ECONOMIES OF SCALE

Nobel prize-winner George J. Stigler began serious inquiry into this important topic in 1958.

- **If one firm can produce 1000 units at a lower cost than two firms each producing 500 units, then economies of scale exist.**
- **When a firm realizes economies of scale, its average costs decline as output rises.**

High-tech industries often feature economies of scale because (i) large up-front investments in setting up a platform and developing innovative products, and (ii) low marginal costs of increasing output or service. Large tech companies also can organize specialized teams to focus on applications, product innovation, and customer acquisition.

The *measurement* of economies of scale requires deep knowledge about firms and is rarely done in high-tech settings. Nevertheless, the presumption that economies of scale are substantial in high-tech settings led Patrick Barwise of the London Business School to characterize tech markets are *winner-take-all.* He supports his claim by reference to the long-term success of firms such as Microsoft (business and office software, cloud services, etc.).

There are examples in support of the *winner-take-all* hypothesis. But we should consider alternative explanations, e.g., Microsoft might win in office products because its products better. The same point applies to Nvidia.

Even when economies of scale are important, a single firm may not win *all*. One important reason is that high-tech products and services are often *differentiated or specialized*. For example, Qualcomm competes with Taiwan Semiconductor (the leader in semiconductors, graphic cards, GPUs, etc.) in the supplying specialized semiconductors for wireless communications.

Another example is Netflix. Its marginal cost of delivering one of their offerings is nearly zero and so average costs decline with viewership. But not everyone likes their hit shows (*House of Cards* and *Ozark)* which are in English and are filmed in the US. Unsurprisingly, consumers in other countries prefer original content in local languages. Hence, the rise of ALT Balaji in India, ViHub in Russia, and GoPlay in Indonesia.

Economies of scale are important for EV manufacturers. Even high-volume manufacturers like BYD and Tesla would do better at greater scale. For low-volume manufacturers like Lucid (and Rivian), greater scale is needed for survival. Lucid produced less than 10,000 vehicles in 2023, has incurred huge losses, and its stock has fallen by 90 percent. But people like their cars. And analysts are focusing on whether Lucid can turn the corner financially, i.e., reduce annual losses and grow.[1]

[1] See *Motley Fool*, July 2024, https://www.fool.com/investing/2024/07/14/5-things-to-know-before-buying-lucid-stock/

In general, economies of scale may be limited because (a) there is limited demand for specialized products, and (b) expanding geographic scope to realize greater scale involves additional investments to match the preferences of local and regional consumers.

When economies of scale are important, success depends on making the right investments, which in turn requires timeliness and foresight.

Readings:

1. Stigler, George J., "Economies of Scale", Journal of Law & Economics, Vol. 1, October 1958, pp. 54-71.
2. Barwise, Patrick, "Nine reasons why tech markets are winner-take all", London Business School, January 29, 2018. https://www.london.edu/lbsr/nine-reasons-why-tech-markets-are-winner-take-all
3. https://www.altbalaji.com/

Low marginal costs … but highly differentiated products: