S&P Global
Market Intelligence

**Michelle P. Cheong**
Director, Head of CreditPro® Product
Michelle.Cheong@spglobal.com

**CONTACT US**

**Asia-Pacific**
+852-2533-3565

**Europe, Middle East & Africa**
+44-207-176-1234

**The Americas**
+1 877 863 1306

# A Look at Chinese Exporters Amid Tariff Talks

## Supply Chain Linkages

**October 2018**

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Intensifying global trade tensions between China and the U.S. have taken prominence as a key risk factor in Asia. On September 17th 2018, the U.S. announced that it would seek to impose a 10% tariff on $200 billion USD of Chinese goods, further escalating the trade dispute between the United States and China.[1] Economists from S&P Global Ratings forecast that an escalation of the current U.S-China trade dispute could lead to a full blown trade war, which could shave roughly one percentage point off U.S. GDP and six-tenths of one percent for China's GDP [2] by 2021.

As announcements of tariffs continue to hit the news and influence market sentiment, this paper looks at navigating credit risks in an uncertain trade environment, with a focus on the impact on China.

It is organized into five sections:

I. Overview of Analysis
II. Measuring the Direct Impact of Tariffs on Chinese Exporters
III. Assessing Potential Credit Contagion
IV. The Overall Chinese Economy
V. In Summary: Looking Forward

## I. Overview of Analysis

The analysis uses a combination of proprietary credit models and a data set from Panjiva Supply Chain Intelligence, a supply chain research unit at S&P Global Market Intelligence, which provides in-depth trade and shipment data to help capture additional insights. The situation is looked at from a macro, industry, and entity perspective.

[1] Source: "USTR Finalizes Tariffs on $200 Billion of Chinese Imports in Response to China's Unfair Trade Practices", US Office of Trade Representatives September 17, 2018 https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/september/ustr-finalizes-tariffs-200
[2] Source: "Global Trade At A Crossroads: It's Hard To See Any Winners In A U.S.-China Trade War", RatingsDirect® Economic Research, September 5, 2018 https://www.capitaliq.com/CIQDotNet/CreditResearch/SPResearch.aspx?DocumentId=39726155&From=SNP_CRS

**Macro perspective — the direct impact of trade wars on an economy is:**

- Proportionate to one country's exports to another as a percentage of its GDP.
- Affected by trade partner dependence and how quickly firms can switch suppliers and customers to other countries and diversify revenue sources.
- Influenced by exposure to companies that are sensitive to a downturn if the trade wars result in an economic slowdown.

**Industry perspective — supply chains linkages are complex. We simplify the measurement of credit contagion by identifying:**

- Consistently strong correlations between fundamental probabilities of default across industries over multiple credit cycles.
- Credit health of industries prior to tariffs being imposed. Credit contagion was more pronounced within speculative grade rated entities than investment grade rated entities, which are more resilient to industry downturns.
    - S&P Global Ratings classifies entities rated 'B-' and below with negative outlooks or ratings on CreditWatch with negative implications as "weakest links".[3] These entities are often less able to "absorb shocks" when there is a slowdown in industry-wide revenues and profits.
    - S&P Global Market Intelligence models generate a quantitative credit score that statistically matches a credit rating from S&P Global Ratings,[4] and offers an automated solution to assess the credit worthiness of numerous counterparties globally, including those that are unrated. Looking at the percentage of entities scored "b- and below" can help provide a fuller picture on systemic effects.
    - S&P Global Market Intelligence's CreditModel™ is calibrated such that, in large samples, companies scored at "b- and below" are on average as risky as entities rated "B- and below", and are more prone to defaulting when there is a downturn in credit or industry cycles.

**Entity perspective — the impact of trade wars on individual entities will depends on:**

- The level of diversification that exists with a firm's customers and the number of countries that import its goods.
- Credit risk of the company.
- Risk of supplier disruptions of certain input products, where there are few substitutes from other countries.

## II. Measuring the Direct Impact of Tariffs on Chinese Exporters

## A. Chinese Industries Hit By U.S. Tariffs

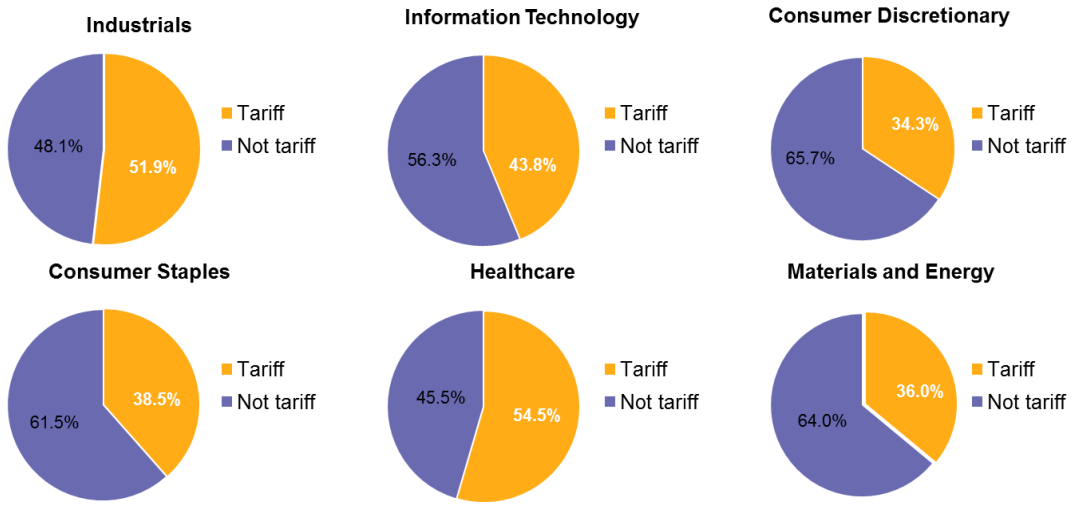
Figure 1 shows the number of industries affected by this latest round of tariffs, as a percent of all industries operating in China.[5] While the earlier tariffs focused on specific sectors (i.e. aluminum and steel), the second set affects a broader base of industries across multiple sectors. About half (51.9%) of the industries in industrials are impacted, and about one third (34.3%) in consumer. This would also affect wages and employment in China.

[3] Source: "Default, Transition and Recovery: Global Weakest Links And Default Rates: Three Emerging Market Financial Institutions Show Increased Default Vulnerability", RatingsDirect®, September 11, 2018.
https://www.capitaliq.com/CIQDotNet/CreditResearch/SPResearch.aspx?DocumentId=39758817&From=SNP_CRS

[4] S&P Global Ratings does not contribute to or participate in the creation of credit scores generated by S&P Global Market Intelligence. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence PD credit model scores from the credit ratings issued by S&P Global Ratings.

[5] A harmonized customs code (HS Code) which is tagged to the goods exported/imported by companies in the Panjiva dataset was used to identify Chinese companies that could potentially be impacted by U.S. tariffs. These Chinese companies hit by tariffs were mapped to the relevant export companies within China via the GICS industry code.

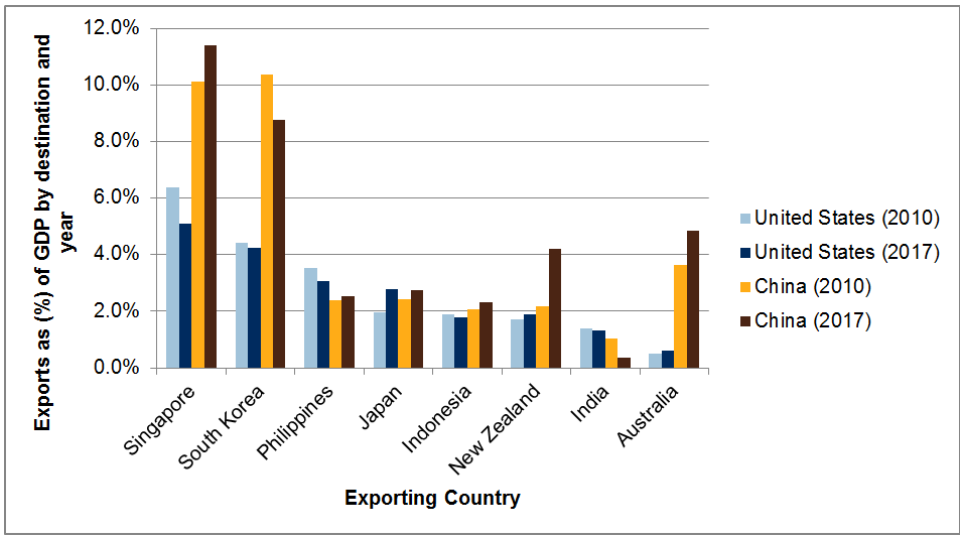
Figure 1: **The Percent of Industries Operating in China Subject to U.S. Tariffs**




