Dataffirm Task - Analysis of Amazon.com, Inc. Revenue

John Beddow

Amazon have released their financial results for the first three quarters of 2017, reporting a total revenue of $117.4 billion for the year up to the end of 30th September, 2017. Using publicly available data, predictions of the total revenue for Amazon.com, Inc. in the 2017 fiscal year[1] have been made via two different approaches.

Using a sample of Amazon's historical quarterly revenue figures from 2007 up to Q3 of 2017[2] an analysis was performed to examine historical trends in quarterly revenue and produce a prediction for the Q4 revenue. Figure 1 shows Amazon's quarterly revenue history between Q1 2007 and Q3 2017. The figure shows that revenues have consistently increased exponentially over time with distinct periodic trends within each year. In all years the fourth quarter provides the largest individual share of revenues accounting for the lucrative end of year holiday season. Figure 2 shows the distributions of revenues over time split by quarter type. Quarters one to three are shown with data from 2007 to 2017, while Q4 has data only up to 2016. To calculate a prediction for the value of the Q4 2017 revenue the existing data is fitted with an exponential function,

$$\text{Revenue} = 16.29e^{0.134x} - 11.22 \tag{1}$$

where x is the desired year minus 2007[3]. For Q4 2017 this results in an estimated revenue of $50.9 billion. As this prediction only uses Q4 information up to the end of 2016, additional revenue from the 2016-completed takeover of Whole Foods Market Inc. is not included. Whole Foods Market's Q4 revenues in 2016 were reported as $4.9 billion. It would be realistic to expect Whole Foods Market to provide revenues of approximately $5 billion in Q4 2017, therefore the prediction for the overall Amazon net revenue to increase accordingly to $56 billion.

A second prediction of Amazon's Q4 2017 revenue was made using employee numbers data[4]. Figure 3 shows the Q4 net revenue per employee over a range of Amazon Q4 employee totals. Neglecting the lowest three employee totals (corresponding to the years 2007-2009) the data is found to be well described by a power series as shown in the figure,

$$\text{Revenue per Employee} = (5.27z^{-0.471}) \times 10^7, \tag{2}$$

$$\text{Total Revenue} = \text{Revenue per Employee} \times z \tag{3}$$

[1] Amazon's self-defined financial year runs concurrently with the calendar year

[2] Source: Statista.com

[3] Date presented in this format to provide sensible exponential parameters.

