Financial and Accounting Analytics of Stock Returns

during Covid-19 Pandemic in 2020

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PROJECT GOALS

01

2019 financial accounting characteristics explain varying exposures for early (Jan-Mar) and late (Apr-Dec) 2020

02

Explanation power of industry or sector in stock returns for early (Jan-Mar) and late (Apr-Dec) 2020

2019 Financial Accounting Characteristics that Explain Varying Exposures to Covid-19 Market Shock (for Early and Late 2020)

THE DATA

- WRDS - Compustat

- Fiscal 2020 monthly stock returns data

  - Companies in the Russell 3000 index (2,800+ companies)

  - Early 2020 Returns: Jan - Mar, 2020

  - Late 2020 Returns: Apr - Dec, 2020

- Fiscal 2019 accounting data for financial ratios

PROCESS

01
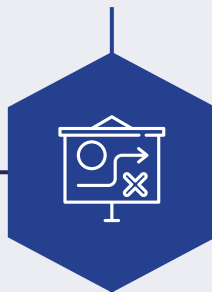Check missing values in raw data & create financial ratios

02
Check for extreme/inf and missing values
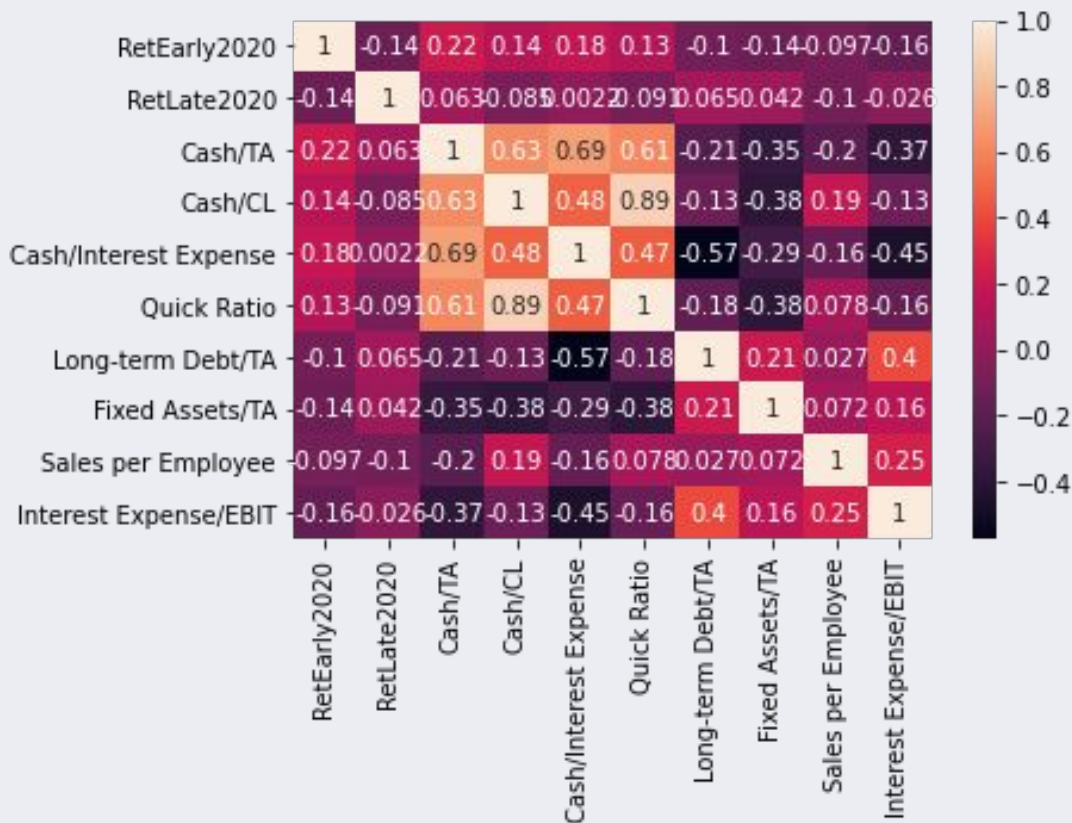
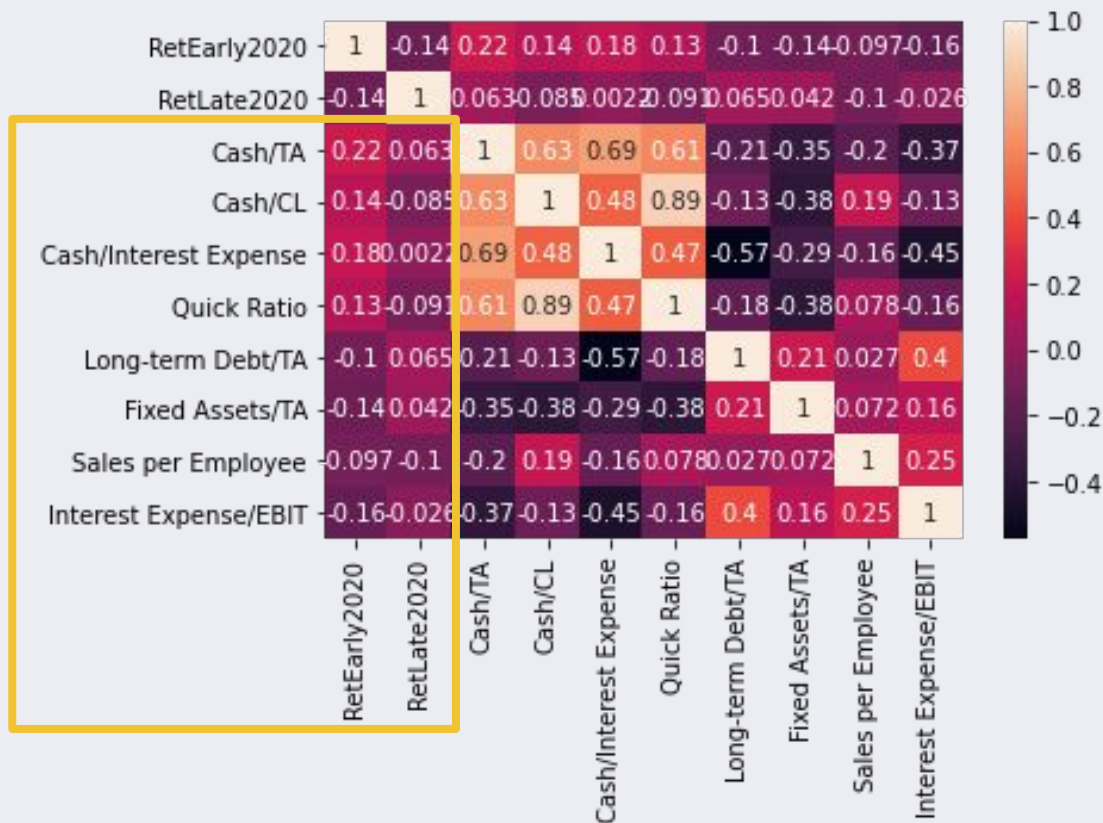**03**
Deal with outliers - winsorization

