

The coronavirus (COVID-19) pandemic: Assessing the impact on corporate credit risk

Yukyung Choi, Glenn Levine and Samuel Malone, Ph.D

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**The coronavirus (COVID-19) pandemic:
Assessing the impact on credit risk**

Abstract
As the coronavirus disease (COVID-19) spreads globally, financial uncertainty are rising, roiling financial markets and potentially pushing the global economy into recession. This report uses Moody's Analytics CreditEdge public firm EDF metrics to assess the impact that the coronavirus has had so far on credit risk. We highlight company-, industry-, and country-level dimensions of the pandemic's repercussions, including both risks and opportunities. In terms of investment ideas, we examine the performance differential between high- and low-EDF bonds in investment grade and high yield, showing that low default risk bonds have strongly outperformed during the international phase of the pandemic. Finally, we lay out projected paths for default risk conditional on a pandemic macroeconomic scenario to illustrate which industries are most likely to be affected, and examine trends in sovereign credit risk.

Cumulative total returns of Low EDF/High EDF strategies: US High Yield

Date	Low EDF	High EDF
1/22	1.00	1.00
1/28	1.02	0.98
2/03	1.05	0.95
2/09	1.08	0.98
2/15	1.10	1.00
2/21	1.12	1.02
2/27	1.15	0.85
3/04	1.20	0.85

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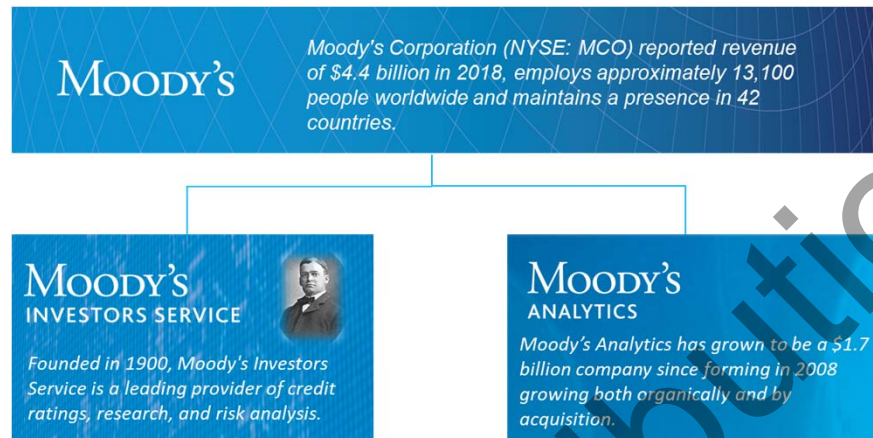
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Agenda

1. Executive summary
2. Industry and country impacts
3. Company effects: winners and losers
4. Equity and bond market effects
5. The forward evolution of EDFs under a pandemic macro scenario

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Executive Summary

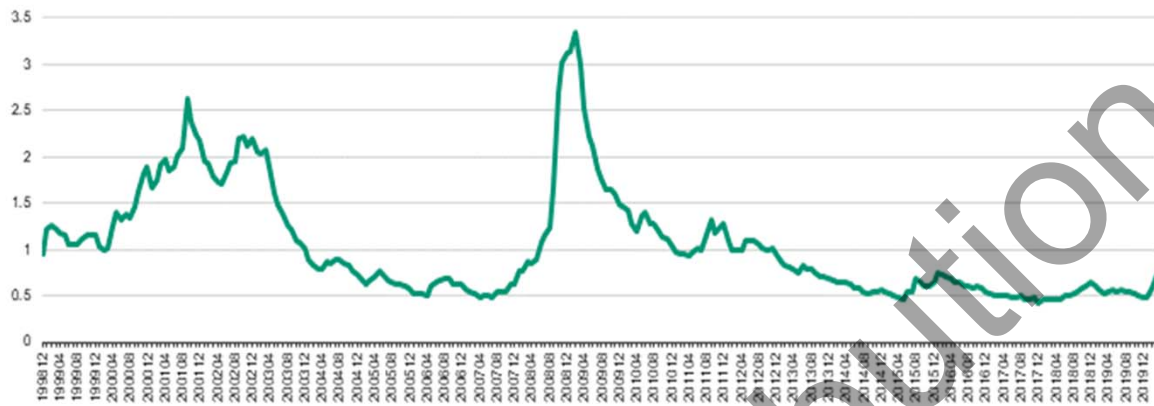
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Executive summary

- Countries whose corporate sectors are at materially increased risk since mid-January:
 - Canada and Norway (oil & gas exposure)
 - U.S. and Southern Europe (large COVID-19 related shocks to multiple industries)
 - Selected emerging markets (risk-off effects and pre-existing vulnerability)
- Major industry-level impacts:
 - Primary impact: Oil & gas, Entertainment & leisure, Air transportation
 - Knock-on effects: Consumer Durables
 - Secular downtrend meets black swan event: Broadcast media, printing
- Corporate bond and equity market impact
 - "Flight-to-credit-quality"
 - Low EDF bonds outperform high EDF bonds in both IG and HY; Low EDF equities outperform in U.S. and Europe
- Stressed EDFs under a pandemic macro scenario
 - Oil & gas industry to see highly elevated default risk in Europe and the U.S. if perfect storm of falling expected demand and supply war persist

Global median default risk (1-year EDF, %)

