IPO Performance Analysis

Charlotte Yee
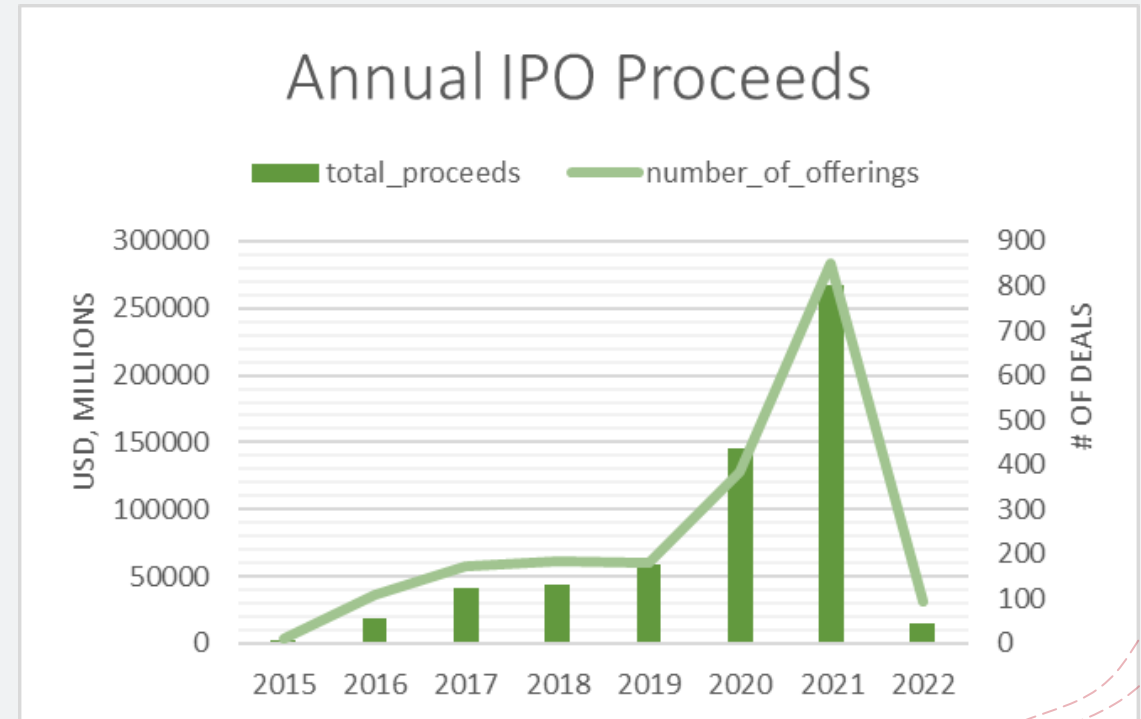
Natalia Kurbakova

AGENDA

Background

+ <u>Initial Public Offering (IPO)</u>: when a company lists shares on the public stock market for the first time

+ IPOs provide:
  + Publicity
  + Access to more $$

+ Boom and Bust
  + 2021: IPO boom
  + 2022: IPO bust

Objective: Explore How…

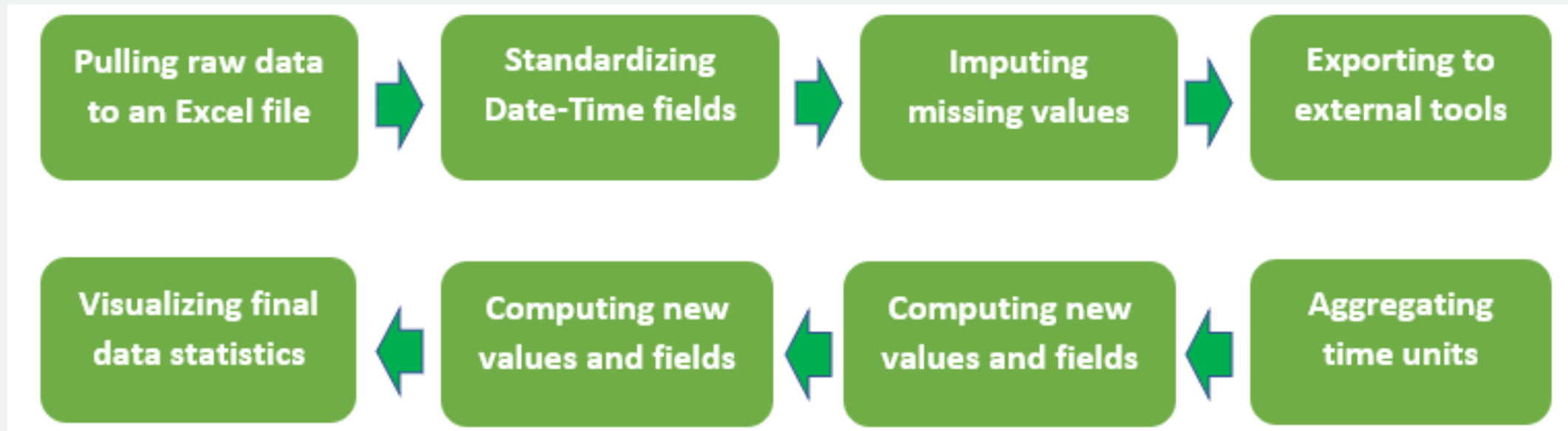## Possible Factors

+Macro indicators

+Equities market performance

Predict IPO Performance

+Proceeds/Valuation

+Volume

+Post-IPO stock performance

Exploratory Data Analysis

EDA Steps

Pulling raw data to an Excel file → Standardizing Date-Time fields → Imputing missing values → Exporting to external tools

Visualizing final data statistics ← Computing new values and fields ← Computing new values and fields ← Aggregating time units

Data Sources

+**Refinitiv**
+IPO data

+**Bloomberg Terminal**
+Macroeconomic Indices

+**S&P Global**
+US IPO Index

Data Manipulation in Excel

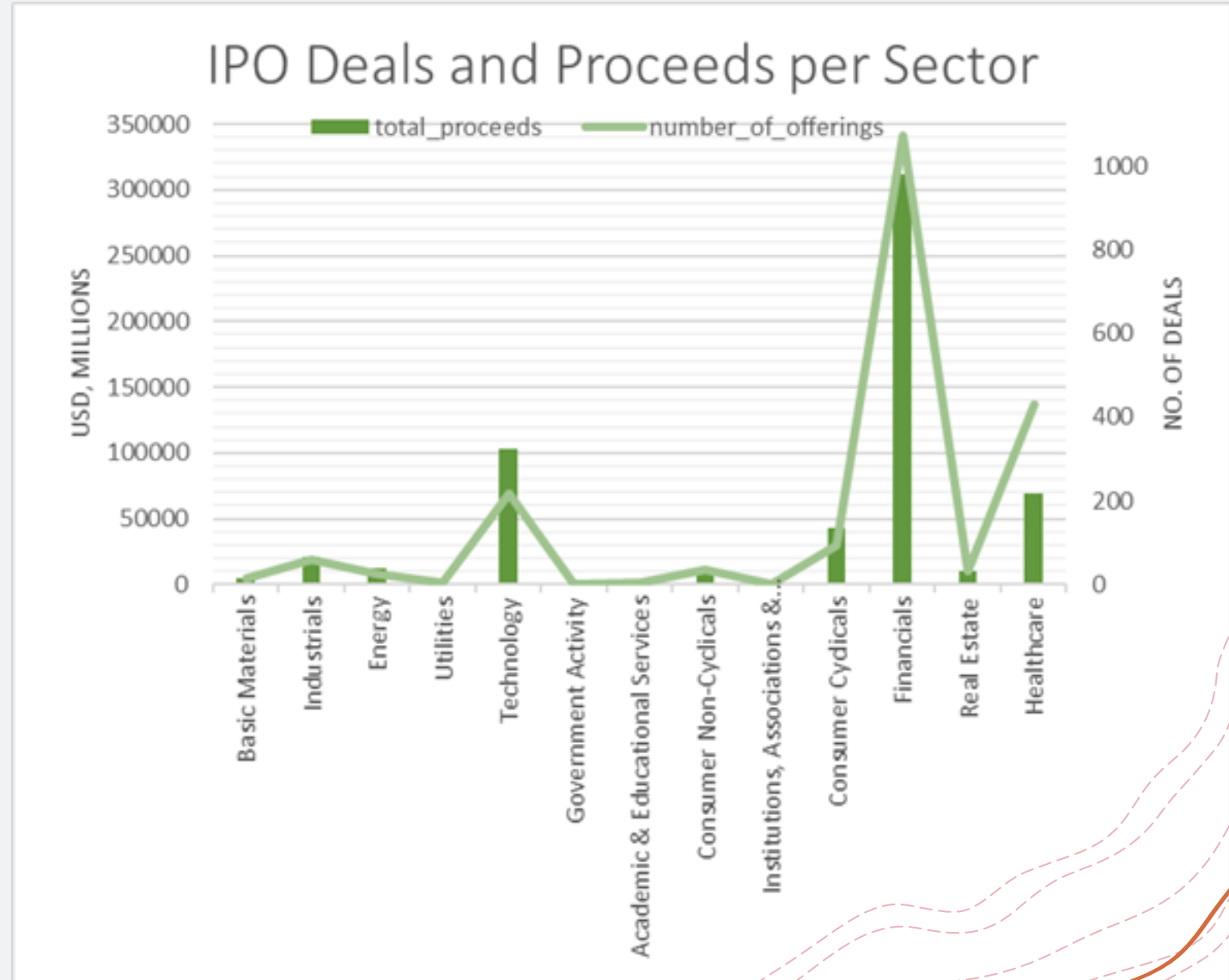## Date-Time Format

+ISO 8601 standard format (YYYY-MM-DD)

Missing Values

+Imputed post-IPO price
  +Generating paths in a Monte Carlo simulation
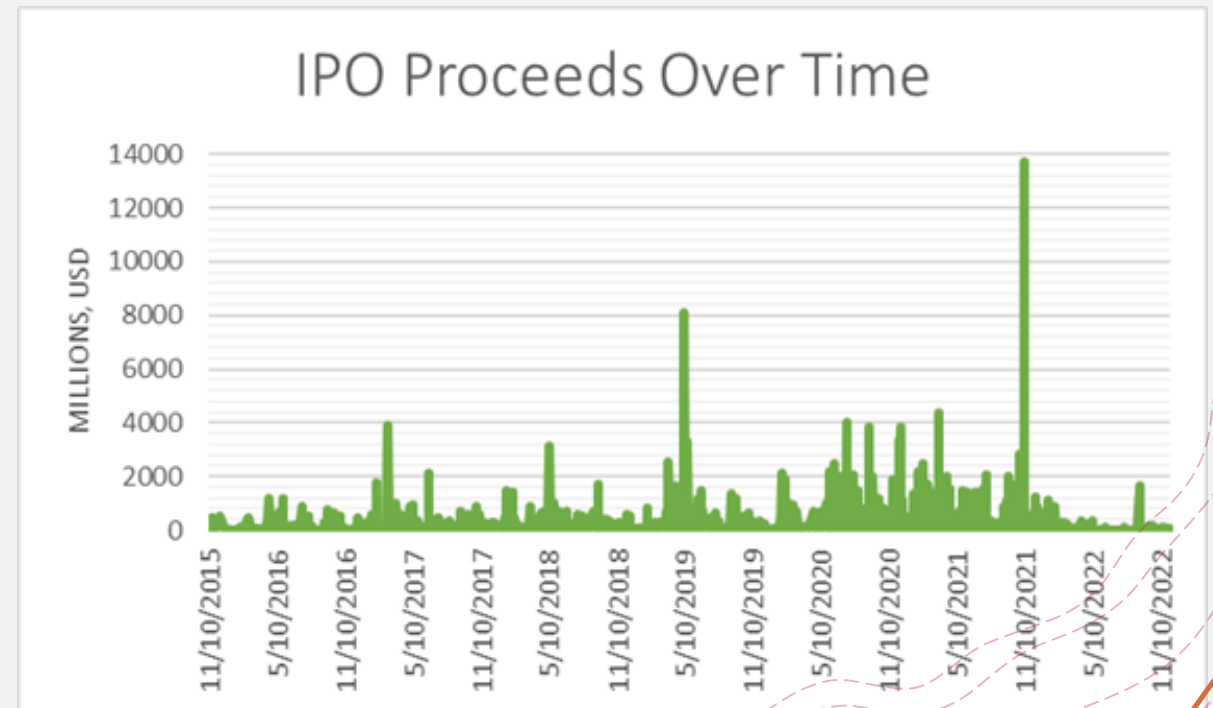 +Using known price changes as scaled random variables
+Others replaced with NA's

