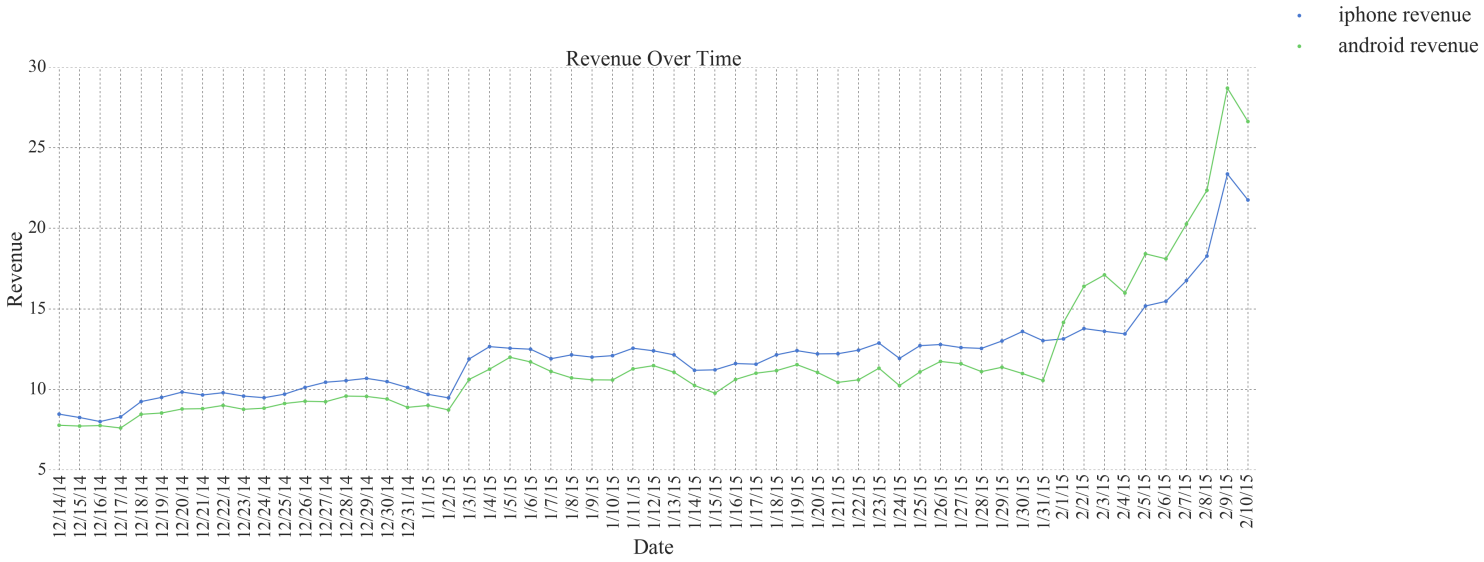
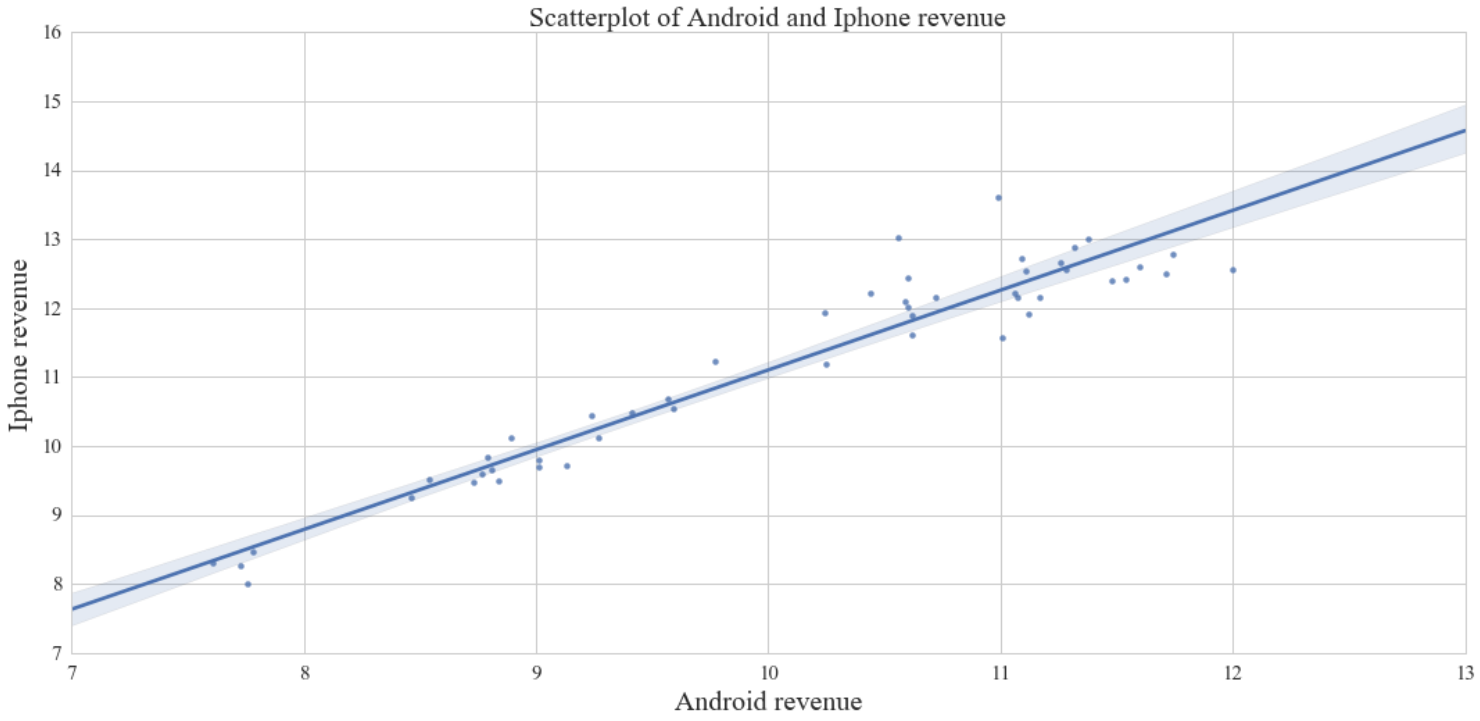
Incremental Revenue Impacted By Product Launch

