Global Supply Chain Risk Report

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

Q4 2018

KEY STORY OF THE QUARTER

The last 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 now report seven sectors: construction, manufacturing, infrastructure, wholesale, retail, finance, and services. The dataset we base our indices on has doubled in size and now comprises 200,000 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 (Q4 2018) and changes over the last three quarters (since Q1 2018):

- **Supplier Criticality** increased 6.2% over the quarter and reached approximately the same level as three quarters ago, at the end of March 2018. This shows an increasing trend in buying companies' perception of dependency on suppliers – they classify a larger proportion of their suppliers as critical or key. This increase is driven by marked increases in both the construction and infrastructure sectors: 40% and 83% respectively. This might suggest a reduction in the choice of qualified suppliers, possibly caused by consolidation in the supply markets, increasing the risk exposure for buying companies.
- **Supplier Financial Risk** was stable compared to the last quarter and decreased 2% over the last three quarters. This shows increasing or unchanging financial stability of suppliers and is supported by all sectors except for infrastructure, which has experienced a 9% increase over the last quarter.
- **Global Sourcing Risk** decreased 12.5% over the last quarter and 18.8% over the last three quarters, showing a decreasing trend in buying companies sourcing from suppliers in high-risk countries. This decrease has been mainly driven by a 25% drop in this metric for the manufacturing sector, which could indicate a more cautious approach to offshoring to low-cost economies, which are sometimes characterised by higher country risk. Smaller, but significant, decreases in Global Sourcing Risk were also observed for the wholesale, retail and finance sectors.
- **Foreign Exchange Risk** increased 6.1% over the quarter and 5.7% over the last three quarters. This has been driven mainly by a marked increase in the infrastructure sector, 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.

Whilst Supplier Criticality and Foreign Exchange Risk increased, Financial Risk stayed the same and Global Sourcing Risk decreased significantly by 12.5%. This may have two possible explanations: Country risk ratings of the countries where suppliers are located could be improving, or – much more likely – buyers could be preferring suppliers located in lower-risk countries. Consider how the metrics behaved within individual sectors:

- The **construction sector** had a significant increase of 40% in Supplier Criticality. Now, more than 80% of the 11,000 relationships reported within this sector are classified as critical or key, showing a marked increase in the perception of dependence on suppliers. On the other hand, Financial Risk for this sector has a declining trend, now just under 20%. Global Sourcing Risk was already exceptionally low, and then it decreased further to 0.1%. Finally, Foreign Exchange Risk has remained at the very low level of 1.6% following a reduction during Q3. This sector is marked by the majority of the suppliers being located in Europe and transactions being carried out in the same operating currency of both the buyer and the supplier.
- The **manufacturing sector** had a stable year in terms of all metrics except Global Sourcing Risk, which decreased in the last quarter by 25%, indicating a marked reduction in buying companies sourcing from suppliers in high-risk countries. However, it is still at the highest level of the seven sectors reported, with 11% of the relationships being with suppliers located in high-risk countries. 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%, the second highest out of the sectors reported.
- The **infrastructure sector** – comprising companies in transportation, communications, electric, gas, and sanitary services – has experienced an overall increase in risk, with three out of four risk metrics showing an increase through Q4 2018. There was a dramatic 83% increase in Supplier Criticality to around 80%. Further, Financial Risk increased (by 9%) to 19% and Foreign Exchange Risk also increased, reaching 14%. At the same time, the already very low Global Sourcing Risk stayed at a stable 0.2%.
- The **wholesale sector**, on the other hand, has seen an overall reduction in risk, with a slight decrease of 2% in Supplier Criticality to around 52%. Financial Risk for this sector was stable at 15%. Global Sourcing Risk decreased to 6%, and Foreign Exchange Risk was stable at around 45%.
- The **retail sector** has also experienced an overall reduction in risk, with two out of the four metrics showing a decrease. But Supplier Criticality remains the highest out of the seven sectors reported, stable at 89%, showing a sustained perception of high dependence on suppliers. At the same time, Financial Risk decreased slightly to 20% and Global Sourcing Risk decreased more markedly (by 11%) to 9%, and Foreign Exchange Risk was stable at 19%.

KEY STORY OF THE QUARTER (CONT.)