EDA: Description

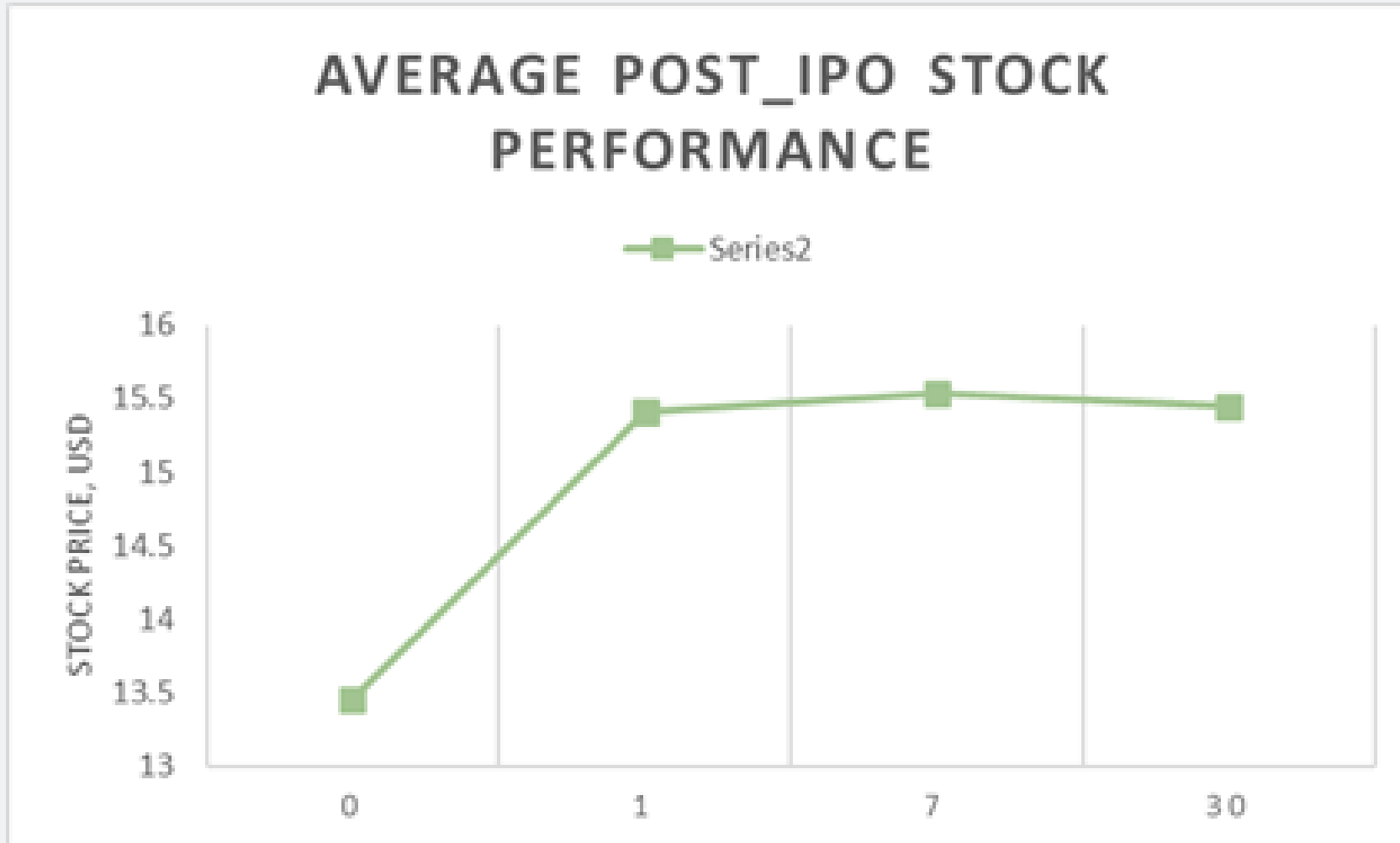+ Technology and Financials sectors have a large number of IPO deals and proceeds

