

Global Supply Chain Risk Report

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

Q1 2019



KEY STORY OF THE QUARTER

The first quarter of 2019 was a period of risk reduction for all four metrics investigated at the macro level; however, the seven sectors included in the analysis (construction, manufacturing, infrastructure, wholesale, retail, finance, and services) enjoyed different levels of risk reduction and some also witnessed increases in risk. The dataset we base our indices on comprises 185,000 transactions. The metrics we report are always calculated four quarters back, showing the progression of these metrics over the past year for all sectors. We summarise here changes through the last quarter (Q1 2019) and changes over the last three quarters (since Q2 2018):

- **Supplier Criticality** decreased 1.4% over the last quarter but is still 7% higher than three quarters ago, at the end of June 2018. This shows a small reduction in buying companies' perception of dependency on suppliers – they classify a smaller proportion of their suppliers as critical or key compared to the previous quarter. This is driven by reductions in the infrastructure, wholesale, retail, and finance sectors and might suggest increased competition in the supply markets, leading to reduced exposure to Supplier Criticality risk for buying companies. However, it should be recognised that compared to three quarters ago, Supplier Criticality remains high, especially for the construction, infrastructure and retail sectors (all above 70%), which might suggest continued pressure on supply due to high demand or consolidated supplier markets.
- **Supplier Financial Risk** reduced 2.9% compared to the last quarter and decreased 4.8% over the last three quarters. This shows increasing or unchanging financial stability of suppliers and is driven by risk reductions mainly in the construction and finance sectors. On the other hand, wholesale and retail have seen sharp increases in Financial Risk, indicating an increasing probability of insolvency in their supplier base.
- **Global Sourcing Risk** decreased 6.3% over the last quarter and 20.3% over the last three quarters, showing a continued decreasing trend in buying companies sourcing from suppliers in high-risk countries. This decrease has been driven by reductions in this metric for the manufacturing and finance sectors, which could indicate a more cautious approach to offshoring to low-cost economies, which are sometimes characterised by higher country risk. Meanwhile, retail saw a sharp increase in Global Sourcing Risk of 34%.
- **Foreign Exchange Risk** decreased 2.5% over the quarter but increased 2.7% over the last three quarters. This has been driven mainly by reductions in the wholesale and finance sectors, indicating that a lower proportion of their transactions are in different currencies. Buying companies may be reducing offshoring somewhat or insisting on paying suppliers in their own currencies (possibly to exploit currency exchange fluctuations such as the GBP/EUR exchange rate).

Whilst all four risk metrics have shown overall reductions (measured as a percentage of the total number of unique buyer-supplier relationships across all seven sectors), the change in risk is quite different within individual sectors:

- **The construction sector** had a small increase of 0.6% in Supplier Criticality, maintaining the very high level of 84% of relationships reported within this sector being classified as critical or key, showing a high perception of dependence on suppliers. On the other hand, Financial Risk for this sector continued a declining trend, reducing by a further 5%, showing a 10.5% reduction compared to three quarters ago and indicating that a higher proportion of suppliers are financially stable. Both Global Sourcing Risk and Foreign Exchange Risk remained exceptionally low, because the majority of the suppliers are located in Europe (if not the buyer's country), where country risk ratings tend to be low and the transaction currency is Euros.
- **The manufacturing sector** has enjoyed an overall reduction in risk, where three metrics have remained the same and Global Sourcing Risk has continued a downward trend – decreasing by 8% over the last quarter and by 31% over the last two quarters. This indicates a slowing (but still noticeable) downward trend in buying companies sourcing from suppliers in high-risk countries. Further, manufacturing is no longer at the highest level of the seven sectors reported, since retail has experienced a marked increase in Global Sourcing Risk this quarter. Meanwhile, the Supplier Criticality metric for the manufacturing sector was around 36%, the second lowest for the sectors reported, indicating that the perception of dependence on suppliers is relatively low. Financial Risk was around 22%, and Foreign Exchange Risk was around 42%, second highest out of the sectors reported.
- **The infrastructure sector** – which comprises companies in transportation, communications, electric, gas, and sanitary services – experienced a reduction in two metrics and an increase in the other two in Q1 2019.. Supplier Criticality did go down 7.5% in the first quarter, but it's still up 78% over the last three. And Infrastructure still has the third highest Supplier Criticality of the seven sectors, at 73.8%. Foreign Exchange Risk continued its increasing trend, rising 22% over the last quarter and 34% over the last three quarters. This rise may be because buying companies in this sector are increasingly sourcing from other countries or are more willing to pay suppliers in different currencies (possibly to exploit currency exchange fluctuations such as the GBP/EUR exchange rate). There was a slight drop (1.5%) in Financial Risk, and the already very low Global Sourcing Risk stayed flat at 0.25%.