Source: Export data from Panjiva.com.as of July 11, 2018. Industry classifications by S&P Global Market Intelligence. For illustrative purposes only.

However, these tariffs are taking place at a time when China is becoming increasingly less dependent on exports, with 80% of Chinese GDP being driven by domestic consumption. And, in recent years, China has become an important export destination for many Asian economies, as well as for Australia and New Zealand. Comparing total exports of these countries as a percentage of their GDP in 2010 versus 2017 (Figure 2) shows a decline in their dependence on the U.S. market, except for Japan and, marginally, for Australia and New Zealand. But exports from these countries to China as a percentage of their GDP have been increasing in most cases, surpassing their exports to the U.S.

Figure 2: **Evolution of Exports to China versus the U.S. as a Percent of GDP**



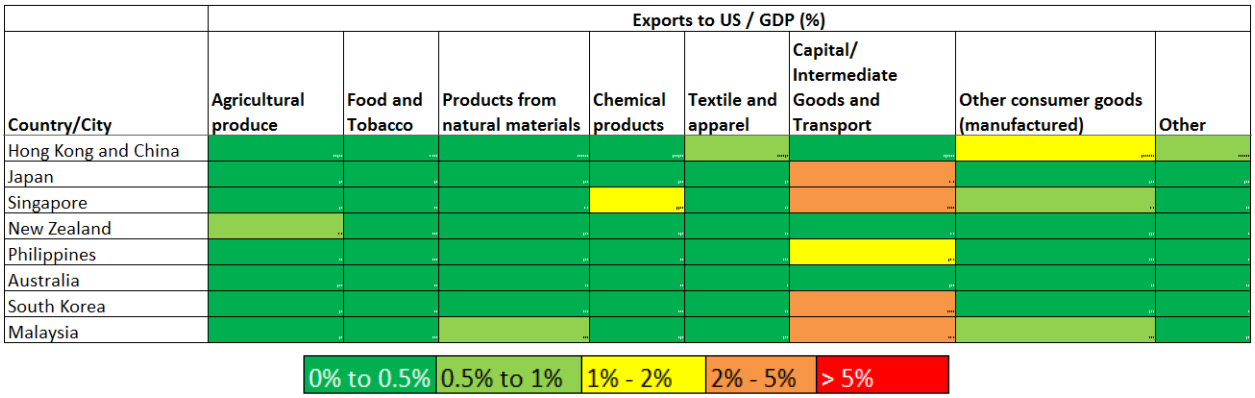

Source: Export data from Panjiva.com. Economic data from S&P Global Market Intelligence, as of July 12, 2018. For illustrative purposes only.

## B. Industry Vulnerability

Hence, the direct impact of these tariffs is manageable in China, even in a scenario where all Chinese goods exported to the U.S. are subject to tariffs. The heat map below (Figure 3) shows exports to the U.S. by sector, where any industry marked yellow, orange, or red will be more significantly impacted. Asian economies are not overly dependent on the U.S. market, with several exceptions:

- Intermediate and capital goods in Japan, Singapore, South Korea, and Malaysia. Which include machinery, machinery parts, and auto parts.
- Consumer goods manufactured in China and Hong Kong. Which include toys, consumer electronics, clothes, gifts, baseball caps, and similar items.

**Figure 3: Exports to the U.S. as a Percentage of GDP by Industry, 2016**




Source: Export data from Panjiva.com. Economic data from S&P Global Market Intelligence, as of May 15, 2018. For illustrative purposes only.

Moreover, most industries in China that are hit by tariffs have diversified revenue sources, with exports going to many countries. So, while U.S. tariffs could certainly hurt earnings and GDP, the downside is somewhat mitigated by revenues from exports to other destinations.

# III. Assessing Potential Credit Contagion

## A. Identifying Industries with High Default Correlations

Prior research by S&P Global Market Intelligence[6] showed that there are industries that are highly correlated in a downturn and, therefore, from a default perspective as well. For example, a decline in infrastructure spending and construction would cause demand and prices for building materials (e.g. cement) to decrease, but it would also cause demand for metals and mining products (e.g. iron and steel) to decrease. Historically, we found that the default risks would increase for both these industries.

To measure default risk, we use two of S&P Global Market Intelligence's credit models. The first fundamental-based view of default risk captures the inherent risk of a firm from its financial standing. The market-based view of default risk is a secondary input used to confirm that these risks are perceived by the markets. Specifically we identified industries that have consistently strong Probability of Default (PD) Fundamentals correlations as those with high credit contagion risks. Most of these industries are exposed to a narrow and correlated set of industry drivers which are relatively volatile across the credit cycle, and are made up of smaller companies that are less capable of diversifying its revenue sources across other industries or geographies. We use Market Signal PDs to confirm that PDs are correlated for these identified industries using market indicators. However, we do not use

[6] Source: Cheong, M. (2014). "Detecting Credit Risks From Industry And Global Credit Risk Spillovers Via Extended Credit Surveillance", white paper from S&P Global Market Intelligence. PD Fundamentals and PD Market Signals are sourced from Credit Analytics from S&P Global Market Intelligence. For illustrative purposes only. As of March 6, 2018.

market signals or hybrid models as our primary metric because stock prices tend to correct in tandem across industries during market corrections, which flags too many false positives.

**Credit Scoring Definitions**

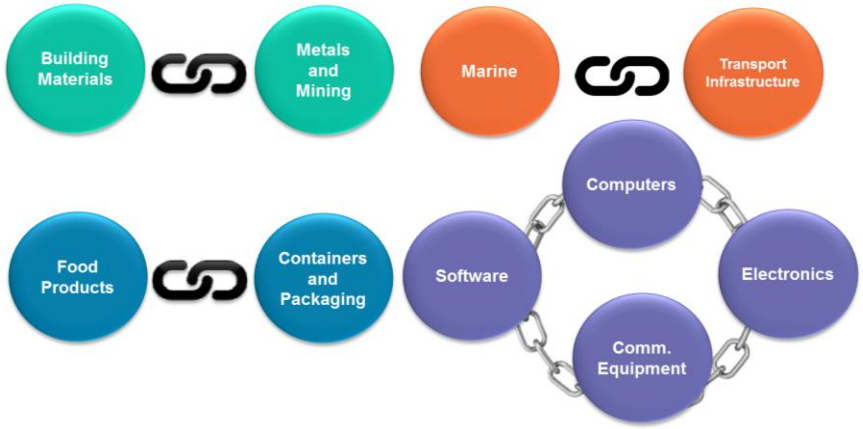
Two primary measures of credit risk are used in this study to score rated, unrated, public, and private entities across the world. Credit scores are developed based on S&P Global Ratings criteria. Our quantitative models provide both a fundamental-based view of default risk to capture the inherent risk of a firm from its financial standing, and a market-based view of default risk to capture emerging risks perceived by the markets.

**PD Model Fundamentals** provides an innovative approach to assessing potential default by looking at financial risk and business risk to measure the likelihood of default of public and private banks, corporations, and REITS over one- to five-year time horizons. The model covers more than 250 countries and 20 segments, regions, and industries.

**PD Model Market Signals** provides a point-in-time view of credit risk for public companies based on our sophisticated equity-driven model that captures equity market sentiment to provide an early-warning sign of potential default between financial reporting periods. The Market Signal PDs are updated daily and cover 64,000+ public companies globally.

*Learn more about these models, as well as our other award-winning credit risk tools and solutions.*[7]

**Figure 4: Industries with Consistent and Statistically Significant PD Fundamental Correlations 2004-2014**




Source: Cheong, M. (2014). "Detecting Credit Risks From Industry And Global Credit Risk Spillovers Via Extended Credit Surveillance", white paper from S&P Global Market Intelligence. PD Fundamentals and PD Market Signals are sourced from Credit Analytics from S&P Global Market Intelligence, as of March 6, 2018. For illustrative purposes only.

It is important to look beyond supply chain linkages to assess their size, leverage, and capital intensity. Credit contagion is more pronounced for companies that have low credit quality even prior to the onset of the industry downturn to begin with, since they inherently already have a lower ability to absorb industry and economic shocks. This translates to a higher average observed (actual) default rates and default correlations during the downturn of the cycle for speculative rated entities issued by S&P Global Ratings.

[7] S&P Global Market Intelligence Sweeps Up Three 'Inside Market Data' Awards Including 'Best Reference Data Provider', https://www.spglobal.com/marketintelligence/en/media-center/press-release/sp-global-market-intelligence-sweeps-up-three-inside-market-data-awards-including-best-reference-data-provider-, 29th May 2018.

## B. An Example of the Impact of a Downturn on Default Correlations

Looking at the technology sector during the dot-com bubble implosion provides an example of what can happen in an industry downturn. S&P Global Market Intelligence's CreditPro® database shows that, on average, observed default correlations across industries from one year to the next are about 0.9%. In Figure 5 below, correlations remained close to normal when the tech bubble burst for those industries in green, more than doubled for those in yellow, and increased by more than fivefold for those in red.

Figure 5: **Observed One-Year Industry Default Correlations of All Technology Companies 1999-2002**

| Industry | Internet Software & Services | Semiconductors & Semiconductor Equipment | Diversified Telecommunication Services | Wireless Telecommunication Services | Electronic Equipment, Instruments & Comp | Internet & Direct Marketing Retail | Communications Equipment | Software | Technology Hardware, Storage & Peripherals | Media |
|---|---|---|---|---|---|---|---|---|---|---|
| Internet Software & Services | | | | | | | | | | |
| Semiconductors & Semiconductor Equipment | | | | | | | | | | |
| Diversified Telecommunication Services | | | | | | | | | | |
| Wireless Telecommunication Services | | | | | | | | | | |
| Electronic Equipment, Instruments & Comp | | | | | | | | | | |
| Internet & Direct Marketing Retail | | | | | | | | | | |
| Communications Equipment | | | | | | | | | | |
| Software | | | | | | | | | | |
| Technology Hardware, Storage & Peripherals | | | | | | | | | | |
| Media | | | | | | | | | | |

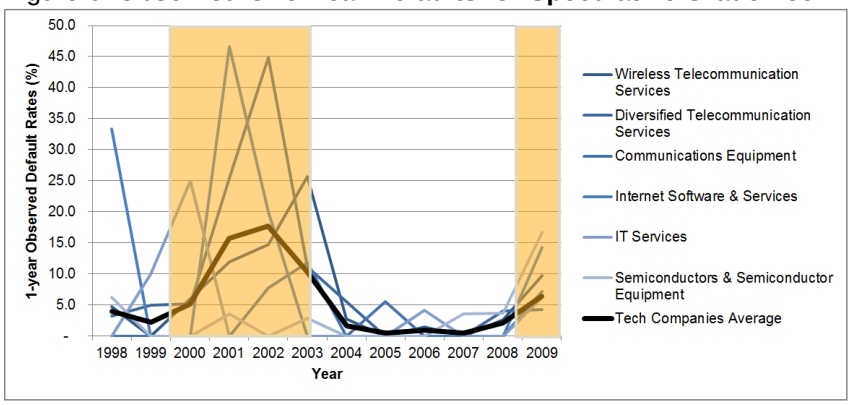
0% to 0.5% | 0.5% to 1% | 1% - 2% | 2% - 5% | > 5%

Source: CreditPro historical default database from S&P Global Market Intelligence, as of May 17, 2018. For illustrative purposes only.