IPO Deals and Proceeds per Sector

EDA: Proceeds Statistics

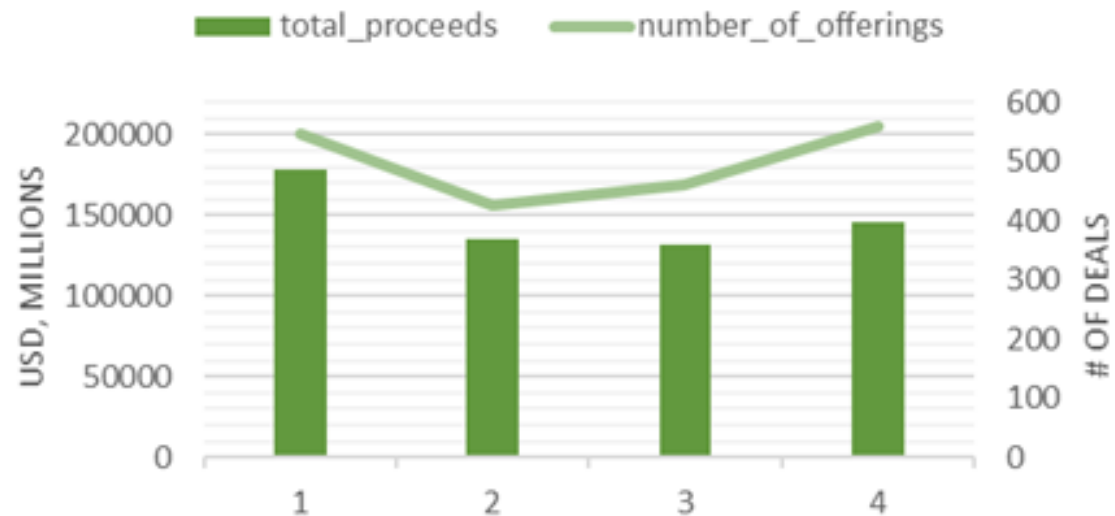IPO Proceeds Distribution

IPO Proceeds Over Time

EDA:
Offer Price Statistics

Average Post-IPO Performance Increase 1 Day after Offer Date

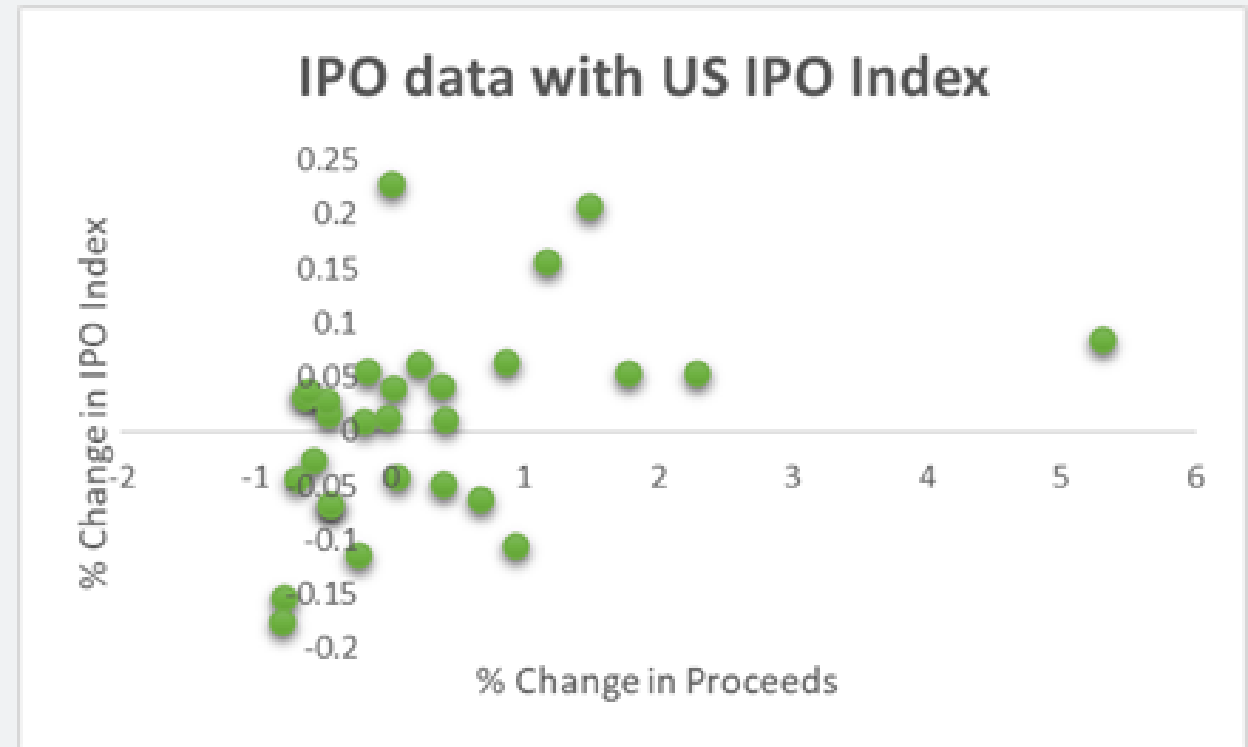# IPO Distribution Suggests Seasonality (~3 cycles per year)
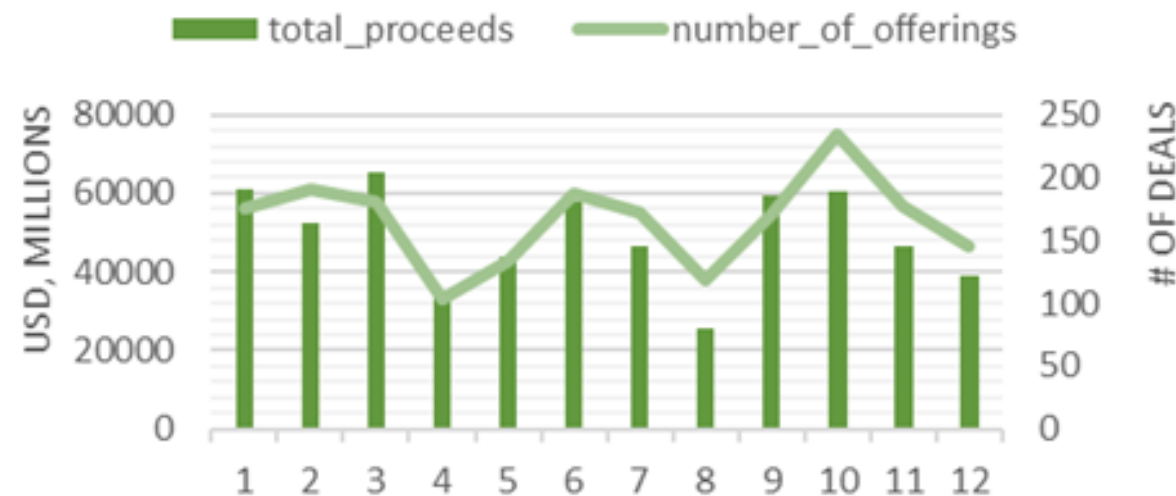
EDA: Correlation Between IPO Proceeds and US IPO Index

+ *Quarterly*: Correlation between IPO proceeds and US IPO Index

+ Macroeconomic trends do not have a significant effect on the change in IPO proceeds or deals.

