Global Supply Chain Risk Report

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

Q2 2019

KEY STORY OF THE QUARTER

The second quarter of 2019 was a period of stability for all four metrics investigated at the macro level (Supplier Criticality, Supplier Financial Risk, Global Sourcing Risk, and Foreign Exchange Risk), and many of the seven industry sectors included in the analysis (construction, manufacturing, infrastructure, wholesale, retail, finance, and services) also enjoyed relatively stable risk levels. Indeed, risk levels during Q2 were the most stable since we began this report in Q4 2017, but we do see reversals of some long-term trends. The dataset we base our indices on comprises 181,000 transactions. The metrics we report are always calculated four quarters back, showing the progression of these metrics over the past year for all sectors.

Key stories by risk metric:

- **Supplier Criticality** increased slightly by 0.6% but is 5.4% higher than it was at the end of September 2018 – implying that, compared to three quarters ago, companies classify a large proportion of their suppliers as critical or key (which indicates a high level of dependency on their suppliers). This is especially true for the construction, infrastructure and retail sectors (all above 70%), which might suggest continued pressure on supply due to high demand or consolidated suppliers.
- Driven by small increases within the manufacturing and service sectors, **Global Sourcing Risk** overall increased slightly (by 1.5%) over the last quarter (Q2 2019), reversing its downward trend. Even so, Global Sourcing Risk is down 16.8% over the last three quarters (since Q3 2018). The slight increase this quarter could suggest an increased comfort with offshoring to lower-cost/higher-risk countries.

Key stories by industry sector:

- **The manufacturing sector** experienced small increases in each of the four risk metrics. Most notably, Global Sourcing Risk reversed the downward trend enjoyed over the previous two quarters with a 2.3% increase. This suggests a small increase in buying companies sourcing from suppliers in low-cost economies associated with high-risk countries. That said, manufacturing Global Sourcing Risk is 29.4% lower than it was three quarters ago.
- **The services sector** has enjoyed a stable quarter, although Supplier Criticality, Global Sourcing Risk and Foreign Exchange Risk are continuing an upward trend, with increases of 4.2%, 2.2%, and 1.8%, respectively. Supplier Criticality in this sector has seen the biggest increase over the last three quarters (61.7%), suggesting buying companies feel far more dependent on their suppliers. Given that the other risk metrics have remained relatively stable, the perceived dependency implies either a consolidation in the supplier market (meaning fewer qualified suppliers) or increased demand.

RISK METRIC AND SECTOR OVERVIEW

Summarised changes for the metrics not featured in the key story section:

- **Supplier Financial Risk** remained unchanged at 19.9% for Q2. However, it is down by 2.8% over the last three quarters, driven by risk reductions in the finance and construction sectors and indicating a reduced probability of insolvency in their supplier base.
- **Foreign Exchange Risk** increased slightly by 0.4% over the last quarter but increased 3.9% over the last three. This has been driven mainly by increases in the infrastructure, retail, and services sectors, indicating that a higher proportion of their transactions are in different currencies. Buying companies may be increasing offshoring somewhat or are more willing to pay suppliers in the supplier's own currency (possibly to exploit currency exchange fluctuations such as the GBP/EUR exchange rate).

Summarised changes for the sectors not featured in the key story section:

- **The construction sector** overall saw just small changes in the risk metrics over the last quarter. However, it continues to maintain very high levels of Supplier Criticality, with 83% of relationships reported within construction classified as critical or key, showing a high perception of dependence on suppliers. Supplier Financial Risk for this sector increased by 2% over the second quarter but is still down 7.6% compared to three quarters ago, 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 in the buyer's country), where country risk ratings tend to be low and the transaction currency is euros.
- **The infrastructure sector** – which comprises companies in transportation, communications, electric, gas, and sanitary services – also saw only small changes in the risk metrics. Supplier Criticality reduced by 2.9%, but it's still up 66% over the last three quarters and is the third-highest of the seven sectors, at 72.4%. Foreign Exchange Risk continued its increasing trend, rising 3.8% over the last quarter and 67% over the last three. This rise may be because infrastructure buying companies are increasingly sourcing from other countries or are more willing to pay suppliers in the supplier's own currency (possibly to exploit currency exchange fluctuations such as the GBP/EUR exchange rate).

RISK METRIC AND SECTOR OVERVIEW (CONT.)