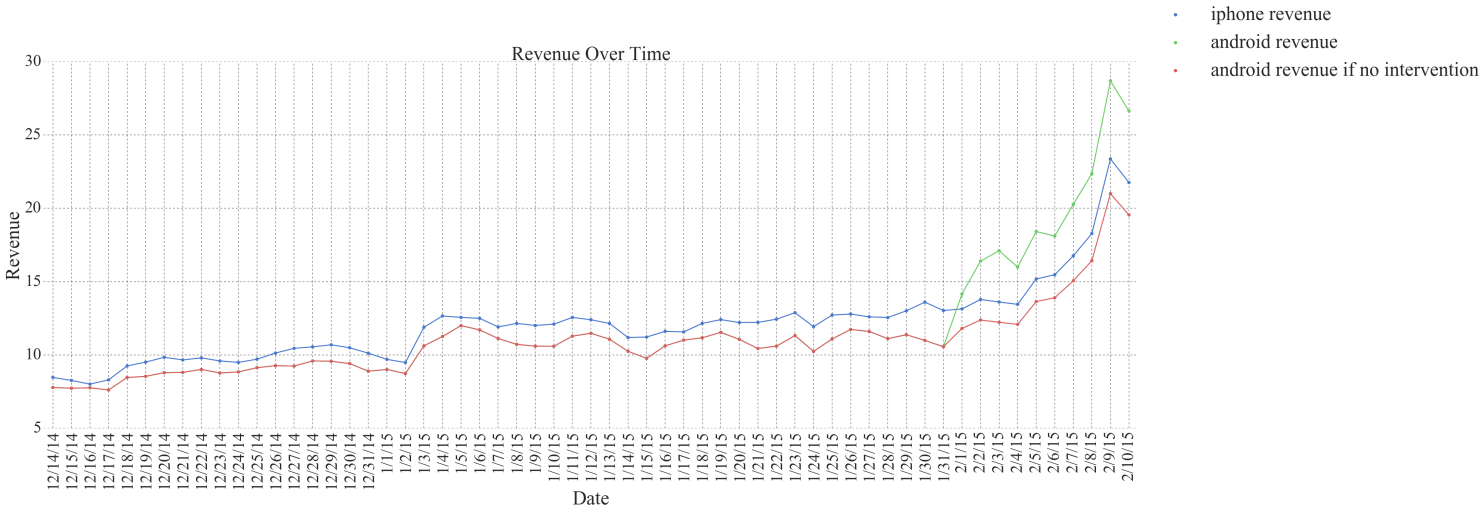
- From the time series plot, we can see the revenue of iphone and android were parellel before the launch date
- Android revenue was immediately increased after the launch date and above iphone revenue
- Meanwhile, iphone revnue was also increased after the launch date due to unknown reasons (discount, promotion etc)