[4] Source: Statista.com

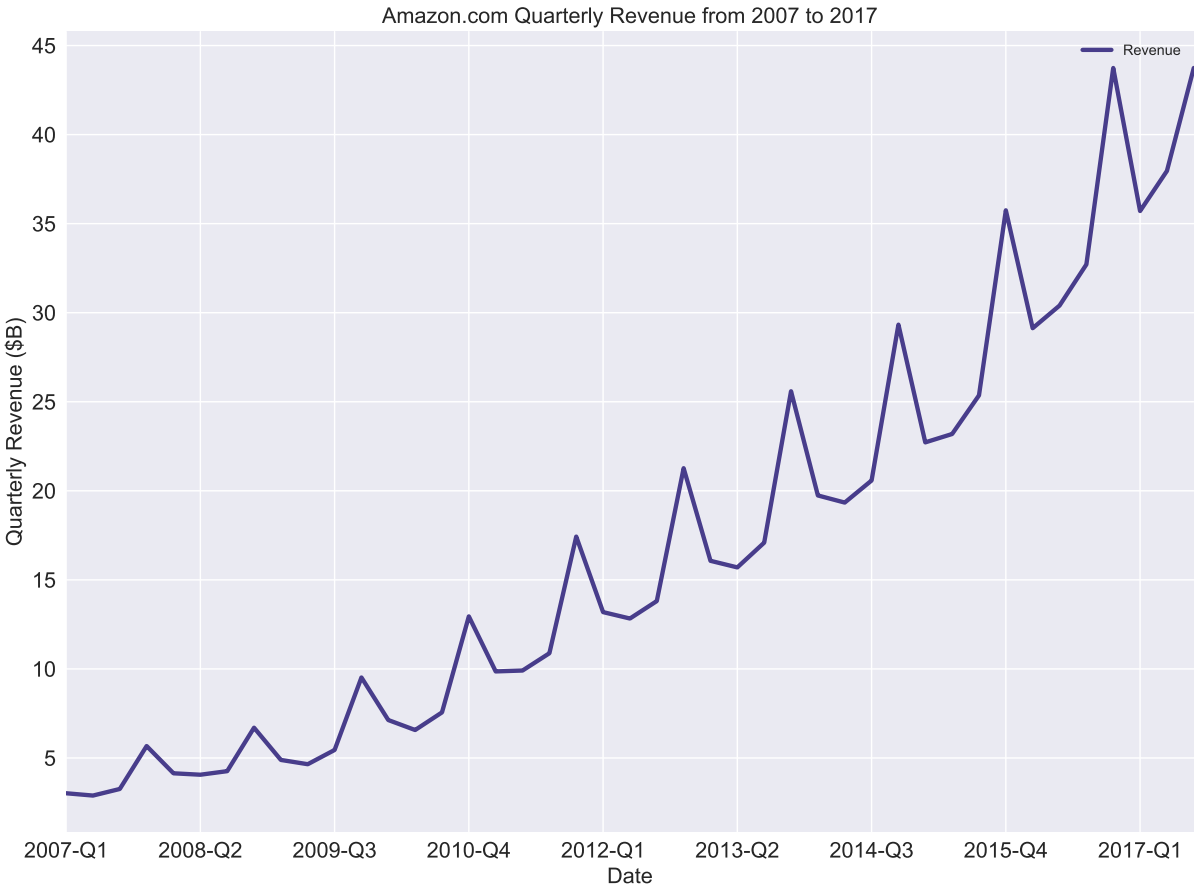

Figure 1: Amazon.com, Inc. net revenue per quarter. Source: Statista.com

where z is the number of employees. Amazon reported its end of Q3 2017 employee total as 541,900. Using this value with equation 2 gives a prediction for the total Q4 revenue of $56.6 billion.

Two separate predictions of the Q4 2017 net revenue for Amazon.com Inc. have been made. The values are found to be consistent with each other ($55.9 billion and $56.6 billion) and correspond to predicted overall revenues for the 2017 fiscal year of $173.3 billion and $174.0 billion respectively. These values are consistent with Amazon's own predictions of its Q4 revenues in 2017 of $56.0 billion to $60.5 billion.[5]

[5]Source: Amazon.com Inc. Q3 2017 Financial Result

Figure 2: Amazon.com, Inc. net quarterly revenues split by fiscal quarter type with lines of best fit included. Source: Statista.com

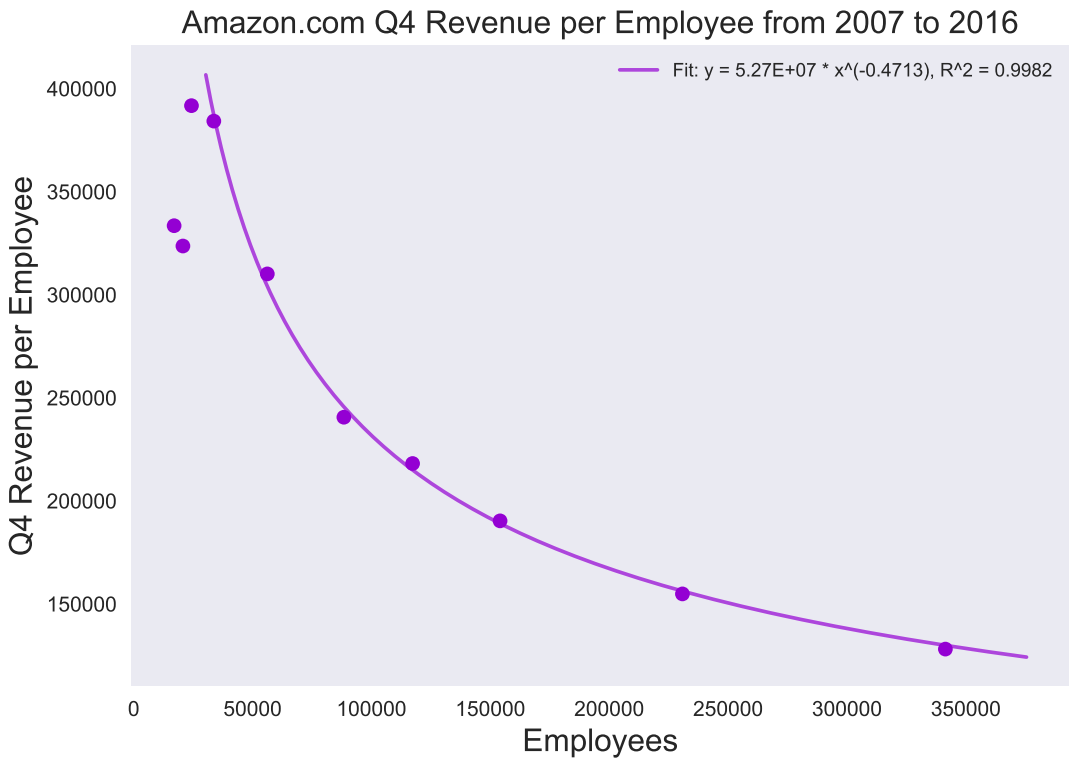

Figure 3: Amazon.com Inc. Q4 revenue per employee as a function of total number of employees with line of best fit included. Source: Statista.com