- The **finance sector** is another that's experienced an overall reduction in risk, with Supplier Criticality reducing to 47% and Financial Risk reducing to 23%, although Financial Risk remains the highest out of the sectors reported. Global Sourcing Risk has experienced a significantly decreasing trend over the last three quarters, from 14% to 10%, indicating a reduction in sourcing from suppliers in high-risk countries. Foreign Exchange Risk was stable at around 35%.
- In the **services sector**, Supplier Criticality was stable at around 23% and Financial Risk was stable at around 16%. Global Sourcing Risk on the other hand has increased slightly to 2% – although, this still one of the lowest out of the seven sectors – and this was accompanied by a small increase in Foreign Exchange Risk, to 12%.

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 actual supply chain risks faced by European companies with international footprints.

The report responds to a growing need for reliable information that can 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 200,000 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. Note that, 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 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 44.1% ↑

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 44.1%, compared to 41.5% at the end of Q3 (September 2018), representing a 6.2% increase. Compared to three quarters ago (March 2018), the metric has not changed but it had dropped through Q2 and has now returned to its previous level.

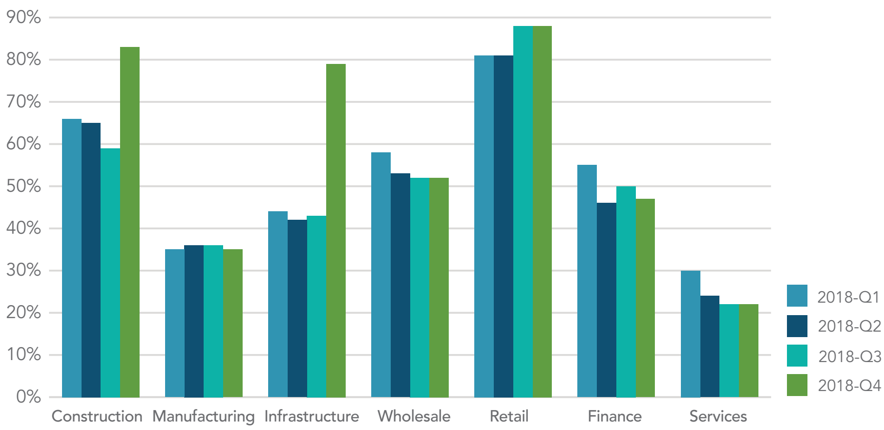


IMAGE 1: SECTORIAL ANALYSIS ON SUPPLIER CRITICALITY

Supplier Criticality is highest in the retail sector (88.5%) and has not changed through the last quarter. Services has the lowest score (22.7%) and has been stable over 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 appears less dependent on individual suppliers, probably because services companies tend to have a wider pool of suppliers to select from.

Meanwhile, both the construction and infrastructure sectors have seen sharp increases in Supplier Criticality. Construction has experienced a 40% increase following what appeared to be a steady downward trend for the previous two quarters. While the infrastructure sector has experienced a dramatic 83% increase through the last quarter, following two quarters of stability. This suggests that buying companies feel more dependent on suppliers, perhaps because of a reduction in the choice of qualified suppliers, possibly caused by consolidation in the supply markets increasing exposure to risk for buying companies.

FINANCIAL RISK 20.4% –

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

The overall current score is at 20.4% compared to 20.5% at the end of Q3. This represents a decrease of 0.5% over the quarter.

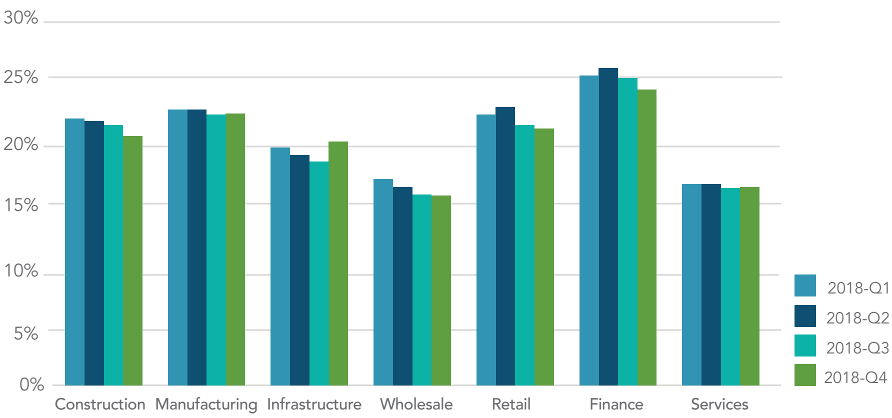


IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK

Financial Risk is highest in finance (23.4%) but has reduced over the last two quarters since June 2018 by 7%. This shows that suppliers' financial stability is increasing, and this may reduce the exposure to risk for buyers in the finance sector. On the other hand, wholesale and service sectors have low and stable Financial Risk at 15% and 15.7% respectively. This indicates that suppliers in these sectors tend to be financially stable.