Method1

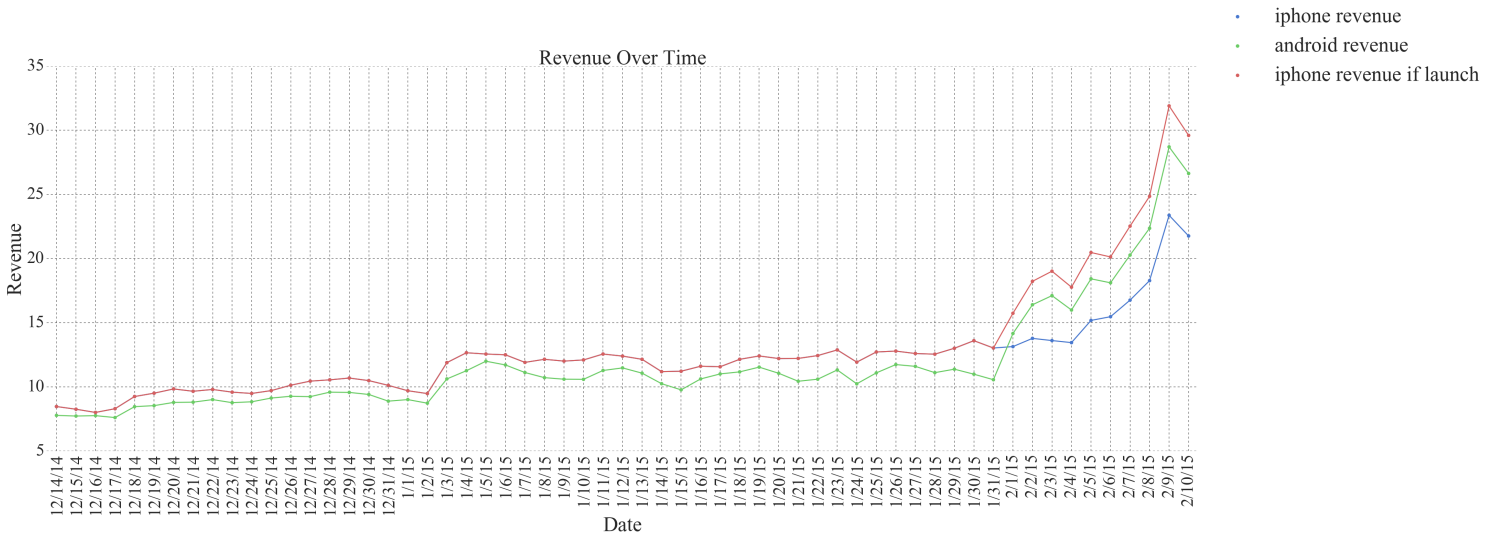
- From the scatter plot, we can see a linear relationship between android revenue and iphone revenue
- If Twitter had not launched product for android, I would expect a parallel time series line which is slightly below the blue line (iphone revenue)
- A linear regression model (regressor:iphone revenue) was used to predict android revenue (the red line) after 02/01/2015 with the assumption of no launch for android
- The absolute incremental revenue impacted by product launch is the difference between actual android revenue and predicted android revenue





Method1

- Similarly, If Twitter had launched product for iphone, I would expect a parallel time series line which is slightly above the green line (android revenue)
- A linear regression model (regressor:android revenue) was used to predict iphone revenue (the red line) after 02/01/2015 with the assumption of launch for iphone
- The absolute incremental revenue impacted by product launch is the difference between predicted iphone revenue and actual iphone revenue



