

# Global Supply Chain Risk Report

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

Q3 2018



## KEY STORY OF THE QUARTER

The third quarter of 2018 was a period of change in terms of the risk indices we report. Owing to the feedback we received from our readers and listeners we included two new sectors in the analysis: Finance and Services. With the inclusion of these two new sectors, the dataset grew to just above 120,000 transactions, and we updated the metrics for previous quarters accordingly. We also stopped reporting Construction and Retail sectors due to an insufficient number of companies in these sectors in the dataset. Consequently, the global supply chain risk metrics at a cross-sector level (supplier criticality, financial risk, global sourcing risk, and foreign exchange risk) now have new levels. We performed a retrospective analysis of the last four quarters, so you will read in this report the progression of these metrics over the past year for five sectors. Because these sectors have changed, with two replaced by new sectors, overall changes in these metrics are different compared with those in the Q2 report:

- **Supplier Criticality** decreased 9% over the quarter and 20% over the last three quarters, which shows a reducing trend in buying companies' perception of dependency on suppliers – they classify a smaller proportion of their vendors as critical or key compared with three quarters ago. This might suggest increased competition in the supply markets, leading to a reduced exposure to risk for buying companies. However, this reduction is driven by perceptions in the Finance Service and Wholesale sectors.
- **Supplier Financial Risk** decreased 2% over the quarter, with little change over the previous two quarters. This change has been driven by Financial Risk reductions in the Manufacturing, Service, and Wholesale sectors. In the meantime, the Financial Risk appetite of the Finance sector is increasing and highest among all five sectors.
- **Global Sourcing Risk** increased 2% over the quarter and 18% over the last three quarters, showing an increasing trend in buying companies sourcing from suppliers in high-risk countries. These increases have been driven by the Finance, Manufacturing, and Service sectors, although Service has experienced a small reduction in Global Sourcing Risk over the last quarter. Once again, we see a high risk appetite in the Finance sector, which has the highest – and also an increasing – exposure to Global Sourcing Risk.
- **Foreign Exchange (FX) Risk** increased 4% over the quarter, with little change over the previous two quarters. This has been driven by marked increases in FX Risk in the Finance, Infrastructure, and Wholesale sectors, indicating that a greater proportion of their transactions are in different currencies. This could be explained by buying companies welcoming the opportunity to pay suppliers in different currencies in order to exploit currency exchange fluctuations such as the GBP/EUR exchange rate, which has fluctuated more in the last quarter than through the last year, from a peak of 1.14 EUR to the GBP to a low of 1.1 EUR.

While there appear to be decreases in two metrics (Supplier Criticality and Supplier Financial Risk) and increases in the other two (Global Sourcing Risk and Foreign Exchange Risk), the results indicate significant differences across sectors:

- Out of all five sectors, **Finance** (which includes Finance, Insurance, and Real Estate) has experienced the biggest increase in risk exposure over the last quarter, with the three “hard” (objective) risk metrics showing an increase, part of a strong trend over the last three quarters. Global Sourcing Risk has increased by 8% over the last quarter and by 31% over the last three quarters, and Foreign Exchange Risk has increased by 8% over the last quarter and 13% over the last three quarters – both sitting at the highest risk across all five sectors. Further, while Supplier Financial Risk in this sector has seen little change in the last quarter, it has increased by 5% across the last three quarters, and it too is at the highest risk level of all five sectors. In sharp contrast, Finance showed the greatest reduction of all sectors (in the last two quarters) in Supplier Criticality – the only perception-based metric – with a 27% decrease over the last quarter and a 45% reduction over the last two quarters. This indicates that buying companies in the Finance sector have experienced a dramatic reduction in perceived dependency on their suppliers – they now categorise fewer of their suppliers as critical or key.
- The **Manufacturing** sector has experienced the least change in terms of the four risk metrics out of the sectors reported, suggesting a quarter of relative stability. Supplier Criticality has increased by 2% over the last quarter (and 6% over the last two quarters), yet Financial Risk has reduced by 3%, suggesting suppliers are more financially stable. Marginal increases of 1% are showing for Global Sourcing Risk and Foreign Exchange Risk.
- The **Services** sector has experienced an 11% reduction in Supplier Criticality over the last quarter and a 38% reduction over the last two quarters and is at the lowest level for all sectors reported. As with the Finance sector, this suggests a significant reduction in perceived dependence on suppliers – a lower proportion are perceived as critical or key. This is supported by reductions in Financial Risk of 2% in the last quarter and 6% over the last three quarters, indicating suppliers are more financially stable. However, Global Sourcing Risk – though reduced by 1% in the last Quarter – is still showing a net increase of 12% over the last three quarters; Foreign Exchange Risk has increased for Services by 2% in the last quarter and by 8% over the last two quarters, although its FX Risk remains the lowest across all five sectors. This indicates the Service sector faces an increased exposure to high-risk countries and currency fluctuations in the global market place, albeit to a much lower extent than Finance.