By restricting the sample to speculative grade companies, more of these boxes would turn red. So, in general, entities rated as speculative grade are more vulnerable to credit contagion than larger, more diversified and well-funded investment grade entities. This played out in the last global financial crisis when the number of defaults in 'B-' rated entities rose from 7.8% to 21%, and the number of defaults in 'CCC+' to 'CCC-' entities rose from 25% to 48%. Consequently, companies scored 'b-' and below by S&P Global Market Intelligence's credit models are also at higher risk of default during industry downturns and shocks to the economy.

We can see this play out in the observed default rates entities rated speculative grade by S&P Global Ratings (bold black line Figure 6) spiked sharply during the dot-com bubble implosion and during the global financial crisis (marked in orange), and continued to persist for a year or so.

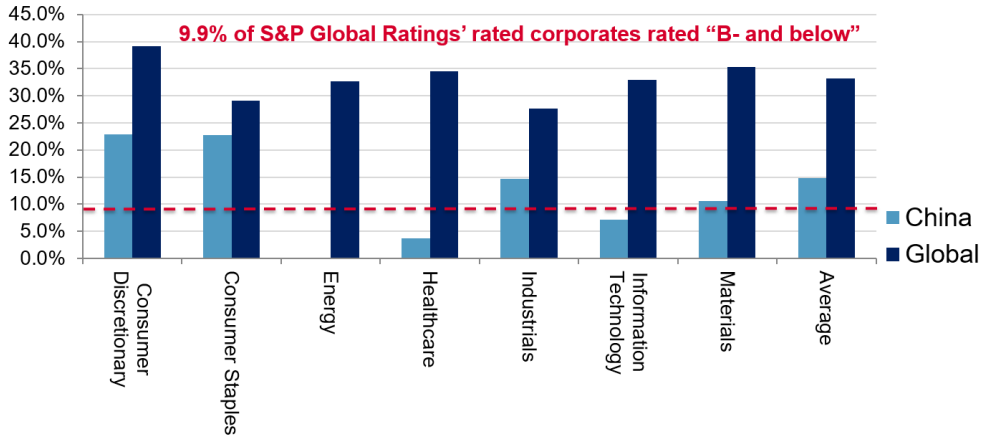
Figure 6: **Observed One-Year Defaults for Speculative Grade Technology Companies 1998-2009**




Source: CreditPro historical default database from S&P Global Market Intelligence as of May 17, 2018. For illustrative purposes only.

Fortunately, based on this metric, Chinese exporters are well positioned to weather the tariff storm relative to their global peers (Figure 7). But, this means that corporates globally are at risk should tariffs cause a global economic slowdown. Outside of China, one in five corporates are in the "b- and below" category and will see default spikes if there is a shock to the economy or a specific industry.