KEY STORY OF THE QUARTER (CONT.)

- The **wholesale sector** has experienced a reduction in two metrics and an increase in the other two through the last quarter. Global Sourcing Risk increased by 15%, and Financial Risk increased by 12%. This could suggest an increasing propensity to offshore to low-cost, high-risk countries, where suppliers are often more likely to have low financial stability. On the other hand, Foreign Exchange Risk has reduced by 5%, suggesting that buying companies may be insisting on paying in the suppliers' own currency, possibly to exploit exchange rates. This is supported by the falling trend in Supplier Criticality, which reduced by 6% in the last quarter and by 14% over the last three quarters (indicating a reducing dependency on suppliers and possibly increased buying power).
- The **retail sector** has experienced the greatest overall increase in risk of all seven sectors, with a reduction only in the perception-based metric, Supplier Criticality, and an increase in the three objective measures. Further, while retail Supplier Criticality has reduced by 5% over the last quarter, it remains the highest out of the seven sectors reported, at just over 84% (showing a sustained perception of high dependence on suppliers). At the same time, Global Sourcing Risk increased by 34%, Financial Risk by 15% and Foreign Exchange Risk by 33%. This could suggest an increasing propensity to source from low-cost, high-risk countries, where suppliers have different currencies to the European buying companies and can be more likely to have low financial stability. The very high levels of supplier dependency indicated by the Supplier Criticality figure could also mean that the buying companies do not have the power to insist on paying suppliers in the suppliers' own currency, where this might exploit exchange rates.
- The **finance sector** has seen the greatest overall reduction in risk, with all four risk metrics continuing a reducing trend over the last quarter and exhibiting marked reductions over the last three quarters. Supplier Criticality has reduced by 13%, Financial Risk by 8%, Global Sourcing Risk by 7%, and Foreign Exchange Risk by 7%. This suggests that the finance sector is taking a more cautious approach to sourcing from low-cost, high-risk countries and that this is contributing to reductions in Foreign Exchange Risk. It could also be that the low levels of supplier dependency indicated by Supplier Criticality mean that buying companies have higher buying power and can insist on paying in buyers' own currency to avoid currency fluctuations.
- The **services sector** has enjoyed a stable quarter, with only the perception-based Supplier Criticality measure experiencing a significant change. Indeed, Supplier Criticality has seen a marked increase of 50%, suggesting buying companies feel far more dependent on their suppliers. Now 34% of buying companies perceive their suppliers as critical or key. Given that the other risk metrics have remained stable, this suggests a consolidation in the supplier market, possibly leading to fewer qualified suppliers or to increased demand.

These results show that supply chain risks are sector specific, making management practices difficult to export across industries. What is meaningful is to track the progression of these indices and consider action as they change.



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 185,000 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. Nevertheless, we should keep in mind the scope of the dataset; these thousands of transactions belong to companies that use Dun & Bradstreet; although we report a large number of transactions, this figure is still a small proportion of all transactions that occur within a given sector.

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 SCM 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 perspectives on four areas of supply chain risk:

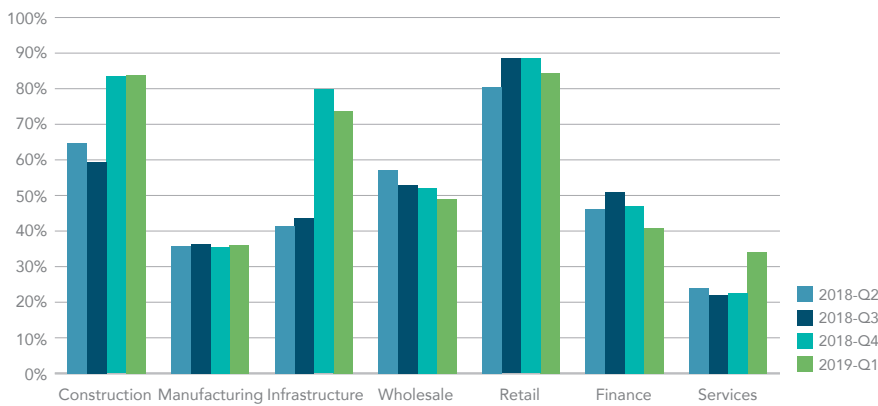
- Supplier Criticality
- Supplier Financial Risk
- Global Sourcing Risk
- Foreign Exchange Risk

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 43.5% ↓

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 43.5%, compared to 44.1% at the end of Q4 (December 2018), representing a 1.4% decrease.