## KEY STORY OF THE QUARTER (CONT.)

- The **Infrastructure** sector (which includes Transportation, Communications, Electric, Gas, and Sanitary Services) has seen no change in Supplier Criticality and Financial Risk over the last quarter, although Supplier Criticality is at the highest level for all the sectors reported. Global Sourcing Risk shows a small reduction of 3%, and although Foreign Exchange Risk has increased by 24% in the last quarter, it shows a net reduction of 4% over the last two quarters, suggesting an overall reduction in risk exposure for this sector.
- The **Wholesale Trade** sector has experienced the greatest reduction in risk exposure of the five sectors over the last quarter, with a notable reduction in three out of four of the risk metrics. Supplier Criticality has reduced by 9%, Financial Risk by 6%, and Global Sourcing Risk by 6%. Further, the latter two metrics are showing a reducing trend over the last two quarters or more. However, Foreign Exchange Risk has increased by 9% over the last quarter and 24% over the last three quarters and is now the highest for all five sectors. This indicates an increasing exposure to currency fluctuations.

These results show that supply chain risks are sector specific, making management practices difficult to export across industries.



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 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 120,000 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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<sup>1</sup> <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

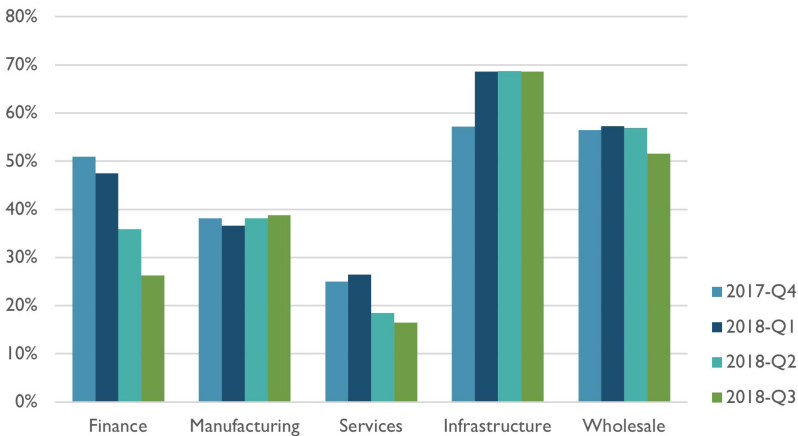
These headline metrics are also broken out to show supply chain risks by industry sector. Overall, no sector appears to have a particularly risky profile, although there are clear differences in the risks they are exposed to, and it is likely that the strategies required for managing risk need to be 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 33.9% ↓

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 33.9%, compared to 37.2% at the end of Q2 (June 2018), representing a 9% reduction. Over the last three quarters (since December 2017), there has been a reduction in Supplier Criticality of 20%, which shows a reducing trend in buying companies' perceptions of dependency on suppliers – they view fewer of their vendors as critical and key. This might suggest increased competition in the supply markets, indicating a reduced exposure to risk for the buying companies. However, this reduction is mostly driven by perceptions in the Finance, Services, and Wholesale Trade sectors.

IMAGE 1: SECTORAL ANALYSIS ON SUPPLIER CRITICALITY



Supplier Criticality is highest in the Infrastructure sector (68.6%) but has not increased since Q1 2018. Services has the lowest score (16.5%) and has seen a reduction from 18.5% in the previous quarter.

This means that companies in the Infrastructure industry consider most of their buyer-supplier relationships to be with suppliers that are critical or key, indicating significant supplier dependency. Conversely, the Services sector appears less dependent on individual suppliers, probably because Services companies tend to have a wider pool of suppliers.

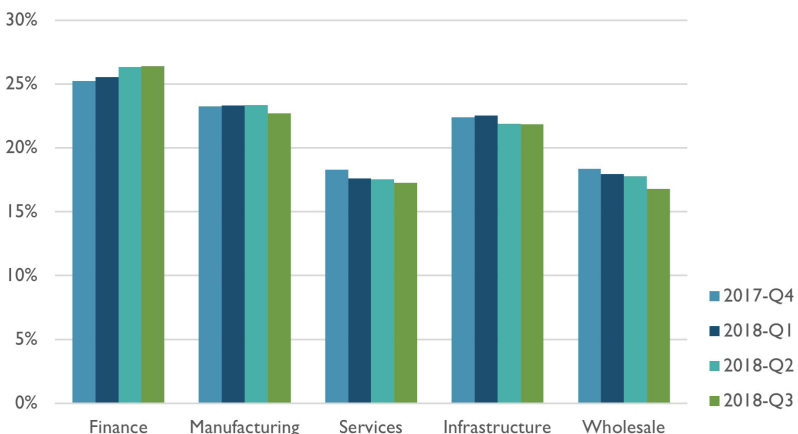
Meanwhile, both the Finance and Wholesale Trade sectors have seen a reduction in Supplier Criticality. Finance has experienced a reducing trend with a 27% decrease over the last quarter and a 48% reduction over the last three quarters, and the Wholesale Trade sector has experienced a 9% reduction over the last quarter following two quarters of stability. This suggests that buying companies feel less dependent on suppliers, perhaps because of increased competition in the supplier market.

### FINANCIAL RISK 22.4% ↓

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 is at 22.4% compared to 22.8% at the end of Q2. This represents a decrease of 2% over the quarter. This change has been driven by Financial Risk reductions in the Manufacturing and Wholesale Trade sectors. In the meantime, the risk appetite of the Finance sector is increasing and is highest among all five sectors. This could be because buying companies in the Finance sector tend to have their own sophisticated credit analytics and are therefore able to manage Finance Risk more effectively.

IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK



Financial Risk is highest in Finance (26.4%), and this has increased over the last three quarters, resulting in a net increase of 5%. This shows that suppliers' financial stability is reducing albeit at a reducing rate. In turn, this increases the exposure to risk for buyers in the Finance sector.

All other sectors have seen either no change or a modest reduction in Financial Risk. The Wholesale Trade sector experienced the biggest drop, 6%, so that it now has the lowest Financial Risk of all five sectors at 16.8%. This indicates that suppliers in this sector tend to be financially stable and that the financial stability of suppliers has improved, mitigating risk exposure.

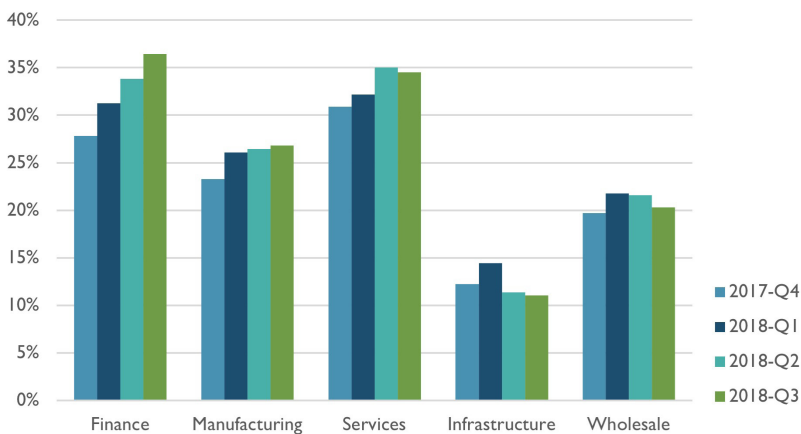
Also, it is worth noting that the Services sector has experienced a reducing trend in Financial Risk with a 6% reduction over the last three quarters, suggesting increased supplier financial stability.

## GLOBAL SOURCING RISK 29.4% ↑

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 29.4%, increasing from 28.7% in Q2 2018, representing a 2.3% increase. However, it has increased 18.2% over the last three quarters, showing an increasing trend in buying companies sourcing from suppliers in high-risk countries. These increases have been driven by the Finance, Manufacturing, and Services sectors, although the Services sector has experienced a small reduction in Global Sourcing Risk over the last quarter. Once again, we see a high risk appetite in the Finance sector, which has the highest – and also an increasing – exposure to risk.

IMAGE 3: SECTORAL ANALYSIS ON GLOBAL SOURCING RISK



Global Sourcing Risk shows all sectors have indicator values below 40%, which means they all have relatively low exposure to suppliers in high-risk countries.

Finance and Services have values above 30%, indicating that a higher proportion of their suppliers are in high-risk countries and therefore they are potentially exposed to the multitude of risks posed, and to the fluctuations in the global marketplace more than the other sectors. Indeed, the Finance sector has seen big increases in Global Sourcing Risk for the last three quarters, resulting in a total increase of 31%. At the same time, the Services sector has experienced a small reduction of 1% in the last quarter, which breaks the upward trend over the previous two quarters, but still nets a total risk increase of 12% over the last three quarters. These increasing trends could be due to outsourcing and offshoring to low-cost economies, which can be associated with higher country risk.

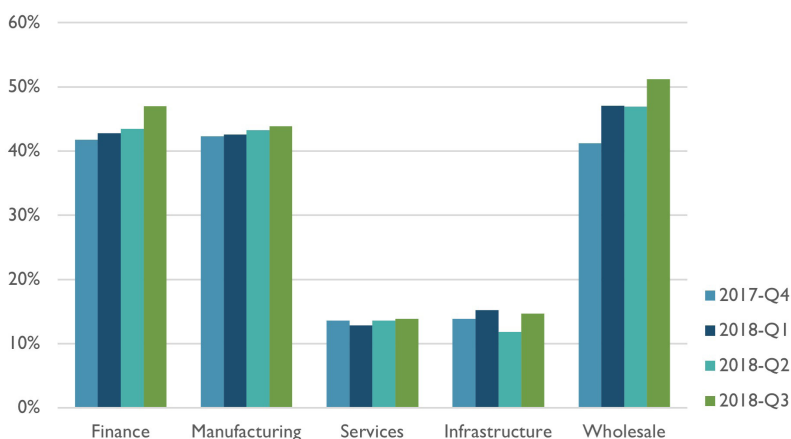
The increasing risk trend in the Manufacturing sector has slowed down, with only a 3% increase over the last two quarters, possibly representing a more cautious approach to sourcing. In contrast, the Infrastructure sector has the lowest Global Sourcing Risk score at 11%, as such companies tend to use a higher proportion of national or regional suppliers. Infrastructure experienced a dramatic reduction of 21.3% through Q2 and has seen a further reduction of 3% over the last quarter.

## FOREIGN EXCHANGE RISK (FX RISK) 36.0% ↑

Foreign Exchange Risk represents the percentage of buyer-supplier relationships where the transaction is between different currencies, such as the Euro (EUR), British pound (GBP), Swedish krona (SEK), and US dollar (USD).

