

A photograph of several white surgical masks with elastic ear loops, scattered on a dark wooden surface. The masks are partially overlapping, and the lighting creates soft shadows. A semi-transparent red banner is overlaid at the bottom of the image.

Supply Chain Stress

February 2020

Executive Summary

- **Coronavirus Fallout**– Some companies have already seen an impact on their business, while others are unsure about the potential impact to their supply chains. The virus may lower China’s Q1 GDP by over 1.5%.
- **China Exposure**– China accounts for over 50% of some US-based companies’ revenue and significantly more for Asia-based shipping companies. Prolonged shutdowns, will likely have a material impact.
- **Air Freight Capacity**– Peak season rates are expected as commercial air travel, which typically moves 45% of air freight grinds to a halt.
- **Supply Risk**– Procurement and Supply Chain professionals should review their value chain and identify safety stock levels for single and sole-sourced components originating in China.
- **Supplier Financial Risk**– Companies will undergo varying degrees of stress if China volumes drop by 50% over the next few months. Public and Private suppliers’ financials should be reviewed to determine exposure to China, cash reserves, and available means of mitigation.

1. Background & Supplier Impact

2. Cost & Capital Supplier Risk Approach

3. Reference Cases

Recent Statements Regarding China Risk

Some companies have already seen an impact on their business, while others are unsure about the potential impact to their supply chains.

How the virus impact evolves would have an impact on 2020 performance, not just from a **demand perspective, but potentially the global supply chain** as well. And the whole team is working diligently to have contingency plans in place should this become a more serious situation.

- Dhivya Suryadevara, CFO GM (Feb 5)

We are experiencing a slower return to normal conditions than we had anticipated. **We do not expect to meet the revenue guidance we provided** due to supply constraints and reduced demand in China.

- Apple Letter to Shareholders (Feb 17)

For people not to think that it would not be a negative short term, I don't think they're thinking straight. It will be a negative. **It will be a negative for the global economy.** It will be, potentially, bigger if it drags on a long time.

- David Farr, CEO Emerson Electric (Feb 5)

Let me comment on the impact of the coronavirus. While it is still early and the ultimate effect is difficult to estimate, we have **reduced our Q1 revenue outlook by \$100 million** to account for the potential impact.

- Colette Kress, CFO NVIDIA (Feb 13)

Will it spillover to Europe and NA? I think that's a big unknown. **The longer there is production disruption in China, the more risk it poses on global OE production.** So, there's a lot of uncertainty around that at the moment.

- Kevin Nowlan, CFO BorgWarner (Feb 13)

China has reduced [air passenger/freight] capacity by 70%; **that is money, that is revenue.**

- Ihssane Mounir, SVP Sales Boeing (Feb 12)

The **wider-than-normal guidance range is to help account for the uncertainty** associated with the evolving coronavirus situation. We are still in the early days of how this situation is playing out. We have no way to model how the rest of the quarter will play out for the coronavirus situation, and what the consequent business impact may be. But we believe that our guidance range incorporates our best judgment for the possible scenarios.

- Steve Sanghi, CEO Microchip Technology (Feb 4)

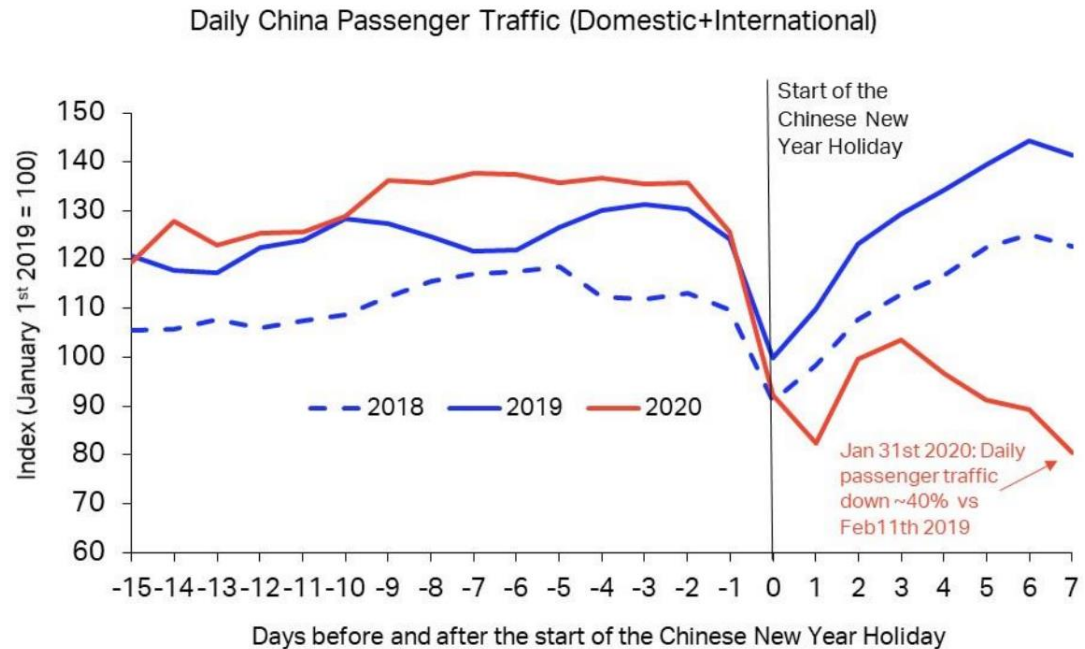
As for the pause from China, actually, because of the lead time, the supply situation may differ. However, in any case, there is a certain amount of inventory for each parts and the level differ by the parts and components. We are doing the close investigation and confirmation, so we do not have the -- **we cannot say when the production stops.**

- Seiji Kuraishi, COO Honda (Feb 7)

Air Freight Capacity & Pricing

Peak season rates are expected as commercial air travel, which typically moves 45% of air freight grinds to a halt.