- **The wholesale sector** is showing significant changes in the risk metrics through Q2, but this is probably due to changes in the dataset for wholesale companies, so changes at this time cannot be attributed to changes in supplier risk.
- **The retail sector** experienced a small reduction in all the risk metrics except for Supplier Criticality, which remained the same (at a very high 84.5%). Retail has the highest Supplier Criticality out of the seven sectors reported, showing a sustained perception of high dependence on suppliers. At the same time, Supplier Financial Risk, Global Sourcing Risk and Foreign Exchange Risk have gone down by 2.5%, 1.8%, and 4.3%, respectively, slightly reversing upward trends. This could indicate a somewhat more cautious approach to sourcing from suppliers in higher-risk countries.
- **The finance sector** has seen no significant change in any of the four risk metrics over the last quarter, consolidating the downward trend in its risk profile over the last three quarters.

These results show that supply chain risks are sector specific, making management practices difficult to export across industries. What can be meaningful is tracking the progression of these indices and considering 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 181,000 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 43.7% ⬆

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 43.7%, a 0.6% increase from its score at the end of Q1 (43.5%).

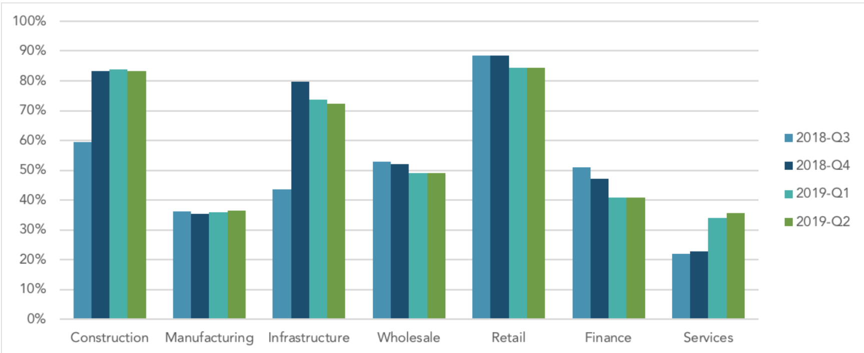


IMAGE 1: SECTORIAL ANALYSIS ON SUPPLIER CRITICALITY

NOTE: Between Q1 and Q2 2019 there was a change in the dataset for wholesale companies, so changes at this time cannot be attributed to changes in supplier risk.

Supplier Criticality is highest in the retail sector (84.5%), where it has remained unchanged 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 and concomitant exposure to risk. Conversely, the services sector has the lowest score (35.5%), although it has increased by 4.2% over the last quarter, continuing an upward trend, 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, infrastructure has seen a continuing downward trend with a 1.9% drop, suggesting reduced perceived dependency on suppliers in this sector. The other sectors have seen stability in Supplier Criticality over the last quarter.

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

The overall current score is at 19.9%, showing no change since the end of Q2 2019.

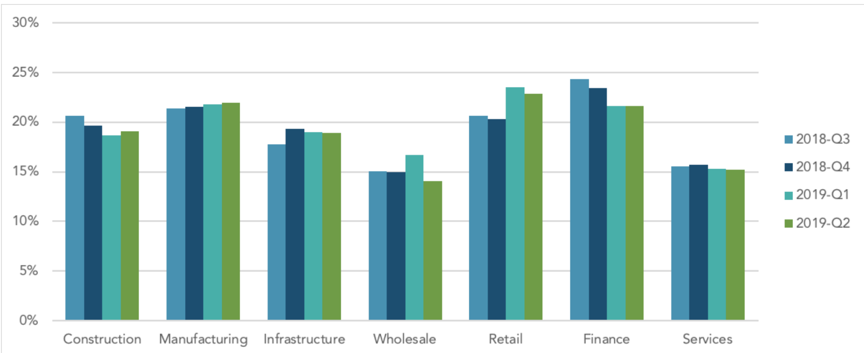


IMAGE 2: SECTORAL ANALYSIS ON FINANCIAL RISK

NOTE: Between Q1 and Q2 2019 there was a change in the dataset for wholesale companies, so changes at this time cannot be attributed to changes in supplier risk.

Supplier Financial Risk is highest in retail (22.9%), but it did go down by 2.5% over the last quarter. This shows that suppliers' financial stability has improved slightly, and there is a reduced risk of insolvency. The wholesale and services sectors have relatively low Supplier Financial Risk at 14.1% and 15.2%, respectively.