The data indicates that 36% of the transactions between buyers and suppliers now have FX Risk compared with 34.8% at the end of Q2, a 4% increase. This has been driven by marked increases in FX Risk in the Finance, Infrastructure, and Wholesale Trade sectors, indicating that a greater proportion of their transactions are in different currencies. This could be explained by an increase in Global Sourcing Risk, but that is only the case for the Finance sector – for Infrastructure and Wholesale Trade, this risk has reduced. Another explanation could be that the buying companies are not able to insist that they be allowed to pay suppliers in their currency. Alternatively, buying companies may welcome the opportunity to pay suppliers in a different currency, in order to exploit currency exchange fluctuations such as with the GBP/EUR exchange rate, which fell from a peak of 1.15 EUR to the GBP near the end of Q2 (15 June) to a low of 1.1 EUR at the end of August and then increased again to 1.14 EUR by 10 October.

IMAGE 4: SECTORAL ANALYSIS ON FOREIGN EXCHANGE RISK



Foreign Exchange Risk is highest in the Wholesale sector at 51.2%, increasing by 9% over the last quarter and by 24% over the last three quarters. The Finance sector trend is similar, with three consecutive increases in FX Risk over the last three quarters, for a net increase of 13%. While the Finance sector increase could be due to an increase in sourcing from high-risk countries, the Wholesale Trade sector has not experienced this increase; therefore a more likely explanation for this sector is the exploitation of currency exchange fluctuations as described above.

Manufacturing continues to have a high level of FX Risk at 43.8%, and this number has increased steadily over the last three quarters by a total of 4%. These high levels could be explained by increased sourcing from offshore suppliers in low-cost economies, and this is supported by the steadily increasing Global Sourcing Risk.

By contrast, the Services sector has the lowest Foreign Exchange Risk (14%), which has been stable over the last four quarters despite 35% of suppliers being in high-risk countries. This suggests that the Services sector is able to insist that they be allowed to pay suppliers in their own currency, which is supported by the low and reducing Supplier Criticality that indicates reducing supplier dependency, possibly due to a high level of competition in the supply market, which would promote buying company power.

Finally, Infrastructure also sees a very low Foreign Exchange Risk at 14.7%, which is enabled by the tendency in this sector to source from domestic suppliers. However, the FX Risk has increased markedly (by 24%) in the last quarter, which could indicate exploitation of currency exchange fluctuations.

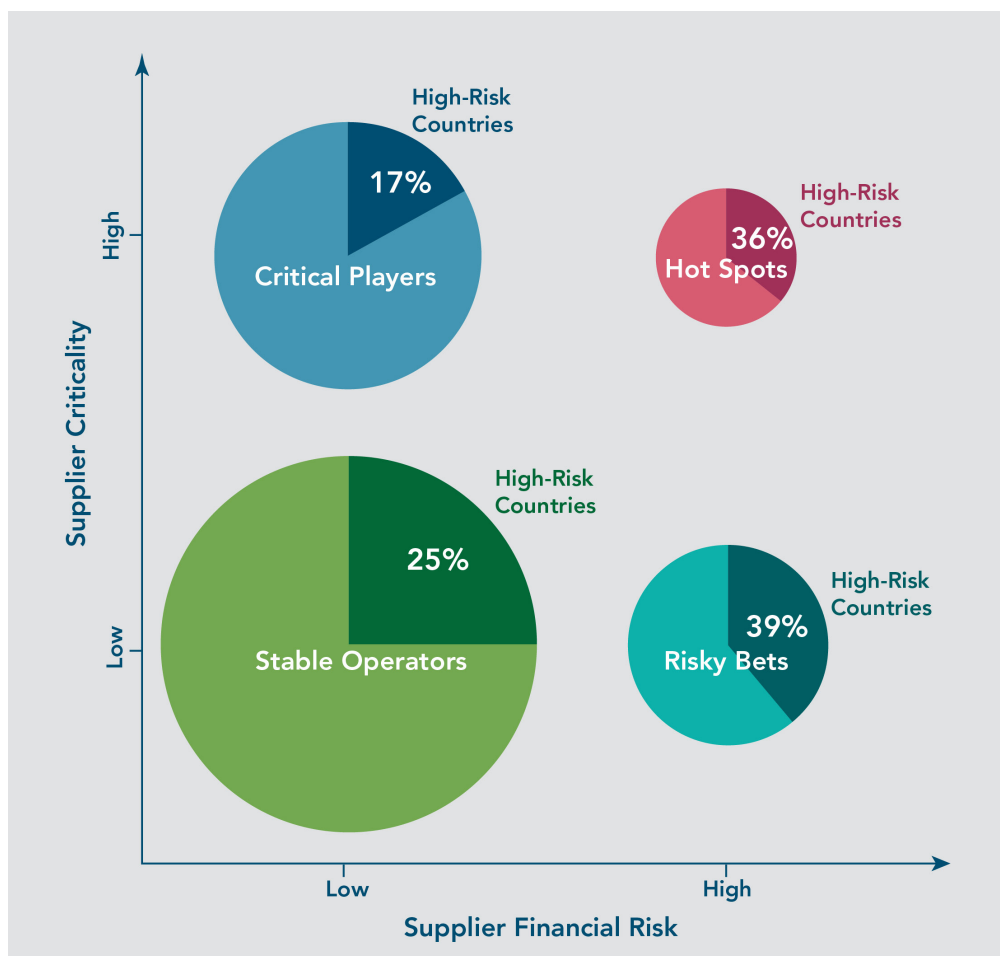


## SECTION 2: SUPPLY CHAIN RISK GRID

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 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, 5.6% (6.3% in June 2018) of relationships found in our data are included here, of which over a quarter (36%) 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, 20% (was 22.2% in June 2018) of relationships are included in this quadrant, and of these, only 17% 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 11% (not changed from June 2018) of all relationships. This quadrant includes the highest proportion (39%) of suppliers 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 (39% in September 2018 compared to 36.7% in June 2018). In 25% of these relationships, the vendors are in a high-risk country.