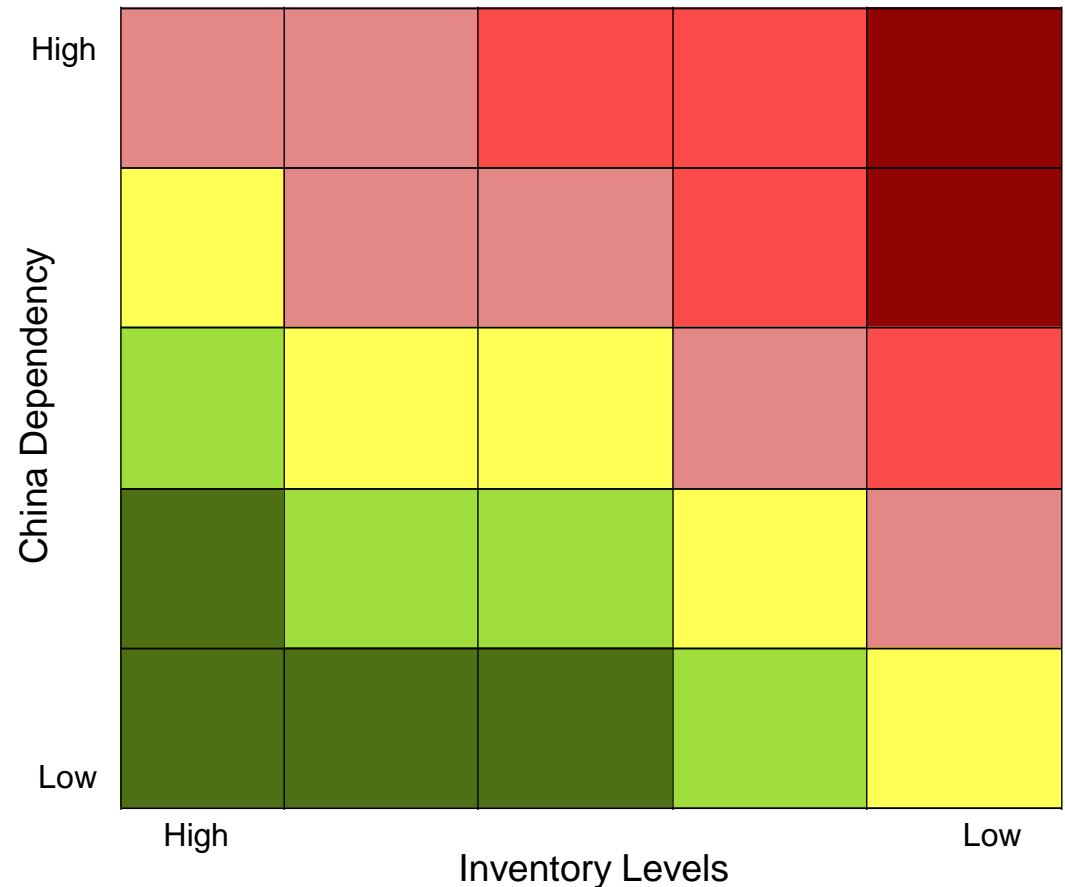
- Air travel typically contracts around the Lunar New Year and returns to normal levels within a week
- By late January, commercial flights did not rebound and were 40% lower than the comparable period in 2019
- Capacity continued to contract to 60-70% below 2019 levels by mid-February
- Peak season air freight rates are expected, as commercial airlines typically move 45% of air freight