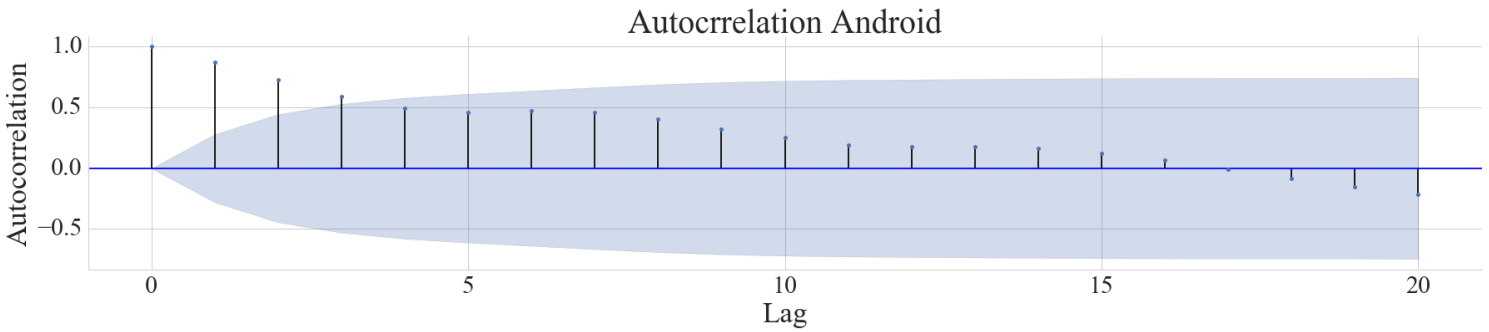
Result1

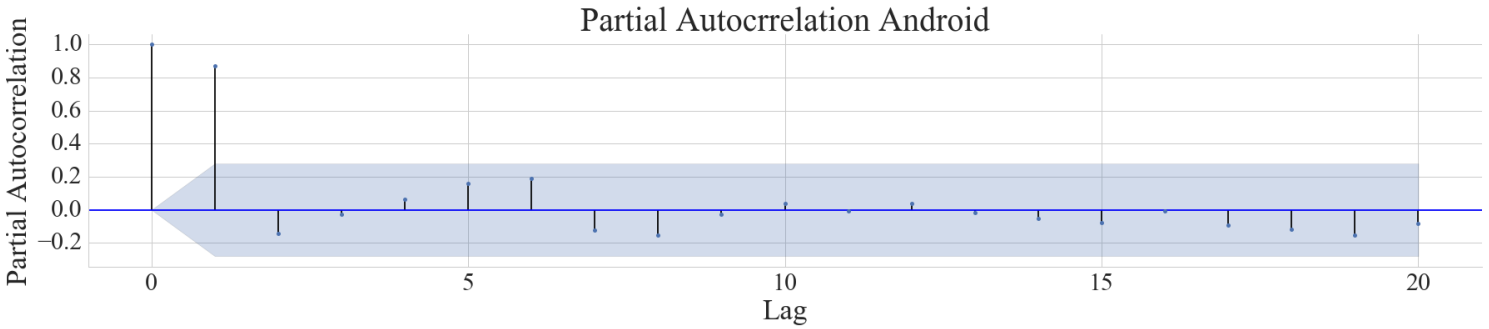
- The table bleow shows incremental revenues for both android and iphone between 02/01/2015-02/10/2015
- The incremental revenues of andorid and iphone are the same on each day becuase method1 is based on an assumption that the launch impact is the same on both platforms

