

Trees Don't Grow to the Sky

Published on: 16 February, 2018 | Author: Investment Team

Albert Einstein, when asked to name humanity's best invention responded by saying 'Compound interest is the most powerful force in the universe'. Compound interest is such a powerful force because it leads to exponential growth.

Moore's law, which is what makes our smartphones and computers shrink in size while simultaneously increasing in processing power and memory is a product of exponential growth and has been a great source of wealth and productivity throughout the globe. Currently, the five largest public companies in the USA – Apple, Google, Microsoft, Amazon and Facebook would not exist without Moore's law. While exponential growth is a remarkable force of nature, the constraints of the real world mean that in practice, exponential growth cannot continue forever.

Over the last 20 years, Amazon has increased its revenues at an annualised rate of 43%. If we extrapolate this growth to the next 20 years, its revenues will be \$230 trillion, **more than double** current world GDP. Let's say that world GDP doesn't stay the same in this period but grows at the same rate it has over the last 20 years i.e. 4.5%. In the next 20 years, world GDP would be only \$183 trillion – still less than Amazon's revenue. This means that over the next 20 years, it is mathematically impossible for Amazon to continue growing its revenues as it has done historically. No amount of mergers and acquisitions combined with the sheer drive and intelligence of Jeff Bezos can spur Amazon's revenue to exceed global GDP.

Being more 'conservative' let's say Amazon grows revenues at 43% annualised but only over the next 10 years. This means that in 2027, its revenues will be \$6 trillion. Assuming the GDP of the USA grows by 4% annualised over the 10-year period, Amazon's revenues would account for about 20% of American GDP in 2027. This second scenario is certainly feasible but still seems unlikely. This would mean that for every dollar spent in the American economy, 20 cents will go to Amazon. This sort of concentration has never occurred in the history of modern capitalism. In the early 1990s, General Electric was a behemoth in the American economy and its revenues were only about 1% of GDP. Of course, history doesn't repeat itself and it is mathematically possible that Amazon's revenue could account for 20% of the American GDP, history suggests otherwise however.

While exponential growth is a remarkable force of nature, it has its limitations. In technology, this means that the size of microchips cannot get infinitely smaller because they are constrained by the size of the atom. In business and economics, this means that companies cannot grow at astronomically high rates indefinitely because eventually they will exceed the size of the economy itself. To quote Carl Sagan 'Exponentials can't go on forever because they will eventually gobble up everything'.

Important Information: Any views, insights, or commentary are for general information only, do not constitute personal investment advice or research, and are intended for UK residents. They may not be appropriate in all jurisdictions. While sourced from information we believe to be reliable, we make no guarantee as to accuracy or completeness. Past performance is not a guide to future results, and the value of investments can go down as well as up.

Regulatory Disclaimer: Tacit Investment Management is the trading name of TIML Limited (No. 9228395), part of Tacit Holdings Limited (No. 10611211). Both companies are incorporated in England and Wales, with the registered office at 14 Hanover Square, London W1S 1HN. TIML Limited is authorised and regulated by the Financial Conduct Authority (FCA ref. 670184) and approves and issues this communication under Section 21 of the Financial Services and Markets Act

2000. Please note, tax and estate planning services are not regulated by the FCA.