IPO data with **US IPO Index**(2015 Q4 - 2022 Q3)

	% Change Proceeds	% Change No. Deals
Correlation	0.401207977	0.543545608
Covariance	0.046876839	0.034310786

EDA: Correlation Between IPO Proceeds and US IPO Index

+ *Monthly*: Correlation between IPO proceeds and US IPO Index

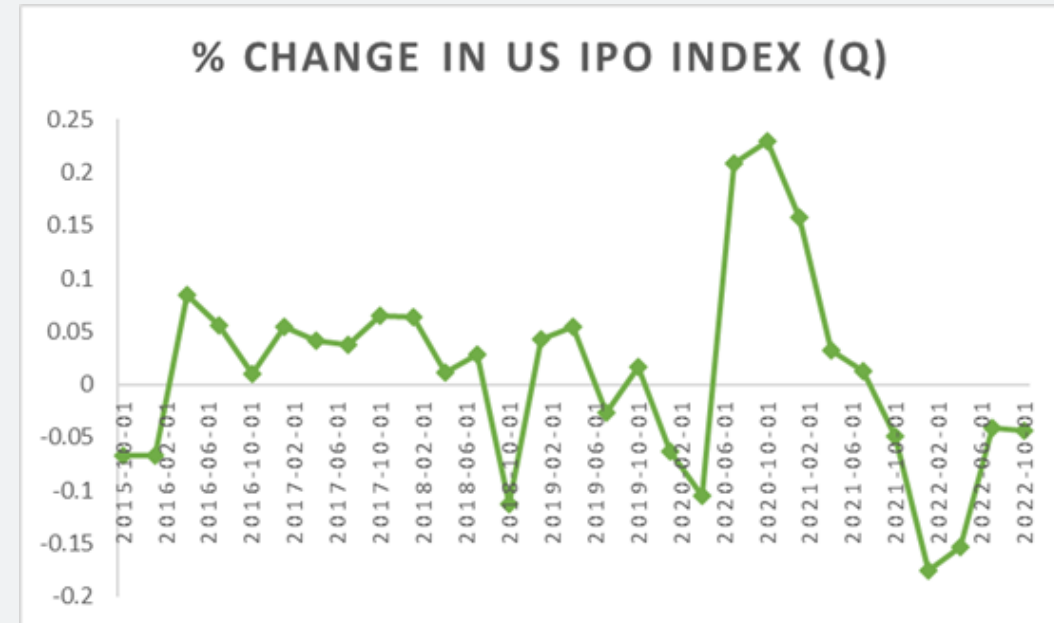+ The more granular the time units become, the lower is the correlation coefficient