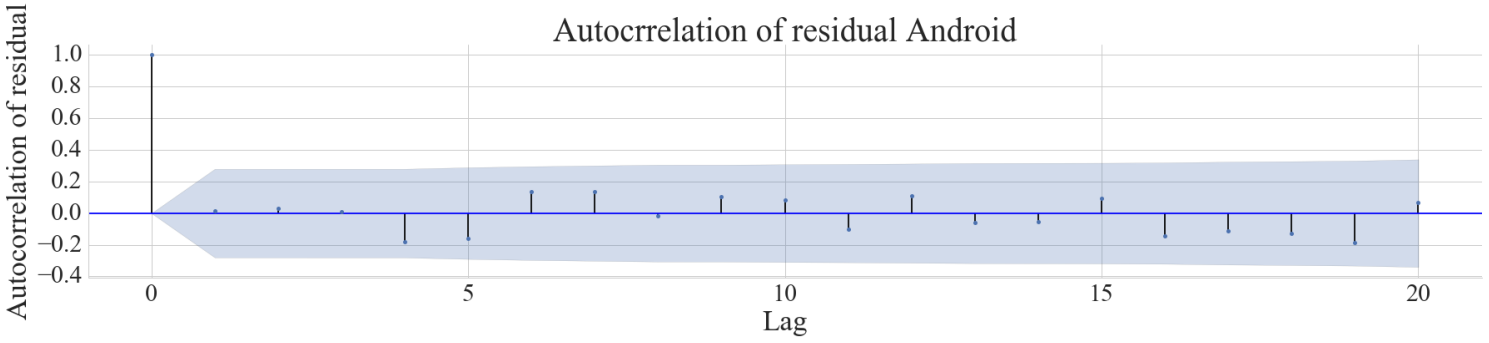
	android incremental revenue	iphone incremental revenue
2015-02-01	2.353042	2.596271
2015-02-02	4.017969	4.445625
2015-02-03	4.880723	5.404661
2015-02-04	3.904491	4.319984
2015-02-05	4.779998	5.290489
2015-02-06	4.209418	4.655980
2015-02-07	5.210288	5.766428
2015-02-08	5.934490	6.569084
2015-02-09	7.700866	8.524844
2015-02-10	7.077533	7.834414

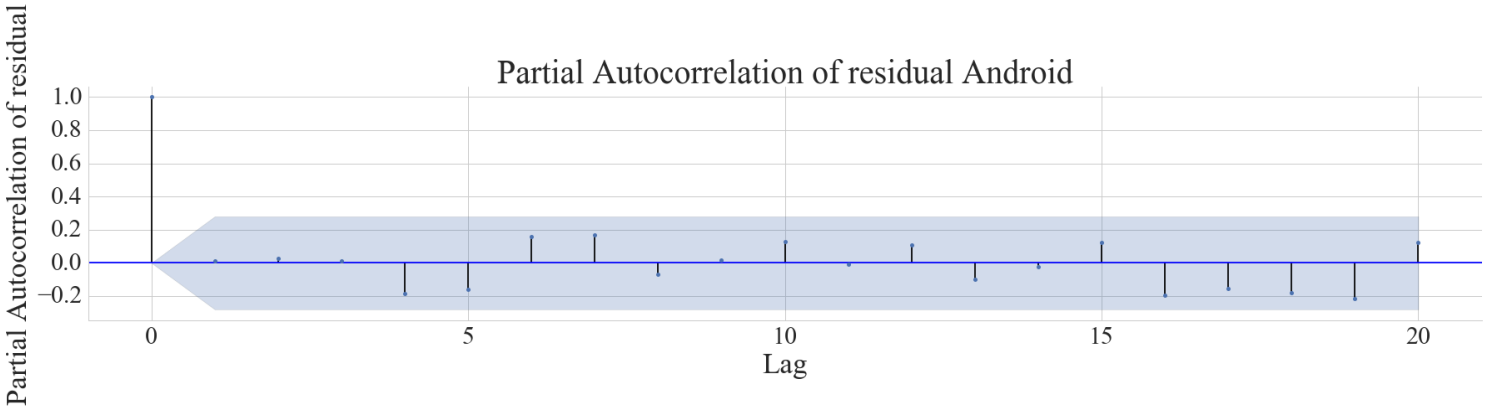
Method2

- If Twitter had not launched product for android, I would expect a parallel time series line which is slightly below the blue line (iphone revenue)
- An ARMAX model was used to predict android revenue after 02/01/2015 with the assumption of no launch for android
- Based on the ACF and PACF plots, I chose an ARMAX model with AR(1), MA(2) and an independent variable iphone revenue
- Based on the ACF and PACF plots of residuals, there were no siginificant correlations beween residuals after a model fit
- The absolute incremental revenue impacted by product launch is the difference between actual android revenue and predicted android revenue



