

Counterpoint Global Insights

Market Share

Understanding Competitive Advantage Through Market Power

CONSILIENT OBSERVER | September 15, 2022

Introduction

“There is no more important proposition in economic theory than that, under competition, the rate of return on investment tends toward equality in all industries.”¹

Sustainable competitive advantage is pertinent for executives and investors. We define sustainable competitive advantage as a company’s ability to generate returns on investment above the cost of capital, and higher than its competitors, for an extended period.

Executives seek to position their companies strategically to attain a competitive advantage. In the process, they have to consider industry dynamics, including barriers to entry, and figure out how to perform activities differently, or perform different activities, than their competitors.² Companies can also create shareholder value by allocating capital judiciously.

Investors commonly seek to buy the shares of businesses that can create value over time. These companies are often said to be surrounded by an economic moat that preserves profitability and keeps competitors at bay.³ Of course, investors need to be sensitive about the price they pay. But businesses with a sustainable competitive advantage can be attractive because their value grows over time.

Investors often treat analysis of competitive advantage and valuation as separate tasks. But they should be done together. Alfred Rappaport, a professor emeritus at the Kellogg School of Management at Northwestern University, made this point clearly in his seminal book, *Creating Shareholder Value*. He wrote, “It is important to establish that the economic forces governing industry attractiveness . . . influence prices, quantities sold, costs, investments, and the riskiness of the industry. These variables, in turn, are the building blocks for the value driver determinants of shareholder value.”⁴ You need to understand the elements of competitive advantage to value a business intelligently.

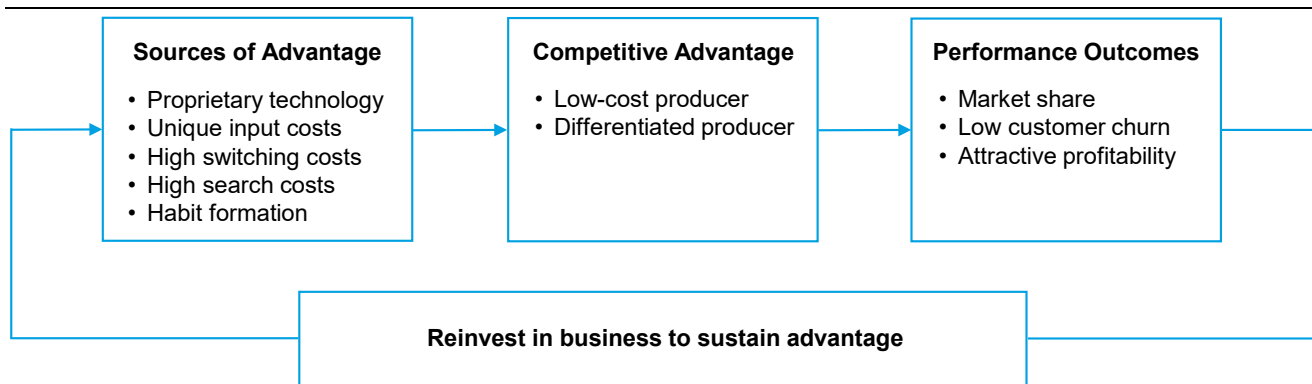
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A traditional approach to assessing a firm's competitiveness considers the potential sources of advantage, determines whether those sources translate into a competitive advantage, and validates the existence of competitive advantage by examining measures of performance, including market share and profitability (see exhibit 1). For example, a company that has a technology protected by a patent may be a differentiated producer and deliver a high return on investment. You start with the sources and end with the outcomes.⁵

Exhibit 1: Traditional Competitive Strategy Analysis



Source: Based on George S. Day and Robin Wensley, "Assessing Advantage: A Framework for Diagnosing Competitive Superiority," *Journal of Marketing*, Vol. 52, No. 2, April 1988, 3 and Bruce Greenwald and Judd Kahn, *Competition Demystified: A Radically Simplified Approach to Business Strategy* (New York: Portfolio, 2005).

This report takes a different tack. It starts by examining market share and asks whether market share, and related concepts, can help inform the analysis of industry structure. This will take us on a journey that includes life cycles, market share, concentration, markups, intangibles, and "superstars." We will study the link between some of these variables and return on investment and provide some analytical tools along the way. We finish with some case studies to see how these ideas apply to a handful of industries.

This work is important because economic theory tells us that return on investment in excess of the opportunity cost of capital gets eroded by competition. There is regression toward the cost of capital. An industry where all competitors earn the cost of capital is in competitive equilibrium.

Research in strategic management has a different point of emphasis than that in economics. Strategy seeks to explain sustainable competitive advantage by looking at individual companies and how they differ. Economics tends to treat firms in broader classes, old versus young or incumbent versus challenger, with an emphasis on aggregates. Notably, the antitrust literature draws much more heavily on research in economics than in strategy.⁶

Understanding competitive advantage helps us anticipate the rate at which regression happens. The slower the rate of fade, the longer a company can sustain its competitive advantage. Companies with strong competitive advantages preserve high returns longer than their competitors do.⁷

A study of market share is useful because it can provide insight into entry and exit dynamics and industry stability. How a firm gains or loses market share can shed light on the distinction between more traditional markets, where multiple competitors grapple for share, and those with strong network effects, which often culminate in one firm dominating the industry.

We also need to understand the link between market share and firm profitability. A strong market share position can lead to attractive profitability for good or bad reasons. Good reasons include the benefit of economies of scale, where bigger companies have lower costs than smaller ones and hence can provide consumers with a

quality offering at an attractive price. Bad reasons reflect anti-competitive behavior, cases where leaders stymie the competition and resulting prices are higher than they would be otherwise.⁸ Debates about potential antitrust actions are based on this distinction.

Defining Market Share

The *Merriam-Webster* dictionary defines market share as “the percentage of the market for a product or service that a company supplies.”⁹ Market share is an outcome of a company’s product or service offering, distribution channels, marketing initiatives, and customer relationships. Some markets tend toward winner-take-most outcomes.¹⁰

Lee Cooper and Masao Nakanishi, professors of marketing, suggest that market share analysis should be competitive, descriptive, and profit-oriented.¹¹ Competitive emphasizes that any assessment must be in the context of the position and decisions of competitors, including potential entrants. Descriptive captures the market structure and the potential impact of marketing initiatives on product performance. Profit-oriented considers how changes in market share lead to changes in profitability.

While market share is straightforward in concept, there can be considerable challenges in attaining reliable figures. For example, defining the market requires judgment. Take automobiles as a case. Does it make sense to measure market share for all vehicles sold? Or does reflecting segments such as sedans versus sport utility vehicles provide insight? What is the appropriate geographic scope? Should market shares be considered on a local, regional, national, or international level? When does that matter? Finally, should you measure market shares using revenues (units sold times price divided by total revenue) or units (units sold divided by total units sold)?¹²

Market structure is defined by the number and distribution of firms within an industry.¹³ Two aspects of market share, stability and concentration, can provide insight into potential sustainable competitive advantage.

Market Share Stability

Market share stability is conducive to sustainable competitive advantage, whereas instability makes it more difficult to create value over time. Instability can be the result of multiple sources, including new entrants, competitive actions, technological change, and shifts in consumer demand.¹⁴ Market share instability provides insight into the nature of rivalry and is a measure of mobility within the industry.¹⁵

Methods to measure market share stability have been around for more than a half century. Bruce Greenwald, a professor emeritus of asset management and finance at Columbia Business School, popularized an approach based on average absolute value market share change.¹⁶ You examine the market shares for each company within an industry over two periods, usually three to five years apart, and calculate the absolute value of the change for each. You use those figures to calculate the average absolute value change.

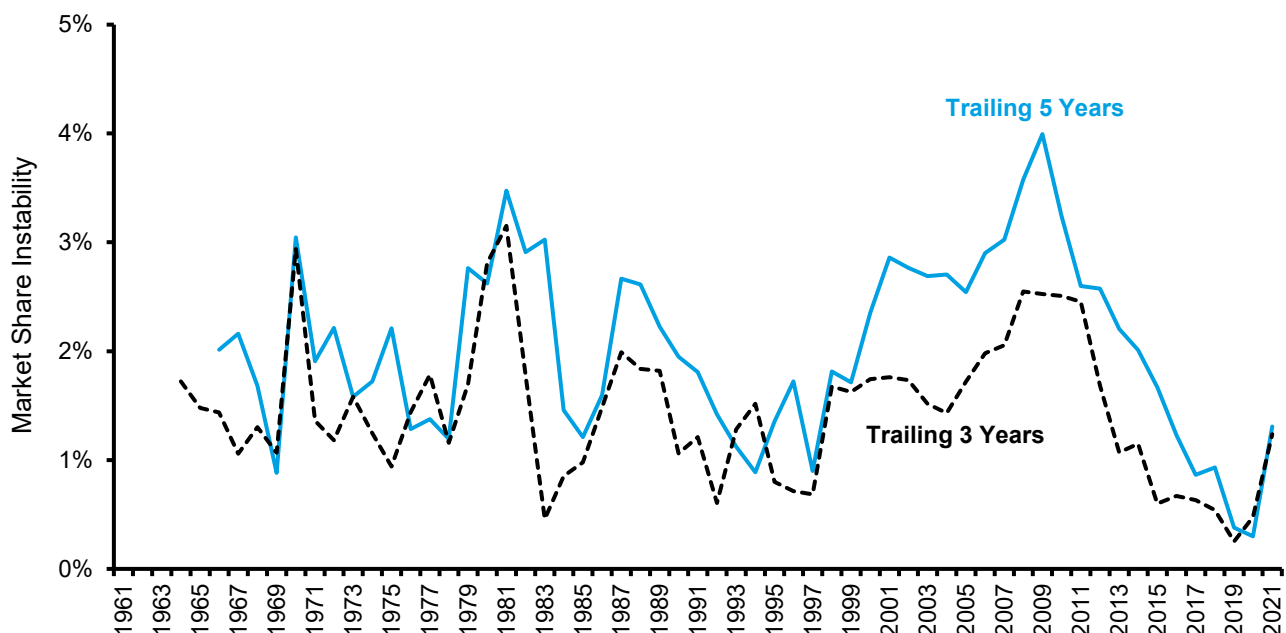
Exhibit 2 provides an example for the United States (U.S.) automobile industry for the 5 years from 2016 through 2021. While some firms lost share (General Motors) and others gained share (Tesla), the average absolute value change was about one percentage point. We consider any average below two to be a low level of instability.

Exhibit 2: Market Share Instability Analysis – U.S. Automobile Industry, 2016-2021

Company	2016	2021	5-Year Absolute Value Change
General Motors	17%	15%	2%
Toyota	14%	15%	1%
Ford	15%	13%	2%
Stellantis	13%	12%	1%
Honda	9%	10%	1%
Hyundai	8%	10%	2%
Nissan	9%	7%	2%
Volkswagen	3%	4%	1%
Subaru	3%	4%	1%
BMW	2%	2%	0%
Daimler	3%	2%	1%
Mazda	2%	2%	1%
Tesla	0%	2%	2%
Volvo	0%	1%	0%
Jaguar Land Rover	0%	1%	0%
Other	2%	0%	2%
Total	100%	100%	
Average			1%

Source: www.goodcarbadcar.net and Counterpoint Global.

We can also look at how this level of instability has changed over time. Exhibit 3 shows the trailing 5- and 3-year market share instability figures for the U.S. automobile industry from 1961 through 2021. We see bouts of relative instability, including the early 1980s and the decade to start the 21st century, interspersed with periods of quiescence.

Exhibit 3: Market Instability Analysis – U.S. Automobile Industry, 1961-2021

Source: Wards Auto, www.goodcarbadcar.net, and Counterpoint Global.

This analysis also allows for two other checks. The first is to see how many companies are in the industry. The other is to see if new names appear on the list or old ones disappear. Lots of companies and the emergence of new competitors typically suggest that barriers to entry are low.

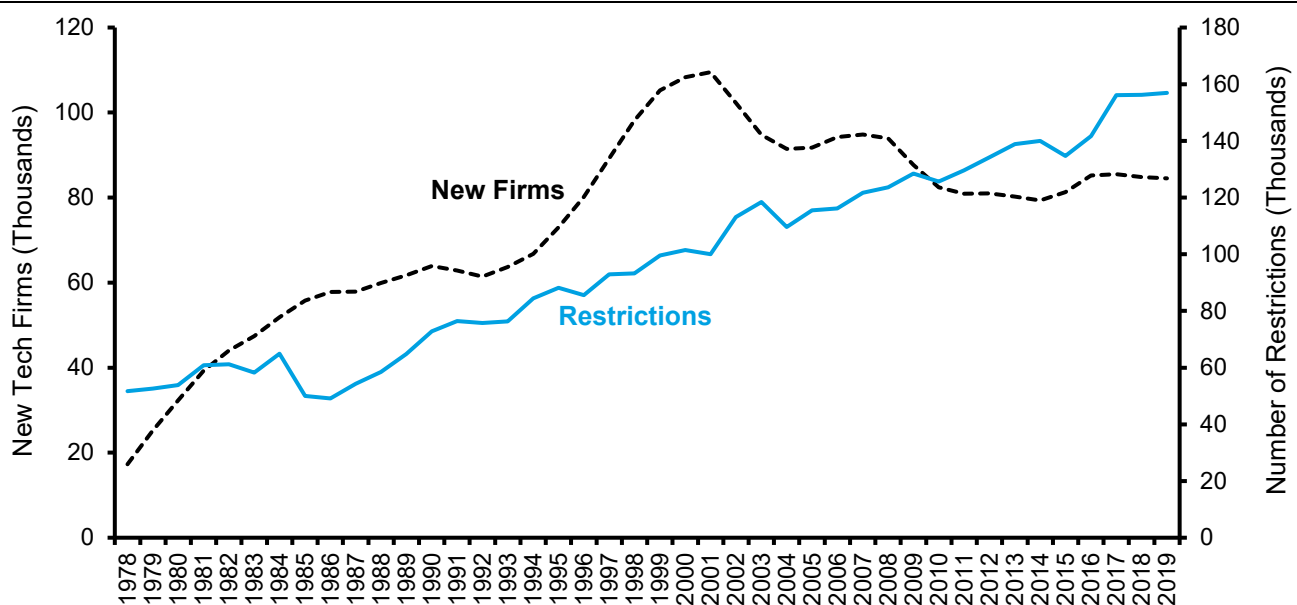
A couple of factors are particularly important in considering the rate of entry and exit. The first is where an industry is in its life cycle. As an industry is born, it is common for the number of entrants to rise sharply in the early years and then to fall over time.¹⁷ Market shares tend to show a great deal of instability early on and settle down over time. For instance, the average absolute value change of the big three automobile manufacturers, General Motors, Ford, and Chrysler, was nearly 10 from 1925 to 1929. Identifying winners can be very challenging shortly after an industry launches.¹⁸

The second factor is the rate of entry. One of the key functions of a capitalist system is to efficiently shift resources from industries that destroy value to those that create value.¹⁹ Low barriers to entry and exit, as well as low friction on capital flows, encourage this process.

Industries with high returns on investment attracted entrants from the mid-1970s through about the year 2000. But since then, high returns have no longer correlated with free entry. Research by the economists Germán Gutiérrez and Thomas Philippon suggests that neither economies of scale for the incumbents nor higher entry costs explain this decline in entry. They contend that the main culprit is the rise of regulation.²⁰

Gutiérrez and Philippon argue that the rise has been geared less toward public interest regulation, which seeks to protect consumers and address negative externalities, and more toward public choice regulation, which primarily benefits incumbents. Regulation, along with the substantial investments in intangibles by big firms, have created large, fixed costs that have impeded the entry and growth of small firms. Exhibit 4 shows the rise in the number of regulations and the entry rate for technology firms.²¹ Entry by technology firms peaked around 2000 and has drifted lower in recent decades.

Exhibit 4: The Rise of Regulations and Firm Entry for Technology, 1978-2019



Source: (New firms) U.S. Census Bureau, Center for Economic Studies, Business Dynamics Statistics; (Restrictions) Patrick McLaughlin, Jonathan Nelson, Thurston Powers, Walter Stover, and Stephen Strosko, RegData US 4.0 Annual (dataset), QuantGov, Mercatus Center at George Mason University, Arlington, VA, 2021; Counterpoint Global.

An analysis of market share stability offers insight into how market shares change over time. But it does not paint a complete picture of how market share is distributed. For that, we need to examine concentration.

Market Concentration

Market concentration quantifies “the extent to which market shares are concentrated between a small number of firms.”²² There are two main ways an industry can become concentrated. The first is through consolidation. For example, the number of aerospace and defense prime contractors went from 51 to 5 during the 1990s.²³ The second is the result of winner-take-most outcomes that are characteristic of some industries.²⁴

The relationship between minimum efficient scale (MES) and the total addressable market (TAM) is one way to think about the number of competitors and the degree of potential concentration.²⁵ MES is the level of output at which a firm reaches its long-term average cost. It is based on the relationship between a company's sales and fixed costs, or costs that do not change with output. A company that has not reached MES will be at a disadvantage to a larger competitor. MES therefore provides an indication of how much market share a company requires to be competitive.²⁶

TAM is the sales a company could attain if it had 100 percent share of a market it could serve while creating value. TAM is not about how large an industry can be but rather how large it can be while adding value.

You should always think about scale relative to competitors. Big firms in a large industry may not have any advantage when compared to one another. For example, eight global automobile manufacturers had sales in excess of \$100 billion in 2021. Likewise, a little firm in a small industry may have an advantage. MES and TAM, which can change over time as the result of shifting consumer preferences and technological advances, should be part of any consideration of concentration.

As with market share, there is a lot of debate about how to measure concentration. Different methods can lead to different conclusions about the same industry. One method is to measure the market share held by some number of companies. This is often designated by the letter “C” and the number of companies measured. For example, a C4 concentration calculation adds up the market shares of the largest four industry participants.

The most common approach for estimating concentration is the Herfindahl-Hirschman Index (HHI), which weights market shares. Specifically, the index is the sum of the squares of the market shares of the 50 largest firms in an industry times 10,000. For industries with fewer than 50 firms the amount is the sum all firms. For instance, for an industry with four companies and market shares of 50 percent, 25 percent, 15 percent, and 10 percent, the index would be 3,450 ($[(.50)^2 + (.25)^2 + (.15)^2 + (.10)^2] \times 10,000 = 3,450$).

The virtue of the HHI is that it considers not only the number of firms in an industry but also the distribution of their sizes. It measures inequality. A large firm in a fragmented industry may be able to impose discipline on its competitors. HHI is commonly used in assessing whether deals are anti-competitive, and an HHI in excess of 2,500 is considered a “highly concentrated” market.²⁷

Exhibit 5 shows how these measures can offer different messages. In the first scenario, the top four competitors have equal share, leading to a C4 of 80 percent and an HHI of 1,800, deemed to be a “moderately concentrated” market. In the second scenario, one company has one-half of the market even as the top four still share 80 percent. Now the HHI soars to 3,000 and the market is considered to be highly concentrated. In practice, however, these metrics generally come to similar conclusions.²⁸

Exhibit 5: Concentration Measures Can Provide Different Signals

	Market Share	
	Scenario 1	Scenario 2
Competitor A	20%	50%
Competitor B	20%	10%
Competitor C	20%	10%
Competitor D	20%	10%
Competitor E	10%	10%
Competitor F	<u>10%</u>	<u>10%</u>
Total	100%	100%
C4	80%	80%
HHI	1,800	3,000

Source: Counterpoint Global.