IPO Data with US IPO Index
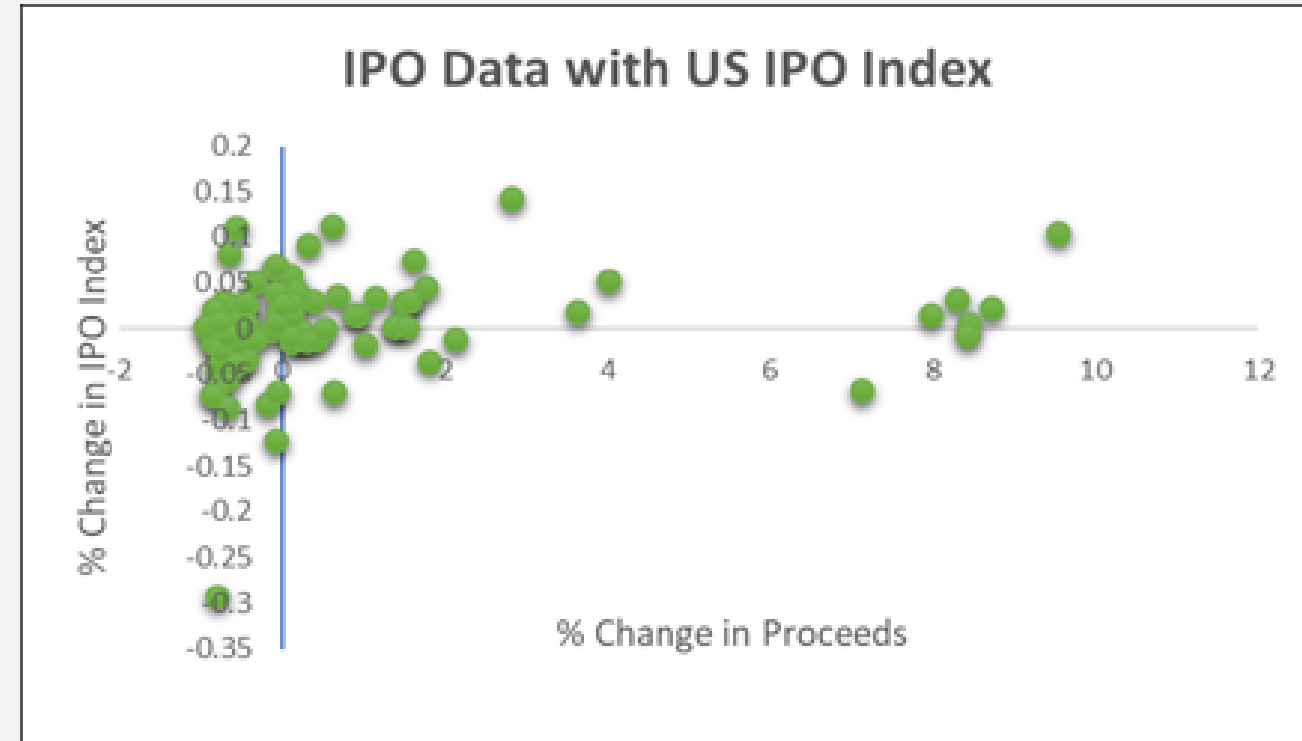
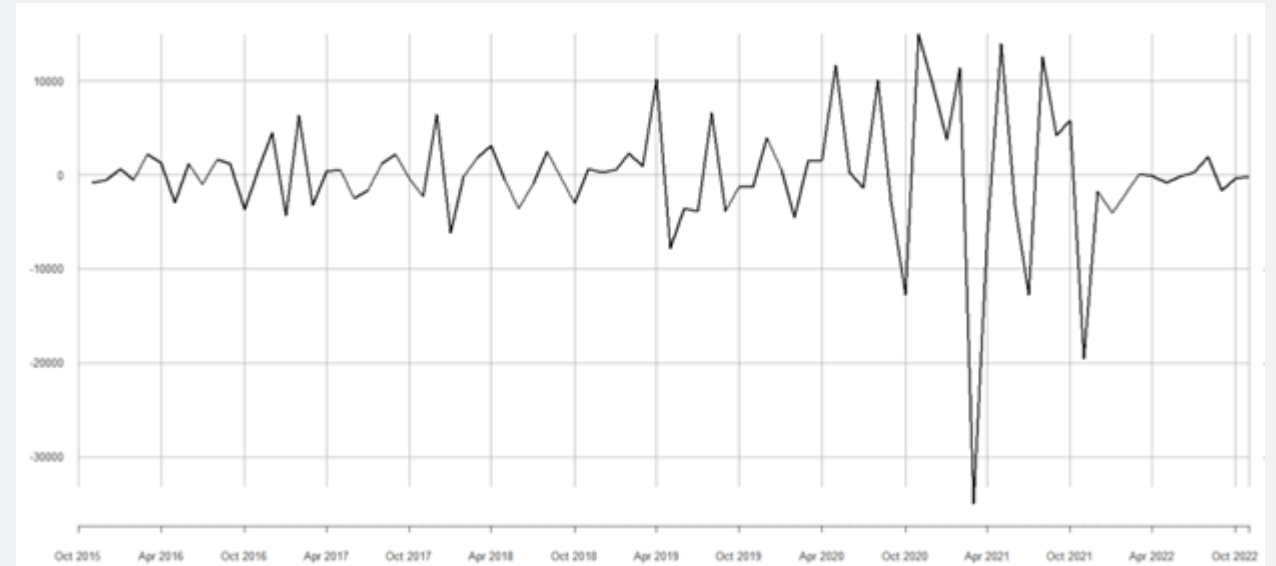| IPO data with **US IPO Index** (11/2015 - 11/2022)	% Change Proceeds	% Change No. Deals
Correlation	0.191451956	0.416835389
Covariance	0.026575112	0.01906504

IPO Proceeds vs. IPO Index

+Visualizing both Time-Series

Autocorrelation

+ Differencing the IPO Proceeds and Average Offer Price per month to determine underlying trends