Supplier Criticality is highest in the retail sector (84.4%) despite a reduction of 4.6% through the last quarter. This means that companies in the retail sector consider most of their buyer-supplier relationships to be with suppliers that are critical or key, indicating significant supplier dependency. Conversely, the services sector has the lowest score (34.1%) even though it has increased by 50% over the last quarter, suggesting buying companies feel more dependent on their suppliers. This could be due to increased demand or consolidation in the supplier market, although services companies tend to have a wider pool of suppliers to select from.

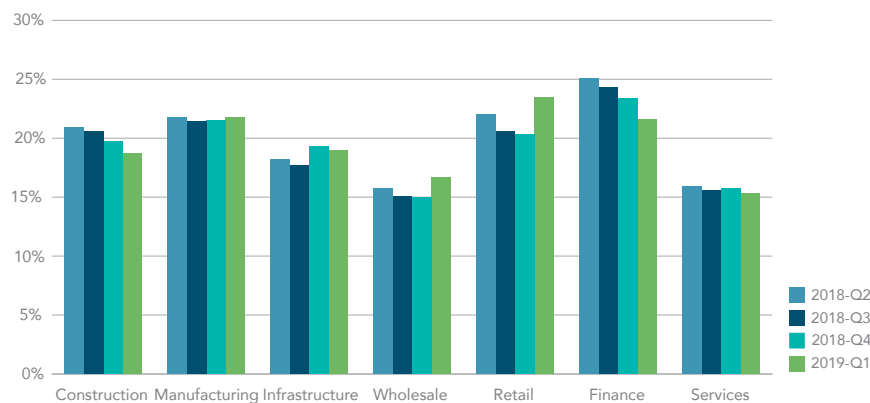
Meanwhile, the infrastructure, wholesale and finance sectors have seen significant reductions in Supplier Criticality of 7.5%, 5.8% and 13.4% respectively, suggesting possible increase in competition in the supply market or reduced demand.

IMAGE 1: SECTORAL ANALYSIS ON SUPPLIER CRITICALITY

FINANCIAL RISK 19.9% ↓

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. When calculating Financial Risk, we consider only transactions where the supplier has a financial risk rating.

The overall current score is at 19.9%, compared to 20.4% at the end of Q4 2018. This represents a decrease of 2.5% over the quarter.



Financial Risk is highest in retail (23.5%) and has increased over the last quarter by 15.4%. This shows that suppliers' financial stability has reduced and there is an increased risk of insolvency and therefore greater risk exposure in the retail sector. On the other hand, the wholesale and service sectors have low Financial Risk at 16.7% and 15.3% respectively, although the wholesale sector has seen a 11.7% rise over the last quarter suggesting that (suppliers in this sector have reduced financial stability).

Both the construction and finance sectors have experienced a reducing trend over the last three quarters with reductions over the last quarter of 5% and 7.8% respectively. This indicates a trend of increasing financial stability in the supply base of both these sectors.

IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK

GLOBAL SOURCING RISK 6.6% ↓

Global Sourcing Risk represents the percentage of buyer-supplier relationships where the supplier is in a country with a Country Risk higher than or equal to 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 6.6%, having decreased from 7% in Q4 2018, representing a 5.7% decrease.