A modest uptick by this measure, but still well below historical average



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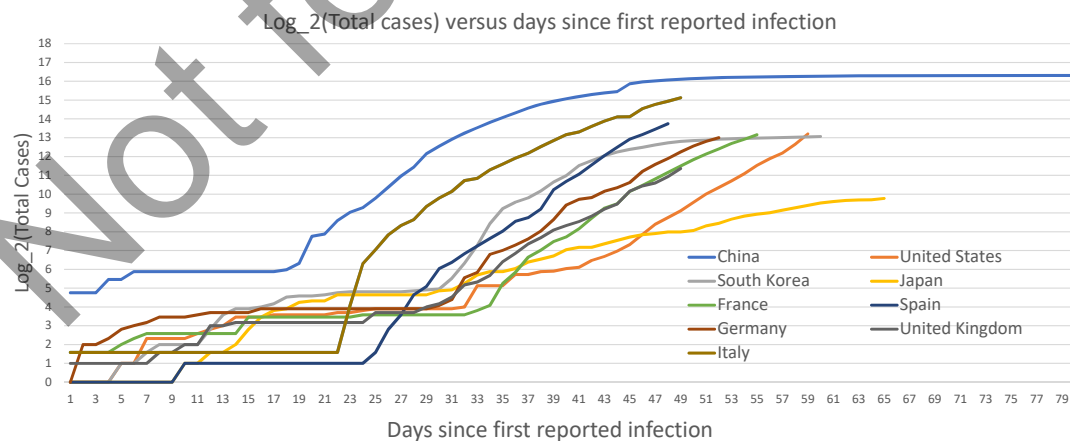
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The S-curve of total infections

Initial detection lag, testing and unrestrained growth, slowing growth



Source: Our World in Data (ourworldindata.org), European Centre for Disease Prevention and Control, Authors' Calculations

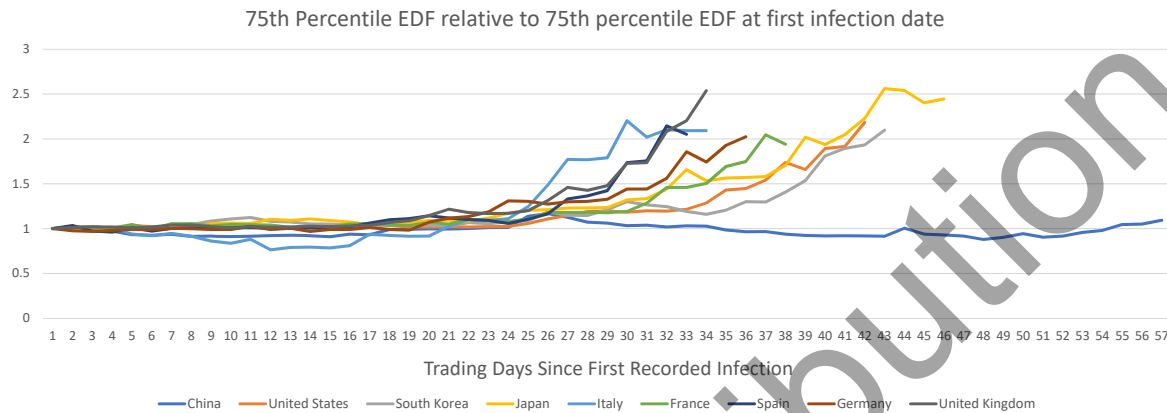
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The J-Curve of default risk

China is the exception



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2 Industry and country impacts

COVID-19: Market impacts so far

Assessing equity returns and leverage impacts

- Demand shock → (Expected) Earnings shock
 - Firm asset shock
 - Shock to Firm Equity Values
 - Shock to Firm Market Leverage → Increased vulnerability
- Global industry shocks affect countries that specialize in those industries
- We look at average asset and equity shocks at the industry/country level during the Jan. 20-March 18 period.

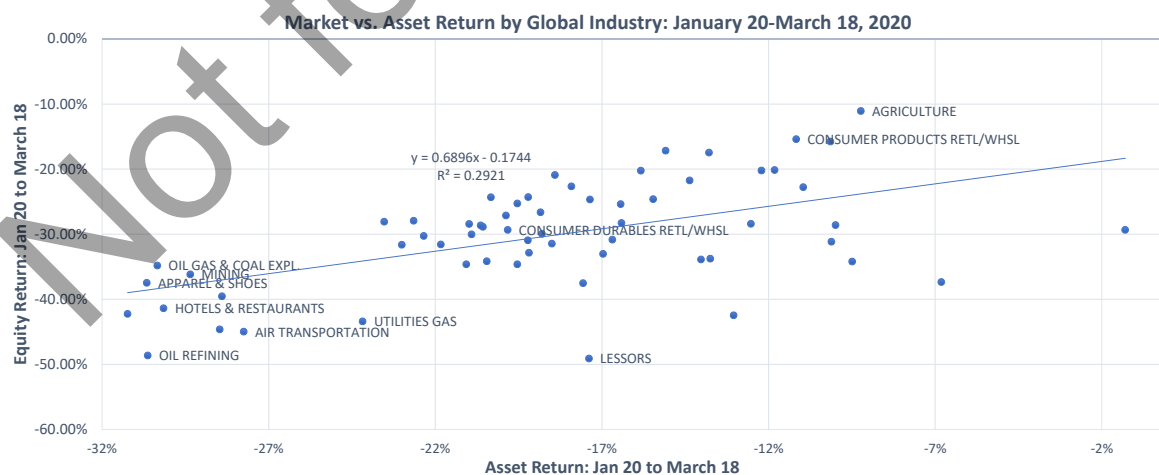
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Average equity vs. asset returns by industry