Another challenge is the level at which you choose to measure concentration. Do we care about local or national concentration? Which tells us more about the nature of competition? Some studies show that national concentration has risen in recent decades even as local concentration has declined for some industries, including retail stores.²⁹ Particular assumptions embedded in the measurement create the dichotomy between the figures for national and local concentration.³⁰

Defining an industry can also be tricky. Researchers calculate HHI using the Standard Industrial Classification (SIC), the Global Industry Classification Standard (GICS), and the North American Industry Classification System (NAICS). The results can differ markedly based on which metric a researcher uses to measure the industry.³¹

The basic intuition is that high concentration suggests limited competition, which explains why HHI is used as a tool to assess whether a merger and acquisition (M&A) deal is considered anti-competitive. Likewise, low concentration is consistent with lots of competition. These important caveats regarding measurement notwithstanding, we would like to know whether concentration is up or down in recent decades.

The answer is it depends on whom you ask. Some studies find clear evidence for rising concentration and explore the implications for industry returns in excess of the cost of capital.³² For example, one analysis suggests the HHI for U.S. public companies has gone from less than 1,000 in the mid-1990s to more than 1,600 today.³³

Other studies find limited evidence for increases in concentration.³⁴ One showed the industries with the largest increase in the C4 ratio from 2002 to 2017 included declining sectors such as newsprint mills and radio networks.

In a point related to entry, the data show that the probability of a firm in the top four dropping out of that group rose steadily from 1980 and peaked around 2000. This suggests these leaders were being disrupted at a rising rate. Since then, however, the probability has dropped steadily, which is consistent with a decline in disruption.³⁵

The core limitation of concentration measures, including C4 and HHI, is that they are not reliably linked to sustainable competitive advantage or stock returns.³⁶ It appears market share provides a better link to profitability than does concentration.³⁷ We now turn to the link between market share and attractive return on investment.

Market Share and Market Power

A recent meta-study found that market share is positively linked to financial performance, including metrics such as return on sales, return on investment, and return on equity.³⁸ But the relationship is not simple and context matters.³⁹ The central question is how market share translates into a return on investment that exceeds the cost of capital.

One of the best ways to answer this is to examine supply and demand curves, one of the most basic concepts in economics. Exhibit 6 provides a simple example. On this chart, the horizontal (x) axis measures quantity and the vertical (y) axis reflects price. The demand curve shows the willingness to pay (WTP) of consumers. They demand a low quantity of a good or service when the price is high, and demand rises as the price falls.

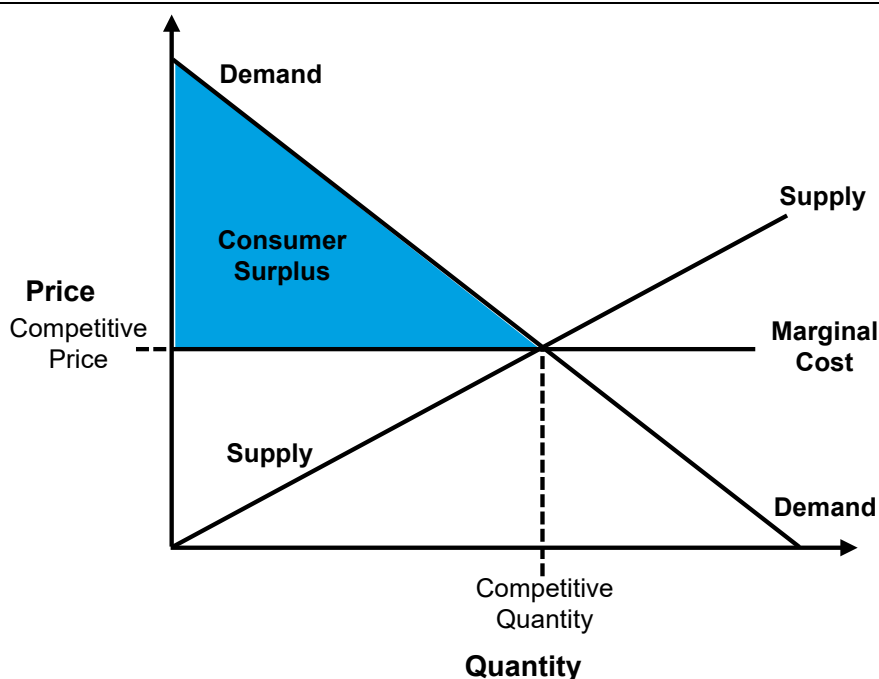
The supply curve reflects the cost for producers. Suppliers will provide lots of a good or service when prices are high, and the willingness to sell (WTS) drops as the price does.

The equilibrium price is at the intersection of the demand and supply curves, where the willingness to pay and the marginal cost of production meet. The price will equal this cost in theory because a producer that has a cost lower than that of its competitors will drop its price to grow its market share.

In a competitive setting, the price migrates toward the marginal cost. This is what George Stigler, the economist quoted at the top of this report, meant when he said, “the rate of return on investment tends toward equality in all industries.” The marginal cost includes the cost of capital. Companies will have a return on investment equal to the cost of capital, which means they neither create nor destroy shareholder value.

Consumers who have a willingness to pay above the price realize a surplus because they are getting something for less than what it's worth to them. Consumer surplus captures the utility, or satisfaction, that consumers perceive. The triangle in the upper left corner reflects this aggregate value.

Exhibit 6: Supply and Demand Curves and Competitive Equilibrium



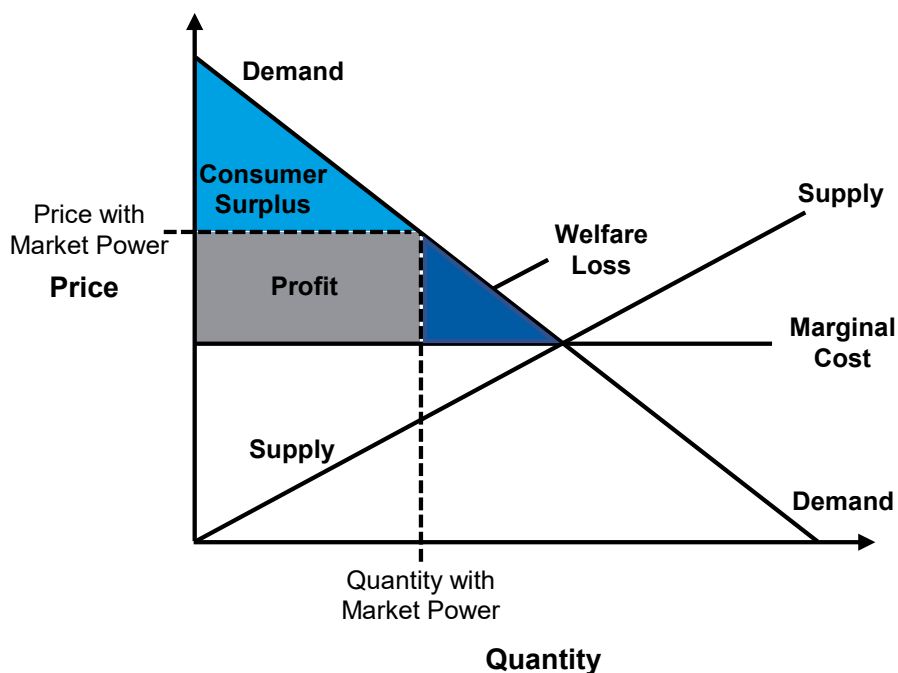
Source: Counterpoint Global.

Companies generally seek to generate returns on investment above the cost of capital. This requires realizing a price that is above the marginal cost. Economists call this ability “market power,” which is defined as “the ability of a firm to raise prices above costs and generate excess profits.”⁴⁰ Industries and companies with market power earn an economic profit, a return on investment in excess of the cost of capital.

Exhibit 7 shows the same demand and supply curves, but rather than the price set at marginal cost, the higher price reflects market power. Consumer surplus remains, but the area of the triangle is much smaller than in exhibit 6.

Producers now have an economic profit. We also have welfare loss, which represents the group of consumers that have a willingness to pay above the competitive price but below the price with market power. In other words, these consumers would have bought the good or service at the competitive price but lose welfare because the higher price precludes them from a purchase.

Exhibit 7: Supply and Demand Curves and Market Power



Source: Counterpoint Global.

The existence and pursuit of market power immediately raises some issues. The first is the role market power plays in the link between market share and economic profit. The second is how we measure market power, the difference between price (output) and marginal cost (input).

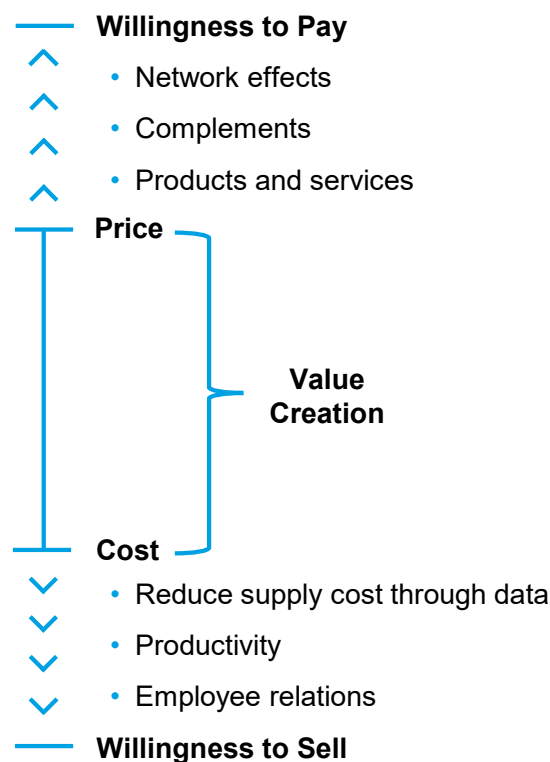
How Companies Create Value

The combination of market power and a framework for understanding how companies create and capture value provides a way to understand the connection between market share and economics. This model of how companies add value was developed by two professors of strategy, Adam Brandenburger and Harborne Stuart, and considers value creation from the point of view of buyers, the company, and suppliers.⁴¹ Felix Oberholzer-Gee, a professor of strategy at Harvard Business School, has brought the ideas to life with robust frameworks and vivid examples.⁴²

Exhibit 8 shows what Oberholzer-Gee calls the “value stick,” which allows us to think about a company’s ability to create value on two levels. The first is the gap between willingness to pay and willingness to sell. WTS is the lowest price at which a supplier is willing to sell their good or service. The difference between willingness to pay and price is consumer surplus, as we have seen. The difference between cost and the willingness to sell is supplier surplus. For example, you might imagine the company paying an employee (cost) more than the salary at which she would be indifferent to working (WTS). In this case the employee would enjoy a supplier surplus.

Oberholzer-Gee argues that companies should strive to increase willingness to pay and to lower willingness to supply. This shifts demand and supply curves, creates the opportunity for consumer and supplier surplus, and leaves plenty of room for the company to create value. The economic pie, from suppliers to customers, grows.⁴³

Exhibit 8: A Value Stick Shows How Market Share Can Add Value



Source: Based on Felix Oberholzer-Gee, *Better, Simpler Strategy: A Value-Based Guide to Exceptional Performance* (Boston, MA: Harvard Business Review Press, 2021), 14.

The second level of value creation is narrower and focuses on the company. A more formal definition of economic profit is return on invested capital (ROIC) minus the weighted average cost of capital (WACC), times invested capital. ROIC is defined as net operating profit after taxes (NOPAT) divided by invested capital.

For instance, if a company's ROIC is 13 percent, its WACC is 8 percent, and its invested capital is \$1,000, the economic profit is \$50 $([.13 - .08] \times \$1,000 = \$50)$. A company creates value when its economic profit is positive, which means the present value of the cash flows from its investment are worth more than the cost.

It is important to add that just because a company has earnings does not mean that it is creating shareholder value. Investments can generate earnings that are positive but fail to earn the cost of capital. This results in a negative economic profit. For this reason, the link between earnings growth and value creation is tenuous.⁴⁴

Oberholzer-Gee shares some of the main ways to increase willingness to pay and lower willingness to sell. These concepts are very consistent with generic strategies to gain a competitive advantage, including differentiation (achieve a premium price by raising WTP), cost leadership (have prices below the competition as the result of a lower WTS), and focus (serve a narrow slice of customers better than competitors can).⁴⁵ These methods are also a structured way to evaluate barriers to entry. The key is to consider how expanding the gap between WTP and WTS makes higher market share more profitable than lower market share.

Let's start with willingness to pay at the top of exhibit 8. While most firms focus narrowly on growing sales, Oberholzer-Gee argues their emphasis should be on enhancing WTP by delighting their customers. We briefly describe the levers he discusses to increase WTP and to potentially add pricing power:⁴⁶

- **Network effects.** A network effect exists when the value of a good or service increases as more people use the good or service.⁴⁷ Network effects come in different forms. Direct network effects exist when members can connect with one another without having to deal with an intermediary. Telephone networks are the archetype. Indirect network effects exist when there are complementary assets, such as electric vehicles and charging stations. Network effects are also pertinent for platform businesses that match two sides of a market. The ride-sharing companies, Uber and Lyft, are a good case in point.⁴⁸

Positive feedback, where the strong get stronger and the weak get weaker, is key to understanding how network effects come about. This is very different than negative feedback, where the strong get weaker, the weak get stronger, and there is regression toward the mean. Most businesses are subject to negative feedback. But there are commonly battles, at least early on, to determine the winner in industries where positive feedback is relevant. (If you want to see a long history of these, type "format war" into your search engine.) One classic example is Video Home System (VHS) versus Betamax.

The outcomes of these business skirmishes are rarely evident in real time.⁴⁹ For instance, Facebook rose to be the leading social network by passing a number of competitors that appeared formidable. Fox Interactive, mostly driven by MySpace, a Facebook competitor, briefly received more page views than the combined Yahoo! sites in late 2006.⁵⁰ Yahoo! had been the top company at that time. MySpace was well ahead of Facebook.

Reaching a position of dominance increases WTP because of network effects.⁵¹ Consumer surplus naturally rises if the company does not raise the price of its good or service. Some social media sites are free to consumers but gather enormous amounts of information about their users. They can then use this information to monetize their market-leading position through advertising. The value to advertisers

increases along with WTP, and the company that controls the network benefits because it auctions the right to advertise to the highest bidder.

A consumer who is part of a leading network can get locked-in as the result of switching costs.⁵² For years most businesses have used personal computers with Microsoft operating systems and office software. Switching to a new system would incur costs in purchase and training.

Network effects are an important driver of WTP but their benefits are less prevalent than asserted.⁵³ When they are present, the rise in WTP creates the potential for pricing power or generates consumer surplus. Market share is a predictor of profitability when network effects are on display.

- **Complements.** A complement is a good or service that is consumed with another good or service. Examples include hot dogs and hot dog buns, razors and razor blades, and cars and gas stations. When the cost of a product goes down, the WTP for its complement goes up. As a result, firms that figure out how to lower the cost of complements, or even give them away for free, can shift the demand curve up and increase the WTP for their own product.⁵⁴ That was likely part of the thinking of Alphabet, the parent of Google, when it made the Android mobile operating system free to handset manufacturers. More mobile handsets using Android meant more consumers using Google search.⁵⁵

Firms that offer complements can still compete with one another. They are sometimes called “frenemies.” They are friends because they recognize that their businesses are more valuable together, and enemies because they dual about how to divide the value that is created.

One recent illustration is the relationship between Apple and Meta Platforms, which owns the social media sites Facebook and Instagram among other businesses. The iPhone has been a key way that users access the Facebook and Instagram applications, and Meta’s applications were among the most downloaded in Apple’s App Store. The companies also discussed a number of ways of working together.⁵⁶

Prior to 2021, advertisers would send information to Meta about customer purchases from their app, along with the identifier for advertisers (IDFA). Meta combined the specific purchase information with other third-party data that tracked a consumer’s activity across a range of applications, websites, and physical stores. The combination of first- and third-party data allowed advertisers to target ads effectively and therefore increased the WTP for ads on Facebook.

In April 2021, Apple introduced App Tracking Transparency, or ATT, which requires users to opt in to be tracked. A majority of users did not. That meant that advertisers could no longer send Meta the IDFA, degrading the ability to target consumers. As a result, the return on investment and WTP for advertisers declined. These advertisers include about 10 million small and medium businesses.⁵⁷

Social media companies and advertisers felt the full effect of these changes in 2022. Meta Platforms has seen a hit to revenue of about \$10 billion in 2022, and other social media businesses have also suffered.⁵⁸ This story shows how the change in one company’s policy can affect the economics of its complement.

Distinguishing between complements and substitutes can be a challenge. Complements increase WTP and substitutes decrease WTP. Oberholzer-Gee shares the example of a digital form of *The Washington Post*. One survey found that many readers consumed both the printed and the online version, suggesting the products are complements. But some readers consumed the online version only, meaning the digital

version is a substitute for print. Discerning the difference requires an analysis of the patterns of usage and trends. Properly structured experiments can also help tease out cause and effect.

- **Products and services.** Higher WTP is associated with goods and services that are more useful, confer more status, and create more consumer pleasure. For example, companies can earn the reputation of putting the interests of the consumer first, combine existing technologies to create useful opportunities for customers that are new, and make sure that the company's business model is not based on a negative aspect of the consumer experience.⁵⁹

Another method of lifting WTP is reducing search costs. One series of experiments showed that recommendations based on the taste of the participant increased WTP.⁶⁰ Most e-commerce and video streaming sites have recommendation engines. The algorithms behind these engines tend to improve with more data about consumer choices. More appropriate recommendations further reduce search costs and inform the algorithm, creating positive feedback that benefits WTP.

Some consumers purchase goods or services by habit, which are defined by automaticity and a lack of conscious deliberation.⁶¹ Habitual behavior differs based on the consumer or category, but research shows that WTP is higher for products purchased by habit.⁶²

We turn our attention to the bottom of the value stick and examine WTS and cost.

Economies of scale, the idea that the cost per unit declines as output rises, is as relevant for cloud computing and software development as it is for semiconductor and automobile manufacturing. We reviewed two important ideas in our discussion of concentration and minimum efficient scale. The first is that understanding MES is helpful in assessing barriers to entry. The second is that you should always assess MES relative to competitors.

There are cases where businesses have network effects (demand-side scale) and economies of scale (supply-side scale). Think of Google as an example. As Google adds users it can gather more information about them. This is valuable to advertisers because it improves the efficiency of their digital advertising. The ad dollars that Google collects, in turn, allow it to further improve the search functionality and hence add value for its users. That is the demand side.

Google is now very big, which allows it to spend sums on fixed costs that are very hard for competitors to match. This is the supply side. For example, it is estimated that Google pays Apple around \$18 to 20 billion a year to make Google the default search engine on the iPhone, iPad, and Mac.⁶³ Google's strong market share translates into demand- and supply-side scale that leads to robust profitability.

Consumers enjoy a surplus and so do suppliers. Supplier surplus is the difference between cost and WTS. Companies that focus solely on cost overlook the opportunity to lower WTS, which can help reduce their own cost while preserving or even adding value for their suppliers. Lowering WTS shifts the company-supplier relationship from zero-sum to win-win.

Here are some ways to reduce WTS:

- **Reduce supply cost through data.** Most companies have digitalized to some degree, which has improved the ability to capture the preferences and purchase habits of their customers. This can be valuable to a supplier, lowering WTS, because it is information the supplier can use to become more efficient. For example, information sharing between Walmart and one of its suppliers, Procter & Gamble, led to lower inventories and higher sales.⁶⁴

Here is how that might work. Consider a supplier that today earns a 12.5 percent profit margin (net operating profit after taxes ÷ sales) and has 1.2x capital turnover (sales ÷ invested capital) for an ROIC of 15 percent ($12.5\% \times 1.2 = 15.0\%$). Now its customer provides data about what products are selling and the patterns of purchase that help the supplier better manage its inventory. This reduces the supplier's invested capital and increases its capital turnover to 2.0x. The supplier can now lower the price of its product to the equivalent of a 7.5 percent profit margin while still earning a 15 percent ROIC ($7.5\% \times 2.0 = 15.0\%$). Even better, the supplier can reduce the price to a 10 percent margin, which creates surplus for the supplier while adding value for the customer.