Infrastructure has experienced the biggest increase (9%) in Financial Risk over the last quarter, indicating that the risk of insolvency in its suppliers has increased. All other sectors have seen either no change or a modest reduction in Financial Risk. The construction sector experienced the biggest drop (5%), indicating that the financial stability of suppliers has improved, mitigating risk exposure.

GLOBAL SOURCING RISK 7% ⬇

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 7%, decreasing from 8% in Q3 2018, representing a 12.5% decrease.

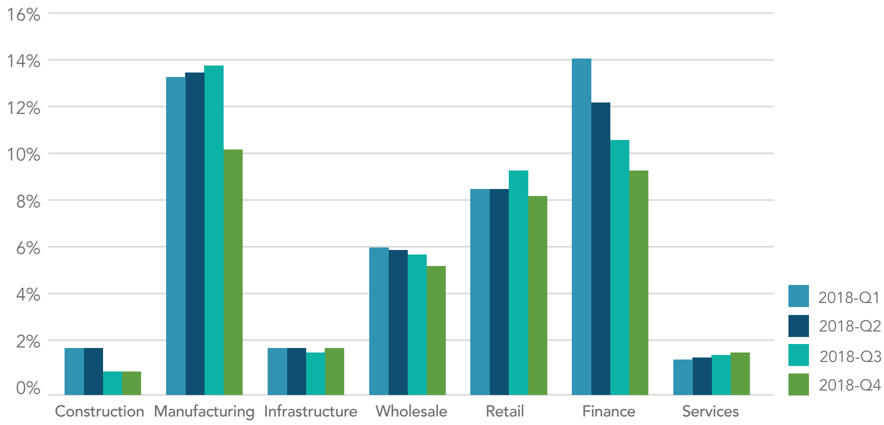


IMAGE 3: SECTORIAL ANALYSIS ON GLOBAL SOURCING RISK

Global Sourcing Risk shows all sectors have values below 11%, which means they all have relatively low exposure to suppliers in high-risk countries. Further, it has either reduced or remained the same over the last quarter.

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 to the fluctuations in the global marketplace) than the other sectors. However, all three have experienced significant reductions in Global Sourcing Risk over the last quarter, with manufacturing experiencing the largest reduction (25%), indicating a marked reduction in buying companies sourcing from suppliers in high-risk countries. This could indicate a more cautious approach to offshoring to low-cost economies, which are sometimes characterised by high country risk.

The finance sector has seen consecutive and significant decreases in Global Sourcing Risk for the last three quarters, resulting in a total decrease of 33% and possibly representing a more cautious approach to sourcing.

The construction, infrastructure and service sectors have an extremely low Global Sourcing Risk, at less than 2%, because the majority of the suppliers are located in Europe.

FOREIGN EXCHANGE RISK (FX RISK) 29.2% ⬆

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 29.2% of the transactions between buyers and suppliers have FX Risk compared with 27.6% at the end of Q3, representing a 5.7% increase.

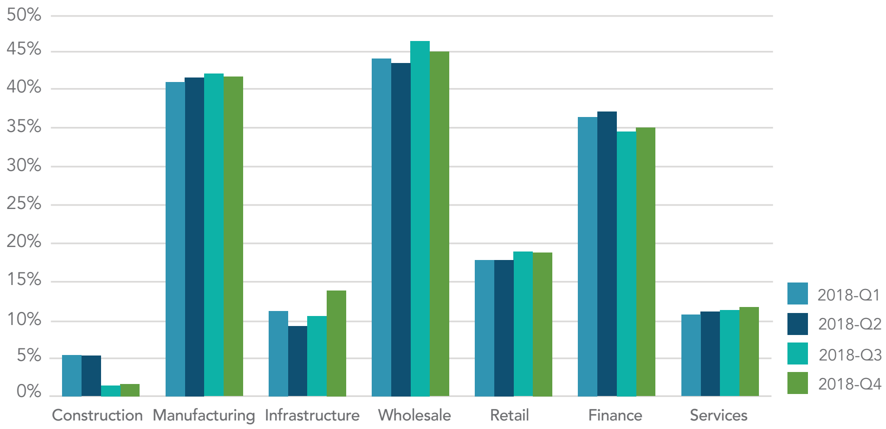


IMAGE 4: SECTORIAL ANALYSIS ON FOREIGN EXCHANGE RISK

Foreign Exchange Risk is highest in the wholesale sector, at 45.3%, but has reduced by 3% over the last quarter, apparently fluctuating around 45%. Similarly, the manufacturing sector has a high FX risk at 42%, but it's generally stable. This could be explained by the high levels of offshoring in these sectors.

