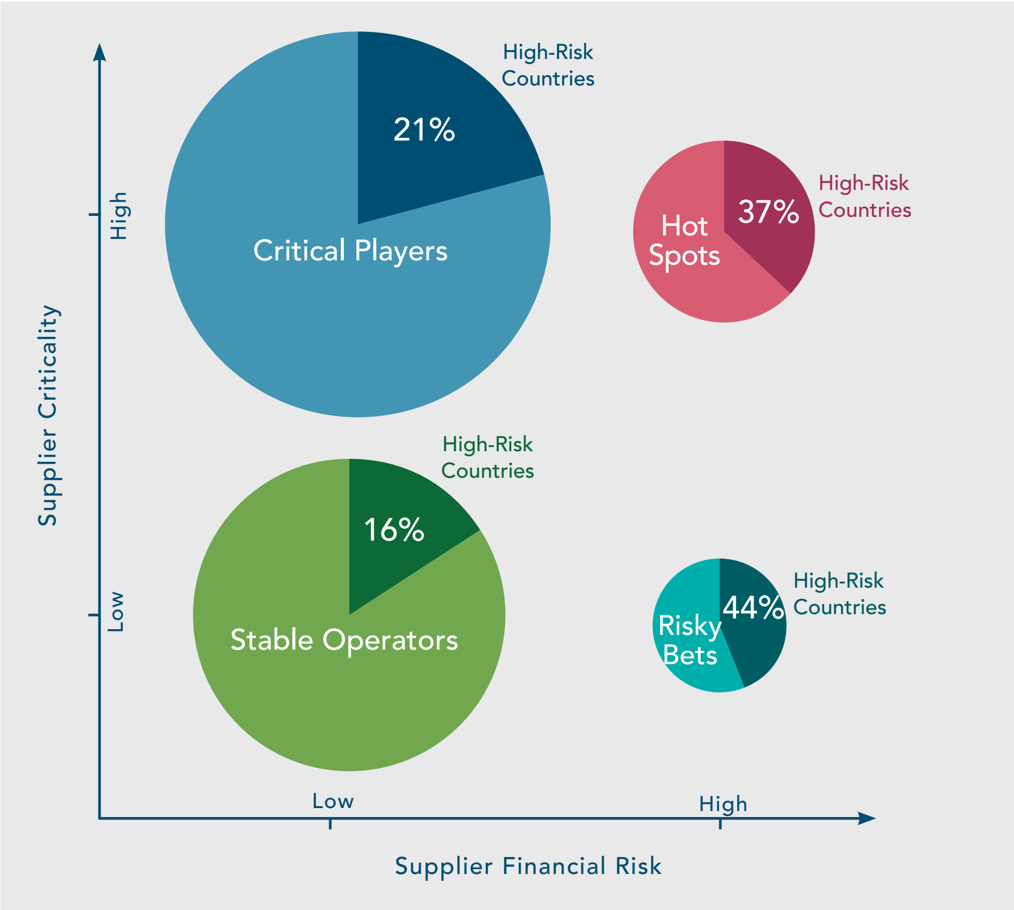
SUPPLY CHAIN RISK GRID: INFRASTRUCTURE



For Infrastructure, the Supply Chain Risk Grid shows that the biggest proportion (47%) of suppliers are in the Critical Players quadrant, but a low proportion (10%) are in high-risk countries. This shows that the Infrastructure sector is particularly exposed to critical suppliers, and companies should consider reducing criticality of suppliers by encouraging new entrants into the supply market and dual-sourcing.

Further, a high proportion of suppliers are in the Hot Spot quadrant (13% compared to 8% in the cross-sector grid), although the exposure to risk appears to be mitigated by a much lower proportion of suppliers in high-risk countries (13% compared to 32% for cross-sector). However, this is still of concern and indicates that buying companies should carefully check the financial stability of supplier companies in the Hot Spot quadrant, maybe dual-source to mitigate the risk (which would also reduce Supplier Criticality), and consider sourcing from more financially stable suppliers.

SUPPLY CHAIN RISK GRID: WHOLESALE



For Wholesale, the Supply Chain Risk Grid shows that the biggest proportion (34%) of suppliers are in the Critical Players quadrant, showing that they are particularly exposed to critical suppliers. This indicates that buying companies should consider reducing criticality of suppliers by encouraging new entrants into the supply market and dual-sourcing.

Also, the proportion of suppliers in the Hot Spot quadrant is significantly higher than the Risky Bets. This also indicates a need to reduce the criticality of suppliers in this quadrant.

Finally, in both the Hot Spot and Risky Bets quadrants, a high proportion of suppliers are in high-risk countries – demonstrating that Global Sourcing is exacerbating the risk. This is probably driven by sourcing from low-cost countries; however, buying companies should consider sourcing from lower-risk countries, particularly for Hotspot suppliers because the total cost of supply – which includes shipping and inventories built to buffer against unreliable deliveries and quality issues – may not be significantly higher.

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 Q2 2018 includes 76,200 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 – with the number for the Supply Chain Risk Grid given in parentheses because this uses a subset of the core data set, where the data for all three ratings measures (Supplier Criticality, Financial Risk, and Country Risk) is complete:

Construction – 7,781 (7,145) unique relationships

Manufacturing – 49,142 (37,146) unique relationships

Retail – 3,424 (3,000) unique relationships

Infrastructure – 12,256 (10,804) unique relationships

Wholesale – 3,287 (2,365) unique relationships

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GUIDANCE ON USE

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