- **Productivity.** There are large differences in productivity within industries.⁶⁵ For example, economists found that U.S. manufacturing plants in the 90th percentile of productivity generated nearly twice the output of those at the 10th percentile. This lowers the company's cost and also lowers WTS as the company needs fewer inputs to generate the same output as its competitors. These differences often relate to scale, which in turn reflects the ratio of fixed to variable costs. Scale is a big deal when fixed costs are high.

The learning curve, which describes the ability to reduce unit costs as a function of cumulative experience, can also lower cost and WTS. Studies of the learning curve for hundreds of products show that a doubling of cumulative output reduces unit costs by about 20 percent for the median firm.⁶⁶ Learning curves come from accumulated experience and know-how while economies of scale are the result of larger output as a function of cost. The concepts are distinct but often go together.

- **Employee relations.** There are a couple of ways a company can increase employee satisfaction, a form of supplier surplus. The first is to pay employees more. This redistributes value from the company to the employees unless there is an offsetting reduction in costs. Some firms pay more than the market rate for employees because it lowers employee turnover, which reduces costs for hiring and training.

The problem with pay as a simple lever of supplier surplus for employees is that empirical studies show a weak correlation between compensation and employee satisfaction.⁶⁷ However, a culture that fosters intrinsic motivation can lower WTS and increase employee satisfaction.⁶⁸ Components of intrinsic motivation include autonomy, mastery, and a sense of purpose.⁶⁹ Autonomy is the feeling of being in control and mastery means there is a good match between an employee's abilities and the opportunity to grow. A sense of purpose means that an employee feels that his or her efforts contribute to a greater good. Employees who are intrinsically motivated do seek fair pay. But companies can enhance productivity and create employee surplus by building a favorable culture.

Data also help manage employees effectively. For instance, service companies that understand product demand can match work flows to staff schedules appropriately. This lowers the company's cost and makes employees happier.

The digitalization of business, the process of converting analog information into a digital format that can be more easily presented, analyzed, saved, and shared, is a constant thread through this discussion. On the one hand, digitalization may appear to erode the sustainable competitive advantage. The newspaper industry is a vivid example. As advertising shifted from print to digital form, large newspapers that rely on advertising revenues were unable to cover the large, fixed costs associated with content creation, printing, and distribution of physical newspapers.

On the other hand, digitalization appears to strengthen the hand of companies with network effects and make competitive advantage more sustainable. Microsoft's decades-long leadership in the personal computer operating system business and extraordinary profitability, measured by cash flow and ROIC, are a case in point.

A handful of professors of strategy from the Norwegian School of Economics provide a framework for assessing when the combination of big data and network effects help or hinder the stability of competitive advantage.⁷⁰ They note that big data is distinct from traditional data because of greater volume, velocity, and variety.

The professors suggest companies can be categorized in a two-by-two matrix, with one axis capturing the importance of big data and the other the importance of network effects (see exhibit 9). Most are "digitalized firms," found in the lower left box of the quadrant, which use digital technology but where big data and network effects are not significant. They cite examples including manufacturing firms seeking to improve efficiency via automation and restaurants and hotels that provide online booking. Competitive advantage is unstable, they argue, because competitors can readily adopt new technologies and therefore a company with a competitive position will be defined by its resources and capabilities.

"Data-driven" companies are in the bottom right quadrant. Big data is important for these companies, but network effects are not strong. These businesses include mapping services, market research firms, and autonomous driving. Here, the source of advantage is the uniqueness of data or the ability to analyze it, which is mitigated by greater access to datasets across industries and the fast-following in data analytics. As a result, competitive advantage is unstable.

In the upper left quadrant are "network firms," where network effects are important but the gathering and use of big data is limited. This includes companies with direct or indirect network effects, such as messaging services and gaming consoles. The nature of network effects plus the associated lock-in make the competitive advantages these businesses enjoy more stable.

The final quadrant, in the upper right corner, are the "data-driven network firms." Companies here include many of the large-capitalization technology companies, where network effects and big data are both important. These businesses have the most stable competitive advantages if they use their data to improve WTP and there is positive feedback between gathering data from their users and making the offering more valuable to new and prospective users. These reinforcing mechanisms allow for sustainable competitive advantage.

Michael Porter, a professor of strategy at Harvard Business School, introduced a framework to analyze industry structure based on five forces (bargaining power of buyers, bargaining power of sellers, substitution threats, rivalry among firms, and threat of new entrants).⁷¹ The prior discussion covered many of the elements within in the Porter framework. Bruce Greenwald and Judd Kahn write, "We have simplified Porter's approach by concentrating first on the force that dominates all others: barriers to entry."⁷² Exhibit 10 summarizes where the major sources of barriers to entry, which address the threat of new entrants, appear on the value stick.

Exhibit 9: The Impact of Big Data and Network Effects on Competitive Advantage

Network Effects	More Important	Network Firms <i>More stable</i>	Data-Driven Network Firms <i>Most stable</i>
	Less Important	Digitalized Firms <i>Most unstable</i>	Data-Driven Firms <i>More unstable</i>
		Less Important	More Important
		Big Data	

Source: Based on Eirik Sjøholm Knudsen, Lasse B. Lien, Bram Timmermans, Ivan Belik, and Sujit Pandey, "Stability in Turbulent Times? The Effect of Digitalization on the Sustainability of Competitive Advantage," Journal of Business Research, Vol. 128, May 2021, 360-369.

Exhibit 10: Where Barriers to Entry Appear on the Value Stick

Sources of Economic Profit	
Barriers to Entry	Where It Appears on Value Stick
Advantage unique to incumbents, including proprietary technology, brands, prime locations, and unique access to distribution	Increases WTP and can lower cost
High switching costs discourage users from adopting a new offering	Increases WTP
Network effects - value to customers increases as more customers use the product	Increases WTP
Minimum efficient scale is high because of large required initial investments	Cost and WTS advantage
Economies of scale as the result of larger volume	Can increase WTP and lower cost and WTS
Government policies or regulations	Lowers cost relative to potential entrant

Source: Joan Magretta, Understanding Michael Porter: The Essential Guide to Competition and Strategy (Boston, MA: Harvard Business Review Press, 2012), 47-50 and Counterpoint Global.

Academics who have studied the link between market share and profitability point to three potential sources of value creation: market power, quality signaling, and operating efficiencies.⁷³ Quality signaling is the idea that a company that becomes a market leader provides a signal to a potential consumer that the offering must be good. They found that market power and quality signaling generally explain more of the variance profitability than did operating efficiencies, but the three factors together provide a good picture of differential profitability.

We now turn to the question of measuring market power.

Measuring Market Power

A company is said to have market power when it can set the price of its good or service above the marginal cost.⁷⁴ Economists use a “markup” to measure this market power. Estimating markup can be thorny and there is more than one approach to doing so.⁷⁵

One widely used approach is as follows:⁷⁶

Markup = production function [(price \times quantity) \div (costs \times input)]

Let's go through the right side of the equation. The production function, denoted by the Greek letter theta (θ), describes the relationship between output and input.⁷⁷ Empirically, the average production function is around 0.85. The output is captured in price \times quantity. The input is reflected in costs. Classic inputs include labor and capital.

Markup, symbolized as μ , is the production function times the output divided by input. The concept is straightforward in theory but getting accurate figures for output and input is a challenge.⁷⁸ One approach is to use financial statements, with sales as a measure of output and cost of goods sold (COGS) as a measure of input. COGS are the direct costs related to product sales. The equation is:

$$\mu = \theta (\text{Sales/COGS})$$

For example, a company with \$1,000 in sales, \$850 in COGS, and a production function of 0.85 will have a markup of 1.0 ($1.0 = 0.85[1,000/850]$). In this case price equals the marginal cost. A company with the same sales and production function that has COGS of \$680 would have a markup of 1.25 ($1.25 = 0.85[1,000/680]$).

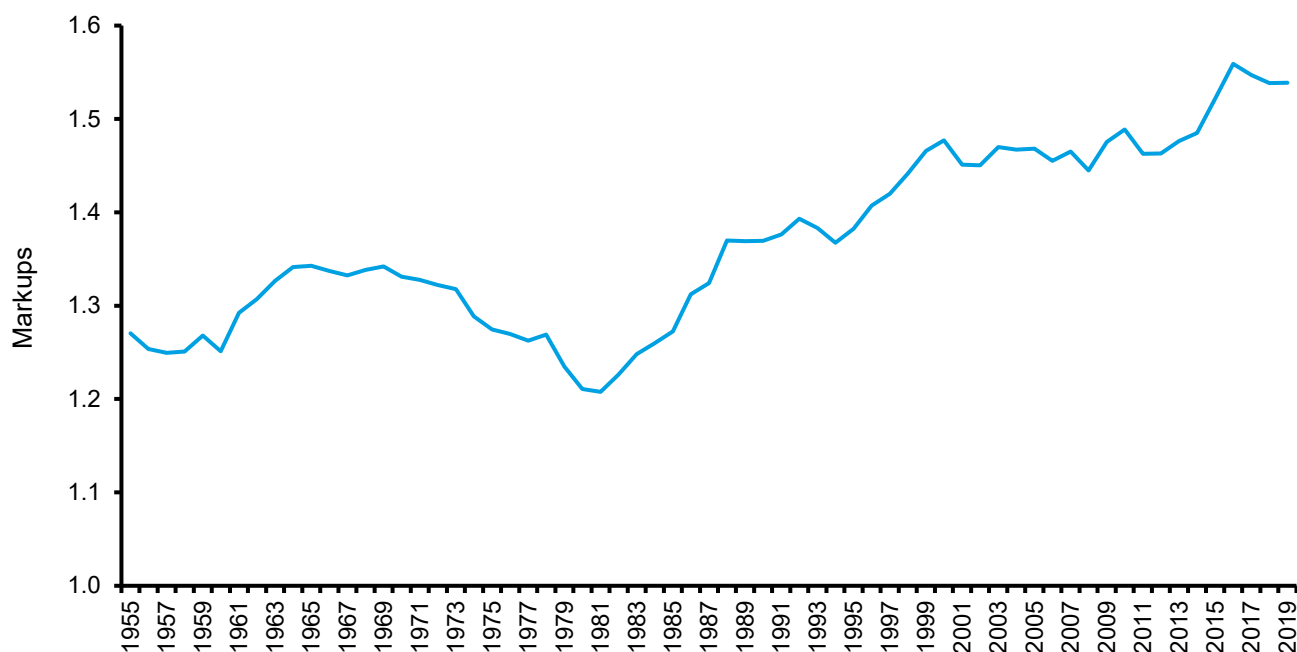
Markups can go up because of higher prices and the same cost or the same price and lower costs. One group of economists found that consumer surplus per capita has increased substantially since 2006 in spite of higher markups as the result of a shift in consumer preferences.⁷⁹

Markups Without Intangibles

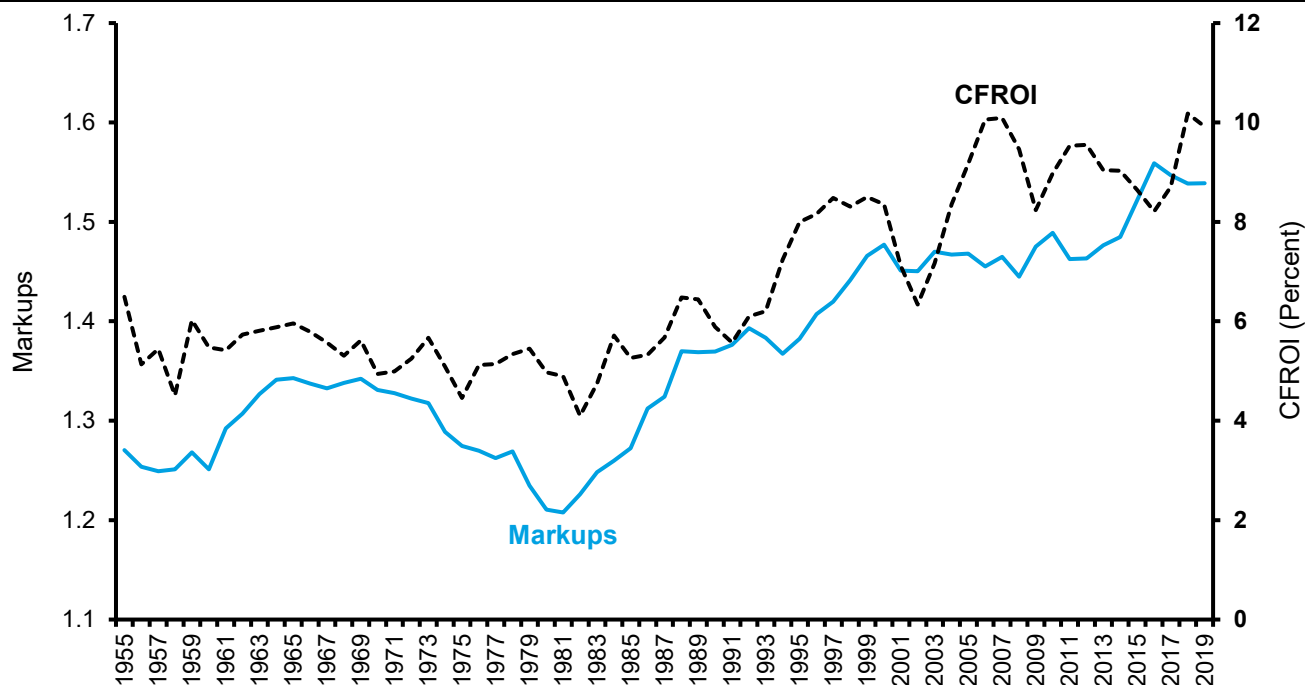
The basic story that has roused the interest of academics and policymakers is summarized in exhibit 11. Aggregate markups in the U.S. were flattish from 1955 through 1980 and have climbed steadily since then. In other words, it appears that market power has increased in the last four decades.⁸⁰ This has coincided with a rise in regulation and robust M&A activity.

Economists also note that labor share, the ratio of labor compensation to value added, has declined in the U.S. as well as other developed countries in recent decades (although it is up since the global financial crisis of 2008-2009).⁸¹ Value added is the difference between revenues and intermediate inputs and is split between the factors of production, labor and capital. In a simple sense, markups hurt labor because when the price of a good or service exceeds its marginal cost, demand will naturally decline. Lower demand means fewer employees are necessary to satisfy that demand.

There also appears to be a correlation between markups and cash flow return on investment (CFROI®).⁸² Both are relatively flat from 1955 through 1980 and climb steadily through 2019 (see exhibit 12).

Exhibit 11: Aggregate Markups in the United States, 1955-2019

Source: Jan Eeckhout, *The Profit Paradox: How Thriving Firms Threaten the Future of Work* (Princeton, NJ: Princeton University Press, 2021), 29 and www.theprofitparadox.com.

Exhibit 12: Aggregate Markups and Cash Flow Return on Investment, 1955-2019

Source: Jan Eeckhout, *The Profit Paradox: How Thriving Firms Threaten the Future of Work* (Princeton, NJ: Princeton University Press, 2021), 29, www.theprofitparadox.com, and Credit Suisse HOLT.

This story is going to take a turn, but for now we want to replicate the data. In so doing we will touch two other interesting facets of the rise in markups. Then we will add an important twist.

Most researchers in this field who use financial statements rely on Compustat. Our universe is the constituents of the Russell 3000 index, which tracks the largest stocks by market capitalization in the United States, at the end of each year. We exclude financials and real estate.⁸³ Our data run from 1990 through 2021.

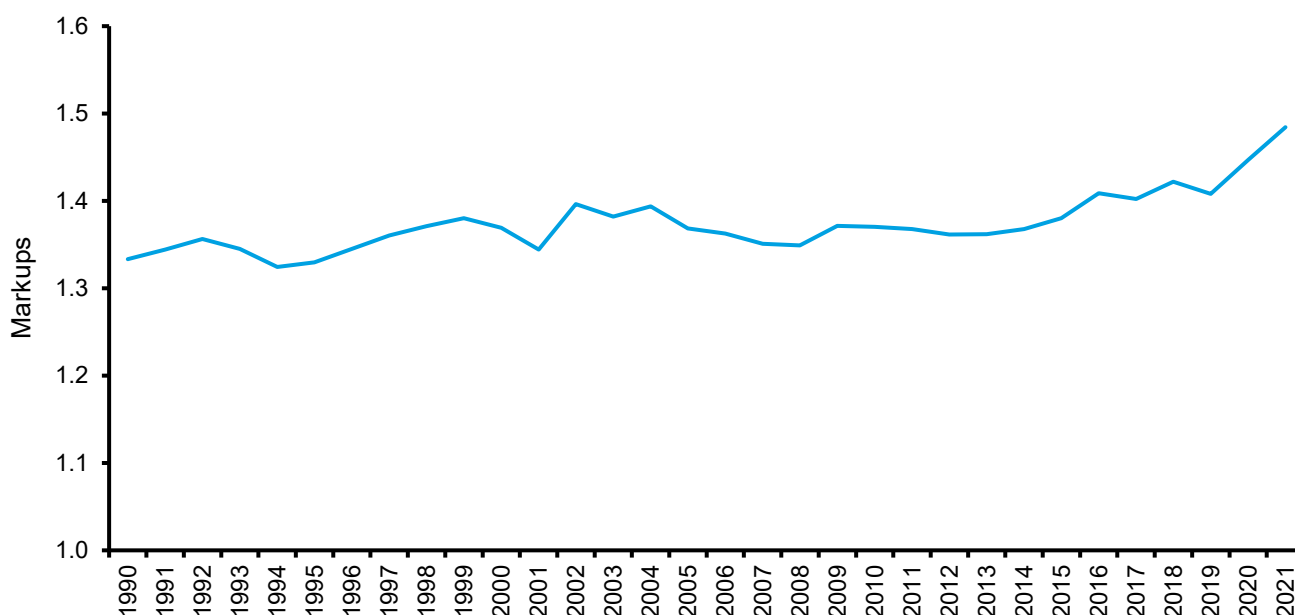
We calculate the markup for each company as the production function \times Sales/COGS. Production functions may differ slightly by industry and year, but for simplicity we used a production function of 0.85, which is the long-term average and median for the population.⁸⁴ We then determine an aggregate markup by weighting companies based on sales.

Exhibit 13 shows the results of our replication. The aggregate markup in 1990 is nearly identical to that in exhibit 11 and the trend over the subsequent 30 years is similar. Our figures, especially in later years, are lower than what some other researchers have found. Part of the explanation is that we do not include the financials, insurance, and real estate industries in our calculation and others do. Those industries have among the highest measured markups, lifting the aggregate.⁸⁵

Another part is a quirk in how Compustat presents the data.⁸⁶ When a company does not provide an allocation between COGS and SG&A for depreciation, depletion, and amortization, Compustat generally deducts the full amount against COGS. As a result, the COGS that Compustat reports are on average 7.5 percent lower than what companies report in their financial statements. Lower COGS translate into higher markups.

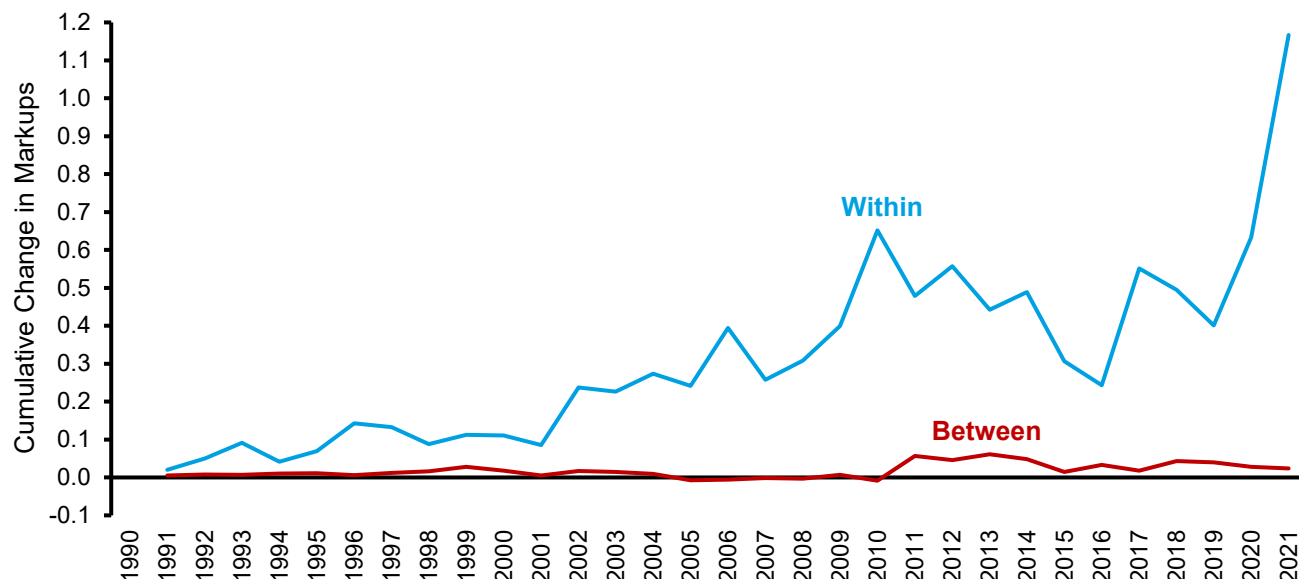
The data also reveal that the cumulative difference in markup changes between industries has been relatively modest (see exhibit 14). The main driver of change has been markup changes within industries.⁸⁷ In other words, the increase in markups for some companies within each industry has separated them from the pack.

Exhibit 13: Aggregate Markups, 1990-2021



Source: FactSet and Counterpoint Global.

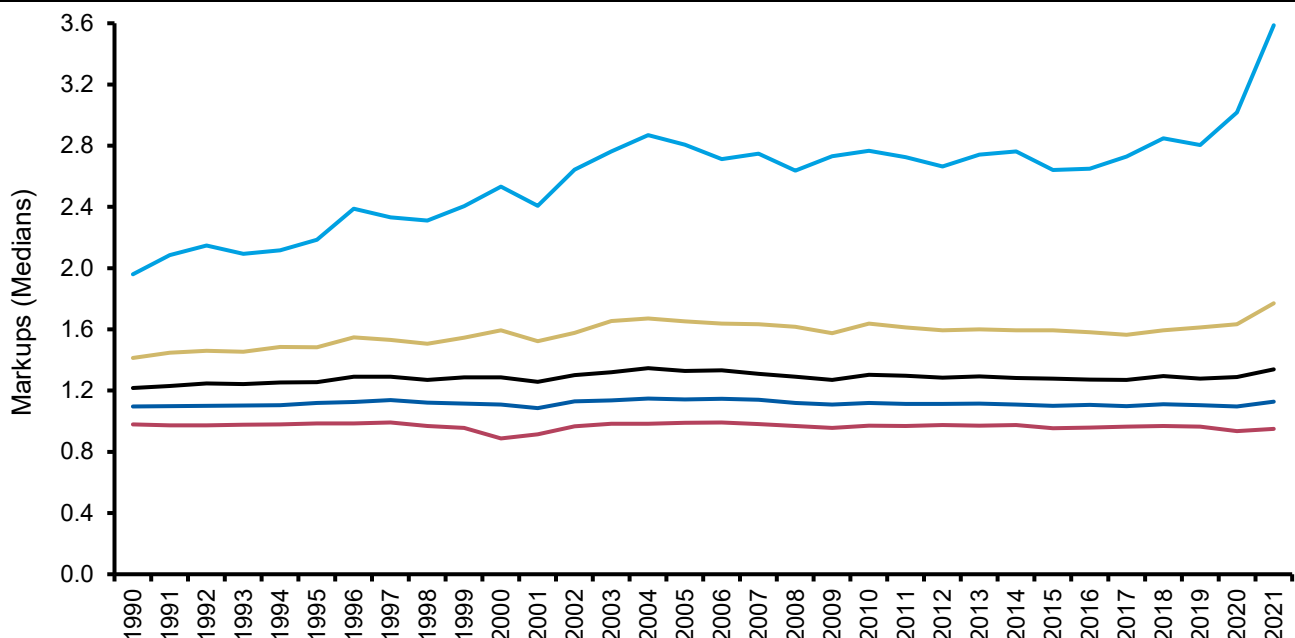
Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales and COGS.

Exhibit 14: Markup Changes Between/Within Industries, 1990-2021

Source: FactSet and Counterpoint Global.

Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales and COGS.

Some academics have called this phenomenon the rise of “superstar” firms.⁸⁸ The argument is “that industries are increasingly characterized by a ‘winner takes most’ feature where a small number of firms gain a large share of the market.”⁸⁹ Exhibit 15 shows how this appears in the data by sorting companies into quintiles based on the markups in a given year. The bottom three quintiles are basically flat throughout the period and most of the increase comes from the top quintile. The rate of increase is highest for the top quintile and declines for each quintile as you go from the top to the bottom.

Exhibit 15: Markups by Quintile, 1990-2021

Source: FactSet and Counterpoint Global.

Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales and COGS.

Some members of the economics and antitrust fields have used these results to argue that there has been a decline in competition and a need for additional regulatory intervention. But other scholars remain more circumspect in their assessments about the data and what they say.⁹⁰ For example, markups in the order of magnitude suggested by some approaches are “too large to be credible” and some of the implications of the increase in markups, including the impact on inflation, are not borne out by the data.⁹¹

Markups seek to capture the relationship between sales and marginal costs. Most approaches that use financial statement analysis measure costs with COGS. The question is whether there are intangible costs that these models do not capture and, if so, whether that changes the picture.

Markups With Intangibles

Here's where things get more complicated. Companies have always invested in tangible and intangible assets. But intangible investments have grown at a much faster pace than tangible ones over the decades that markups have increased.⁹² As a result, COGS may understate costs, which means that markups calculated simply with sales and COGS are overstated. The point that intangibles are poorly reflected in the data has been made by many scholars in the fields of accounting and economics.⁹³

This rise in intangibles suggests that input costs should include items that are reflected in selling, general, and administrative (SG&A) expense. While SG&A technically captures costs not directly related to production, the argument is that COGS are a declining percent of a firm's total variable cost.⁹⁴

Meghana Ayyagari and Vojislav Maksimovic, professors of finance, collaborated with the economist Asli Demirguc-Kunt to estimate markups with a more complete definition of cost.⁹⁵ They use a widely-accepted method to adjust the estimate for cost to reflect a component of SG&A.⁹⁶ This approach first deducts research and development (R&D) from total SG&A and assumes that 30 percent of the remaining SG&A is an investment and the other 70 percent is a cost.⁹⁷ So the markup equation, including intangibles, is as follows:

$$\mu = \theta [\text{Sales}/(\text{COGS} + \text{SG\&A} - \text{R\&D} - 0.3(\text{SG\&A} - \text{R\&D}))]$$

Let's look at Snowflake, Inc., a cloud computing-based data warehousing company, to see how capturing these costs changes the result. This is an extreme example but shows how meaningful the adjustment can be.

Here's the markup for fiscal 2022 based solely on COGS (income statement items are in millions of dollars) and using a production function (θ) of 0.85:

$$\mu = \theta (\text{Sales}/\text{COGS}) = 0.85(\$1,219/458) \approx 2.25$$

Here's the markup after giving consideration to costs reflected in SG&A and bumping up θ to 0.95 to reflect the higher input:

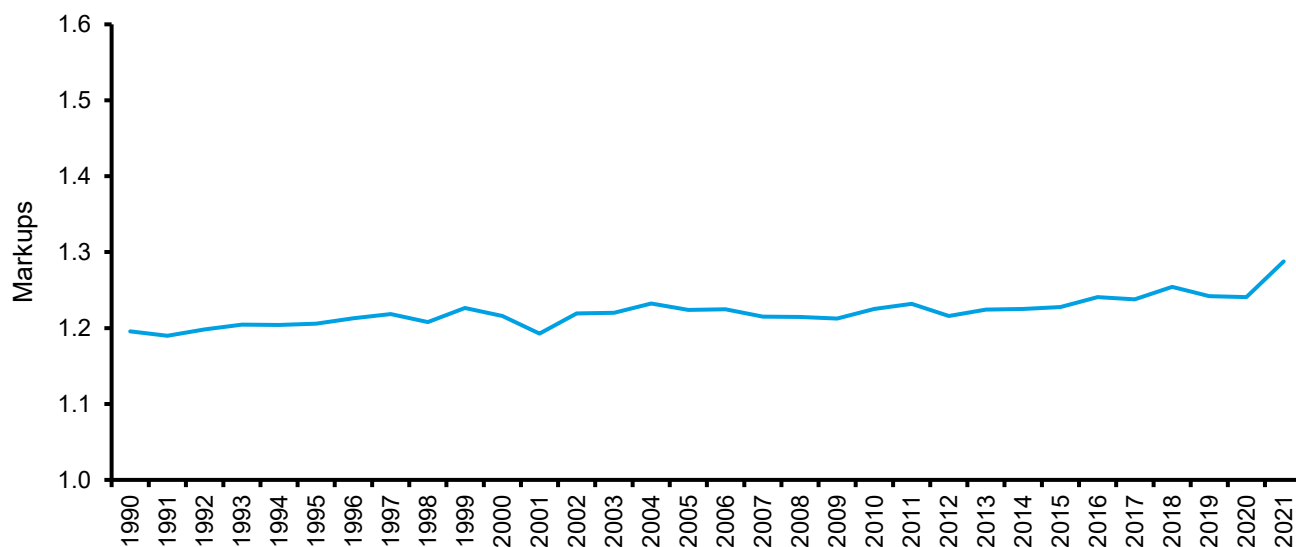
$$\begin{aligned} \mu &= \theta [\text{Sales}/(\text{COGS} + \text{SG\&A} - \text{R\&D} - 0.3(\text{SG\&A} - \text{R\&D}))] \\ &= 0.95[1,219/(458 + 1,476 - 467 - 0.3(1,476 - 467))] \approx 1.00 \end{aligned}$$

These calculations provide conclusions about market power that are starkly different, from well above average to unity. We acknowledge that there is a lively debate about how best to extract costs from SG&A but believe that ignoring SG&A in the analysis of markups yields a distorted picture.

Companies with high gross margins and low operating profit margins will have large differences between their unadjusted and adjusted markups. The adjustment has minimal effect on companies with low gross margins and positive operating profit margins.

The picture of markups changes quite dramatically when some of SG&A is considered as a cost. Exhibit 16 shows that markups for the companies in the Russell 3000 have risen gently since 1990, and the level of markup is consistently lower than the calculation that excludes the cost from SG&A. For example, the markup that includes the SG&A cost was 1.20 in 1990, while the markup using solely COGS was 1.33 (see exhibit 13). For this analysis we use a production function of 0.95 to reflect the greater input costs.

Exhibit 16: Markups with Intangible Adjustment, 1990-2021

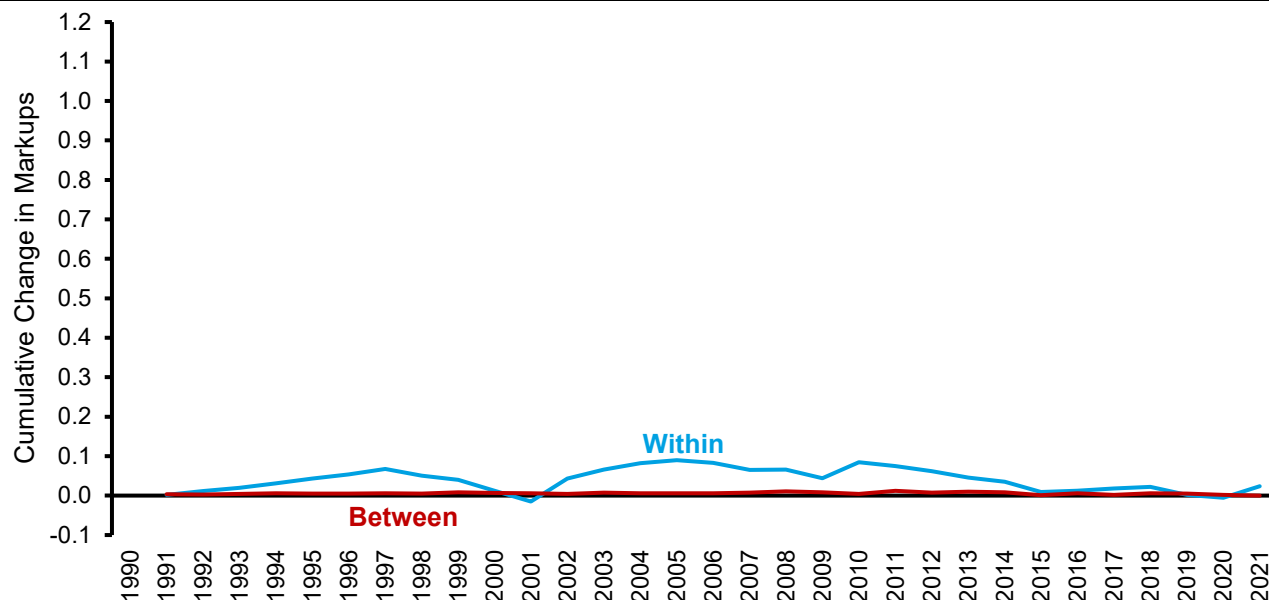


Source: FactSet and Counterpoint Global.

Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales, COGS, SG&A, and R&D.

The adjustments also cause the increase in dispersion of markups within industries, captured in exhibit 14, to evaporate. Exhibit 17 shows the cumulative difference between and within industries remains relatively stable.

Exhibit 17: Markup Changes Between/Within Industries with Intangible Adjustment, 1990-2021

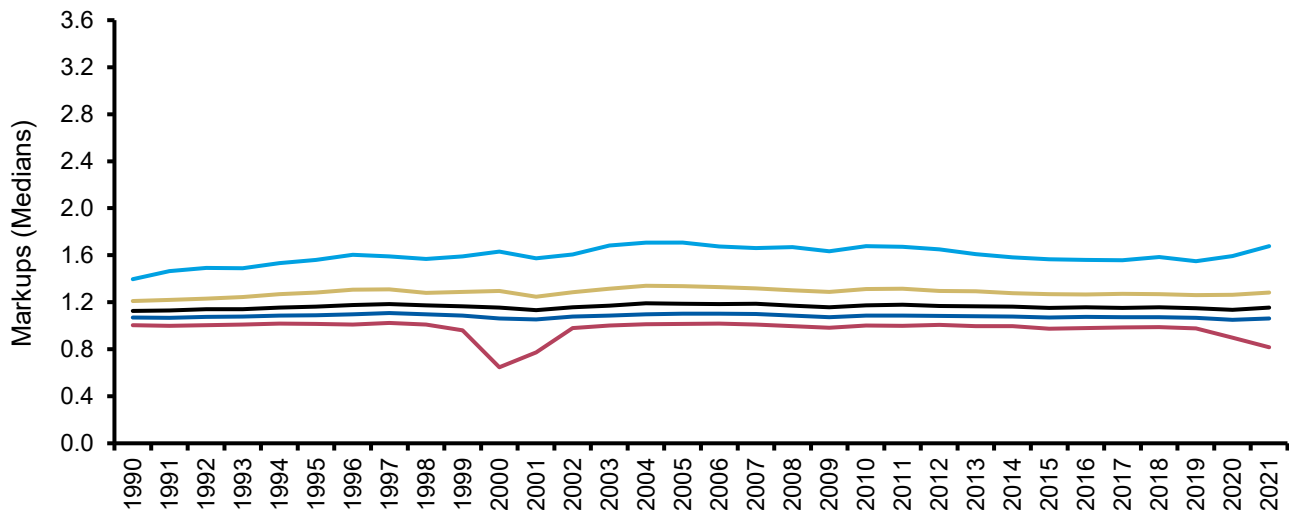


Source: FactSet and Counterpoint Global.

Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales, COGS, SG&A, and R&D.

The rise of superstar firms was the driver of markup dispersion within industries. While some evidence that the markups for firms in the top quintile rose over the time we examined, exhibit 18 shows that the effect is substantially more muted after adjustments.

Exhibit 18: Markups by Quintile with Intangible Adjustment, 1990-2021



Source: FactSet and Counterpoint Global.

Note: Russell 3000 index excluding financials and real estate; minimum of \$0.1 million sales, COGS, SG&A, and R&D.

One important insight is that superstar firms tend to substantially outspend their competitors on intangible assets.⁹⁸ James Bessen, executive director of the Technology and Policy Research Initiative at the Boston University School of Law, builds on this point and describes three developments that allow superstar firms to differentiate themselves from their peers to sustain a competitive advantage. First, these companies invest heavily in proprietary software. Bessen shows that the growth in spending for software has vastly outstripped that for R&D, advertising, and acquisitions.⁹⁹ Overall, companies in the U.S. spent about \$240 billion on proprietary software, and those expenditures were heavily skewed toward the largest firms.¹⁰⁰

Next, he argues that the use of software has allowed superstar firms to go beyond simple economies of scale to provide differentiated offerings as well. Academics often suggest companies pursue either a strategy of cost leadership or differentiation and avoid trying to do both and risk getting “stuck in the middle.”¹⁰¹ The application of proprietary software allows large firms to now deliver scale and complexity in a way not possible in the past.¹⁰²

Finally, the sheer complexity of the software and the lack of incentives to share mean that the diffusion of technology is slower now than it was in prior generations. For this reason, it is difficult for competitors to close the productivity gap and the minimum efficient scale for potential challengers is on the rise.¹⁰³

Ayyagari et al. also calculate the ROIC for each company. They find that about 40 percent of superstar firms, as ranked by ROIC, are in technology, 20 percent in manufacturing, and 13 percent in healthcare.¹⁰⁴ A company’s ROIC is lower after reflecting adjustments for intangible investments. We estimate that Microsoft’s ROIC (using average invested capital) for fiscal 2022 goes from 49 percent to 34 percent with adjustments.¹⁰⁵

What you conclude about market power has a lot to do with how you choose to measure markups and which data you use. There has been a rise in markups in recent years if the consideration of costs is restricted to COGS. But this pattern largely disappears if a component of SG&A is considered a cost, which would be consistent with a rise in intangible investment.