Global public firms, January 20-March 18, 2020

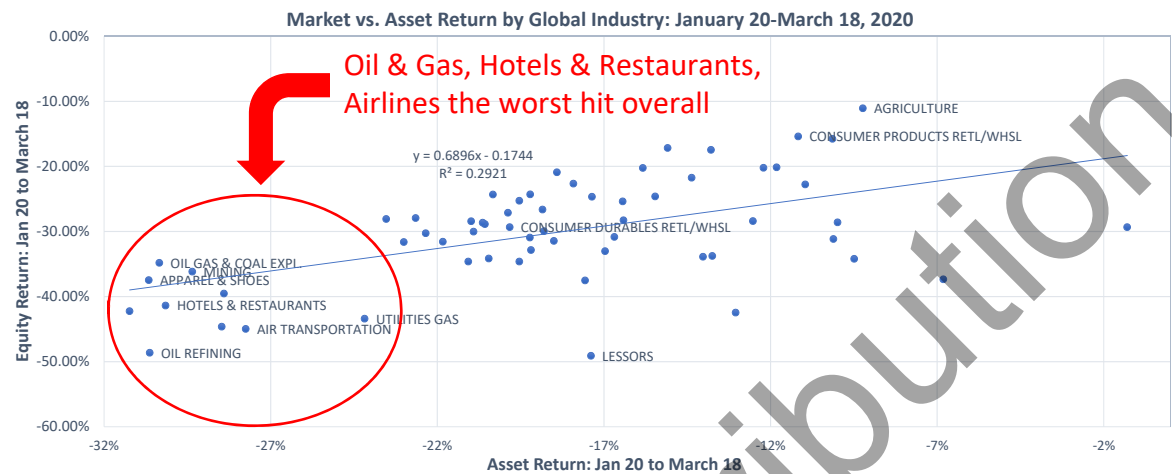


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Average equity vs. asset returns by industry

Industries with highly levered large cap firms feel outsized impact

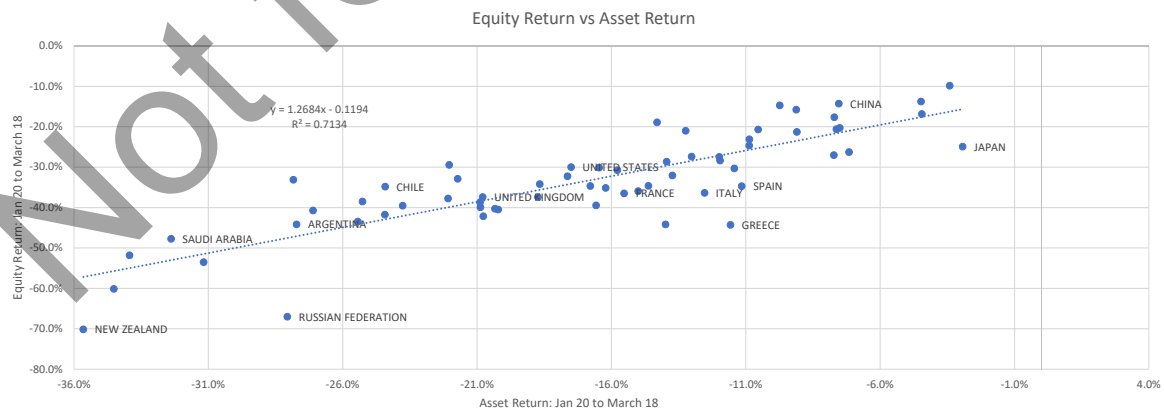


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Average equity vs. asset returns by country

Global public firms, January 20-March 18, 2020



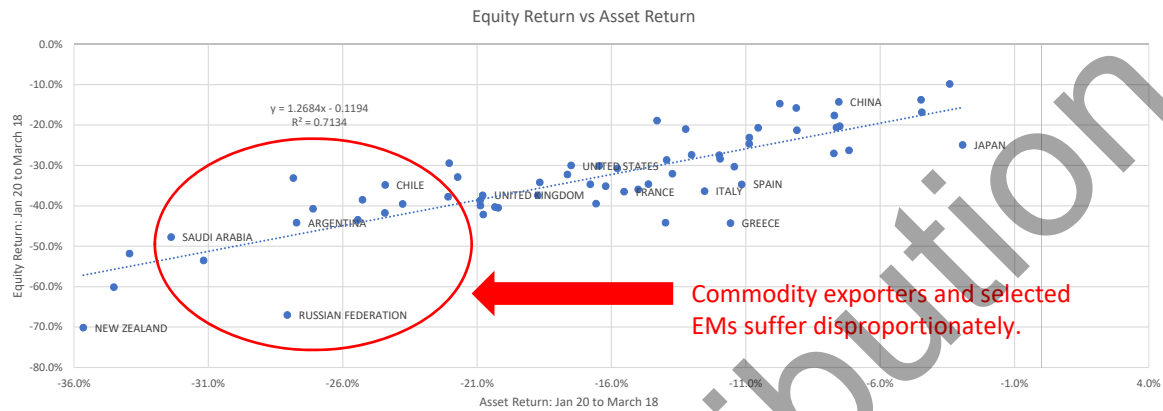
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Average equity vs. asset returns by country