Supply Shortage Risk

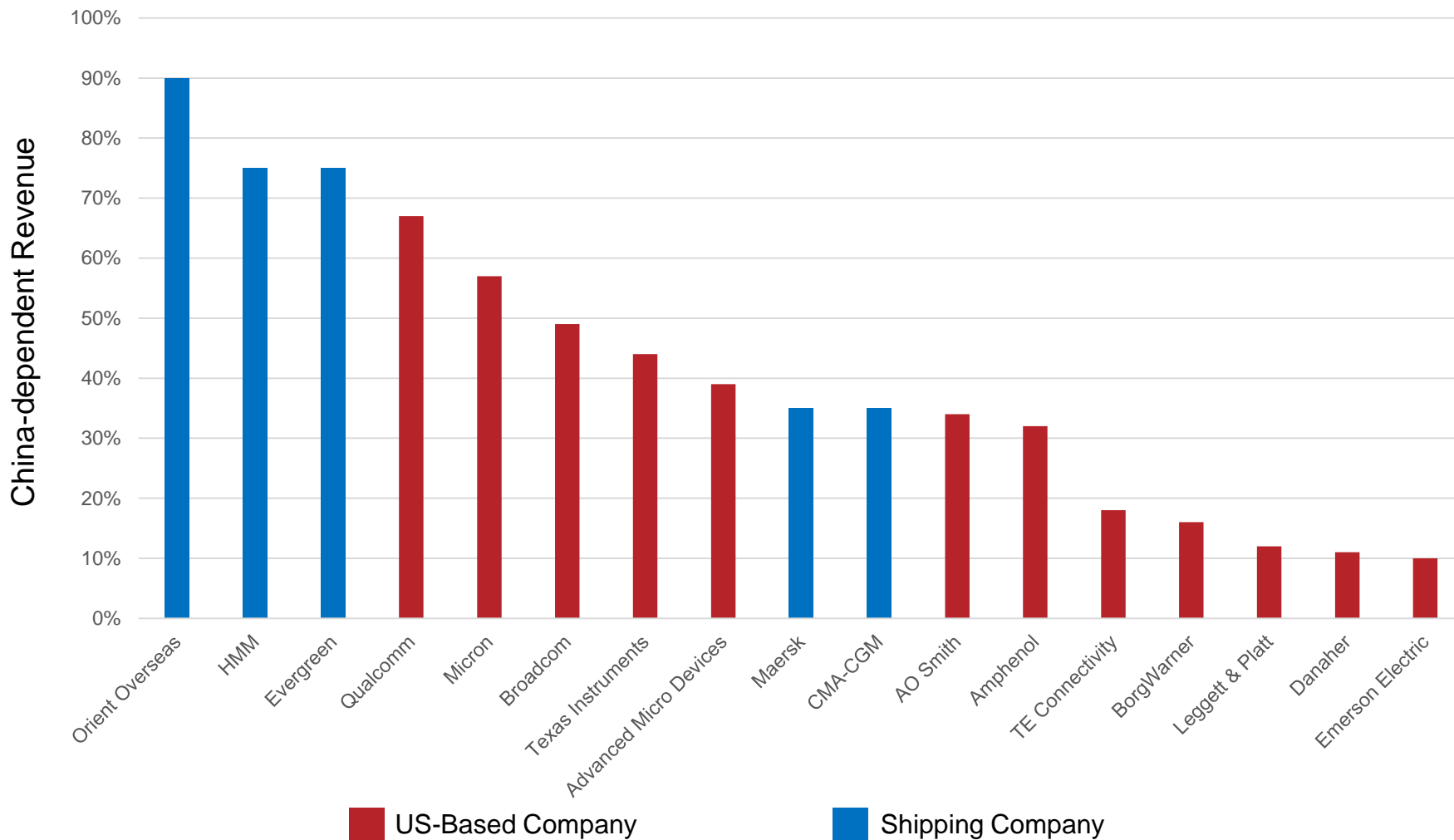
Companies should review their supply base for critical components that depend upon China and have low safety stock levels.

- Resources should be focused on major suppliers as well as suppliers that provide supply-critical components
- Working with manufacturing and engineering highlights critical components
- Working with supply chain highlights limited sources for critical components
- Efforts should be narrowed to the most critical suppliers



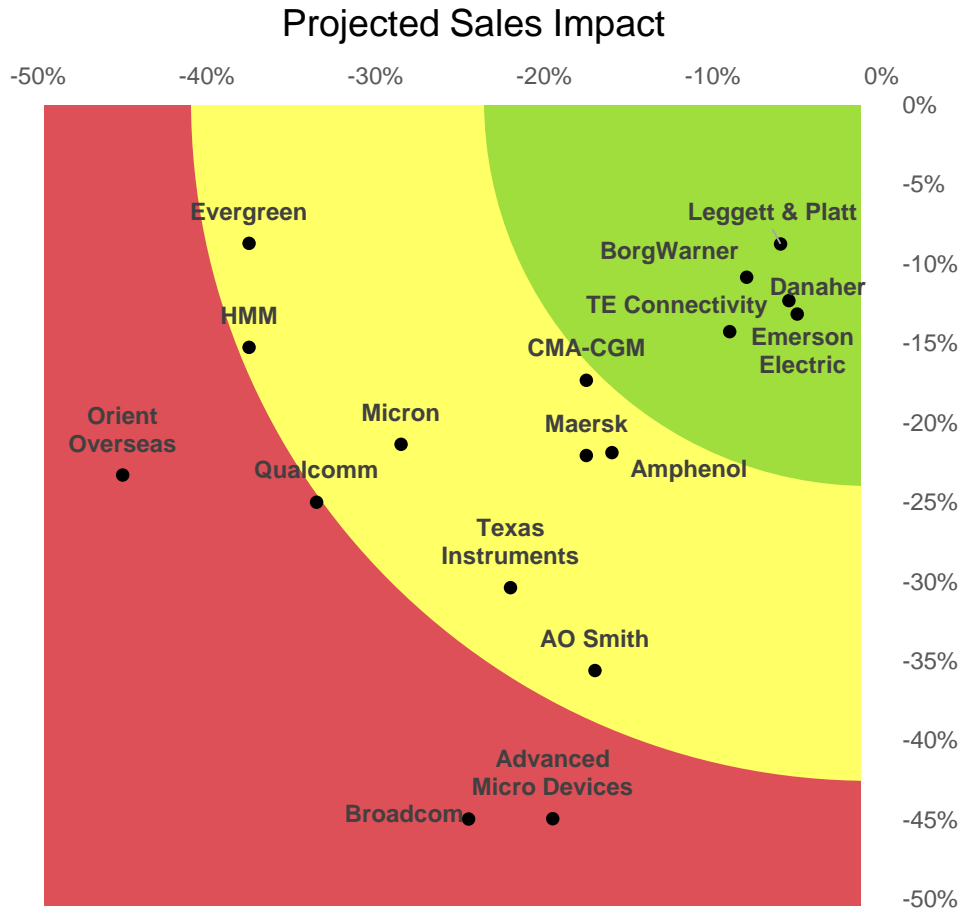
China Share of Company Revenue

China accounts for over 50% of some US-based companies' revenue and significantly more for global shipping companies.



Production Cut Analysis

Companies will undergo varying degrees of stress if China volumes fell by 50% over the next few months.

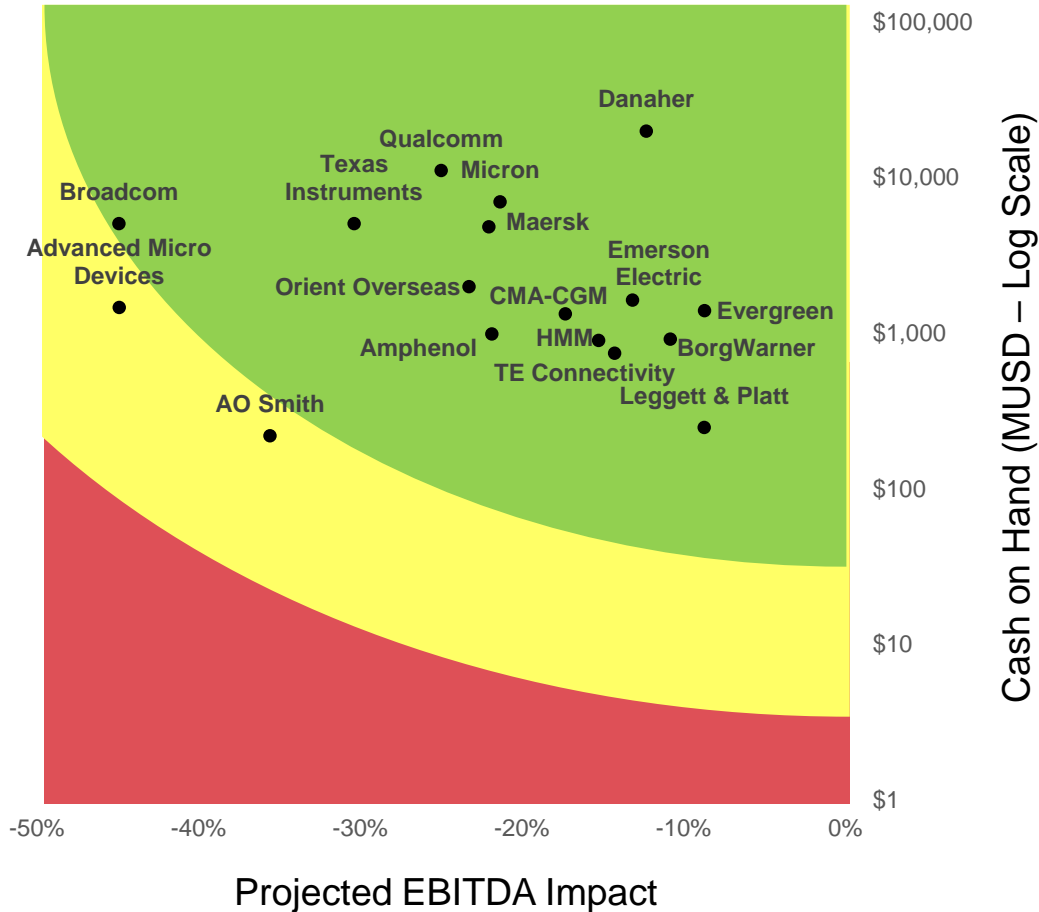


Projected EBITDA Impact

- A significant and prolonged decline in China operations and revenue sales would have a material impact
- AMD & Broadcom would see the largest impact on EBITDA while Orient Overseas, HMM, and Evergreen impact on sales
- Companies could incur additional charges if they are forced to reduce staffing levels or expedite shipments

Production Cut Analysis

Companies will undergo varying degrees of stress if China volumes fell by 50% over the next few months.



- Compared to the peer group, AMD and AO Smith have less of a cash cushion on hand
- Companies that need to raise additional capital may risk violating credit covenants

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Risk Identification

Risk Assessment

- Review financial statements and analyze key metrics determine level of supplier risk
- Rank suppliers in terms of potential short term and long term stress
- Identify actions to address with the supply base, depending on level of risk

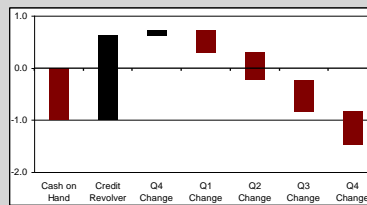
Cash Burn Walk Chart

Why: Based on the revenue and fixed cost assumptions, the model estimated the quarterly cash burn rate for each supplier

What to discuss with the supplier: The assumptions estimate reduced revenue based on exposure to GM, Chrysler, and automotive in general. Discuss revenue projections, specific programs and new business awards. If they show a near-term default (cash below 0) determine what steps they are taking to secure additional cash i.e. debt, selling assets, etc.