Infrastructure has seen the biggest increase (32%) in FX Risk, to 14%, 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.

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

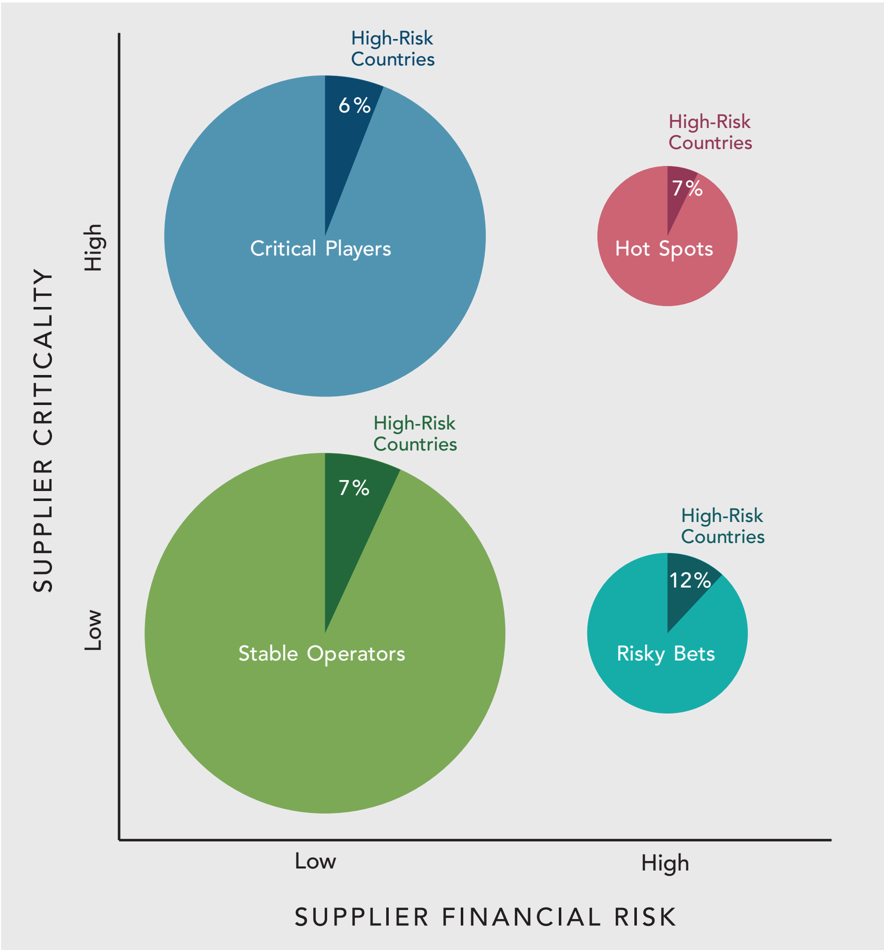
The Supply Chain Risk Grid combines three indicators in a chart to provide a comprehensive overview of risk exposure.

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, 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, 14,000 relationships in the data are included here, of which over 7% 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, 72,000 relationships are included in this quadrant, and of these, only 6% 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 18,000 of all relationships. This quadrant includes the highest proportion (12%) 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 (91,000). In 7% of these relationships the suppliers are in a high-risk country.

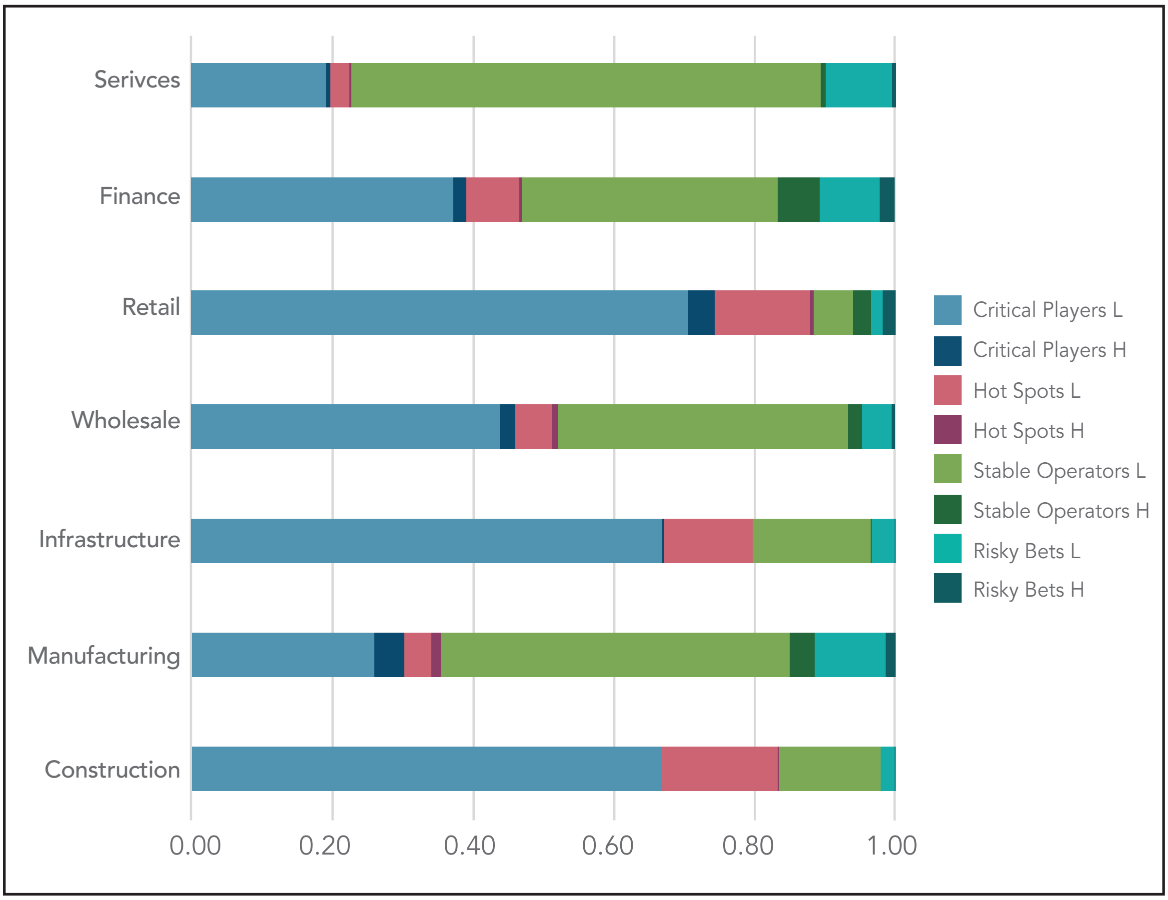
SUPPLY CHAIN RISK GRID[2]



[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

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 have the highest proportion of suppliers in the Hot Spot category, indicating 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 3% of Hot Spot suppliers are also in high-risk countries, which further amplifies the risk exposure. Infrastructure also has 13% of their relationships in Hot Spots, but very few of these relationships are with suppliers located in high-risk countries.

The retail, infrastructure, and construction sectors have a high proportion of suppliers in the Critical Players category, but once again retail has higher risk exposure, with 5% of these relationships being with suppliers located in high-risk countries. Similarly for the manufacturing sector, a relatively high proportion (14%) of suppliers in the Critical Players category are located in high-risk countries. For these sectors, it could be advisable to dual-source for the critical suppliers in high-risk countries in order to mitigate the risk.

The service, finance, and manufacturing sectors have the highest proportions of suppliers in the Risky Bets category, where Supplier Criticality is low but Financial Risk is high. In the service sector, only a small proportion (3%) of these are in high-risk countries, whereas in the finance and manufacturing sectors, relatively high proportions – 17% and 13% respectively – are in high-risk countries, compounding the high Financial Risk. Buying companies should carefully check the financial stability of these suppliers and maybe dual-source to mitigate the risk.

Also notable for the retail sector: Overall, it has the riskiest profile with the lowest proportion of relationships categorised under Stable Operators, with normal Supplier Criticality and low supplier Financial Risk. On the other hand, the service sector has the least risky profile, with the highest proportion of suppliers in the Stable Operators category and the lowest in Hot Spots.

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 2018 includes 195,207 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 – 10,755 (10,754) relationships

Manufacturing – 68,358 (68,315) relationships

Infrastructure – 15,964 (15,963) relationships

Wholesale – 3,509 (3,509) relationships

Retail – 4,749 (4,745) relationships

Finance – 53,944 (53,628) relationships

Services – 37,958 (37,941) relationships

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GUIDANCE ON USE

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