Model Selection – ARIMA
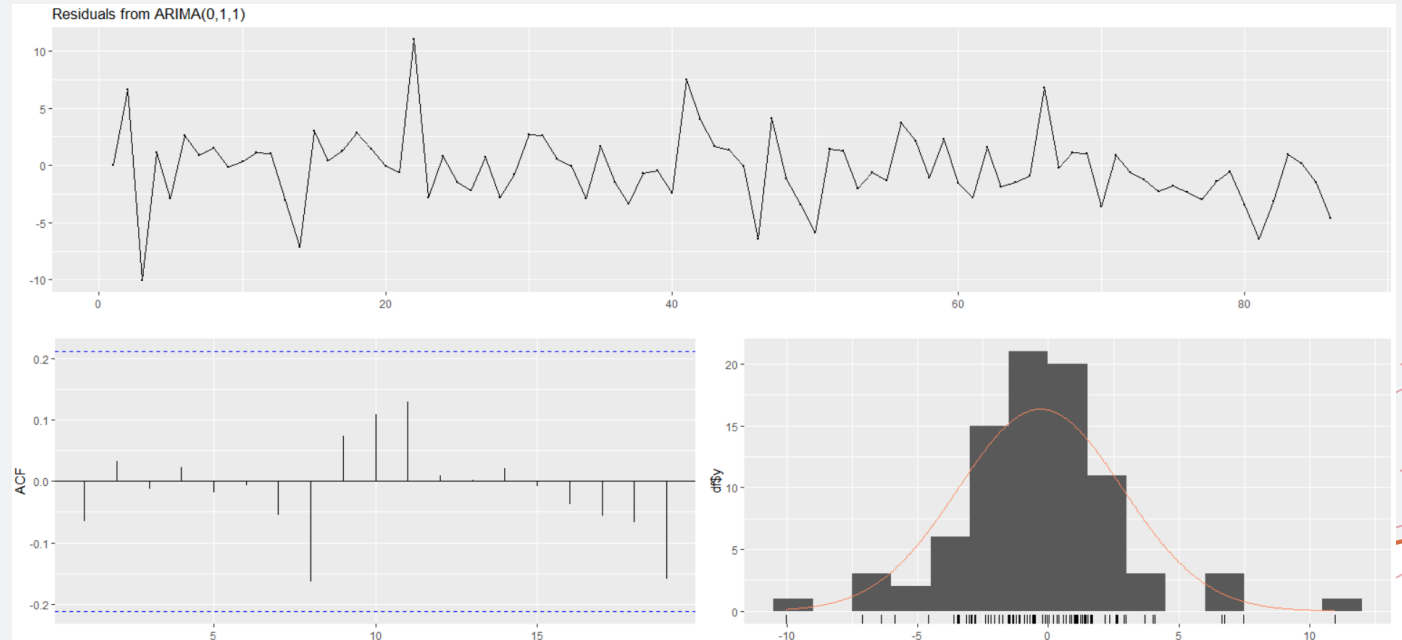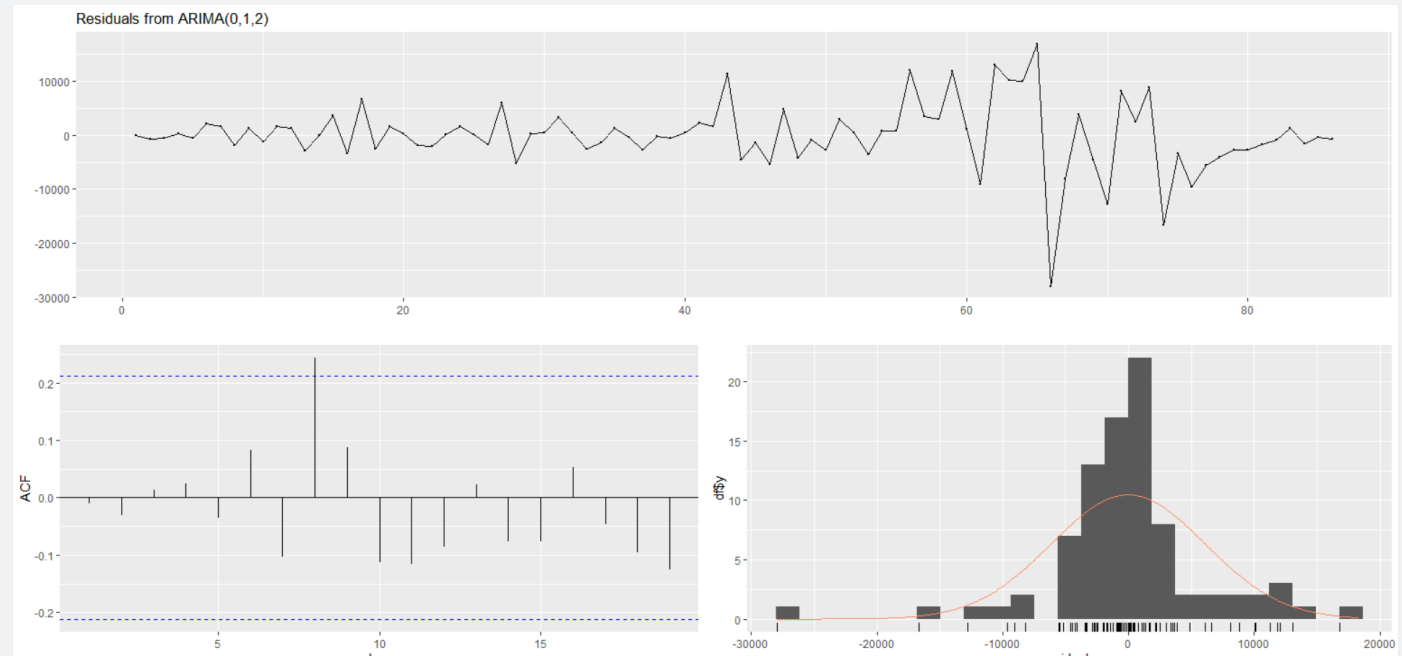
IPO Total Monthly Proceeds:

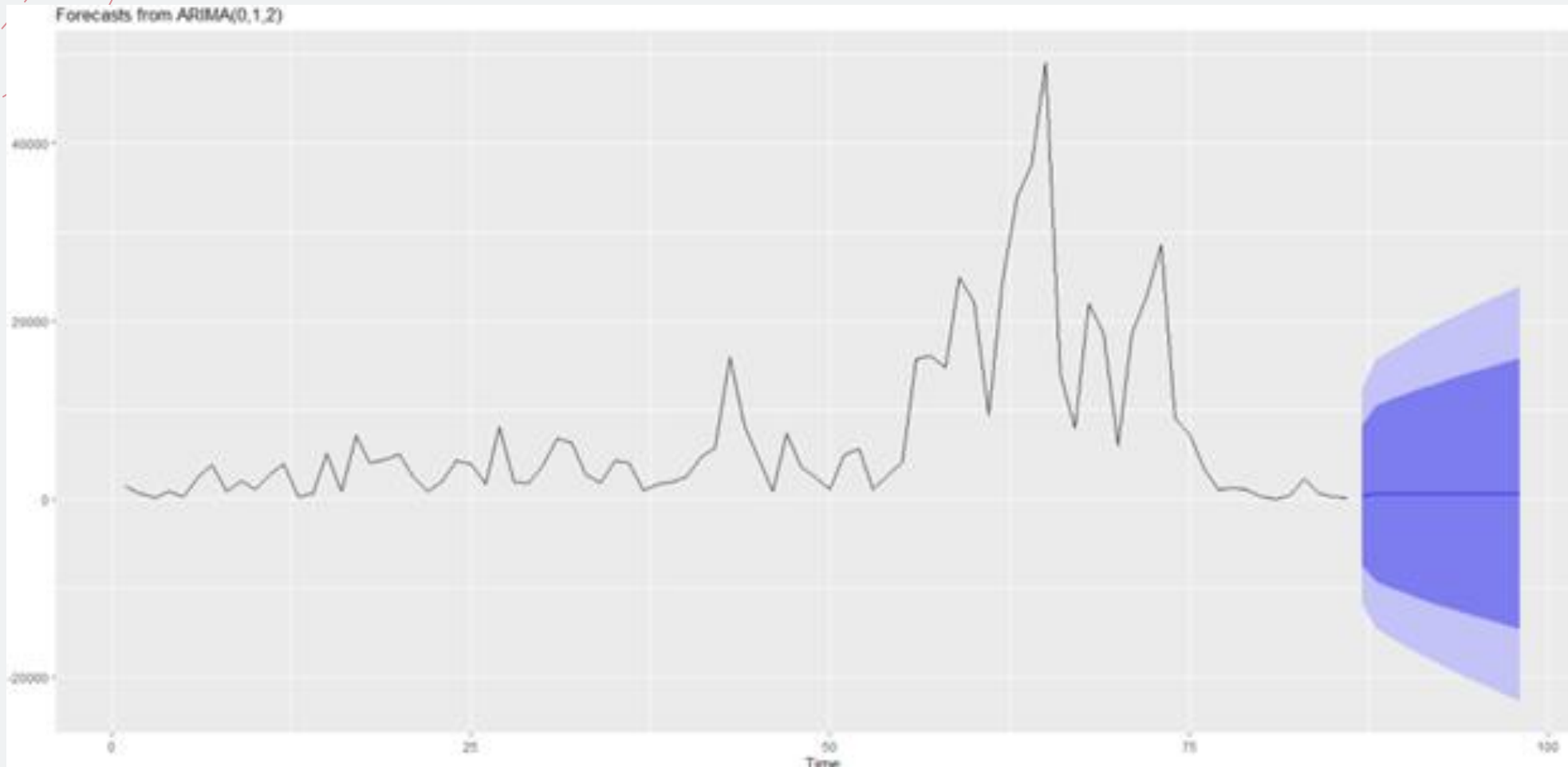**ARIMA(0,1,2)** – no seasonality

IPO Average Monthly Offer Price:
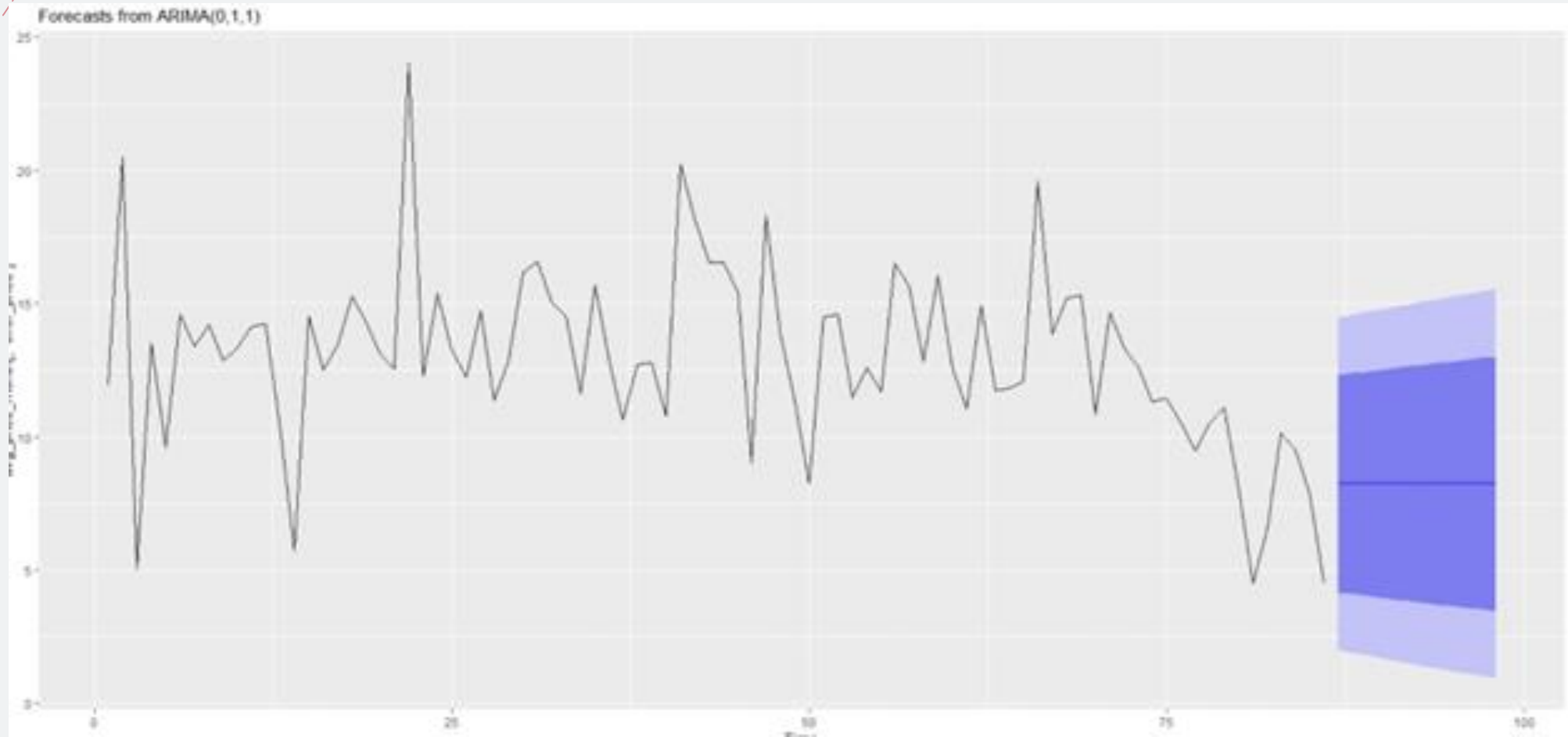
ARIMA(0,1,1) – no seasonality

Residuals

+ Residuals from fitted values pass the tests

+ -> the model selection does a good job

IPO Proceeds Forecast:
12 months ahead (95% confidence)

Forecasts from ARIMA(0,1,2)

Average Offer Price Forecast:
12 months ahead (95% confidence)

Forecasts from ARIMA(0,1,1)

Conclusions & Next Steps

+ No Seasonality
  + The trend can be explained in abnormally high IPO proceeds (outliers) for certain months.

+ IPO proceeds somewhat correlate with the IPO Index

+ Remove Outliers
  + Might affect model selection – dynamic regression

+ Hypothesis Testing

Thank You