04
Correlation & regression analysis

CORRELATION MATRIX

CORRELATION MATRIX

LINEAR REGRESSION MODELS

	RetEarly2020
R-Squared	0.063
Adj. R-Squared	0.059

	coef	std err	t	P>|t|
const	-0.254100	0.027	-9.502	0.000
Cash/TA	0.267900	0.080	3.335	0.001
Cash/CL	0.045900	0.019	2.424	0.015
Cash/Interest Expense	0.000059	0.001	0.079	0.937
Quick Ratio	-0.024500	0.012	-2.042	0.041
Long-term Debt/TA	-0.047900	0.048	-0.998	0.318
Fixed Assets/TA	-0.083400	0.034	-2.443	0.015
Sales per Employee	-0.035500	0.014	-2.546	0.011
Interest Expense/EBIT	-0.088400	0.030	-2.940	0.003

	RetLate2020
R-Squared	0.040
Adj. R-Squared	0.036

	coef	std err	t	P>|t|
const	0.8345	0.090	9.253	0.000
Cash/TA	1.4419	0.271	5.321	0.000
Cash/CL	-0.0968	0.064	-1.516	0.130
Cash/Interest Expense	-0.0004	0.003	-0.149	0.881
Quick Ratio	-0.0930	0.040	-2.298	0.022
Long-term Debt/TA	0.3867	0.162	2.390	0.017
Fixed Assets/TA	0.1161	0.115	1.009	0.313
Sales per Employee	-0.0724	0.047	-1.538	0.124
Interest Expense/EBIT	-0.0209	0.101	-0.206	0.837

RetEarly2020 v.s. RetLate2020

	RetEarly2020
R-Squared	0.063
Adj. R-Squared	0.059

	RetLate2020
R-Squared	0.040
Adj. R-Squared	0.036

- **RetEarly2020**
  - Higher Adj. R-squared: more variation in observed 2020 return can be explained by the financial ratios.
- **RetLate2020**
  - Lower explanatory power.
  - RetLate2020 model coverd longer unstable period during 2020.

- 02 -

Does Industry or Sector Explain Differences in Stock Returns for Early (Jan-Mar) and Late (Apr-Dec) 2020?