Both the construction and manufacturing sectors have experienced slight increases of 2% and 0.6%, respectively, and in the case of construction, this reverses the previous downward trend. The increased Supplier Financial Risk indicates a reduction in the financial stability of suppliers in both these sectors.

GLOBAL SOURCING RISK 6.7% ⬆

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 6.7%, having increased slightly from 6.6% in Q1, representing a 1.6% increase.

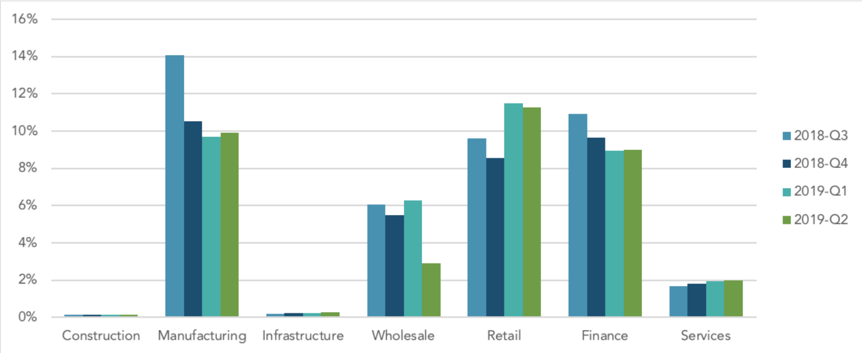


IMAGE 3: SECTORIAL ANALYSIS ON GLOBAL SOURCING RISK

NOTE: Between Q1 and Q2 2019 there was a change in the dataset for wholesale companies, so changes at this time cannot be attributed to changes in supplier risk.

Global Sourcing Risk is below 12% for all sectors, 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 than the other sectors to the multitude of risks posed – and to fluctuations in the global marketplace.

The retail sector has the highest level of Global Sourcing Risk at 11.3%, despite a reduction of 1.8% through the last quarter, suggesting a relatively high propensity to source from low-cost, high-risk countries. Meanwhile, the manufacturing sector has experienced a reversal in its downward trend with a 2.3% increase.

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 in the buyer's country), where country risk ratings tend to be low.

FOREIGN EXCHANGE RISK (FX RISK) 28.6% ⬆

Foreign Exchange Risk represents the percentage of buyer-supplier relationships where the transactions are 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 at the end of the second quarter, 28.6% of the transactions between buyers and suppliers were exposed to FX Risk, representing a slight increase (0.4%) over the 28.5% in Q1.

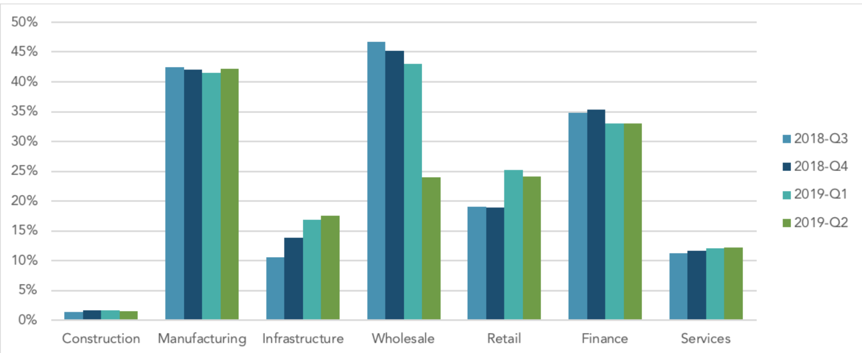


IMAGE 4: SECTORIAL ANALYSIS ON FOREIGN EXCHANGE RISK

NOTE: Between Q1 and Q2 2019 there was a change in the dataset for wholesale companies, so changes at this time cannot be attributed to changes in supplier risk.

Foreign Exchange Risk is highest in the manufacturing sector, at 42.2%, and it's been pretty stable at that level. This could be partially explained by the high levels of offshoring in this sector.

Both the infrastructure and services sectors have seen small increases in FX Risk over the last quarter (3.8% and 1.8%, respectively) continuing upward trends. This indicates that an increasing proportion of their transactions are in different currencies. This could be explained by buying companies welcoming the opportunity to pay suppliers in the suppliers' own currency, exploiting currency exchange fluctuations such as the GBP/EUR exchange rate.

Finally, construction is experiencing a very low Foreign Exchange Risk at 1.5%, which is enabled by the tendency in this sector to source from domestic suppliers.

SECTION 2: SUPPLY CHAIN RISK GRID

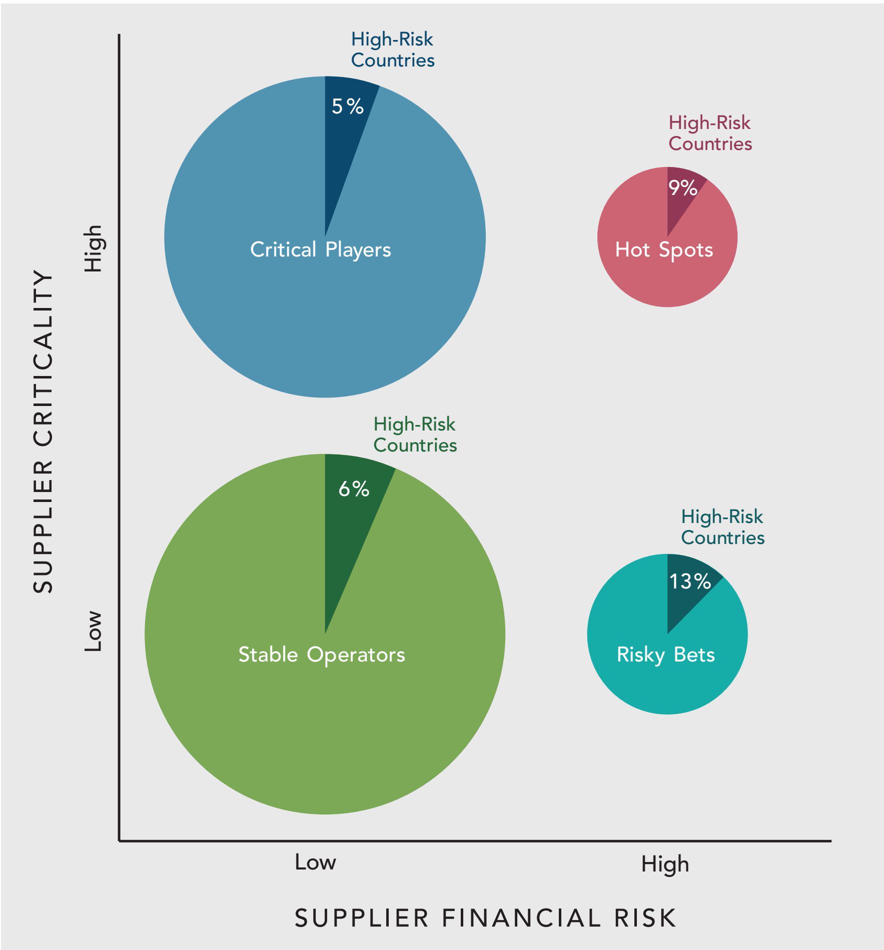
The Supply Chain Risk Grid combines three indicators in a chart to provide a comprehensive overview of risk exposure.

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.