### SUPPLY CHAIN RISK GRID<sup>2</sup>



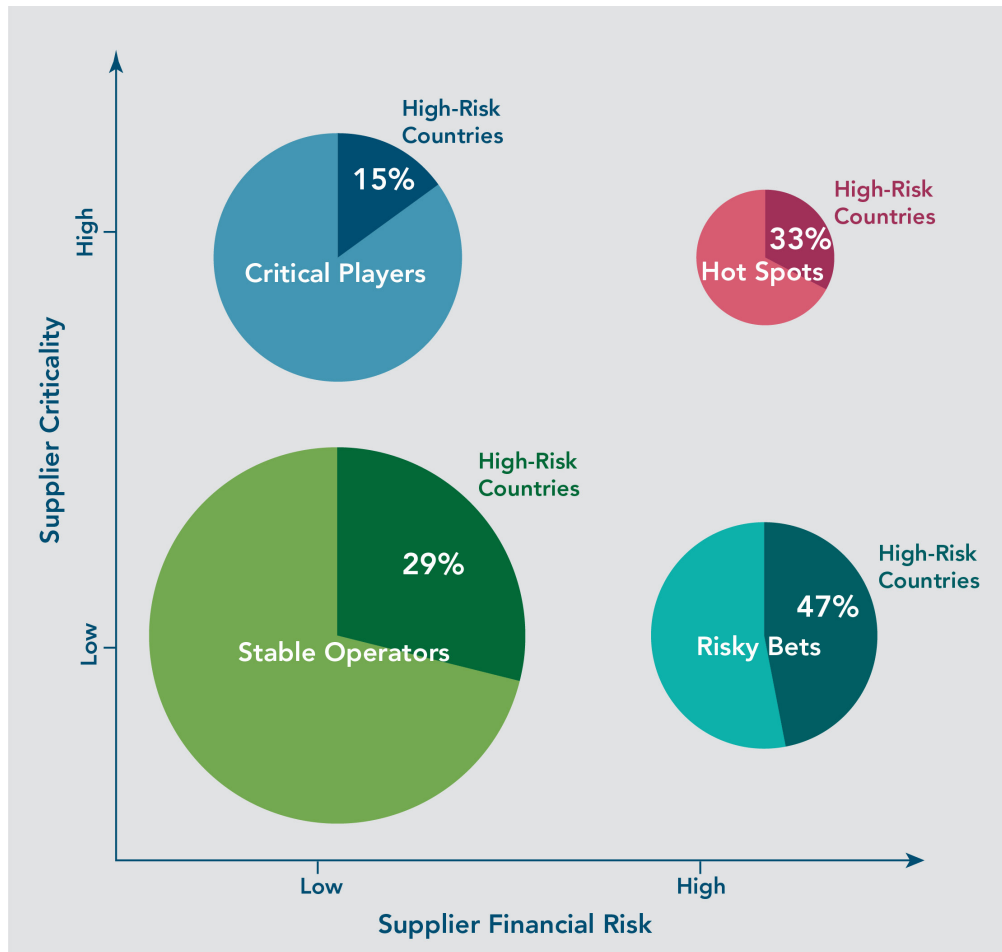
<sup>2</sup> The Supply Chain Risk Grid uses a subset of the core data set, where the data for all three ratings (Criticality, Financial Risk and Country Risk) measures are complete.