Commodity country equities have been hit especially hard



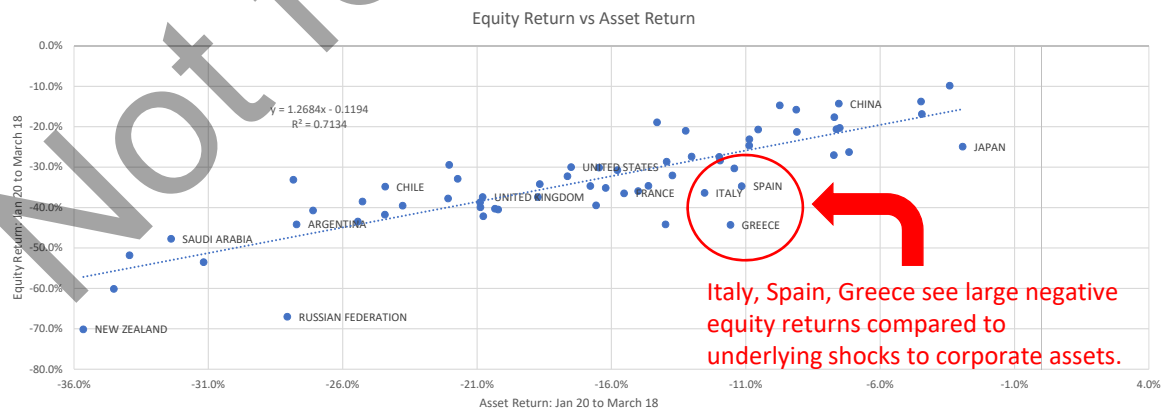
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Average equity vs. asset returns by country

High leverage adversely impacts Southern European corporates



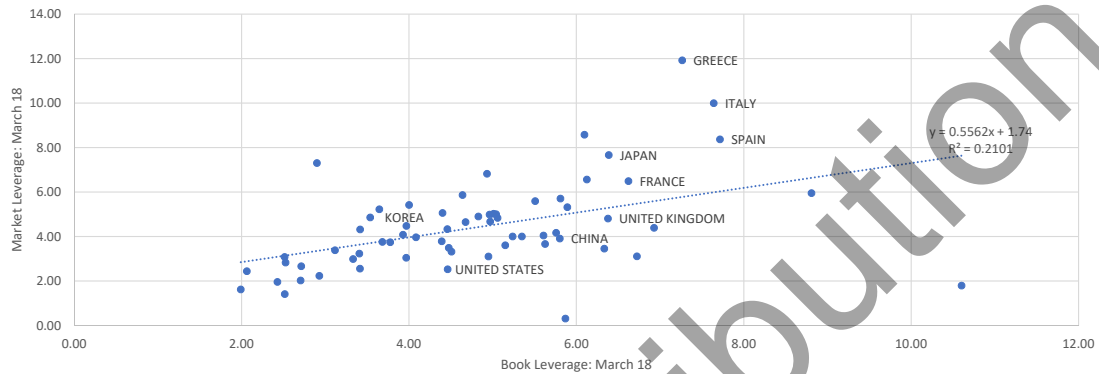
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Corporate book and market leverage by country

Global public firms, March 18, 2020

Market Leverage vs. Book Leverage at the Country Level: March 18



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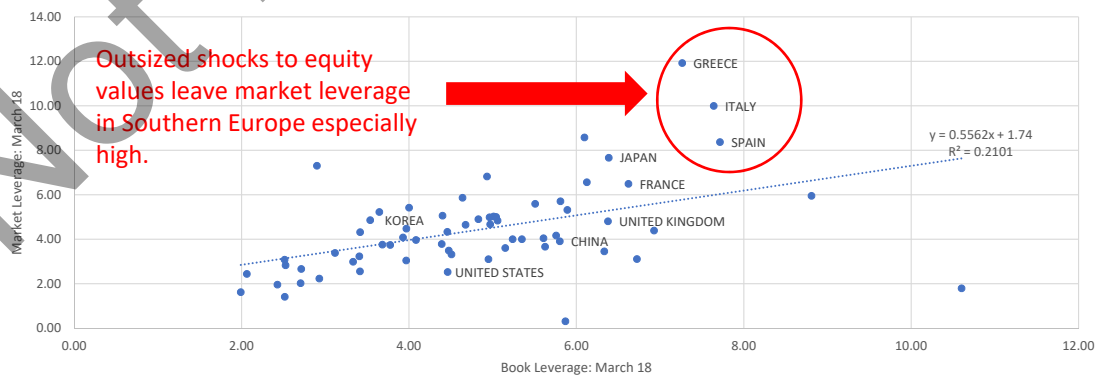
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Corporate book and market leverage by country

High leverage plus a shock begets higher leverage

Market Leverage vs. Book Leverage at the Country Level: March 18



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Assessing likely default impacts

We now focus on shocks to the right tail of the PD distribution

- The mean and 75th percentile of the PD distribution for an industry or country reveals a lot about likely defaults ahead
- So let's see where the tail of default risk has been most sensitive to the effects of the COVID-19 pandemic

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Top 5 countries

Results for tail default risk measures and end dates

Risk Discovery:

United States,

Developed Oil Producers,

Emerging Markets

have felt the biggest impact

3/12

3/18

Top 5 Countries by Increased Default Risk (Jan. 20 to March 12)