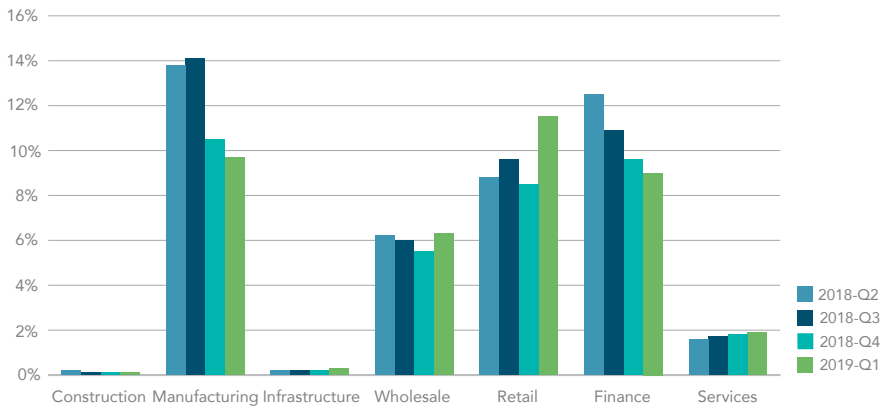


IMAGE 3: SECTORIAL ANALYSIS ON GLOBAL SOURCING RISK

Global Sourcing Risk shows all sectors have values below 12%, which means they all have relatively low exposure to suppliers in high-risk countries. But manufacturing, retail and finance have values above 8%, indicating that a higher proportion of their suppliers are in high-risk countries, and therefore they are potentially more exposed to the multitude of risks posed – and the fluctuations in the global marketplace – than the other sectors.

The retail sector has the highest level of Global Sourcing Risk at 11.5%, after an increase of 34% through the last quarter, suggesting an increased propensity to source from low-cost, high-risk countries. Meanwhile both the manufacturing and finance sectors have experienced a reducing trend over multiple quarters with reductions over the last quarter of 7.7% and 7% respectively. This could indicate a more cautious approach to offshoring to low-cost economies, which are often characterised by high country risk.

The construction and infrastructure sectors have an extremely low Global Sourcing Risk at less than 0.3%, since the majority of the suppliers are located in Europe (if not the buyer's country), where country risk ratings tend to be low.

FOREIGN EXCHANGE RISK (FX RISK) 28.5% ↓

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

The data indicates that 28.5% of the transactions between buyers and suppliers have FX Risk at the end of the first quarter, compared with 29.2% at the end of Q4 2018 representing a 2.4% reduction.

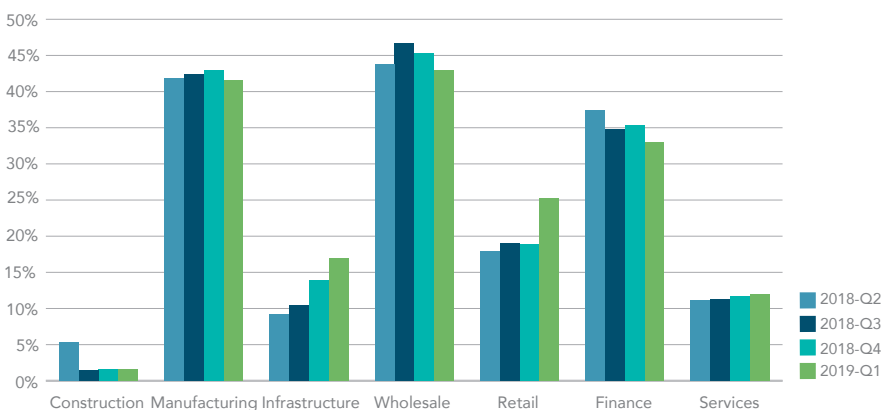


IMAGE 4: SECTORIAL ANALYSIS ON FOREIGN EXCHANGE RISK

Foreign Exchange Risk is highest in the wholesale sector, at 43%, despite the fact it has reduced by 5% over the last quarter from 45.3%. Similarly, the manufacturing sector has a high FX Risk at 42%, but it's pretty stable. This could be explained by the high levels of offshoring in these sectors.

Both the infrastructure and retail sectors have seen significant increases in FX Risk the last quarter, of 22% and 33% respectively, 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, exploiting currency exchange fluctuations such as the GBP/EUR exchange rate. Further, in the case of retail, the increase could be partially explained by the increase in Global Sourcing Risk, where more suppliers are located in high-risk countries and are therefore likely to have different currencies to the European buying companies.

Finally, construction is experiencing a very low Foreign Exchange Risk at 1.6%, which is enabled by the tendency in this sector to source from domestic suppliers.