## 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 on the previous page.

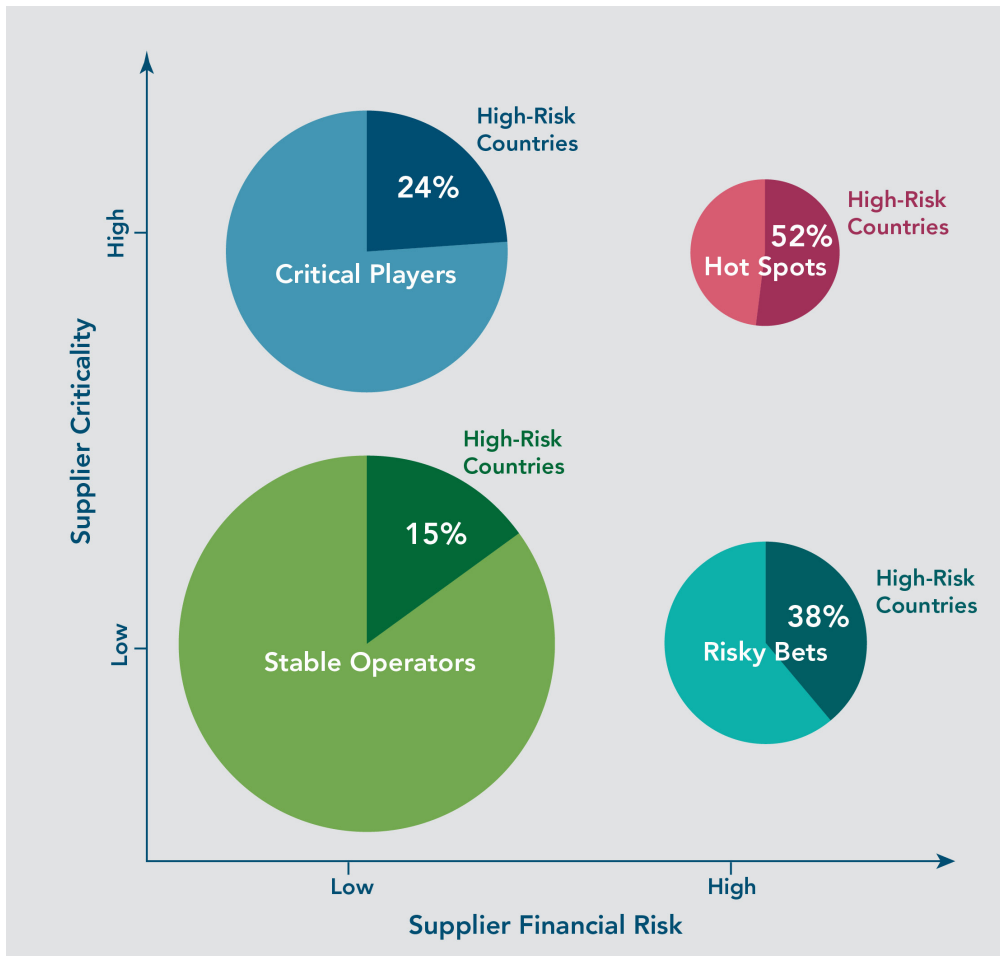
### SUPPLY CHAIN RISK GRID: FINANCE, INSURANCE, AND REAL ESTATE



For Finance, the Supply Chain Risk Grid shows that the biggest proportion of suppliers (37%) are in the Stable Operators quadrant. This suggests a low risk exposure. Further, the proportion of relationships in the Hot Spots quadrant is at 5% – lower than that for the cross-sector grid, which is at 6%. However, the proportion of relationships in the Risky Bets quadrant is at 14%, the highest of all the sectors, and a high proportion (47%) of these suppliers are in high-risk countries.

Considering the proportions of suppliers across the four quadrants, this represents a moderate exposure to risk; however, the proportion of suppliers in high-risk countries is high, particularly in the Risky Bets quadrant. This is no doubt driven by outsourcing and offshoring strategies aimed at driving down service costs. Buying companies should consider sourcing from suppliers that are more financially stable, that are in lower-risk countries, and/or that dual-source to mitigate the risk.

## SUPPLY CHAIN RISK GRID: MANUFACTURING



For Manufacturing, the Supply Chain Risk Grid is very similar to the cross-sector grid shown at the start of this section. It shows that the biggest proportion of suppliers (38%) are in the Stable Operators quadrant. This suggests a low risk exposure.

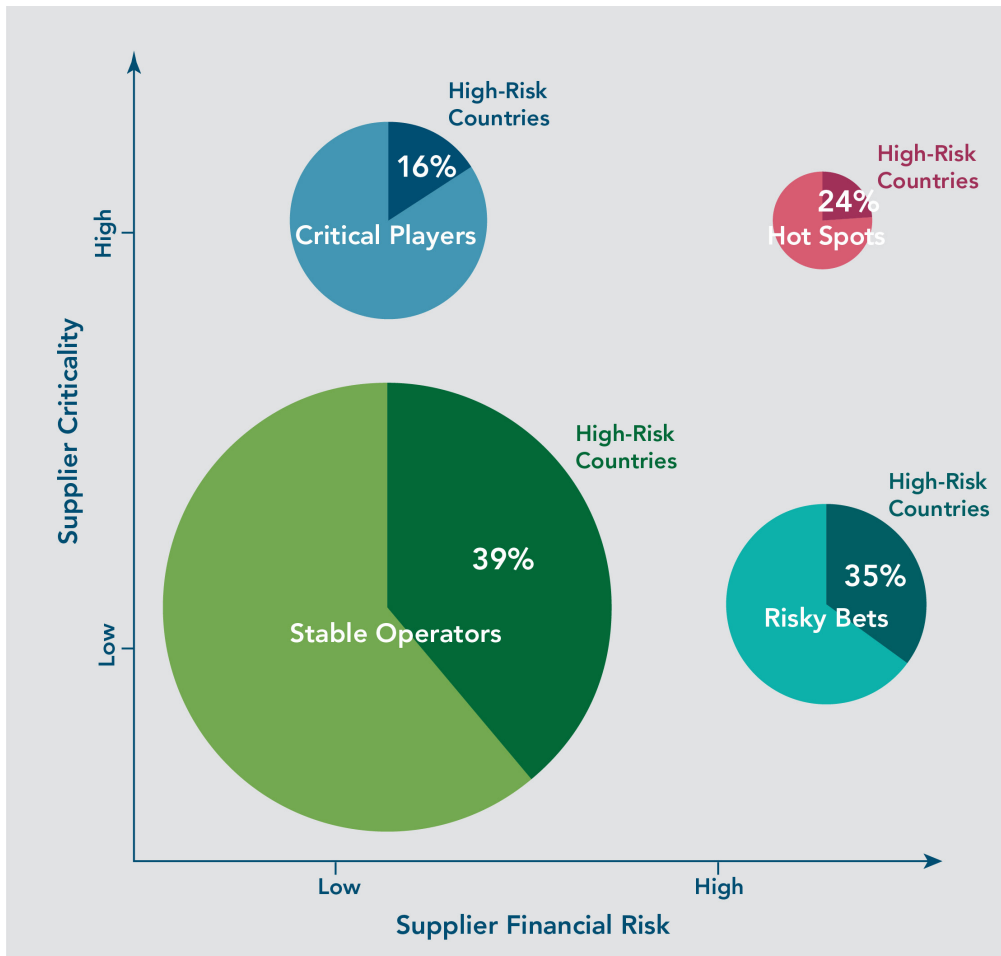
Further, the proportion of relationships in the Hot Spots quadrant is at 6%; however, a very high proportion of these suppliers (52% compared to 36% for the cross-sector grid), are in high-risk countries, indicating that high Financial Risk and high Supplier Criticality is being amplified by global sourcing and the additional political and economic country risks.