Figure 7: **Percent of Entities with CreditModel™ Scores at 'b-' and Below**



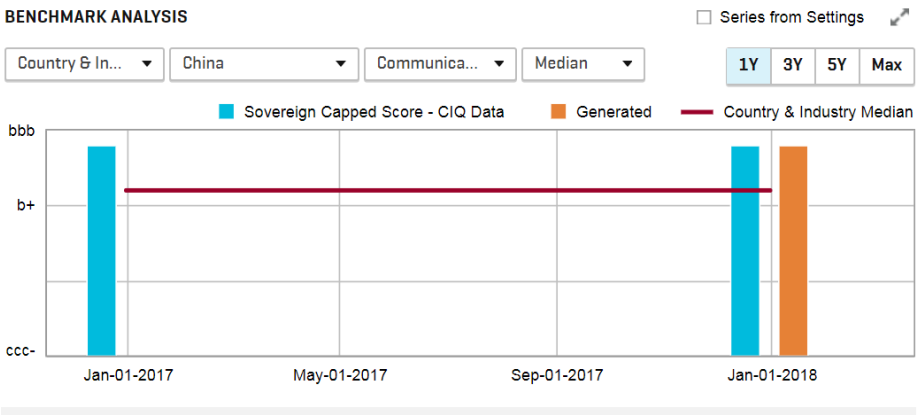

Source: Export data from Panjiva.com as of July 23, 2018. CreditModel Scores are sourced from Credit Analytics from S&P Global Market Intelligence, as of August 17, 2018. S&P Global Ratings does not contribute to or participate in the creation of credit scores generated by S&P Global Market Intelligence. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence credit model scores from the credit ratings issued by S&P Global Ratings. For illustrative purposes only.

## C. A Look at Companies

Using the Panjiva data to analyze customer concentration risk shows that companies within China have a fairly diversified customer bases across the globe, with a few exceptions where firms are highly exposed to the U.S. market. Some of these cases are actually operating subsidiaries of American companies. Here, the risk is less about defaulting on debt obligations and more about whether tariffs could cause the parent company to shut down operations in China and move the manufacturing arm elsewhere.

Examining a scenario of a one-year decline of 50% in revenues for an investment grade and speculative grade entity helps compare the resilience of both types of firms. Assuming the company has a credit score of 'bbb-' based on our methodology, as long as it continues to have positive profits the credit score remains the same (compare the orange bar on the right with the blue bar next to it) and the one-year historical PD remains a manageable 0.24% (Figure 8).

Figure 8: **Scenario Analysis of a Technology Company in China with a 50% Decline in Revenues, Credit Score 'bbb-'**[8]

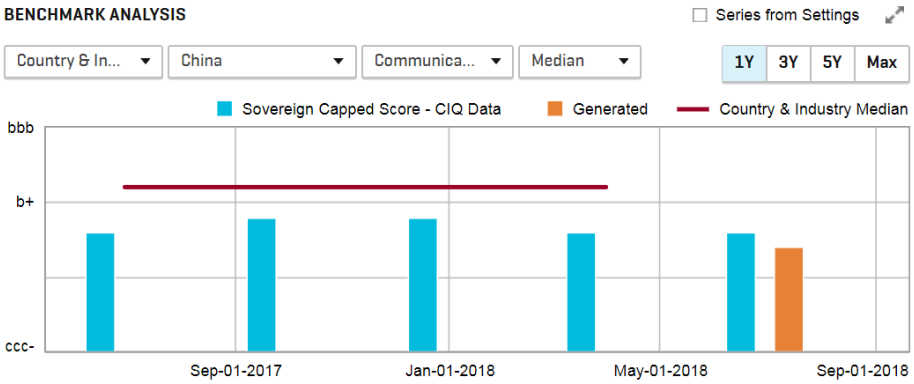



Source: CreditModel Scores are sourced from Credit Analytics from S&P Global Market Intelligence, as of September 18, 2018. S&P Global Ratings does not contribute to or participate in the creation of credit scores generated by S&P Global Market Intelligence. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence credit model scores from the credit ratings issued by S&P Global Ratings. For illustrative purposes only.

[8] Huawei Culture Co., Ltd. (SZE:002502) https://www.capitaliq.com/CIQDotNet/company.aspx?companyId=46299812

Alternatively, this company with a 'b-' score (Figure 8) was making financial losses even before the trade tariffs. The same 50% decline in revenues would cause its CreditModel score to deteriorate by two notches and the one-year PD shoot up to 20.9% (compare the orange bar on the right with the blue bar next to it). This company is less likely to be able to service its debt obligations if the tariff war plays out. Looking at the over-the-counter (OTC) universe of firms, it is important to note that some highly leveraged pre-IPO companies have a PD Fundamental score are scored at 'ccc+' and below; and highlights that the need to analyze the creditworthiness and resilience of individual entities within your portfolios to tariff wars and resultant supply chain disruptions.