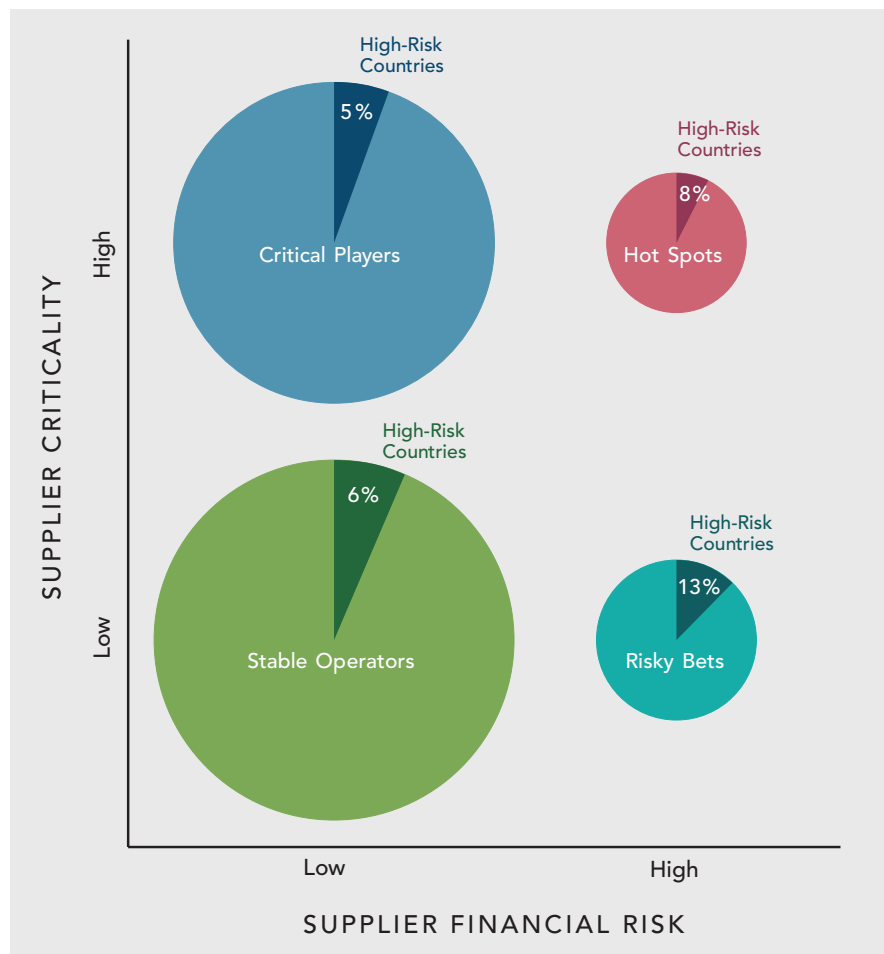
SECTION 2: SUPPLY CHAIN RISK GRID

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, 12,000 relationships in the data are included here, of which over 8% 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, 68,000 relationships are included in this quadrant, and of these, only 5% 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 17,000 of all relationships. This quadrant includes the highest proportion (13%) 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 number of relationships (87,000). In 6% of these relationships the suppliers are in a high-risk country.

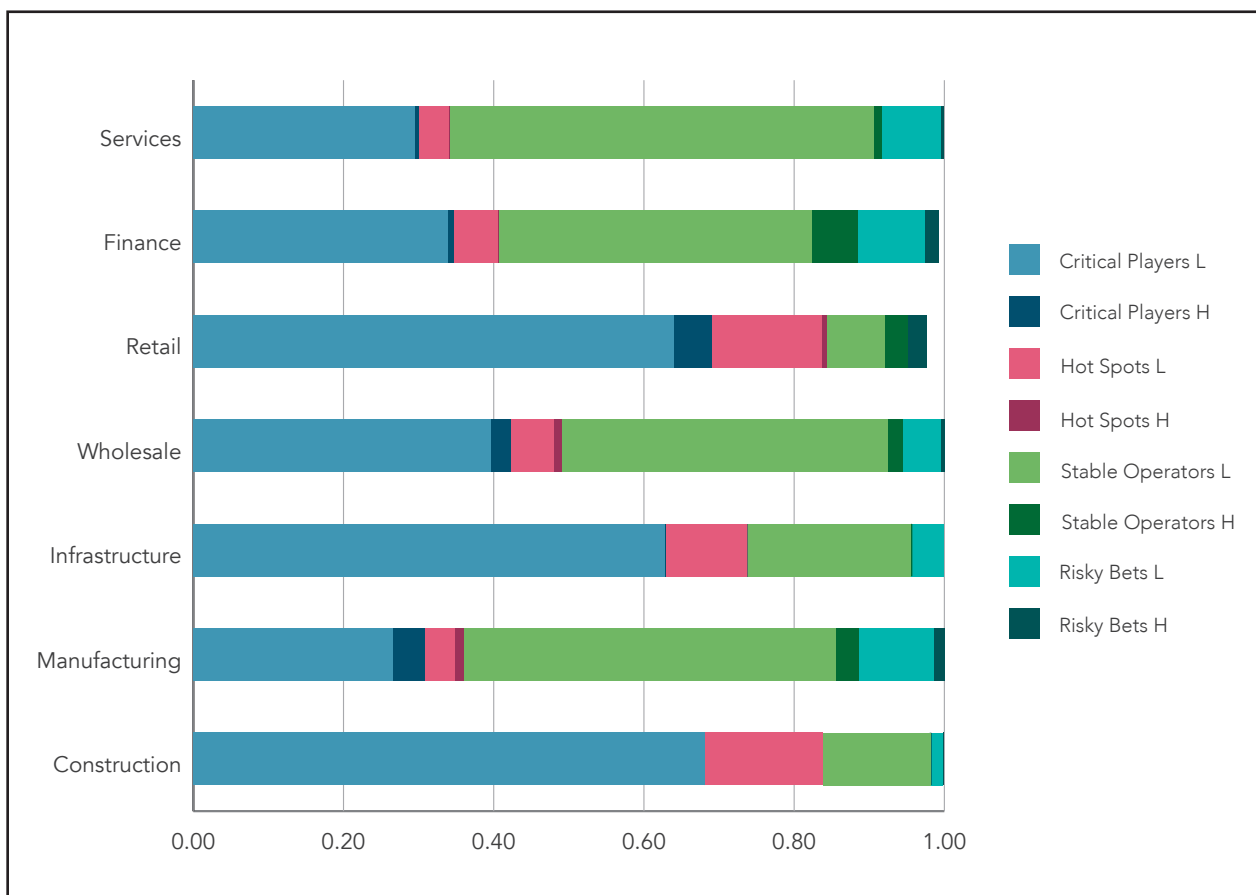
SUPPLY CHAIN RISK GRID²



² The Supply Chain Risk Grid uses a subset of the core data set, where the data for all three ratings measures (Supplier Criticality, Financial Risk, and Country Risk) is complete. Total number of observations can be found on the last page of this report.

SECTOR-SPECIFIC RISK GRIDS

The bar chart below shows the proportions of relationships in different risk categories, allowing a comparison of risk exposure between different sectors.



Note: L = low country risk; H = high country risk

Both retail and construction (closely followed by infrastructure) have particularly high-risk profiles, with a combination of the highest proportion of suppliers in the Hot Spot category and the lowest proportion in the Stable Operator category. The Hot Spot quadrant indicates high Supplier Criticality and high Financial Risk. 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. This particularly applies to retail where 5% of Hot Spot, 7% of Critical Player, and 54% of Risky Bet suppliers are also located in high-risk countries, which further compounds the risk exposure. Whereas both construction and infrastructure have very few suppliers in high-risk countries, so this is not an issue.

On the other hand, the service and manufacturing sectors have the least risky profiles, with the highest proportion of suppliers in the Stable Operators category and the lowest in Hot Spots. Manufacturing does, however, have far more suppliers located in high-risk countries than the service sector: 23% of vendors in Hot Spots, 14% of Critical Players, and 14% of Risky Bet suppliers. This compounds the risks already conferred by these quadrants and encourages the use of dual sourcing to mitigate risks.

Both the finance and wholesale sectors also have relatively low-risk profiles, though the wholesale profile is similar to manufacturing, with relatively high proportions of each supplier category in high-risk countries. For the finance sector, the majority of the suppliers located in high-risk countries (38% of suppliers) are Stable Operators, and therefore they have both low Finance Risk and Supplier Criticality. This helps to mitigate the risks of using suppliers in high-risk countries.

GLOSSARY AND METHODOLOGY

Supplier Criticality: The percentage of 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 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 buyer–supplier relationships where the supplier is in a country with Country Risk greater than or equal to 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 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 Q1 2019 includes 184,620 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) are complete:

Construction – 11,072 relationships

Manufacturing – 64,059 relationships

Infrastructure – 12,311 relationships

Wholesale – 3,388 relationships

Retail – 3,470 relationships

Finance – 50,385 relationships

Services – 39,935 relationships

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GUIDANCE ON USE

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