How to Calculate: The model uses the supplier's most recent revenue, EBIT and fixed asset numbers to estimate forward quarterly revenue and costs resulting in quarterly cash flows

Sample Cash Burn Walk Chart



Supplier Detail Report – ArvinMeritor

Summary

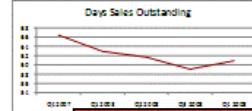
- ArvinMeritor will not be able to manage reduced volumes with their current access to liquidity
- Already highly leveraged, ArvinMeritor will need to look to bankruptcy protection

Constraints Analysis



Supplier Detail Report – ArvinMeritor

Working Capital Performance

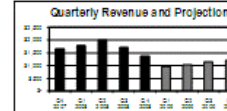


Uses of Cash for 2009

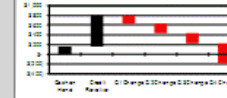


Supplier Detail Report – ArvinMeritor

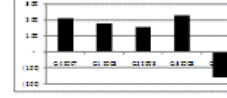
Diagnostics



Cash Position



Debt / (Debt + Equity)



Cash Metrics

LT Debt / Equity	1.21
Current Portion of LT Debt / Equity	0.21
Current Ratio	0.98
Quick Ratio	0.28
LT Debt / Trailing EBITDA	4.03
Projected Change in Cash / Revenue for 2009	-42.7%
LT Debt Due in One Year	0.21
Cash Requirement for 2009 / Cash on Hand	91.8%
Percent of Cash Requirement as Credit Cash and Cash Equivalents (\$M US)	155

Volume Metrics

Percent of Non-Distressed Customers	0.2%
Projected Q1 2009 Volume vs. Q4 2008	70.8%
Total 2009 Volume vs. 2008 Volume	82.2%

Operating Metrics

COGS / Sales	64.7%
SG&A / Sales	7.2%
R&D / Sales	0.0%
CAPEX / Sales	0.2%
Operating Margin	-2.2%
D50	0.0
D90	0.0
D50 / D90	0.0
Days of Inventory	-425
Fixed Asset Turnover	1.4

Page 22

Cost & Capital

Supplier Engagement

Supplier Interviews

- Determine proper topics to address for both public and private suppliers to gauge financial risk
- Quantify supplier initiatives to reduce cash burn rates to maintain solvency
- Identify ownership structures and financing for private companies
- Calculate credit revolver covenants and understand supplier cash consequences for default
- Apply standard templates to collect financials from private suppliers

Enter Data in millions

P&L Data	Q1 2009	Q4 2008	Q3 2008	Q2 2008	Q1 2008	Q4 2007
Revenue						
COGS						
Depreciation						
EBIT						

Balance Sheet Data	Q1 2009	Q4 2008	Q3 2008	Q2 2008	Q1 2008	Q4 2007
Cash and Equivalents						
Accounts Receivable						
Inventory						
Total Current Assets						
Accounts Payable						
Current Portion of Long-Term Debt						
Total Current Liabilities						
Long Term Debt						
Equity						

Cash Flow Data	Q1 2009	Q4 2008	Q3 2008	Q2 2008	Q1 2008	Q4 2007
Net Income						
Depreciation						
Changes in Working Capital						
Cash Flow - Operating Activities						
CAPEX						
Debt - Net Issuance						
Cash Flow - Financing Activities						
Net Change in Cash						

Financials

Customer mix

Enter the amount of sales to the following industries in terms of a percent

Select industry from the drop down and include a percentage	0%
1	0%
2	0%
3	0%
4	0%
Other	0%

Customer Mix

Document all covenants

Document source of liquidity
(i.e. financial institution, private investors, etc.)