Figure 9: **Scenario Analysis of a Technology Company in China with a 50% Decline in Revenues, Credit Score 'b-'**

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## IV. Overall Chinese Economy

If a slowdown occurs in the Chinese economy and there is a worsening of consumer sentiment that impacts consumption, the consumer discretionary and consumer staples sectors will be at highest risk of default. Companies here are smaller than global capital goods and technology manufacturers, and have less sophisticated risk management systems.

If a slowdown is experienced globally, it could result in a spike in defaults in countries outside of China. Within Asia, the materials and consumer discretionary sectors are most at risk of defaults, with 31% of these companies scored at 'b-' and below. As a reference, approximately 19% of entities globally are scored at 'b-' and below. At the country level, South Korea appears to be vulnerable, with most of its sectors having more than 20% of their entities scored 'b-' and below.[9]

Figure 10: **Country and Sector Heat Map of Percent of Credit Scores at 'b-' and Below**

| Sector | Australia | Hong Kong | Indonesia | Malaysia | New Zealand | Philippines | Singapore | Thailand | Vietnam | South Korea | Japan | % "b- and below" within Sector |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Consumer Discretionary | 25% | 31% | 34% | 10% | 10% | 6% | 38% | 21% | 19% | 44% | 2% | 31% |
| Consumer Staples | 20% | 34% | 19% | 11% | 17% | 13% | 13% | 32% | 16% | 29% | 0% | 18% |
| Energy | 13% | 32% | 39% | 37% | 25% | 50% | 35% | 20% | 38% | 5% | 0% | 23% |
| Financials | 1% | 0% | 13% | 0% | 3% | 0% | 0% | 0% | 8% | 2% | 0% | 2% |
| Healthcare | 11% | 27% | 0% | 0% | 21% | | 18% | 14% | 0% | 34% | 2% | 23% |
| Industrials | 21% | 22% | 26% | 14% | 9% | 7% | 18% | 13% | 26% | 26% | 3% | 19% |
| Information Technology | 10% | 15% | 0% | 18% | 33% | 50% | 10% | 0% | 25% | 24% | 2% | 17% |
| Materials | 31% | 18% | 38% | 24% | 36% | 50% | 38% | 17% | 23% | 41% | 0% | 31% |
| Telecommunication Services | 18% | 0% | 13% | 0% | 25% | 0% | 20% | 0% | | 57% | 0% | 16% |
| Utilities | 4% | 5% | 0% | 13% | 7% | 0% | 0% | 11% | 0% | 10% | 0% | 6% |
| % "b- and below" within country | 19% | 23% | 26% | 15% | 13% | 11% | 23% | 16% | 21% | 33% | 2% | 23% |

Below 10% | Between 10% and 20% | Above 20%

[9] Note: The relatively small size (e.g. total assets) of the South Korean sample can lead to more companies scored at "b- and below", results still hold on a size-adjusted basis, with leverage being a key factor driving these results

Source: CreditModel Scores are sourced from Credit Analytics from S&P Global Market Intelligence, as of August 21, 2018. S&P Global Ratings does not contribute to or participate in the creation of credit scores generated by S&P Global Market Intelligence. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence credit model scores from the credit ratings issued by S&P Global Ratings. For illustrative purposes only.

## V. In Summary: Looking Forward

Even with the latest round of tariffs imposed by the U.S., industries within China on the whole are likely to withstand the negative shocks. Most major Chinese exporters subject to tariffs have diversified revenue sources outside the U.S. While it is unavoidable that revenues could deteriorate, the risk of credit contagion in the country is manageable.

Tariffs could affect smaller companies in China with concentrated U.S. suppliers and customers, however, as well as those that are highly leveraged. Firms that are high credit risks scored at ‘b-’ and below in cyclical industries could be affected if a trade war is prolonged. But, with total export revenues to the U.S. contributing about 3% to China’s GDP, the long-term impact should be contained.