Case Studies in Market Share

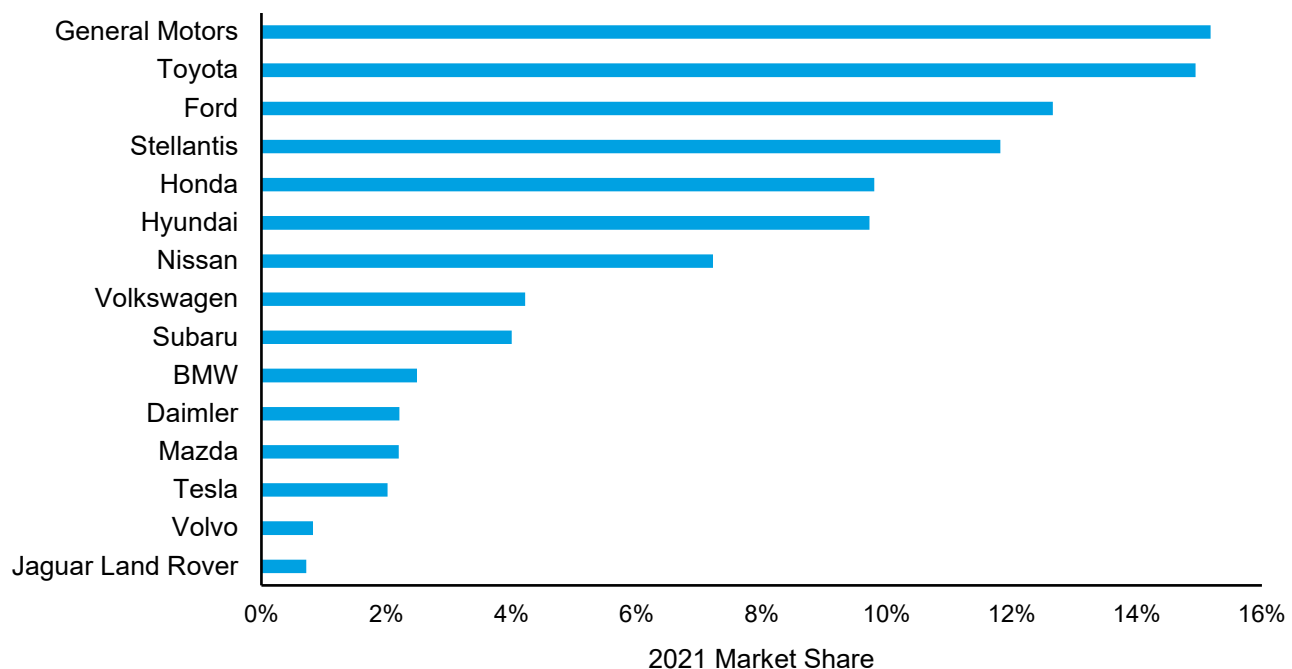
We now turn to four case studies to illustrate some of the methods and points in the report. We selected two traditional industries, automobiles and airlines, and two with winner-take-all outcomes, internet search and word processing software.¹⁰⁶ For each we examine market share, concentration, market share instability, and markups.

Automobiles

The U.S. automobile industry has a long and storied history. Since the end of World War II, concentration has dropped, new manufactures have entered, and profitability has gradually eroded. The industry now faces the prospects of migrating from internal combustion engines to electric vehicles in the coming decades.

Exhibit 19 provides a snapshot of market share in the U.S. measured by units sold. We see that 6 producers have a market share between roughly 10 and 15 percent. One estimate of minimum efficient scale for auto assembly is about 250,000 units per year per factory.¹⁰⁷ About one-half of the autos sold in the U.S. are imported.

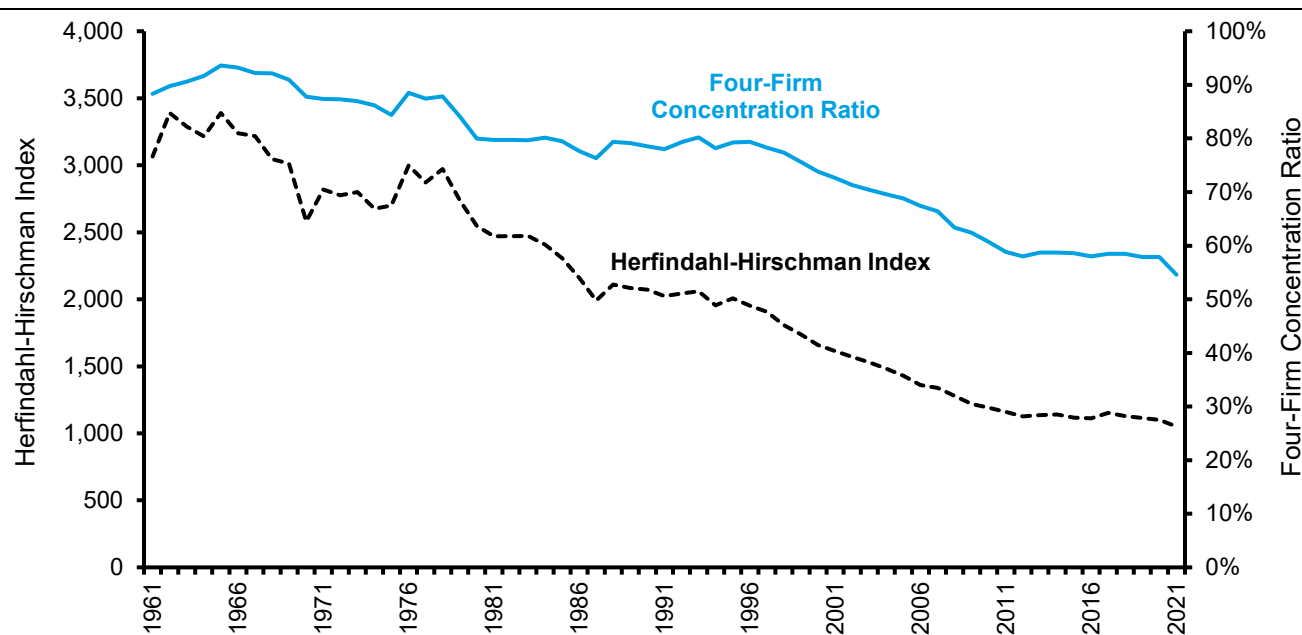
Exhibit 19: Market Share for the U.S. Automobile Industry, 2021



Source: goodcarbadcar.net and Counterpoint Global.

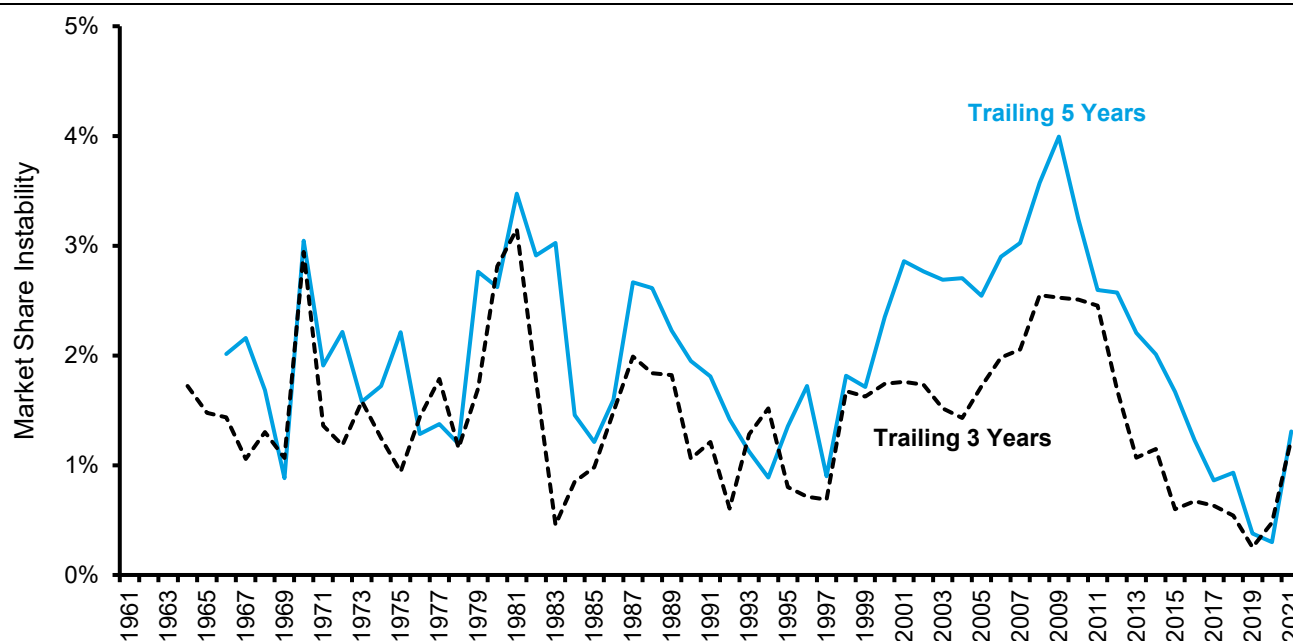
The concentration in the U.S. automobile industry has been driving lower for the last 60 years, as revealed in exhibit 20. The peak of this series, achieved in 1962, was an HHI of 3,391, well above the threshold of what is considered to be a highly concentrated industry. The most recent reading for the HHI is 1,051, considered to be an unconcentrated market. The C4 concentration ratio shows a similar decline.

While some of this decline is the result of consolidation, the majority reflects the loss of market share of the top two producers. In 1965, General Motors's market share was 49.6 percent and Ford's was 26.8 percent, combining for more than three-quarters of the market. Their combined share today is 27.8 percent, just over one-quarter of the market.

Exhibit 20: Concentration Ratios for the U.S. Automobile Industry, 1961-2021

Source: Wards Auto and www.goodcarbadcar.net.

We saw the market instability analysis of the industry earlier (reproduced in exhibit 21). In the 1970s, U.S. manufacturers were caught flatfooted as imports from Japan that were low cost and fuel-efficient gained substantial market share. The increase in instability at the time of the financial crisis reflects sharp market share losses for General Motors and Chrysler, which is now part of Stellantis.

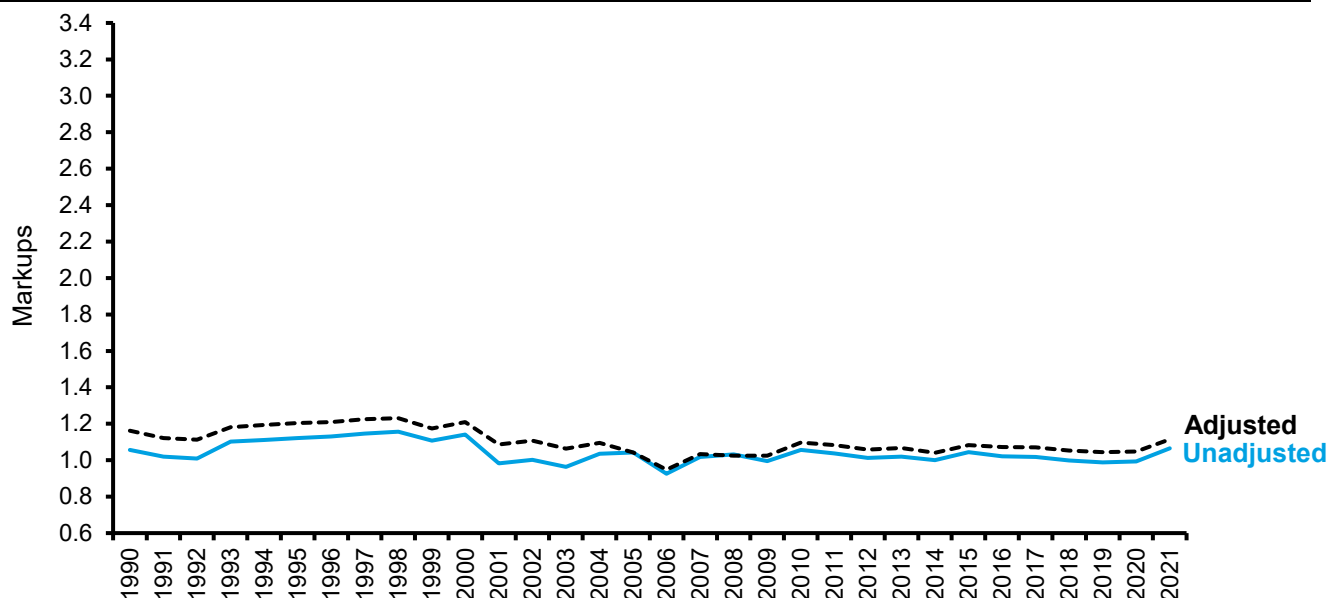
Exhibit 21: Market Instability Analysis for the U.S. Automobile Industry, 1961-2021

Source: Wards Auto and www.goodcarbadcar.net.

The U.S. auto industry is large and has a handful of companies with modest and similar market shares. Minimum efficient scale is important and multiple competitors can achieve this scale because of the size of the global industry. As a consequence, achieving high and sustainable economic profits is a challenge.

Exhibit 22 shows the markups for the auto industry, both unadjusted and adjusted for intangibles, from 1990 to 2021. The difference between the two series is modest reflecting limited costs associated with intangibles. The median is below that of the Russell 3000, reflecting the industry's struggle with profitability. The industry has earned a return similar to its cost of capital over the period that corresponds with the markup data.

Exhibit 22: Unadjusted and Adjusted Markups for the U.S. Automobile Industry, 1990-2021



Source: FactSet and Counterpoint Global.

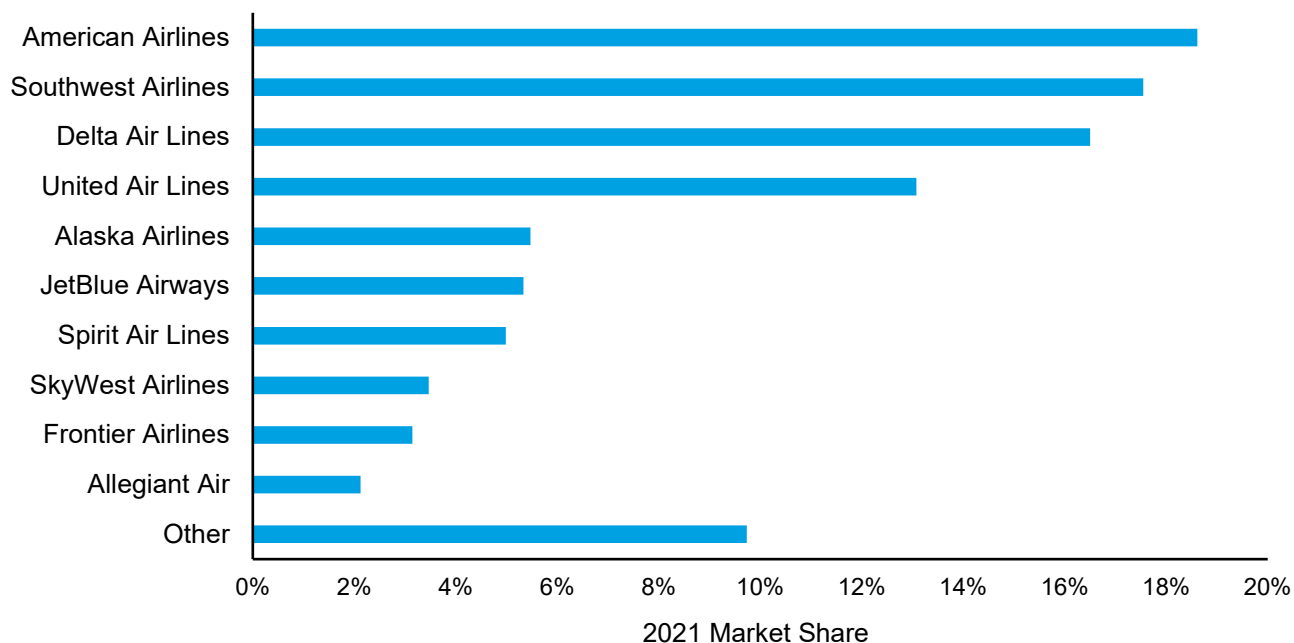
Airlines

We now examine the U.S. airline industry. This sector launched in earnest after World War II but has been challenged to deliver consistently positive economic profit.¹⁰⁸ There have been more than 100 airline bankruptcy filings since the industry deregulated in 1978, including some airlines that have filed more than once.¹⁰⁹ The structure of the industry was changing rapidly until the COVID-19 pandemic created a massive negative shock.

Exhibit 23 shows the market share of the major carriers based on U.S. revenue passenger miles for 2021. We can see that 4 carriers have market share between 13 and 19 percent. Minimum efficient scale is important in airlines because of high fixed costs.

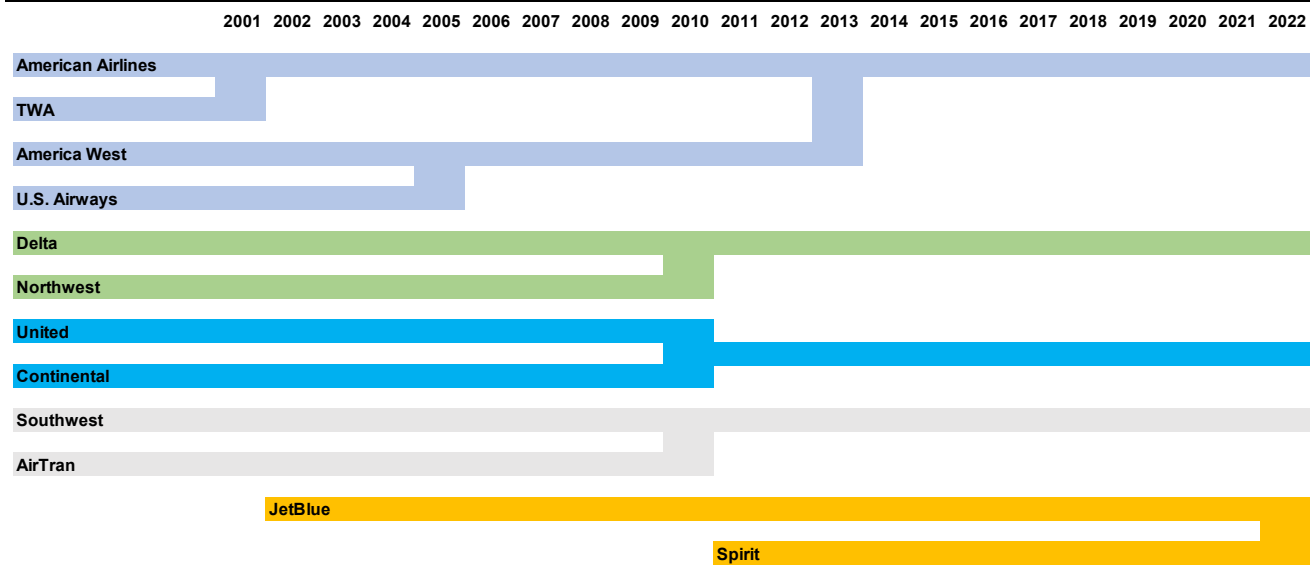
The poor industry returns have led to substantial consolidation in the 21st century (see exhibit 24). Ten airlines that existed prior to 2001 have merged into the four major carriers today. JetBlue's recent agreement to acquire Spirit Airlines continues this trend. Some research finds this consolidation has led to an increase in market power for the airlines.¹¹⁰

Exhibit 23: Market Share for the U.S. Airline Industry, 2021



Source: Bureau of Transportation Statistics and Counterpoint Global.