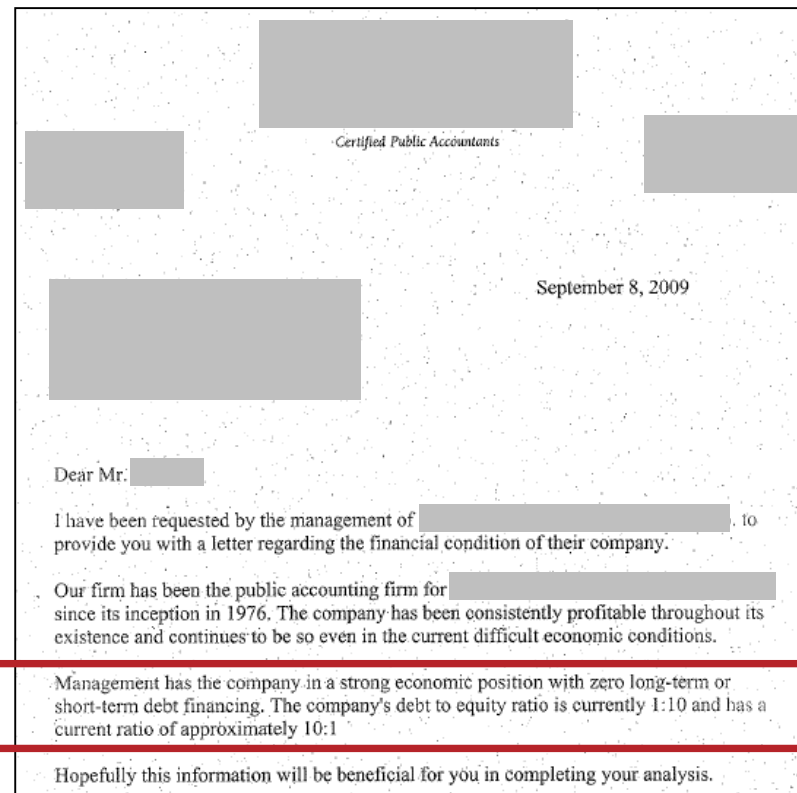
Liquidity

Private Supplier Assessment

Gut Check Data Received

- Suppliers may view this data request as unimportant and simply provide information to make the problem go away
- Thus, the materials provided will likely have unintentional missing information, incorrect information, or contradictory information

Examples



Supplier Engagement

	Liquidity	Viability	Volume
What to Ask	<ul style="list-style-type: none"> • Credit covenants • Sources of short term cash • Ownership of equity and their access to capital 	<ul style="list-style-type: none"> • Manufacturing footprint (e.g. China components) • Stability of contracts • Sole sourced components 	<ul style="list-style-type: none"> • Capacity reduction • Cash management • Safety stock levels
Key Data	<ul style="list-style-type: none"> • Interest Coverage • CAPEX limits 	<ul style="list-style-type: none"> • Quantify initiatives and timing for cost reduction activities such as SG&A reduction, plant consolidation and business segment disposition 	<ul style="list-style-type: none"> • Cash Conversion Cycle • Working capital initiatives

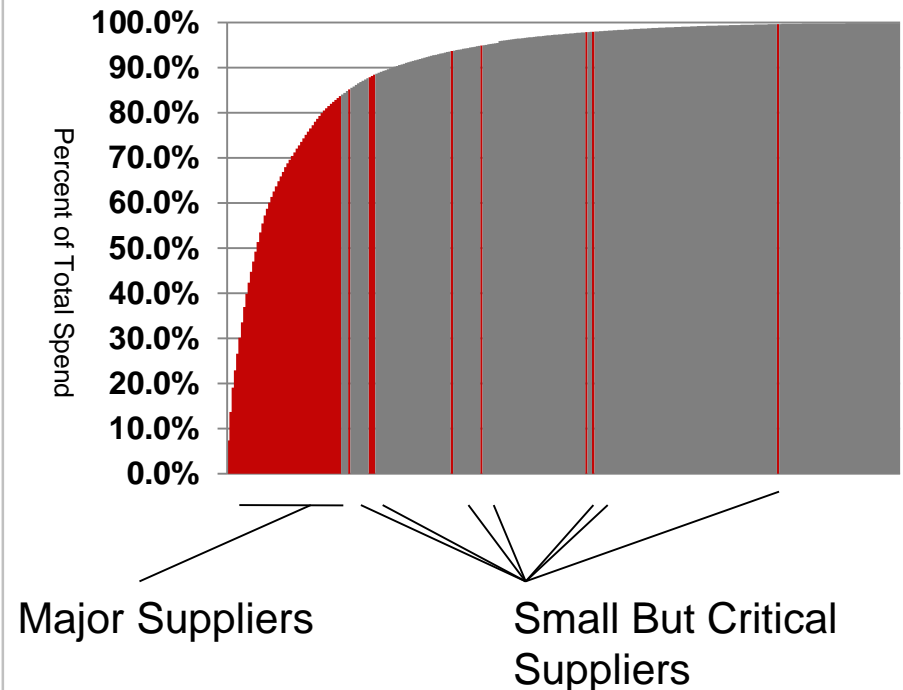
Supplier Prioritization

Risk assessment can be prioritized for large as well as small but critical suppliers.

Prioritized Approach

- Resources should be focused on major suppliers as well as suppliers that provide supply-critical components
- Working with manufacturing and engineering highlights critical components
- Working with supply chain highlights limited sources for critical components
- Efforts should be narrowed to the most critical suppliers