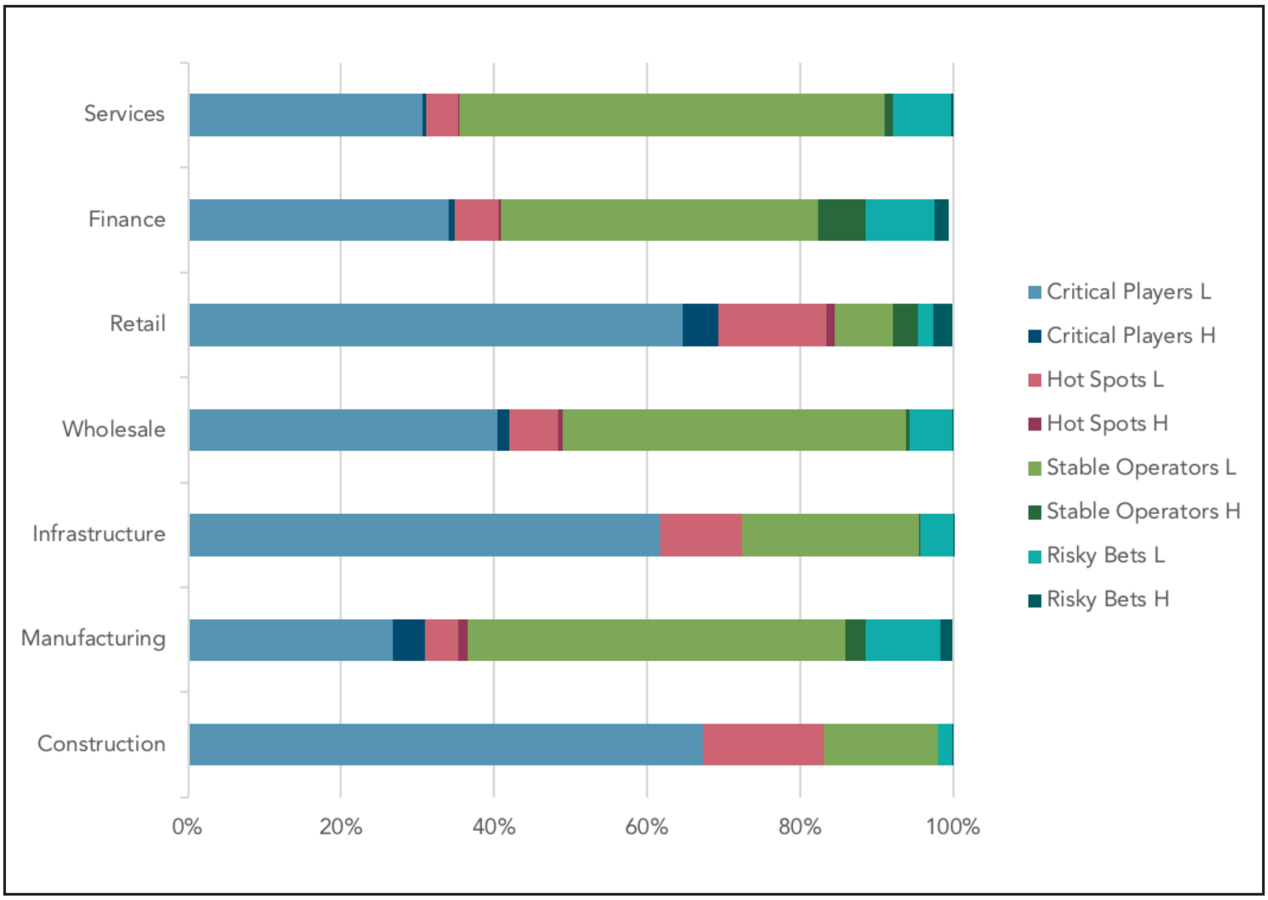
SUPPLY CHAIN RISK GRID[2]



[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 Supplier Financial Risk. Buying companies should carefully check the financial stability of supplier companies in the Hot Spot quadrant, perhaps dual-source to mitigate the risk (which would also reduce Supplier Criticality), and they should consider sourcing from more financially stable suppliers. This particularly applies to retail, where 6% of Hot Spot, 7% of Critical Player, and 55% of Risky Bet suppliers are also located in high-risk countries – which further compounds their risk exposure. Because both construction and infrastructure have very few suppliers in high-risk countries, this is not an issue in those sectors.

On the other hand, the services 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 services sector: 23% of vendors in Hot Spots, 14% of Critical Players, and 15% 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 (37% of suppliers) are Stable Operators, and therefore they have both low Supplier Financial 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.

PRODUCED BY

Prof Emel Aktas – Cranfield School of Management (emel.aktas@cranfield.ac.uk)

Dr Heather Skipworth – Cranfield School of Management (heather.skipworth@cranfield.ac.uk)

Prof Carlos Mena – Michigan State University (cmena@broad.msu.edu)

Dr Farooq Habib – Cranfield School of Management (farooq.habib@cranfield.ac.uk)

DATA

Dun & Bradstreet data for Q2 2019 includes 180,819 buyer–supplier relationships, which informed the calculation of the Supply Chain Risk indices: Supplier Criticality, Supplier 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:

Construction – 10,625 relationships

Manufacturing – 63,371 relationships

Infrastructure – 11,704 relationships

Wholesale – 2,309 relationships

Retail – 3,481 relationships

Finance – 50,373 relationships

Services – 38,956 relationships

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GUIDANCE ON USE

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dun & bradstreet

Marlow International
Parkway, Marlow
Buckinghamshire, SL7 1AJ

+44 (0) 800 001234