Delta (q75-q50)	Delta q75	Delta mean
BERMUDA	CANADA	ARGENTINA
UNITED STATES	UNITED STATES	CANADA
CANADA	BERMUDA	NORWAY
POLAND	POLAND	SOUTH AFRICA
SINGAPORE	GREECE	UNITED STATES

Top 5 Countries by Increased Default Risk (Jan. 20 to March 18)

Delta (q75-q50)	Delta q75	Delta mean
UNITED STATES	UNITED STATES	ARGENTINA
BERMUDA	CANADA	BERMUDA
CANADA	ARGENTINA	CANADA
ARGENTINA	BERMUDA	NORWAY
SINGAPORE	GREECE	UNITED STATES

Top 5 global industries

Results for tail default risk measures and end dates

**Supply Glut +
Cyclical Demand
Shock:**

Oil & Gas and
**Entertainment &
Leisure**,
escalating to **Oil
& Gas** and
**Consumer
Cyclicals**

3/12

3/18

Top 5 Industries by Increased Default Risk (Jan. 20 to March 12)		
Delta (q75-q50)	Delta q75	Delta mean
BROADCAST MEDIA	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
OIL GAS & COAL EXPL/PROD	BROADCAST MEDIA	PRINTING
CABLE TV	ENTERTAINMENT & LEISURE	ENTERTAINMENT & LEISURE
ENTERTAINMENT & LEISURE	CABLE TV	BROADCAST MEDIA
UTILITIES GAS	AIR TRANSPORTATION	OIL REFINING
Top 5 Industries by Increased Default Risk (Jan. 20 to March 18)		
Delta (q75-q50)	Delta q75	Delta mean
OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
BROADCAST MEDIA	BROADCAST MEDIA	CONSUMER DURABLES RETL/WHSL
TELEPHONE	ENTERTAINMENT & LEISURE	BROADCAST MEDIA
CONSUMER DURABLES RETL/WHSL	TELEPHONE	TRANSPORTATION EQUIPMENT
ENTERTAINMENT & LEISURE	CONSUMER DURABLES RETL/WHSL	AEROSPACE & DEFENSE

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Top 5 global industries

Results for tail default risk measures and end dates

**Structural
Decline +
Black Swan:**

Oil & Gas and
**Printing, Cable
TV, Broadcast
Media**

Top 5 Industries by Increased Default Risk (Jan. 20 to March 12)		
Delta (q75-q50)	Delta q75	Delta mean
BROADCAST MEDIA	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
OIL GAS & COAL EXPL/PROD	BROADCAST MEDIA	PRINTING
CABLE TV	ENTERTAINMENT & LEISURE	ENTERTAINMENT & LEISURE
ENTERTAINMENT & LEISURE	CABLE TV	BROADCAST MEDIA
UTILITIES GAS	AIR TRANSPORTATION	OIL REFINING
Top 5 Industries by Increased Default Risk (Jan. 20 to March 18)		
Delta (q75-q50)	Delta q75	Delta mean
OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
BROADCAST MEDIA	BROADCAST MEDIA	CONSUMER DURABLES RETL/WHSL
TELEPHONE	ENTERTAINMENT & LEISURE	BROADCAST MEDIA
CONSUMER DURABLES RETL/WHSL	TELEPHONE	TRANSPORTATION EQUIPMENT
ENTERTAINMENT & LEISURE	CONSUMER DURABLES RETL/WHSL	AEROSPACE & DEFENSE

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Top 5 industries for U.S.

Results for tail default risk measures and end dates

Risk Discovery:

Greatest Default Risk Impact Shifting from **Oil & Gas** to **Consumer Cyclicals**

3/12

3/18

Top 5 Industries by Increased Default Risk (Jan. 20 to March 12): U.S.		
Delta (q75-q50)	Delta q75	Delta mean
PRINTING	PRINTING	PRINTING
TEXTILES	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
OIL REFINING	OIL REFINING	OIL REFINING
CHEMICALS	TEXTILES	ENTERTAINMENT & LEISURE
OIL GAS & COAL EXPL/PROD	CONSUMER PRODUCTS RETL/WHSL	BROADCAST MEDIA
Top 5 Industries by Increased Default Risk (Jan. 20 to March 18): U.S.		
Delta (q75-q50)	Delta q75	Delta mean
CONSUMER DURABLES RETL/WHSL	AUTOMOTIVE	PRINTING
CONSUMER PRODUCTS	ENTERTAINMENT & LEISURE	CONSUMER DURABLES RETL/WHSL
PLASTIC & RUBBER	CONSUMER DURABLES RETL/WHSL	CONSUMER PRODUCTS
ENTERTAINMENT & LEISURE	CONSUMER PRODUCTS	PLASTIC & RUBBER
APPAREL & SHOES	PLASTIC & RUBBER	OIL REFINING

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Top 5 industries for Western Europe

Results for tail default risk measures and end dates

Risk Discovery:

Greatest Default Risk Impact Shifting from **Oil & Gas** and **Automotive** to **Oil & Gas, Air Transportation** and **Consumer Cyclicals**