Supplier Focus by Spend



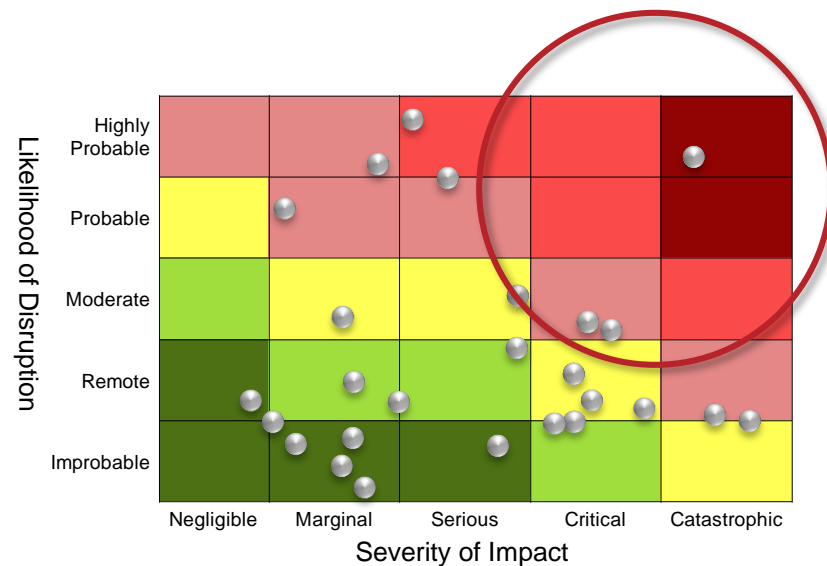
Risk Management Playbook

Developing counter measures for the riskiest suppliers

Focus Area

- Cost and Capital will work to develop risk mitigation playbooks for the identified high-risk, high-impact suppliers
- For each identified supplier, a specific contingency roadmap will be created with event triggers and defined countermeasures

Criticality Matrix



Private Supplier Process

Cost & Capital's private supplier evaluation



- Use the Cost & Capital template for P&L, Balance Sheet and Cash Flow

- Evaluate submission and calculate key ratios
- Assess liquidity position
- Gauge risk due to customer mix

- Interview CFO or controller to add detail behind the submitted template

- Generate risk profile for supplier

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1. Background & Supplier Impact
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Cost & Capital Partners Introduction

- **Cost & Capital Partners focuses on the two most critical levers for shareholder value today - Cost Efficiency and Capital Efficiency**
 - Cash should be treated as the valuable resource it is
 - Spend management preserves cash
 - Capital efficiency frees cash trapped in traditional operations
- **We deliver results – not just recommendations, each and every time**
 - We stand behind our recommendations and prefer to be involved in implementation
 - We conduct negotiations on behalf of our clients
 - We are passionate about our work and the results
 - We work with our clients to implement the changes required to improve the business

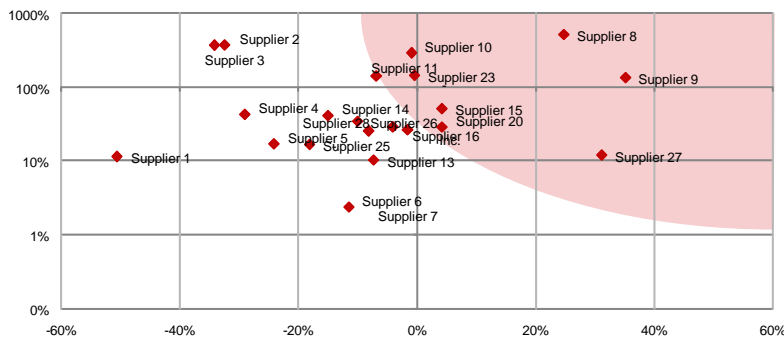
Previous project work



Reference Case

Risk Management

Packaging – Chemicals



Engagement Overview

- Cost & Capital was asked to review risk factors for packaging suppliers for a maker of lawn and garden care products
- The team analyzed and audited packaging suppliers to determine the level of risk in the supply chain due to financial strain, capacity and cost reduction initiatives
- Suppliers were segmented into low, medium, high and critical risk suppliers
- Detailed agendas were created to engage the suppliers and develop risk mitigation plans

Reference Case

Risk Management

Supplier Risk Management – Industrial Equipment

Rating	Financial Ratio	Value	Comment
	Annual Volume Change	(13.0%)	
	EBITDA Margin	1.5%	Very low cash generation from operations
	Debt to Assets	NA	5.1MM debt (25% of sales)
	Debt to Equity	(0.83)	Negative equity levels suggest financial distress
	Debt Due in One Year	31.9%	Large debt principal payment due in next 12 months
	(Cash + Credit) / Revenue	(0.5%)	No cash on hand and company did not disclose available credit line
	Current Ratio	1.53	Working capital ratios show signs of financial distress
	Interest Coverage Ratio	< 0	
	Debt to EBITDA Ratio	14.41	
	Quick Ratio	0.63	

Engagement Overview

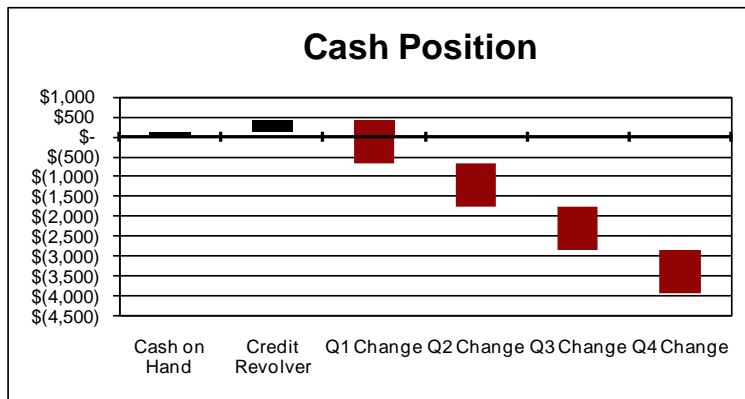
- A global industrial company needed to assess several dozen private suppliers for financial risk
- Templates were distributed to the suppliers and interviews were conducted to determine key operating and cash metrics
- Second round interviews were held to uncover any inconsistencies in data that was submitted
- Suppliers' financial risk was ranked and reported to management and risk mitigation plans were developed