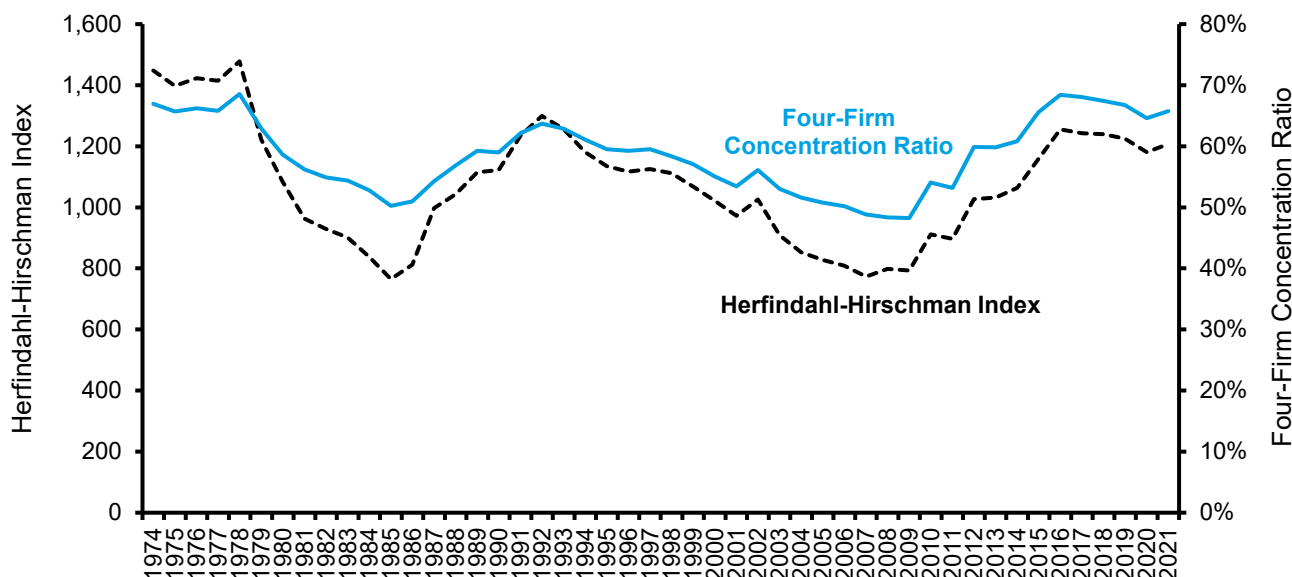
Exhibit 24: Consolidation of the U.S. Airline Industry, 2001-2022



Source: Counterpoint Global.

Exhibit 25 shows the lift in concentration in the last 20 years largely as the result of M&A. The HHI figure for 2021 was about 1,200 and reflected an unconcentrated industry. But airlines are a good example of why it is necessary to focus on regional versus national concentration.

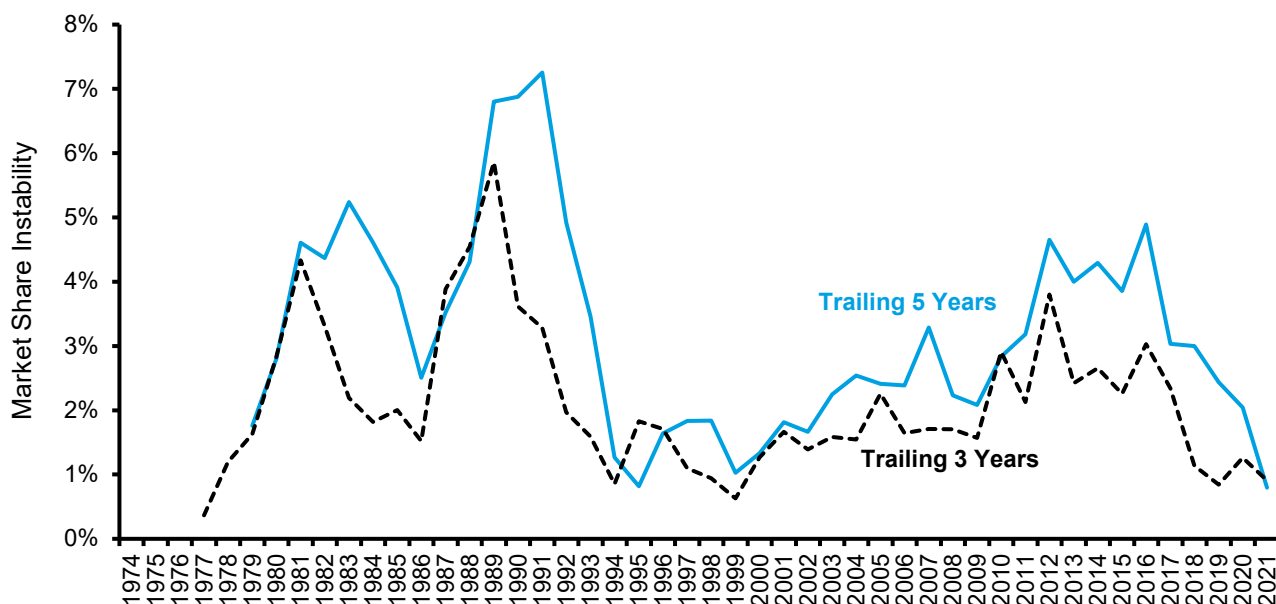
Exhibit 25: Concentration Ratios for the U.S. Airline Industry, 1974-2021



Source: Bureau of Transportation Statistics and Counterpoint Global.

Market shares have become more stable in recent years following a tumultuous period in the 1980s as the result of deregulation and the recent 20-year wave of consolidation that was precipitated in part by industry woes following the attacks on September 11, 2001. Two periods of low or declining market share instability, the mid-1990s and 2014-2019, were relatively good periods for economic profits.

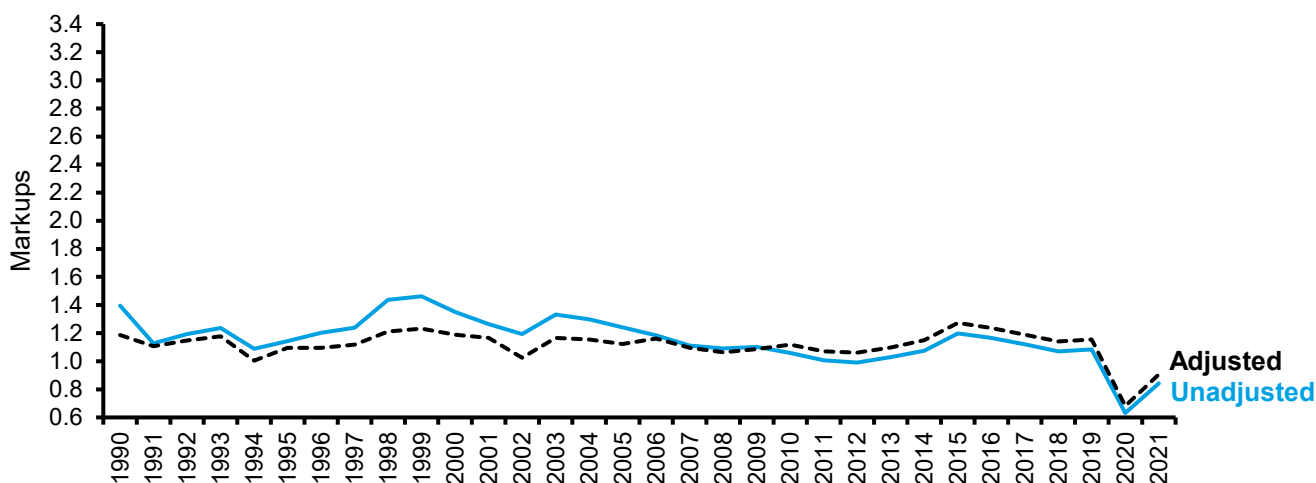
Exhibit 26: Market Instability Analysis for the U.S. Airline Industry, 1974-2021



Source: Bureau of Transportation Statistics and Counterpoint Global.

The markup data reflect the fact that sustainable value creation has been mostly elusive (see exhibit 27). As with autos, the gap between figures unadjusted and adjusted for intangible costs is small. That noted, ROICs are higher in North America than other markets around the world.¹¹¹ Further, analysis that relies on government data including Air Carrier Statistics and Air Carrier Financial Reports find that markups did trend higher through the 21st century prior to the COVID-19 pandemic.¹¹²

Exhibit 27: Unadjusted and Adjusted Markups for the U.S. Airline Industry, 1990-2021



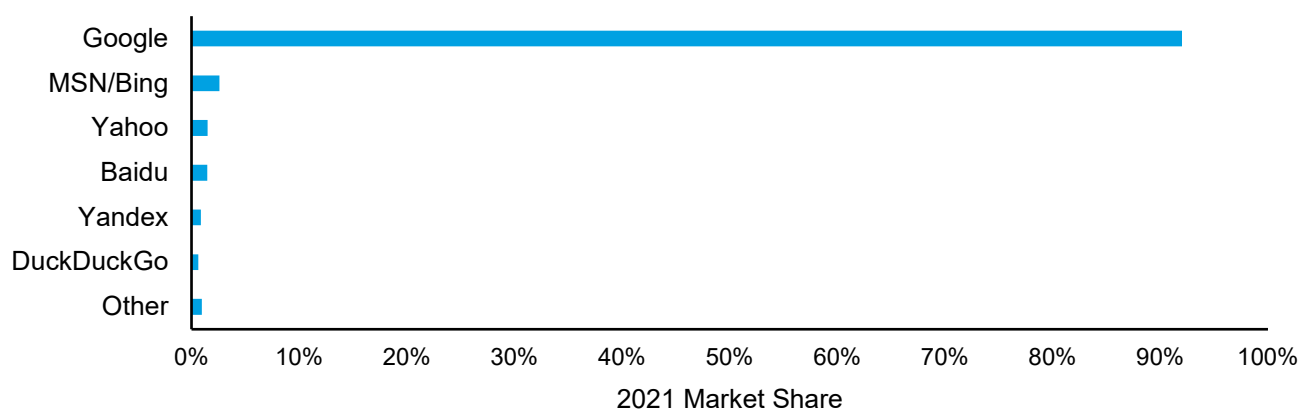
Source: FactSet and Counterpoint Global.

Internet Search

The next industry we review, internet search, has characteristics that are sharply different than those of autos or airlines. This industry is much younger than the other ones and the eventual winner was by no means clear as the battle for market share began in the mid-1990s.

Exhibit 28 shows the breakdown of market share at the end of 2021. Google commands more than 90 percent of the market and its closest competitor is under 3 percent. This is an example of a winner take most market. Google's revenues are predominately from advertising. As we saw before, a clear market leader increases the willingness to pay of customers, which are in this case the advertisers. While Google does have discretion over the supply of ads it offers, the prices are set via an auction.

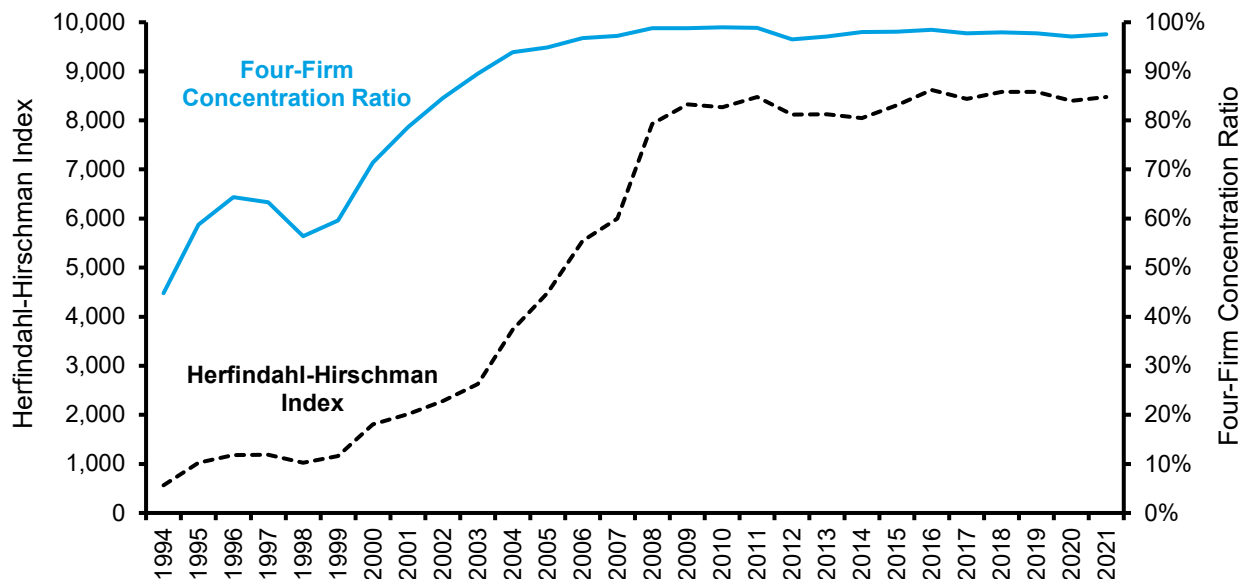
Exhibit 28: Market Share for the Internet Search Industry, 2021



Source: StatCounter via <https://www.dailymotion.com/video/x81fzhm>.

The substantial skew in market share shows up as a high measure of concentration (see exhibit 29). The HHI for this industry is nearly 8,500. The threshold for being a highly concentrated industry is 2,500. But note the sharp increase in concentration for the 10 years from 1999 to 2009. The HHI went roughly from 1,160 to 8,325.

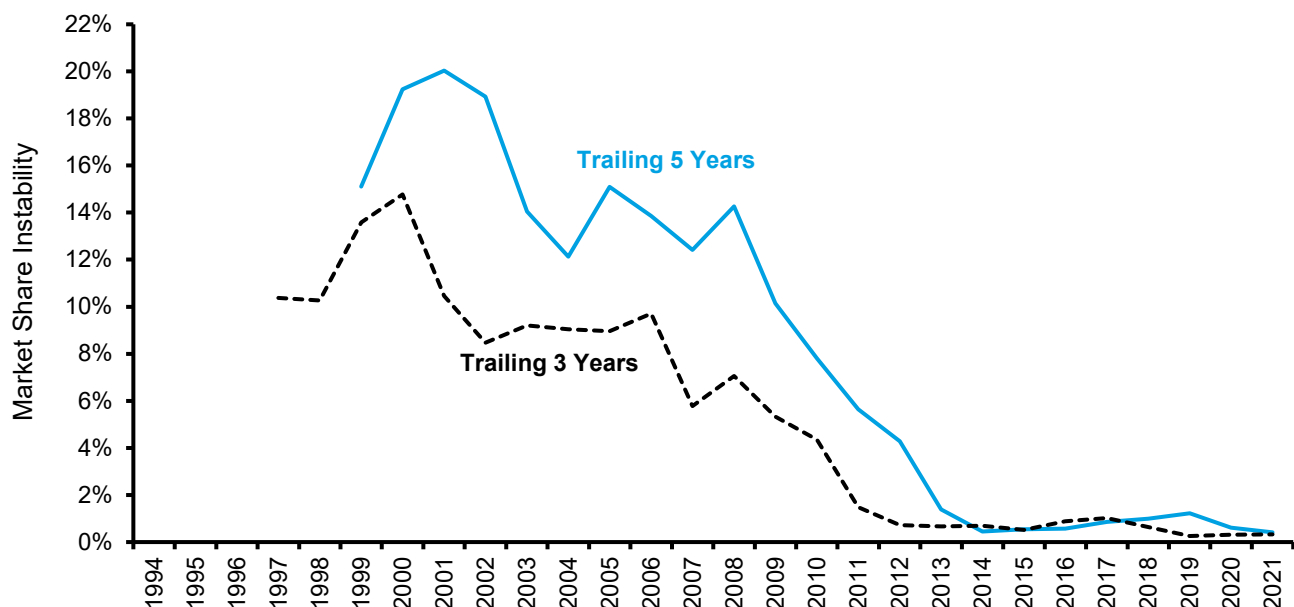
Exhibit 29: Concentration Ratios for the Internet Search Industry, 1994-2021



Source: StatCounter via <https://www.dailymotion.com/video/x81fzhm>.

Exhibit 30 shows that there were huge swings in market share in the early days of search. Early market leaders such as Excite, AltaVista, Lycos, Infoseek, and Yahoo! moved up and down the leader board until Google came on the scene in 1998. Google did not launch AdWords, a self-serve advertising platform, until the fall of 2000.

Exhibit 30: Market Instability Analysis for the Internet Search Industry, 1994-2021

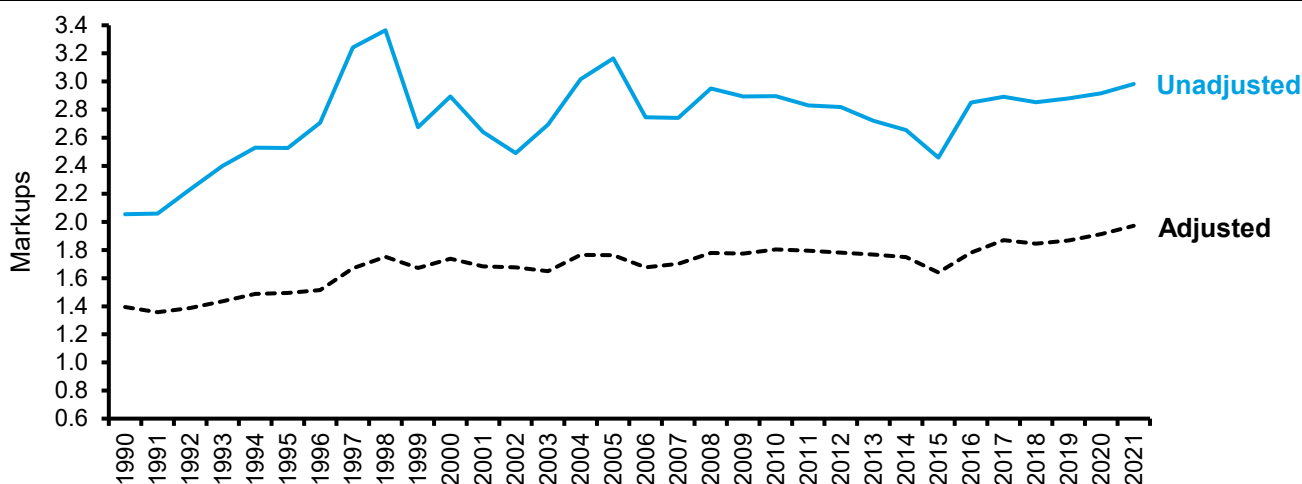


Source: StatCounter via <https://www.dailymotion.com/video/x81fzhm>.

The combination of a high and stable market share leads to markups that are above average (see exhibit 31). But unlike autos and airlines, where markups were similar whether or not they were adjusted for intangibles, the intangible adjustment is large for this industry. (Since this is weighted, it is effectively showing results for Google.)

For example, the 2021 unadjusted markup is roughly 50 percent higher than the adjusted one (3.0 versus 2.0). This means that Google is investing heavily in intangibles. Consistent with these healthy markups, Alphabet's ROIC is in the top decile of all public companies.¹¹³

Exhibit 31: Unadjusted and Adjusted Markups for the Internet Search Industry, 1990-2021



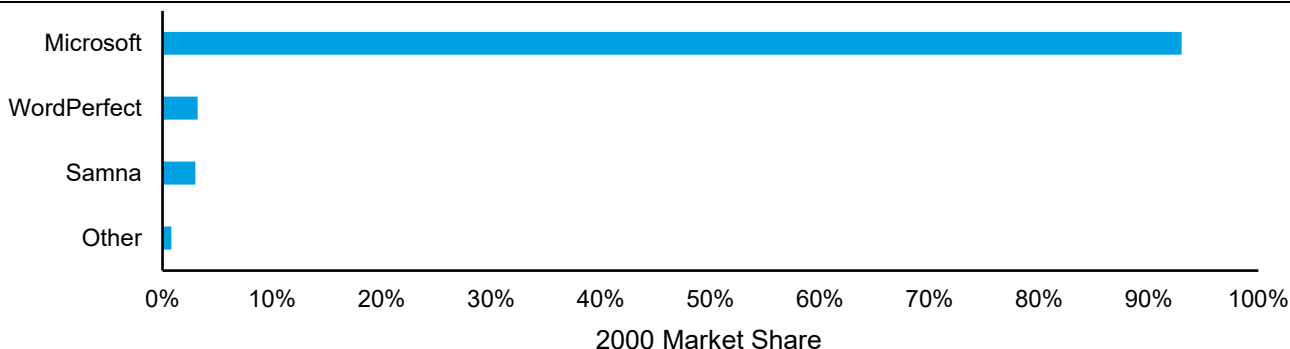
Source: FactSet and Counterpoint Global.

Word Processing Software

Our final case is the market for word processing software that was compatible with the DOS and Windows operating systems from 1986 through 2000.¹¹⁴ This is another example of a market where a dominant competitor, WordPerfect, which had nearly one-half of the market in 1990, lost to the eventual winner, Microsoft Word, in what became a winner-take-most market.

Exhibit 32 shows the market shares in 2000. Word's share exceeded 90 percent and its next two competitors had about 3 percent share each. A key factor in Word's ascent was an evolution in the operating system from DOS to Microsoft Windows. WordPerfect was deemed to be a high-quality word processor running on DOS but lost its edge as users transitioned to Windows.

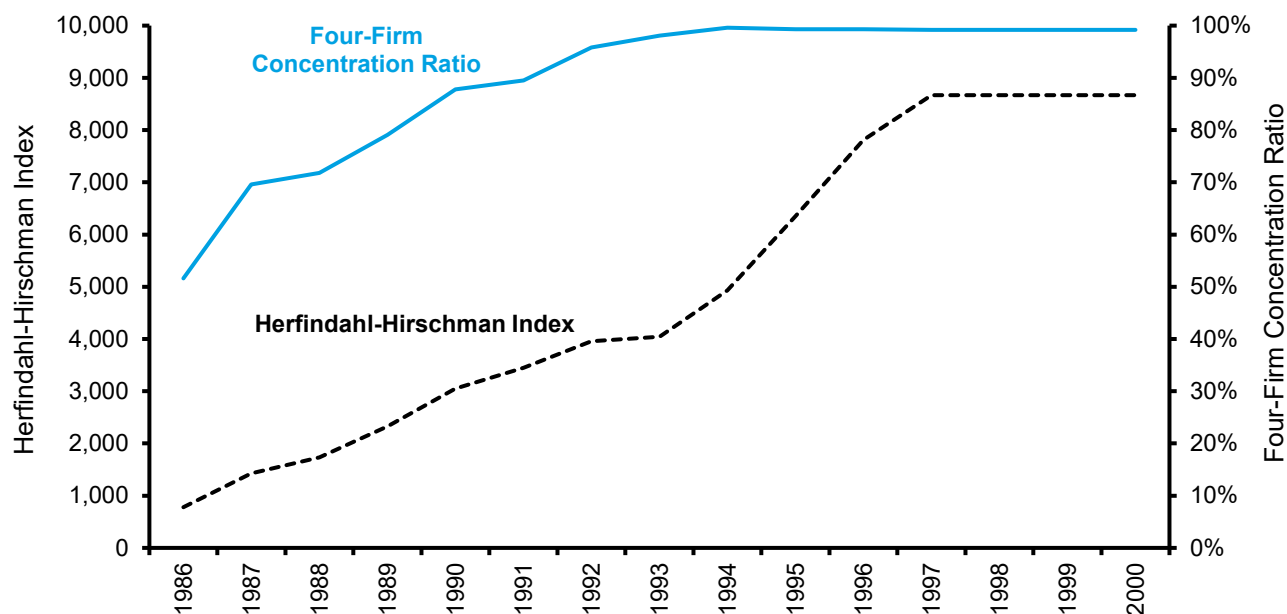
Exhibit 32: Market Share for the Word Processing Software Industry, 2000



Source: Stan Liebowitz: see <https://personal.utdallas.edu/~liebowit/book/wordprocessor/word.html>, and Counterpoint Global.

As Word ascended to its leading position, concentration rose sharply. Exhibit 33 shows that the HHI rises from less than 800 in 1986 to nearly 8,700 in 2000. The C4 concentration ratio essentially doubled from just over 50 percent at the beginning of the period to almost 100 percent at the end.

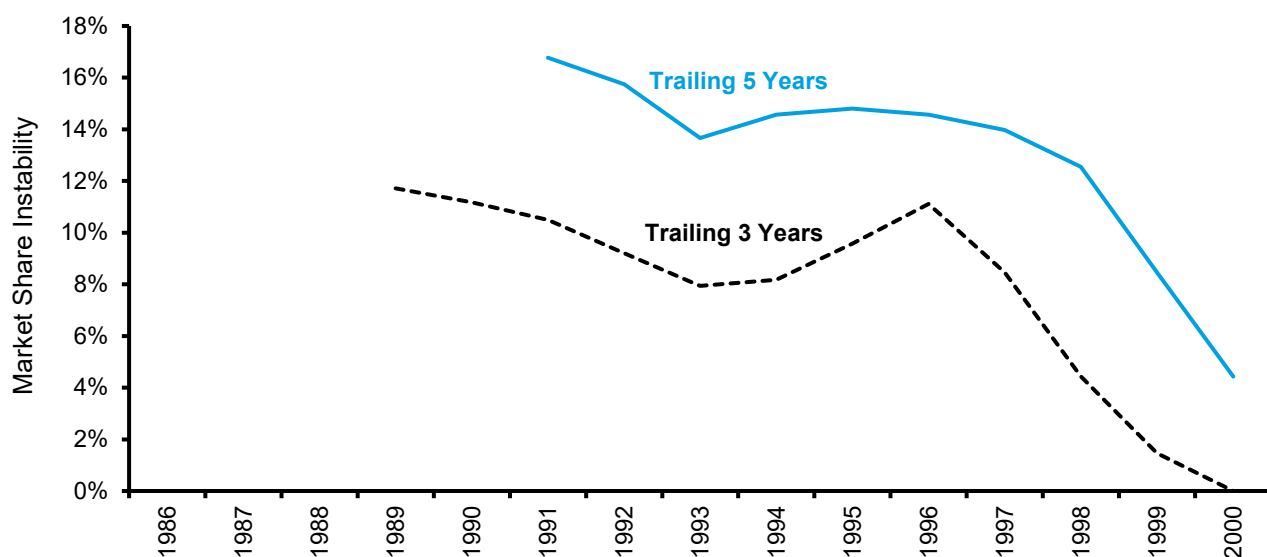
Exhibit 33: Concentration Ratios for the Word Processing Software Industry, 1986-2000



Source: Stan Liebowitz: see <https://personal.utdallas.edu/~liebowitz/book/wordprocessor/word.html>, and Counterpoint Global estimates.

In the late 1980s there was a lot of jockeying for market share, leading to an industry with very high instability (see exhibit 34). As concentration rose, instability fell. By the end of the measured period, Word's market share position was strong and stable.

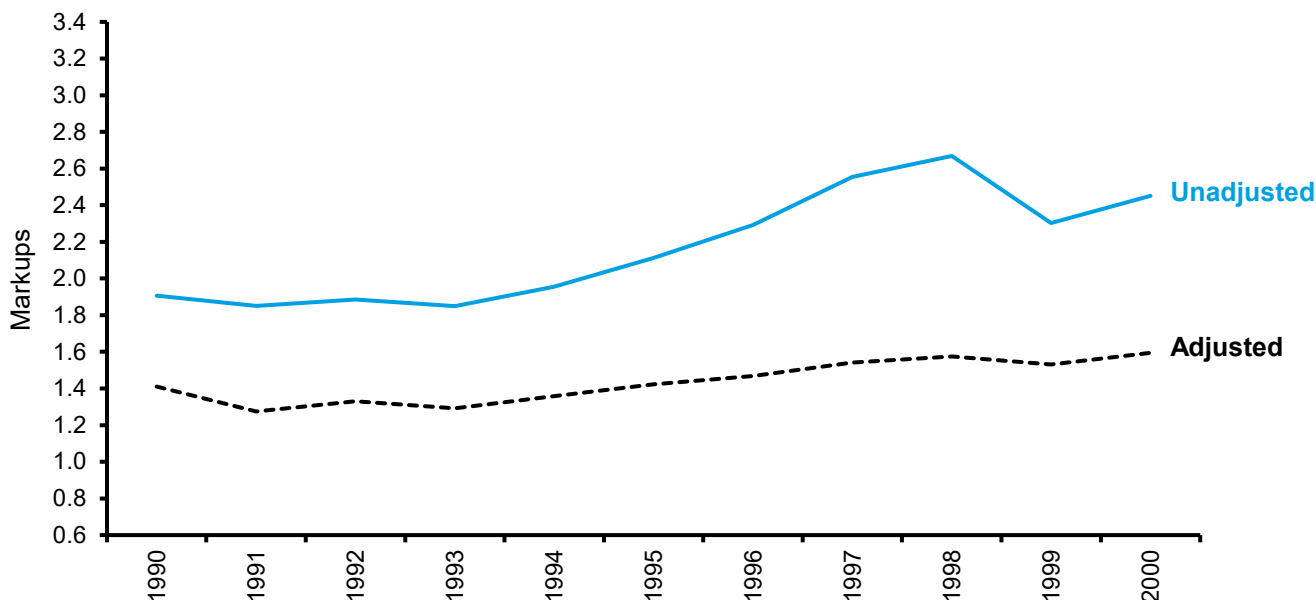
Exhibit 34: Market Instability Analysis for the Word Processing Software Industry, 1986-2000



Source: Stan Liebowitz: see <https://personal.utdallas.edu/~liebowitz/book/wordprocessor/word.html>, and Counterpoint Global estimates.

Consistent with a winner-take-most market, markups are above average (see exhibit 35). As with search, there is a large gap between the unadjusted and adjusted figure as the result of intangible costs that are not reflected in COGS. While the relationship between high market share and strong markups makes sense, we would caution that our calculation of markups uses accounting data that reflect more than just the word processing market.

Exhibit 35: Unadjusted and Adjusted Markups for the Word Processing Software Industry, 1990-2000



Source: FactSet and Counterpoint Global.

These case studies are a study in contrast. Autos and airlines have dispersed market share among a handful of large competitors, while search and word processing have market shares that are skewed toward one competitor.

The concentration data suggest that autos and airlines are very competitive, albeit the long-term trend in autos is toward less concentration while the recent wave of consolidation in airlines has led to more concentration. Search and word processing start with low concentration but rise sharply as one company establishes its strength.

Each of these industries started with high market share instability and have become more stable over time. Notably, the level of instability in autos does bounce around more than the other industries do. Any analysis of market share instability must consider where an industry is within its life cycle.

Markups attempt to measure market power, or the price a company can charge above marginal cost. Markups are below average for autos and airlines, reflecting the difficulty in achieving scale or differentiation in those industries. Markups are above average for search and word processing as the market leader enjoys advantages on the supply- and demand-side. Further, the gap between markups that are unadjusted and adjusted for intangible costs is small with autos and airlines but substantial for the software-based industries.

Conclusion

This report starts by asking whether a study of market share and measures that relate to market share, such as stability and concentration, can help evaluate whether a company has a sustainable competitive advantage.

While we believe this analysis provides useful indicators, developing a clear picture is challenging because it is difficult to capture what we care about. Issues here include what classification you use to measure industries, whether you examine local or national results, and if and how costs associated with intangibles should be reflected in the analysis. Further, causal mechanisms matter. A company that gains market share as the result of an advantage in economies of scale is fine. A company that gains market share by illegally hampering competition is not. Assigning causality can be hard.

Market share can be difficult to analyze because there is latitude in defining the boundaries of industries and markets. This analysis should consider the moves of competitors, reflect the market structure, and provide a link between changes in market share and profitability.

Achieving a sustainable competitive advantage is difficult for a business that competes in an industry where there is instability in market share. As a general observation, market share instability tends to be high as an industry emerges. During this phase competitors jockey for market fit and new competitors join the fray. Market shares then become more stable as the industry shakes out.

Analysis of stability offers a good occasion to examine the rate of entry and exit, as well as the barriers to entry and exit. The rise of regulation in the last few decades appears to have depressed the rate of entry.

Market share instability tends to be unfavorable for sustainable competitive advantage, but market share stability does not ensure it. Industries can be stable near a point of competitive equilibrium, which precludes any meaningful value creation.

Market concentration as a broad metric has little to say about industry profitability. Measuring concentration, as with market share, presents challenges because of method, data source, and the level of geographic specificity. For instance, some studies show an increase in national concentration and a decrease in local concentration at the same time.

Concentration can be the result of a few processes, which have varying implications for economic profit. The first is that one company has some advantage, usually associated with economies of scale, relative to its competitors. Concentration can also occur through consolidation as a result of M&A. The U.S. airline industry is a good example. Finally, concentration may be the result of a battle in a winner-take-most market. The internet search industry is a good case in point.

Any analysis of concentration is a good time to consider minimum efficient scale and the total addressable market. The important point to keep in mind is that scale for an individual company is relative to its competitors. Some industries, such as the global auto industry, are large enough to accommodate a number of companies that operate at minimum efficient scale. This tends to result in industry ROICs that are close to the cost of capital.

There is a lively debate about the degree to which concentration has changed in recent decades and what that means for competitiveness. The conclusions differ based on the approach the researcher takes to measure concentration. One thing to bear in mind is that regulators do consider concentration as part of an assessment of industry competitiveness.

Market power measures the degree to which a firm can set its price above its marginal cost. A firm with market power creates value by earning a return above its cost of capital. An expansive view of value creation goes from the customer's willingness to pay to a supplier's willingness to sell. Between those extremes lie a company's price and cost. The difference between willingness to pay and price is consumer surplus, and the difference between cost and willingness to sell is supplier surplus. A company can create an opportunity to enhance market power by increasing willingness to pay and decreasing willingness to sell. Further, most of the classic barriers to entry can be mapped onto the framework that considers everything from willingness to pay to willingness to sell.

Markups are the classic way to measure market power. There are various approaches to estimating markups. One popular approach solves for the markup by taking the ratio of output to input times a production function. Using financial statements, sales is commonly used as a proxy for output and COGS for input, or marginal cost. The average production function is around 0.85. An open question is whether a markup is a better measure of market power than ROIC or even gross margin.

Studies have identified provocative patterns in markup data. Specifically, markups appear to have been largely flat from the mid-1950s through 1980 and have ascended steadily since then. The rise in markups has not come from changes between industries but rather from increased dispersion within industries. This has led to the concept of superstar firms, which have distinguished themselves from their industry peers.

Some research suggests that superstar firms are those that have invested heavily in proprietary technology that is not shared with other firms. This software allows these businesses to capture scale, manage complexity, and differentiate from competitors.

This is consistent with research showing that intangible investments have risen sharply in recent decades. This means that COGS may underestimate the marginal cost. Introducing a fraction of SG&A as an additional cost changes the aggregate picture. The rise in markups since the 1980s largely disappears and the rise of superstar firms, while still detectable, becomes vastly more muted. Here again, the answer you get depends on the question you ask.

There has been increased interest in antitrust action abroad and in the U.S.¹¹⁵ Big technology companies have been one of the focuses of regulatory attention. At a minimum, there will likely be greater scrutiny in M&A deals, more distraction, heightened scrutiny of pricing actions, and continued lobbying to offset the risks. That said, the ambiguity in quantifying measures such as concentration and market power mean that demonstrating harm to consumers and competition can be a challenge. Political and public sentiment toward large companies has vacillated between positive and negative many times in the last 125 years.¹¹⁶

Our case studies highlighted traditional industries, autos and airlines, along with digital industries, internet search and word processing software, with winner-take-most outcomes. Examining the development of these industries over time shows how the dynamics for market share, concentration, and markups differ. It is important to note that picking winners is easy after the fact. The market share instability for the internet search market, for example, was extremely high in the early days.

We can now take stock of the link between market share and sustainable competitive advantage. Here are some observations:

- **Look for lopsided market shares.** These tend to be the result of winner-take-most markets. Ideally, the company achieves the market share position through organic growth. Network effects and positive

feedback generally contribute to this outcome. The risk here is that another network comes along and unseats the current incumbent.

- **Market share stability.** Market shares are generally unstable as an industry emerges and settle down as it matures. It is challenging for a company to sustain a competitive advantage in an unstable industry. But a stable industry does not promise excess returns.
- **Be alert to the potential of new entrants.** Clayton Christensen, who was a professor at Harvard Business School, developed the theory of disruptive innovation.¹¹⁷ Challengers approach a segment of the market, usually at the low end, with a new business model that commonly lowers minimum efficient scale.¹¹⁸ Once that competitor establishes a toehold, it can address additional segments of the market and drain excess profits from the incumbents. Consider barriers to entry and how they are affected by WTP, price, cost, and WTS. Assess if and how regulation creates a barrier to entry.
- **Low market share inequality.** Some industries have multiple competitors with a difference in market share that is modest. The important consideration is the nature of the industry, especially with regard to fixed and variable costs. For high fixed-cost businesses, it is important to consider minimum efficient scale while recognizing that scale is not about absolute size but rather size relative to competitors.
- **Duration of market share leadership.** How long a company with leading market share remains at the top is a function of how big the gap is between the leader and the nearest rival, market instability, and the factors that drive market share change, such as barriers to entry, marketing spending, and product and process innovation. The first two determinants can be determined quantitatively. The third one can be modeled but generally requires judgment.¹¹⁹ As noted earlier, the rate at which leaders are getting disrupted has declined since 2000.
- **Look for companies that have consumers with a high willingness to pay or an ability to increase the willingness to pay of customers over time.** Some offerings do not have dominant market shares but do have a high willingness to pay. This is typical of well-regarded luxury brands. These businesses often have pricing power. Other businesses increase WTP through network effects or managing complements effectively.

The appendix includes a list of companies with wide economic moats based on market share that Josh Jarrett, director of research at Counterpoint Global, has collected (exhibit 36). This group of businesses has posted CFROIs that are substantially higher than the average of an aggregate of companies in popular stock market indices (exhibit 37). Good businesses are not always good investments, but consistent value creation tends to be an investor's ally.