THE DATA

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- Fiscal 2019 accounting data for financial ratios

- **GICS GGROUP Codes**

- **NAICS Industry Codes**

PROCESS

01
Data preprocessing - NAICS codes

03
Calculate the average stock returns
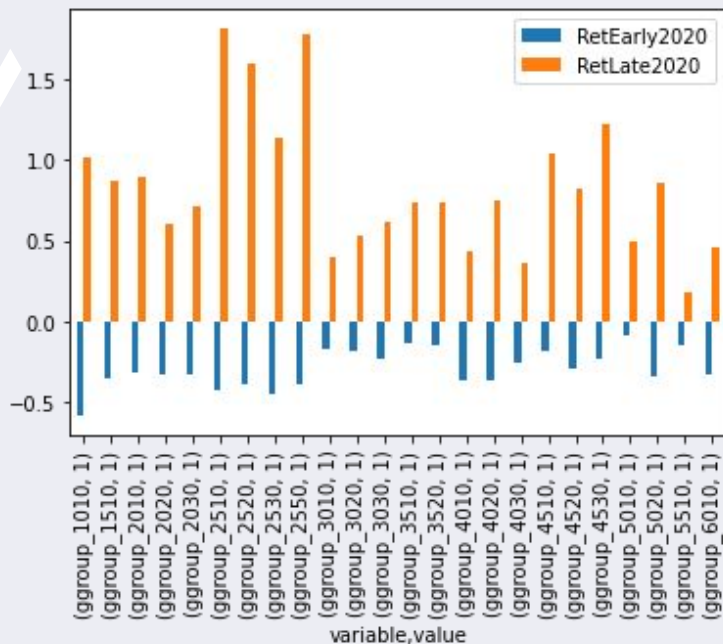
02
Create industry indicator variables

04
Fixed effect regressions

AVERAGE STOCK RETURNS

GICS

RetEarly2020	
Highest	Communication services (ggroup_5010)
Lowest	Energy (ggroup_1010)
RetLate2020	
Highest	Automobiles & Components (ggroup_2510)
Lowest	Utilities (ggroup_5510)

AVERAGE STOCK RETURNS

NAICS
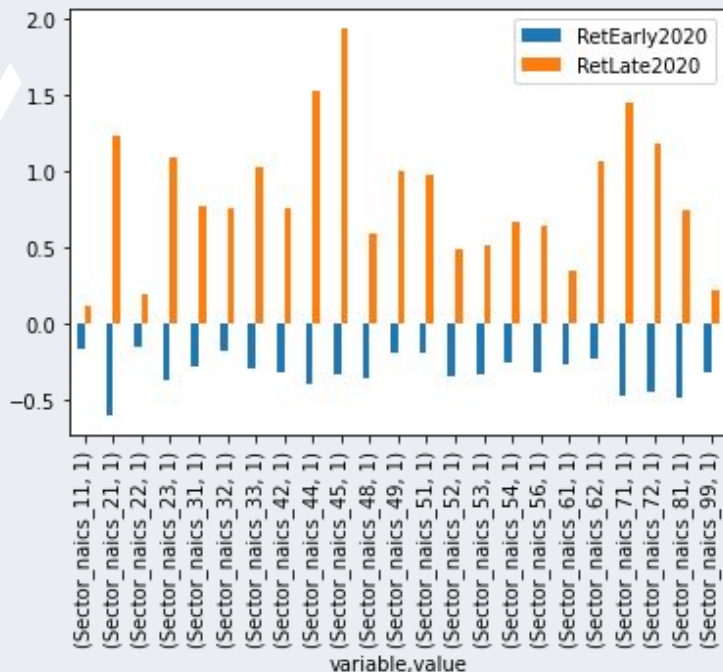
RetEarly2020	
Highest	Utilities (Sector_naics_22)
Lowest	Mining, Quarrying, and Oil and Gas Extraction (Sector_naics_21)
RetLate2020	
Highest	Retail Trade (Sector_naics_45)
Lowest	Agriculture, Forestry, Fishing and Hunting (Sector_naics_11)

FIXED EFFECT REGRESSIONS

	RetEarly2020			RetLate2020		
	R2	**Adj. R2**	**Significant Var**	**R2**	**Adj. R2**	**Significant Var**
GICS	0.131	0.123	0.958	0.110	0.102	0.917
NAICS	0.083	0.075	0.869	0.080	0.073	0.739

- **Best performing regression:** RetEarly2020 ~ b * GIC Groups
  - Adj. R2: Using GICS add explanatory power to the model
- **RetEarly2020 v.s. RetLate2020**
  - Regression models for RetEarly2020 has better performance.
- **GICS v.s. NAICS**
  - Regression models using GICS have greater changes in R-Squared.
  - More explanatory variables in GICS are significant.

THANKS!

Any questions?