

# Strengths and weaknesses of network effects

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Economics has trouble analyzing network effects. Yet these are playing an increasingly important role in the contemporary economy, which is characterized by globalization and technology. The sharpest increases in market capitalization over the last two decades all relate to network effects. This is what the famous FANG companies (Facebook, Amazon, Netflix and Google), as well as Apple and Uber, etc., have in common. Their specificity lies in the fact that they have been able to trigger what mathematicians call an “avalanche”. When the network launches successfully, its growth becomes exponential, clients are aggregated, returns to scale increase, marginal client sign-up costs become negligible, and rival networks are progressively eliminated. This effect is most significant in two-sided markets, which, like Uber, combine strong external effects between each side of the market (supply and demand) and relatively inflexible demand. The network germinates and its development is self-sustained. And investors (over)value this growth.

All companies dream of being able to ride the waves of a network effect. By nature, the development of a network concomitantly weakens rival networks. If the network sets itself the goal of being global, supranational, the marginal costs continue to fall, and no competitors can catch up. A network that goes beyond this point tends to become a *de facto* monopoly, a “natural” monopoly.

Not all technologies lend themselves to generating network effects of this kind. The service production costs must be low, and development of the network must be largely financed by users. Well-designed networks have a relatively low capital intensity.

The valuation of networks is very much based on expectations of their growth and associated profits. Low capital intensity and the potential gains that ultimately arise explain their very high stock market values, which are out of all proportion to their net position, let alone their tangible assets.

Sooner or later, these network-driven companies face a series of challenges. The network effect dries up by nature. When it succeeds in developing, the network creates its own slowdown. It generates an income, which supports its valuation, but the prospects for growth inevitably deteriorate. That is, unless another avalanche is triggered with new products or services, which is what Apple has done with the iPad, the iPhone, the iWatch and all the successive versions of these products, which are eagerly awaited by users like the Messiah.

Becoming dominant as a result of their success, they will be challenged by the competition authorities, which will be concerned by their market share. This is a complicated issue, because the reference market is difficult to define. Is it national, regional or global?

These companies, whose networks are global, have become masters in the art of juggling with regulations, particularly tax regulations. The exact location of their profits and costs is very hard to establish, even for their products. National taxation systems are totally inadequate

when it comes to dealing rationally with products “designed in California, made in China” and “sold in Europe”.

These network-driven companies are very largely responsible for stock market movements. Apart from FANG, U.S. stock market performances are in line with those of the European stock exchanges. But there are very few similar companies in Europe. Furthermore, the hypersensitivity of these companies’ valuations to their anticipated growth means that, if they “cough”, the whole stock market catches a cold.

Finally, these companies are likely to create problems in terms of both public freedom and individual freedom - the famous “privacy” issue - and also in terms of the functioning of democracy. Some of them fuel populism and destabilize representative democracies.

We can see the complex dilemma we face with a “network”. The smooth running of the market requires atomicity, plurality and competition between suppliers. But the market for certain products and services automatically leads to near-monopolistic concentrations, creating increasingly evident adverse effects, and the traditional tools for dealing with this seem powerless. Achieving an optimal combination of economic innovation, individual freedom and the global market, is an equation with many unknowns.