Annual Volume Change	EBITDA Margin	Debt to Assets	Debt to Equity	Debt Due in One Year	(Cash + Credit) / Revenue	Current Ratio	Interest Coverage Ratio	Leverage Ratio (Debt / LTM EBITDA)	Quick Ratio	Assessment
(13.9%)	7.2%	1.35	(3.39)	18.8%	(0.6%)	1.70	1.61	5.65	1.09	Critical
(13.0%)	1.5%		(0.83)	31.9%	(0.5%)	1.53	<0	14.41	0.63	Probable
(43.0%)	3.5%				4.4%	2.80	5.00		1.54	Moderate
(39.6%)	5.4%	1.56	(2.80)	57.1%	1.7%	0.71	1.94	5.35	0.44	Moderate
(15.3%)	0.6%	0.61	1.54	9.5%	10.4%	1.56	0.43	18.50	0.94	Moderate
(26.1%)	9.7%	0.14	0.16	41.7%	0.0%	0.61	8.59	0.55	0.29	Remote
(9.7%)	(8.6%)	0.47	0.87	0.7%	29.7%	1.14	<0	<0	0.51	Remote
6.4%	6.2%	0.44	0.79	19.9%	4.6%	1.19	7.08	1.06	0.73	Remote
(13.3%)	2.8%	0.21			9.0%	3.40			1.33	Remote
(26.5%)	1.3%	0.40	0.66	0.2%	4.1%	2.83	1.46	6.90	1.67	Remote
		0.00	0.00	NA	1.5%	3.66	NA	NA	2.16	Remote
(45.2%)										Remote
(10.7%)	2.4%	0.00	0.00	NA	4.4%	10.48	NA	0.00	7.14	Remote
(33.3%)	0.7%	0.15	0.17	3.8%	27.6%	1.83	NA	3.64	1.06	Remote
(21.1%)		0.00	0.00	NA	18.9%	4.11	NA	NA	3.07	Improbable
(40.0%)		0.00	0.00	NA	6.3%		NA	NA		Improbable
(11.1%)		0.06	0.06	100.0%	36.1%	1.56			1.20	Improbable
(18.2%)	3.9%	0.00	0.00	NA	7.5%	1.96	13.33	0.00	1.18	Improbable
(31.1%)		0.00	0.00	NA	4.5%	4.93	NA	NA	2.36	Improbable
(36.3%)	5.5%	0.24	0.32	22.5%	19.4%	3.64	7.50	0.95	2.00	Improbable
12.4%	12.7%	0.00	0.00	NA	21.3%	1.92	NA	NA	1.83	Improbable
(12.5%)		0.00	0.00	NA	15.2%					Improbable
(18.7%)	16.1%			0.0%	18.5%	3.42	60.67	0.29	2.23	Improbable
(25.0%)	6.3%	0.00	0.00	NA	18.1%	1.70	NA	0.00	1.15	Improbable
(5.2%)	8.5%	0.15	0.18	0.0%	4.9%	2.38	381.50	0.99	1.25	Improbable
8.7%	7.1%	0.00	0.00	NA	15.0%	4.00	NA	0.00	2.70	Improbable
3.2%	5.6%	0.00	0.00	NA	21.5%	3.40	NA	0.00	2.40	Improbable
(23.6%)	14.7%	0.46	0.83	48.8%	47.9%	2.19	1.56	2.40	1.74	Improbable
(31.8%)	2.5%	0.00	0.00	NA	27.8%	8.23	<0	0.00	7.02	Improbable
(8.0%)	5.3%	0.25	0.33	5.7%	36.8%	1.66	2.03	1.09	1.53	Improbable

Reference Case

Risk Management

Supplier Risk Management – Industrial Equipment



Engagement Overview

- Maintaining plant continuity during a credit crunch, a major automotive OEM tasked the team with identifying troubled suppliers beyond D&B ratings for private suppliers
- Suppliers were audited and key cash burn rate details were summarized to identify the more critical suppliers to monitor
- Each supplier was assessed for access to credit, cash as well as upcoming debt maturities
- The resulting analysis helped the client to consolidate the supply base and manage reduced volumes

Reference Case

Cost Reduction

Skills Development – Industrial Equipment



Engagement Overview

- A global industrial equipment supplier needed to gauge the level of supply chain competence within a new structured organization
- Leveraging the experience and materials from supporting sourcing projects across multiple industries, the team developed a set of assessment questions for each competency area:

Benchmarking Cost Analysis

Finance Market Knowledge

Negotiations Risk Management

Value Chain Analysis

Question	Answers
<p>With all other business conditions the same, what is the effect on the ROIC performance of a supplier as Raw Material Prices decline?</p> <p><i>Return On Invested Capital (ROIC)</i></p>	<p>A U <input type="checkbox"/></p> <p>B W <input type="checkbox"/></p> <p>C X <input type="checkbox"/></p> <p>D Y <input type="checkbox"/></p> <p>E Z <input type="checkbox"/></p>

Cost & Capital

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