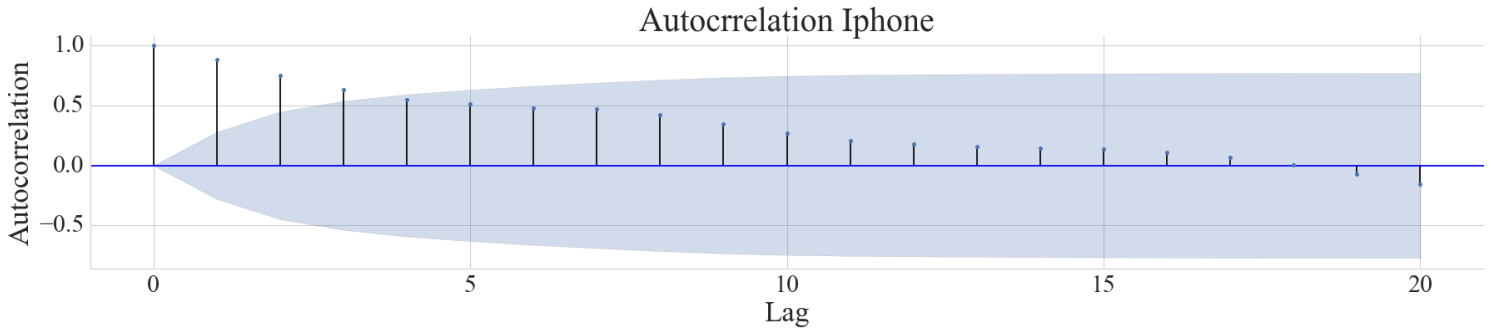


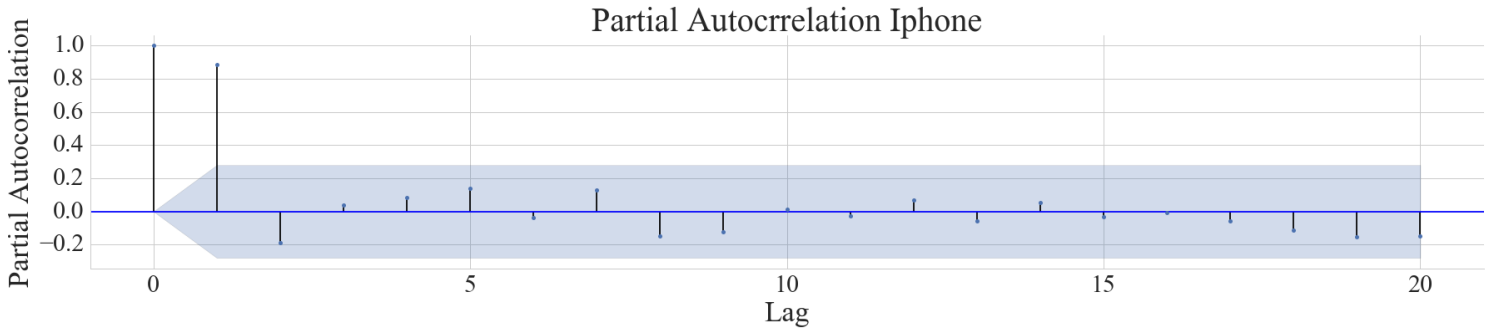


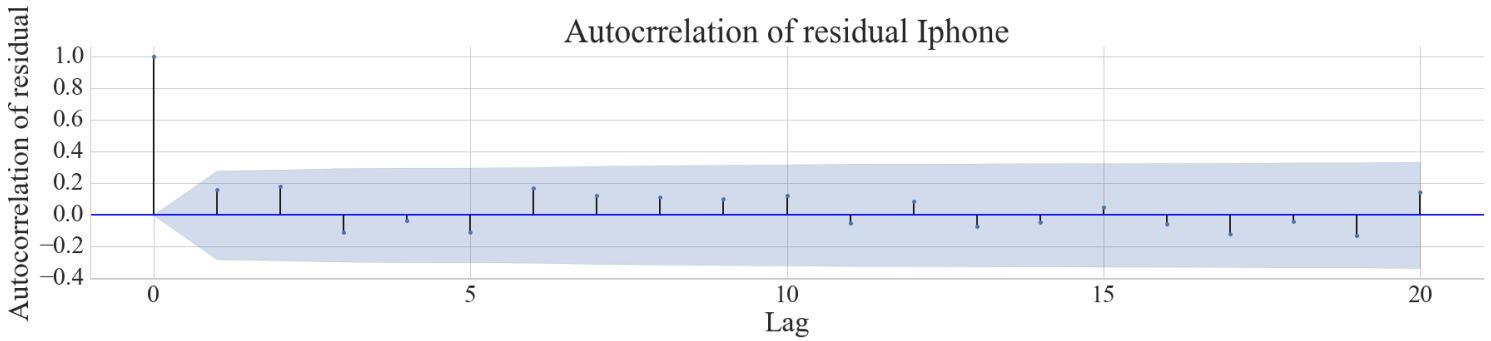


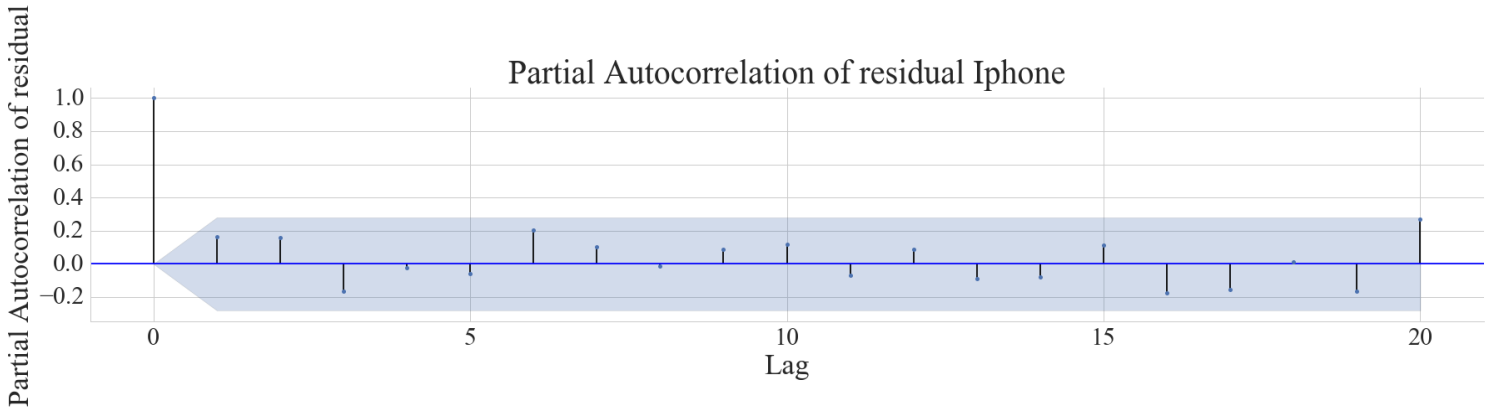
Method2

- Similarly, If Twitter had launched product for iphone, I would expect a parallel time series line which slightly above the green line
- An ARIMAX model was used to predict iphone revenue after 02/01/2015 with the assumption of launch for iphone
- Based on the ACF and PACF plots, I chose an ARMAX model with AR(1), MA(2) and an independent variable android revenue
- Based on the ACF and PACF plots of residuals, there were no siginificant correlations beween residuals after a model fit
- The absolute incremental revenue impacted by product launch is the difference between predicted iphone revenue and actual android revenue









Result2

- The table bleow shows incremental revenues for both android and iphone between 02/01/2015-02/10/2015
- The incremental revenues of andorid and iphone are more or less same on each day becuase method1 is based on an assumption that the launch impact is the same on both platforms

	android incremental revenue	iphone incremental revenue
2015-02-01	2.987867	2.897686
2015-02-02	4.292476	4.404067
2015-02-03	5.195202	5.358697
2015-02-04	4.166909	4.280972
2015-02-05	5.276376	5.236394
2015-02-06	4.733538	4.603809
2015-02-07	5.900966	5.700851
2015-02-08	6.813732	6.490535
2015-02-09	9.220676	8.406944
2015-02-10	8.394475	7.729363