Moreover, the proportion of relationships in the Risky Bets quadrant is at 11%, and 38% 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 Spots quadrant. 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 Hot Spots 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 lower.



## SUPPLY CHAIN RISK GRID: SERVICES

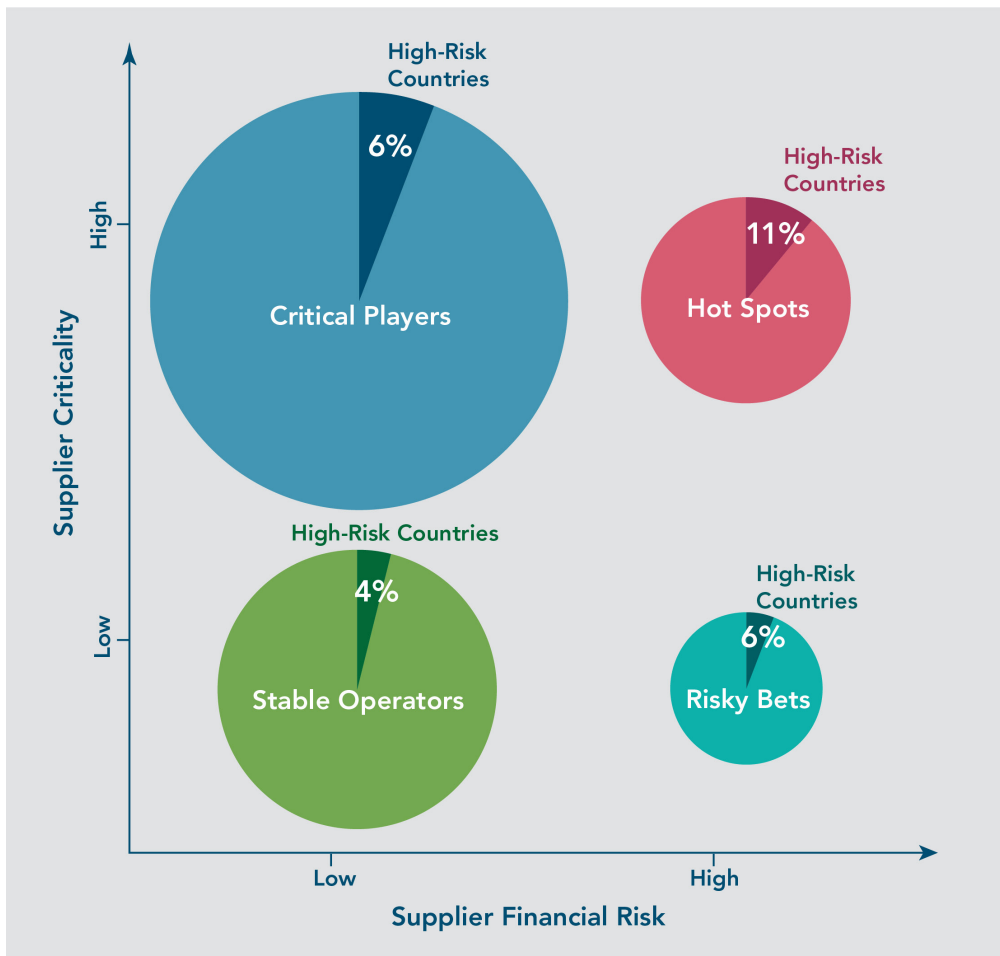


For the Service sector, the Supply Chain Risk Grid shows the lowest risk exposure of the five sectors. The biggest proportion of suppliers (54%) are in the Stable Operators quadrant, and this is by far the biggest of all the sectors, which suggests a low risk exposure. A high proportion of these suppliers (39%) are in high-risk countries, but this is a good risk strategy as these are neither critical suppliers nor subject to high Financial Risk.

Further, the proportion of relationships in the Hot Spots quadrant is only 3%, the lowest of all the sectors, and a relatively low proportion of these (24%) are in high-risk countries (compared with 36% for the cross-sector grid). Moreover, the proportion of suppliers in the Critical Players quadrant is at 10%, the lowest of all the sectors – again, suggesting a low risk profile.