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3/18

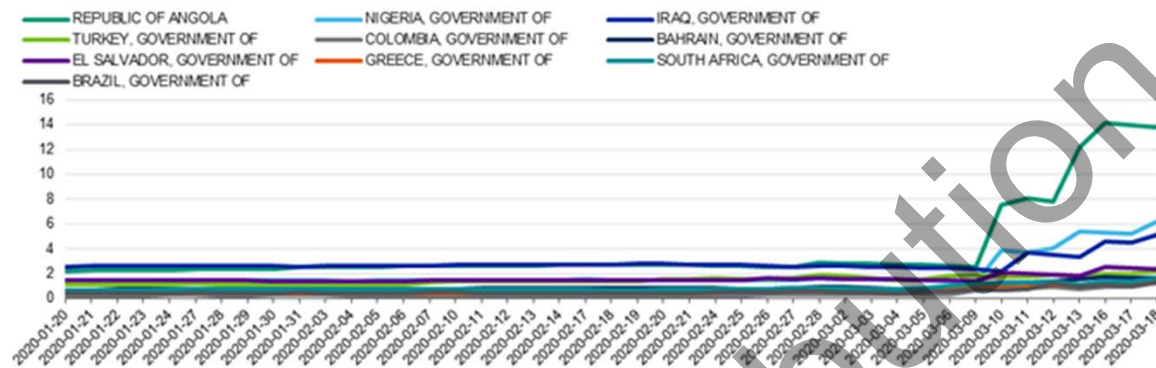
Top 5 Industries by Increased Default Risk (Jan. 20 to March 12): W. Europe		
Delta (q75-q50)	Delta q75	Delta mean
OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD
AUTOMOTIVE	APPAREL & SHOES	PLASTIC & RUBBER
APPAREL & SHOES	AUTOMOTIVE	COMPUTER HARDWARE
AGRICULTURE	AGRICULTURE	CONSUMER PRODUCTS RETL/WHSL
SEMICONDUCTORS	SEMICONDUCTORS	AUTOMOTIVE
Top 5 Industries by Increased Default Risk (Jan. 20 to March 18): W. Europe		
Delta (q75-q50)	Delta q75	Delta mean
CABLE TV	CABLE TV	OIL GAS & COAL EXPL/PROD
AIR TRANSPORTATION	AIR TRANSPORTATION	UTILITIES NEC
OIL GAS & COAL EXPL/PROD	OIL GAS & COAL EXPL/PROD	CONSUMER PRODUCTS RETL/WHSL
APPAREL & SHOES	APPAREL & SHOES	AIR TRANSPORTATION
ENTERTAINMENT & LEISURE	CONSUMER PRODUCTS RETL/WHSL	ELECTRONIC EQUIPMENT

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Increased sovereign default risk: Top 10 countries

Credit Default Swap-implied Default Probabilities



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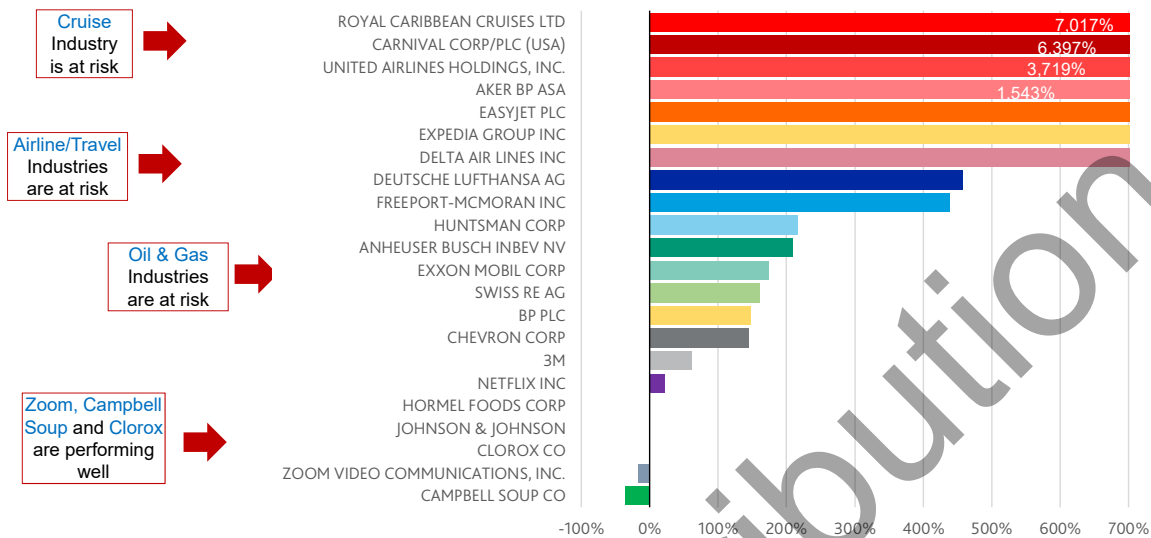
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Turning on the microscope:

A closer look at firms during the pandemic

Selected companies: relative EDF change (1/20 to 3/18)



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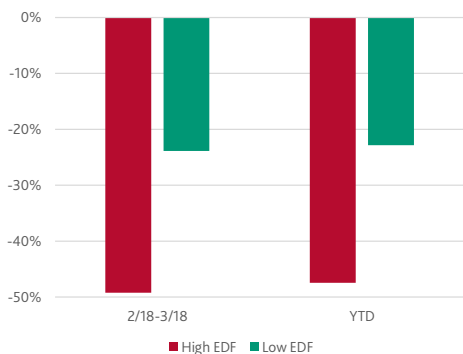
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Flight-to-credit-quality:
equities and fixed income

Total returns of Low EDF/High EDF strategies

S&P 500

Total return



Companies with high EDF

Corp

Mylan NV
Alliance Data Systems Corp
American Airlines Group Inc
Apache Corp
DXC Technology Co
L Brands Inc
Macy's Inc
Nordstrom Inc
Western Digital Corp

FI

Citizens Financial Group Inc
Comerica Inc
E*TRADE Financial Corp
Lincoln National Corp
Principal Financial Group Inc
Regions Financial Corp
SVB Financial Group
State Street Corp
Unum Group

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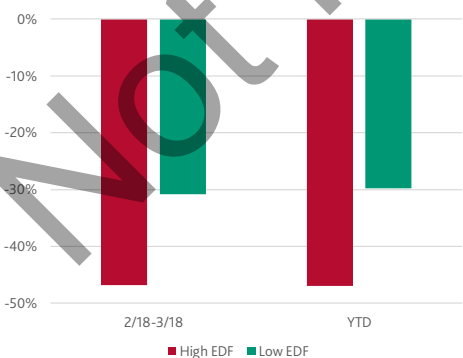
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Total returns of Low EDF/High EDF strategies

Europe Stoxx 600

Total return



Companies with high EDF

Corp

AMS AG
K+S AG
Faurecia SE
Cineworld Group PLC
John Wood Group PLC
NMC Health PLC
TechnipFMC PLC
Pirelli & C SpA
ArcelorMittal SA
Altice Europe NV

FI

CaixaBank SA
TP ICAP PLC
Royal Bank of Scotland Group PLC
Quilter PLC
Phoenix Group Holdings PLC
Bank of Ireland Group PLC
AIB Group PLC
Aegon NV
Santander Bank Polska SA

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Fixed income strategy: Go long high credit quality

Use bond PDs to make a finer distinction amongst bonds

- Divide the eligible securities into five duration buckets and two sectors buckets (FIN and IND/UTL, for Investment Grade only) per duration cell, so 10 in total (5 in High Yield).
- Within each duration/sector bucket, rank the bonds by their EDFs.
- Select the bonds in the high 20% and the low 20% of each duration bucket's rank order by bond count.
- On a daily basis, calculate the market value-weighted total returns of the high and low 20% bucket in each duration/sector bucket.
- Combine the duration bucket results on a market value-weighted basis

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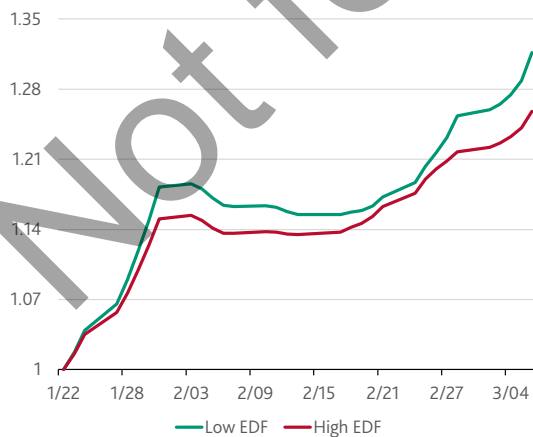
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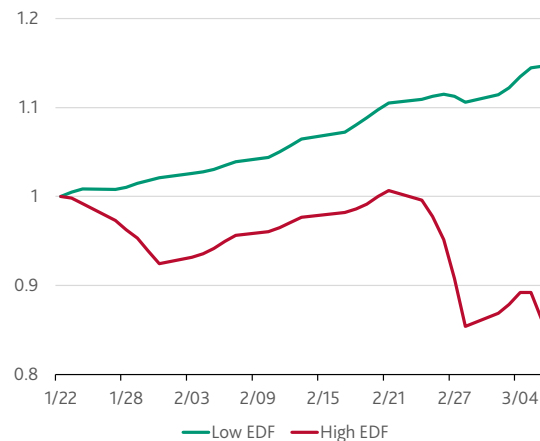
Cumulative total returns of Low EDF/High EDF strategies

The flight-to-credit quality, present in IG, is overwhelming in HY

US Investment Grade



US High Yield



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Forecasting credit risk under economic scenarios

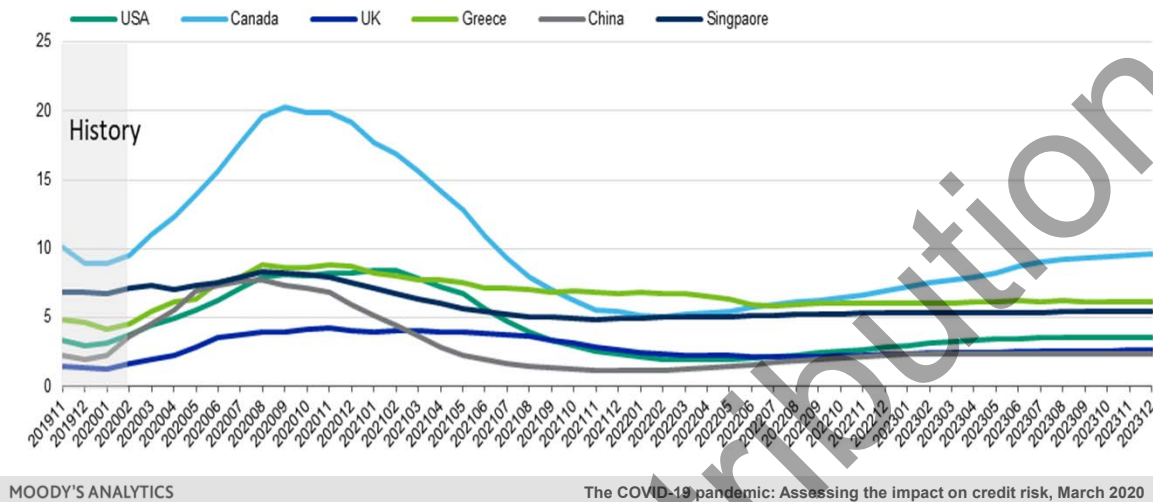
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Projecting credit risk using Stressed EDFs

- The Stressed EDF model is used to forecast EDFs, conditioned on an economic scenario
- In early-March, our Economics team produced 3 COVID-19 scenarios: Baseline, Downside, Pandemic
- The Pandemic scenario is now the most likely:
 - US GDP falls 2%
 - US unemployment rate rises from 3.5% to 5.4%
 - S&P 500 falls 26%

Select Countries, Pandemic scenario

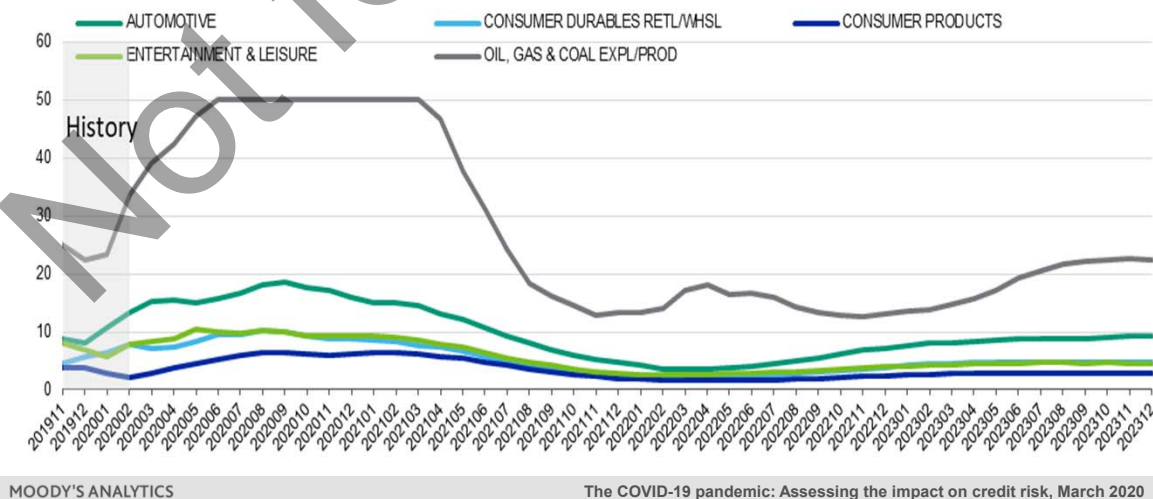
75th percentile Stressed Default Probability



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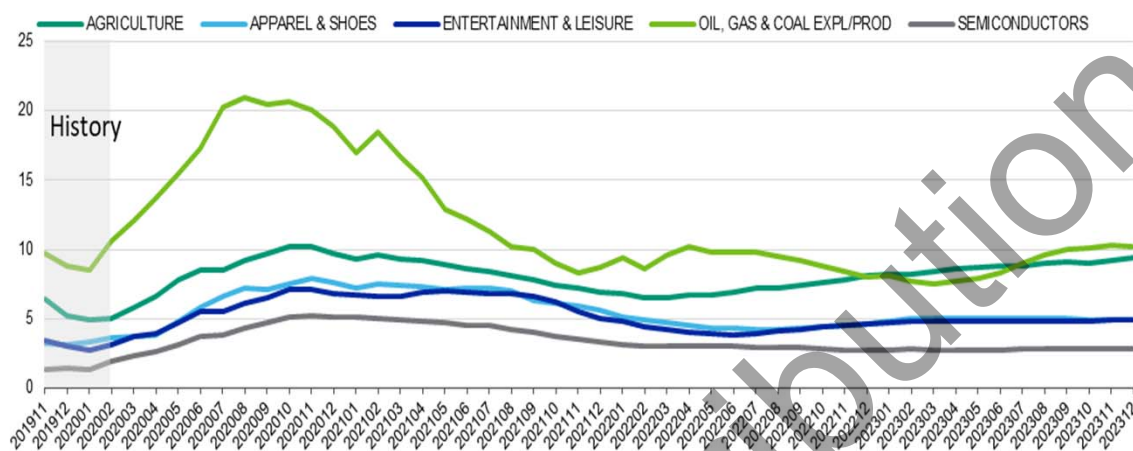
Select North American industries, Pandemic scenario

75th percentile Stressed Default Probability



Select W. European industries, Pandemic scenario

75th percentile Stressed Default Probability



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Conclusions

Where we might go from here

- Default risk impacts of the COVID-19 pandemic have been notable so far for several industries
- Our projection of default risk for the Oil & Gas industry in particular is dire if current supply and demand conditions persist
- U.S. and Southern European corporate sectors are at elevated risk
- Moving along the S-curve of confirmed cases, through effective suppression of COVID-19 and effective policy measures, is key to stabilizing markets and capping default risk

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Continue the conversation on Thursday



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 A dark blue slide with a horizontal band of colorful, pixelated lines across the middle. The Moody's Analytics logo is in the top left, and the tagline "Better Faster Decisions" is in the top right. The bottom section contains contact information for three individuals.

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