Finally, the Risky Bets quadrant here is very similar to that for the cross-sector grid, with 11% of suppliers and 35% of these in high-risk countries.

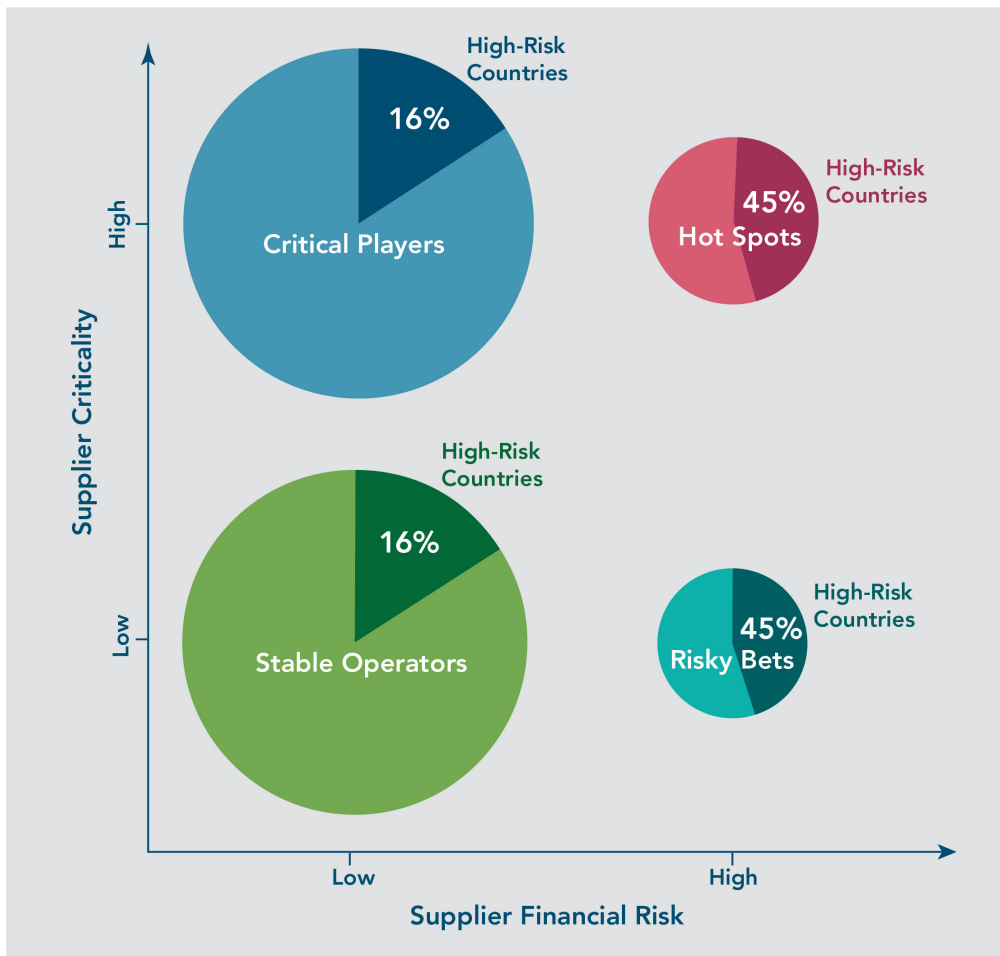
## SUPPLY CHAIN RISK GRID: INFRASTRUCTURE



For Infrastructure, the Supply Chain Risk Grid shows that the biggest proportion (46%) of suppliers are in the Critical Players quadrant. This is the highest by a long way of all the sectors, but the high perceived dependency on suppliers is mitigated by a very low proportion (6%) of them being located 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 by dual-sourcing.

Further, a high proportion of suppliers are in the Hot Spots quadrant (12%), the highest of all the sectors, although the exposure to risk appears to be mitigated by a lower proportion of suppliers in high-risk countries (11% compared to 36% 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 Spots 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 TRADE



For Wholesale, the Supply Chain Risk Grid shows that a similar proportion of suppliers are in the Stable Operators and Critical Players quadrants (29% and 28% respectively), indicating that they are quite exposed to critical suppliers. This suggests that buying companies should consider reducing criticality of suppliers by encouraging new entrants into the supply market and by dual-sourcing.

Also, the proportion of suppliers in the Hot Spots quadrant is higher than the Risky Bets, at 7%. This also indicates a need to reduce the criticality of suppliers in this quadrant.

Finally, in both the Hot Spots and Risky Bets quadrants, a high proportion of suppliers (45%) 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 Hot Spots 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 lower.

## 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 Q3 2018 includes 121,367 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 dataset, where the data for all three ratings measures (Supplier Criticality, Financial Risk, and Country Risk) is complete:

Finance – 34,113 unique relationships

Manufacturing – 48,319 unique relationships

Services – 24,479 unique relationships

Infrastructure – 11,633 unique relationships

Wholesale – 2,823 unique relationships

## ACKNOWLEDGEMENT

Priscilla Schelp, a PhD student at Cranfield School of Management, and Andres Tacsir, the initiator of the project at Dun & Bradstreet, contributed to this report.

## DATE OF PUBLISH

This report was published in November 2018.

## GUIDANCE ON USE

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