Please see important disclosures on pages 55-57

Appendix: Wide Moat Businesses

Exhibit 36: Wide Moat Businesses

Company Name	Company Name
Adobe Incorporated	Johnson & Johnson
Aena SME SA	Jumbo Interactive Limited
Air Products and Chemicals, Inc.	Kering
Alphabet Inc.	Linde plc
Altria Group Inc	Live Nation Entertainment, Inc.
Amazon.com, Inc.	Lockheed Martin Corporation
AMERCO	L'Oreal
American Tower Corporation	LVMH Moët Hennessy Louis Vuitton SE
Analog Devices, Inc.	Marsh & McLennan Companies, Inc.
Aon Plc	Martin Marietta Materials, Inc.
Arthur J. Gallagher & Co.	Mastercard Incorporated
ASML Holding NV ADR	McCormick & Company, Incorporated
Autodesk, Inc.	Mettler-Toledo International Inc.
AutoZone, Inc.	Microsoft Corporation
Bausch + Lomb Corporation	Moody's Corporation
Black Knight, Inc.	MSCI Inc.
Blackstone Inc.	Northrop Grumman Corp.
Bolsa Mexicana de Valores SAB de CV	NVIDIA Corporation
British American Tobacco Plc	O'Reilly Automotive, Inc.
Brookfield Asset Management Inc.	Pernod Ricard
Brown & Brown, Inc.	Philip Morris International Inc.
Cadence Design Systems, Inc.	Pool Corporation
Canadian Pacific Railway Limited	PPG Industries, Inc.
CBRE Group, Inc.	Raytheon Technologies Corporation
China Tower Corp Ltd	RELX Plc
Christian Dior SE	Republic Services, Inc.
CME Group Inc.	Rightmove Plc
Cooper Companies, Inc.	S&P Global, Inc.
Copart, Inc.	SBA Communications Corp.
CoStar Group, Inc.	Sherwin-Williams Company
Crown Castle Inc.	Sony Group Corporation
Danaher Corporation	Synopsys, Inc.
DexCom, Inc.	Taiwan Semiconductor Manufacturing Co.
Diageo Plc	Tencent Holdings Limited
Douzone Bizon Co.	Tesla Inc
Essilorluxottica SA	Texas Instruments Incorporated
Estee Lauder Companies Inc.	Thermo Fisher Scientific Inc.
Evolution AB (publ.)	TransDigm Group Incorporated
Fair Isaac Corporation	Transurban Group
FirstService Corp	Union Pacific Corporation
General Dynamics Corporation	Universal Music Group NV
Grupo Aeroportuario Del Pacifico SAB DE CV	VeriSign, Inc.
Grupo Aeroportuario del Sureste SAB de CV	Verisk Analytics Inc
Hermes International SCA	Visa Inc.
IDEXX Laboratories, Inc.	Vulcan Materials Company
Illumina, Inc.	Warner Music Group Corp.
Intercontinental Exchange, Inc.	Waste Connections, Inc.
Intuit Inc.	Waste Management, Inc.
Intuitive Surgical, Inc.	Zoetis, Inc.

Source: Counterpoint Global; Provided for illustrative purposes only and should not be construed as a recommendation for investment.

Exhibit 37: Wide Moat Businesses Earn Relatively High CFROIs

Results as of August 2022	Median Trailing CFROI					CFROI Minus Discount Rate, Last FY
	Last FY	3-Yr	5-Yr	7-Yr	10-Yr	
Weighted Average						
Wide Moat Portfolio	24%	23%	23%	23%	21%	22%
S&P 500	19%	17%	17%	16%	15%	17%
MSCI World	16%	14%	14%	14%	13%	13%
Median						
Wide Moat Portfolio	17%	17%	18%	18%	17%	17%
S&P 500	13%	13%	13%	12%	12%	10%
MSCI World	9%	8%	9%	9%	9%	4%

Source: Counterpoint Global and Credit Suisse HOLT Lens.

Endnotes

- ¹ George J. Stigler, *Capital and Rates of Return in Manufacturing Industries* (Princeton, NJ: Princeton University Press, 1963), 54.
- ² Joan Magretta, *Understanding Michael Porter: The Essential Guide to Competition and Strategy* (Boston: Harvard Business Review Press, 2012).
- ³ Michael J. Mauboussin, Dan Callahan, and Darius Majd, “Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation,” *Credit Suisse Global Financial Strategies*, November 1, 2016 and Heather Brilliant and Elizabeth Collins, *Why Moats Matter: The Morningstar Approach to Stock Investing* (Hoboken, NJ: John Wiley & Sons, 2014).
- ⁴ Alfred Rappaport, *Creating Shareholder Value: A Guide for Managers and Investors—Revised and Updated* (New York: Free Press, 1998), 63.
- ⁵ For example, see Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1980); Michael E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance* (New York: Simon & Schuster, 1985); Clayton M. Christensen, *Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail* (Boston, MA: Harvard Business School Press, 1997); Bruce Greenwald and Judd Kahn, *Competition Demystified: A Radically Simplified Approach to Business Strategy* (New York: Penguin Group, 2005); and Magretta, *Understanding Michael Porter*.
- ⁶ Felix Oberholzer-Gee and Dennis A. Yao, “Antitrust – What Role for Strategic Management Expertise?” *Boston University Law Review*, Vol. 90, No. 4, August 2010, 1457-1478.
- ⁷ Victoria Dickinson and Gregory A. Sommers, “Which Competitive Efforts Lead to Future Abnormal Economic Rents? Using Accounting Ratios to Assess Competitive Advantage,” *Journal of Business Finance & Accounting*, Vol. 39, Nos. 3 & 4, April/May 2012, 360-398 and Benjamin Maury, “Sustainable Competitive Advantage and Profitability Persistence: Sources versus Outcomes for Assessing Advantage,” *Journal of Business Research*, Vol. 84, March 2018, 100-113. For empirical work, see Michael J. Mauboussin, Dan Callahan, Bryant Matthews, and David A. Holland, “How to Model Reversion to the Mean: Determining How Fast, and to What Mean, Results Revert,” *Credit Suisse Global Financial Strategies*, September 17, 2013.
- ⁸ Naomi R. Lamoreaux, “The Problem of Bigness: From Standard Oil to Google,” *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 94-117 and Shivaram Rajgopal, Anup Srivastava, and Rong Zhao, “Do Digital Technology Firms Earn Excess Profits? Alternative Perspectives,” *Accounting Review*, forthcoming. For the same issue related to concentration, see Matias Covarrubias, Germán Gutiérrez, and Thomas Philippon, “From Good to Bad Concentration? U.S. Industries over the Past 30 Years,” *NBER Working Paper 25983*, September 2019.
- ⁹ See www.merriam-webster.com/dictionary/market%20share.
- ¹⁰ W. Brian Arthur, “Increasing Returns and the New World of Business,” *Harvard Business Review*, Vol. 74, No. 4, July-August 1996, 100-109 and Carl Shapiro and Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy* (Boston, MA: Harvard Business School Press, 1999), 173-225.
- ¹¹ Lee G. Cooper and Masao Nakanishi, *Market-Share Analysis: Evaluating Competitive Marketing Effectiveness* (Norwell, MA: Kluwer Academic Publishers, 1988), 10-11.
- ¹² Revenue share is better. See Abhi Bhattacharya, Neil A. Morgan, and Lopo L. Rego, “Examining Why and When Market Share Drives Firm Profit,” *Journal of Marketing*, Vol. 86, No. 4, July 2022, 73-94.
- ¹³ David Besanko, David Dranove, Mark Shanley, and Scott Schaefer, *Economics of Strategy, 7th Edition* (New York: John Wiley & Sons, 2017), 162.
- ¹⁴ Michael Gort, “Analysis of Stability and Change in Market Shares,” *Journal of Political Economy*, Vol. 71, No. 1, February 1963, 51-63.
- ¹⁵ R. E. Caves and M. E. Porter, “Market Structure, Oligopoly, and Stability of Market Shares,” *Journal of Industrial Economics*, Vol. 26, No. 4, June 1978, 289-313 and Masatoshi Kato and Yuji Honjo, “Market Share Instability and the Dynamics of Competition: A Panel Data Analysis of Japanese Manufacturing Industries,” *Review of Industrial Organization*, Vol. 28, No. 2, March 2006, 165-182.
- ¹⁶ Greenwald and Kahn, *Competition Demystified*, 65-66.
- ¹⁷ Steven Klepper, “Entry, Exit, Growth, and Innovation over the Product Life Cycle,” *American Economic Review*, Vol. 86, No. 3, June 1996, 562-583. For related work, see Steven Klepper and Elizabeth Graddy, “The

Evolution of New Industries and the Determinants of Market Structure,” *RAND Journal of Economics*, Vol. 21, No. 1, Spring, 1990, 27-44; Steven Klepper, “The Capabilities of New Firms and the Evolution of the U.S. Automobile Industry,” *Industrial and Corporate Change*, Vol. 11, No. 4, August 2002, 645-666; Rajshree Agarwal and Michael Gort, “The Evolution of Markets and Entry, Exit and Survival of Firms,” *Review of Economics and Statistics*, Vol. 78, No. 3, August 1996, 489-498; Steven Klepper, *Experimental Capitalism: The Nanoeconomics of American High-Tech Industries* (Princeton, NJ: Princeton University Press, 2016); Timothy Dunne, Mark J. Roberts and Larry Samuelson, “Patterns of Firm Entry and Exit in U.S. Manufacturing Industries,” *RAND Journal of Economics*, Vol. 19, No. 4, Winter 1988, 495-515; Harry Bloch, “Innovation and the Evolution of Industry Structure,” *International Journal of the Economics of Business*, Vol. 25, No. 1, February 2018, 73-83.

¹⁸ Michael J. Mauboussin and Dan Callahan, “New Business Boom and Bust: How Capitalism Experiments,” *Consilient Observer: Counterpoint Global Insights*, June 15, 2022.

¹⁹ Thomas Philippon, *The Great Reversal: How America Gave Up on Free Markets* (Cambridge, MA: Belknap Press, 2019), 93.

²⁰ Germán Gutiérrez and Thomas Philippon, “The Failure of Free Entry,” *National Bureau of Economic Research Working Paper* 26001, June 2019.

²¹ “Technology” includes Information, Manufacturing, Professional, Scientific, and Technical Services, and subsectors such as Computer Systems Design and Related Services and Architectural, Engineering, and Related Services.

²² See <https://www.oecd.org/competition/market-concentration.htm>.

²³ Department of Defense, “State of Competition within the Defense Industrial Base,” *Office of the Under Secretary of Defense for Acquisition and Sustainment*, February 2022.

²⁴ Melissa A. Schilling, “Technology Success and Failure in Winner-Take-All Markets: The Impact of Learning Orientation, Timing, and Network Externalities,” *Academy of Management Journal*, Vol. 45, No. 2, April 2002, 387-398.

²⁵ Jonathan A. Knee, *The Platform Delusion: Who Wins and Who Loses in the Age of Tech Titans* (New York: Portfolio/Penguin, 2021), 24-32.

²⁶ Felix Oberholzer-Gee offers a method to calculate MES. He writes, “To find MES for your company, determine how cost would change if the firm grew by 10 percent. Pay close attention to which cost items you consider fixed—these will not change as you grow—and which one you treat as variable. Finally, compare average cost at the current and higher production level. If the average cost declines as you grow, your company is too small to be cost competitive with larger rivals. If average cost remains roughly unchanged, you are at or beyond MES.” See Felix Oberholzer-Gee, *Better, Simpler Strategy: A Value-Based Guide to Exceptional Performance* (Boston, MA: Harvard Business Review Press, 2021), 160.

²⁷ See www.justice.gov/atr/horizontal-merger-guidelines-08192010#5c.

²⁸ I. Pavić, Fran Galetić, and Damir Piplica, “Similarities and Differences between the CR and HHI as an Indicator of Market Concentration and Market Power,” *British Journal of Economics, Management & Trade*, Vol. 13, No. 1, January 2016, 1-8.

²⁹ Esteban Rossi-Hansberg, Pierre-Daniel Sarte, and Nicholas Trachter, “Diverging Trends in National and Local Concentration,” *National Bureau of Economic Research Working Paper* 25066, September 2018 and Dominic A. Smith and Sergio Ocampo, “The Evolution of U.S. Retail Concentration,” *Working Paper*, February 12, 2022.

³⁰ Jan Eeckhout, “Comment on ‘Diverging Trends in National and Local Concentration,’” *NBER Macroeconomics Annual* 2020, Vol. 35, 2020, 151-162. Eeckhout shows that if you assume a rising population, a constant average establishment size, an increase in the ratio of establishments to firms, and a stable grid of industry (as measured by Standard Industrial Classification, or SIC, code) and geographical area (commonly expressed using a ZIP code or metropolitan statistical area, or MSA), you will get a divergence in national and local measures of concentration for “purely mechanical reasons.”

³¹ Ashiq Ali, Sandy Klasa, and Eric Yeung, “The Limitations of Industry Concentration Measures Constructed with Compustat Data: Implications for Finance Research,” *Review of Financial Studies*, Vol. 22, No. 10, October 2009, 3839-3871; Karel Hrazdil and Ray Zhang, “The Importance of Industry Classification in Estimating Concentration Ratios,” *Economics Letters*, Vol. 114, No. 2, February 2012, 224-227; and Jan Keil, “The Trouble with Approximating Industry Concentration from Compustat,” *Journal of Corporate Finance*, Vol. 45, August 2017, 467-479.

- ³² Leila Davis and Özgür Orhangazi, "Competition and Monopoly in the U.S. Economy: What Do Industrial Concentration Data Tell?" *Political Economy Research Institute Working Paper No. 492*, July 2019; Falk Bräuning, José L. Fillat, and Gustavo Joaquim, "Cost-Price Relationships in a Concentrated Economy," *Federal Reserve Bank of Boston Current Policy Perspectives*, May 23, 2022; and Covarrubias, Gutiérrez, and Philippon, "From Good to Bad Concentration?"
- ³³ Gustavo Grullon, Yelena Larkin, Roni Michaely, "Are U.S. Industries Becoming More Concentrated?" *Review of Finance*, Vol. 23, No. 4, July 2019, 697-743.
- ³⁴ Robert D. Atkinson and Filipe Lage de Sousa, "No, Monopoly Has Not Grown," *Information Technology & Innovation Foundation*, June 2021 and Robert Kulick and Andrew Card, "Industrial Concentration in the United States: 2002-2017," *NERA Economic Consulting*, March 2022.
- ³⁵ James Bessen, *The New Goliaths: How Corporations Use Software to Dominate Industries, Kill Innovation, and Undermine Regulation* (New Haven, CT: Yale University Press, 2022), 19-21; James Bessen, Erich Denk, Joowon Kim, and Cesare Righi, "Declining Industrial Disruption," *Boston University School of Law: Law & Economics Series Paper No. 20-28*, February 2020; and Victor Manuel Bennett, "Changes in Persistence of Performance Over Time," *Strategic Management Journal*, Vol. 41, No. 10, October 2020, 1745-1769.
- ³⁶ Jan Keil, "Explaining the Concentration-Profitability Paradox," *Review of Political Economy*, Vol. 29, No. 2, 2017, 209-231; Jan Keil, "Is There a Causal Effect of Concentration on Persistent Profitability Differentials?" *Industrial and Corporate Change*, Vol. 28, No. 2, April 2019, 241-257; and Kwei Hou and David T. Robinson, "Industry Concentration and Average Stock Returns," *Journal of Finance*, Vol. 61, No. 4, August 2006, 1927-1956.
- ³⁷ Bradley T. Gale and Ben S. Branch, "Concentration versus Market Share: Which Determines Performance and Why Does It Matter?" *Antitrust Bulletin*, Vol. 27, No. 1, Spring 1982, 83-106.
- ³⁸ Alexander Edeling and Alexander Himme, "When Does Market Share Matter? New Empirical Generalizations from a Meta-Analysis of the Market Share-Performance Relationship," *Journal of Marketing*, Vol. 82, No. 3, May 2018, 1-24.
- ³⁹ John E. Prescott, Ajay K. Kohli and N. Venkatraman, "The Market Share-Profitability Relationship: An Empirical Assessment of Major Assertions and Contradictions," *Strategic Management Journal*, Vol. 7, No. 4, July-August 1986, 377-394.
- ⁴⁰ Jan Eeckhout, *The Profit Paradox: How Thriving Firms Threaten the Future of Work* (Princeton, NJ: Princeton University Press, 2021), 24.
- ⁴¹ Adam M. Brandenburger and Harborne W. Stuart Jr., "Value-Based Business Strategy," *Journal of Economics & Management Strategy*, Vol. 5, No. 1, Spring 1996, 5-24 and Harborne W. Stuart Jr., *The Profitability Test: Does Your Strategy Make Sense?* (Cambridge, MA: MIT Press, 2016).
- ⁴² Oberholzer-Gee, *Better, Simpler Strategy*.
- ⁴³ Nick Sleep of Nomad popularized the term, "scale economics shared," in the investment community. Nick Sleep and Qais Zakaria, "Nomad Investment Partnership Letters to Partners, 2001-2014." See https://igyfoundation.org.uk/wp-content/uploads/2021/03/Full_Collection_Nomad_Letters_.pdf. In his final letter as chief executive officer of Amazon, Jeff Bezos discussed the concept of "create more than you consume." He estimates that the company's interactions with shareholders, employees, third-party sellers, and customers resulted in more than \$300 billion in value. These figures do not represent surplus but provide a starting point. See <https://www.aboutamazon.com/news/company-news/2020-letter-to-shareholders>.
- ⁴⁴ Michael J. Mauboussin and Alfred Rappaport, *Expectations Investing: Reading Stock Prices for Better Returns—Revised and Updated* (New York: Columbia Business School Publishing, 2021), 16-18.
- ⁴⁵ Magretta, *Understanding Michael Porter*, 114-115.
- ⁴⁶ Willingness to pay (WTP) is an important concept in economics but tricky to estimate. Common techniques include surveys, conjoint analysis (a more structured form of survey), auctions, and experiments. For more on this, see Tim Stobierski, "Willingness to Pay: What It Is and How to Calculate It," *Harvard Business School Online*, October 20, 2020, at <https://online.hbs.edu/blog/post/willingness-to-pay>. A consumer should in theory provide the same figure for WTP and willingness to accept (WTA), the amount an individual would accept to not use a product or service. But surveys often show a large gap between the two. Cass Sunstein, a professor at Harvard Law School, surveyed individuals in 2018 about their per month WTP and WTA for a handful of social media platforms. Here are the results:

Platform	Per Month		Ratio of WTA/WTP
	Average WTP	Average WTA	
WhatsApp	\$34.90	\$101.16	2.9
Reddit	27.73	97.73	3.5
LinkedIn	25.71	97.80	3.8
Snapchat	24.92	106.20	4.3
Instagram	21.67	102.60	4.7
Pinterest	20.97	102.92	4.9
Twitter	19.94	104.18	5.2
YouTube	17.27	90.78	5.3
Facebook	16.99	89.17	5.2

That the WTA is roughly three to five times higher than the WTP is evidence of the endowment effect, the idea that people place a greater value on what they own than what they do not own. Indeed, the size of the ratio compelled Sunstein to call it a “superendowment effect.” See Cass R. Sunstein, *Too Much Information: Understanding What You Don’t Want to Know* (Cambridge, MA: MIT Press, 2020), 138-141.

Erik Brynjolfsson and colleagues did a similar exercise. They found that the median WTA for Facebook, for instance, was a more modest \$48.49 per month. See Erik Brynjolfsson, Avinash Collis, and Felix Eggers, “Using Massive Online Choice Experiments to Measure Changes in Well-Being,” *PNAS*, Vol. 116, No. 15, April 9, 2019, 7250-7255.

⁴⁷ Arthur, “Increasing Returns and the New World of Business.”

⁴⁸ Oberholzer-Gee, *Better, Simpler Strategy*, 89-91.

⁴⁹ W. Brian Arthur, “Competing Technologies, Increasing Returns, and Lock-In by Historical Events,” *Economic Journal*, Vol. 99, No. 394, March 1989, 116-131.

⁵⁰ Michael Arrington, “It’s Official(ish): MySpace Is Biggest Site on Internet,” *TechCrunch*, December 12, 2006.

⁵¹ Andrew McAfee and Erik Brynjolfsson, *Machine Platform Crowd: Harnessing Our Digital Future* (New York: W.W. Norton & Company, 2017), 153-156.

⁵² Shapiro and Varian, *Information Rules*, 103-134.

⁵³ Knee, *The Platform Delusion*, 12-17. Professors Michael Cusumano, Annabelle Gawer, and David Yoffie found that only 43 of the 252 competitors seeking to become successful platform companies succeeded. See Michael A. Cusumano, Annabelle Gawer, and David B. Yoffie, *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power* (New York: Harper Business, 2019), 107-138.

⁵⁴ “Laws of Tech: Commoditize Your Complement,” at www.gwern.net/Complement.

⁵⁵ Ron Amadeo, Google’s Iron Grip on Android: Controlling Open Source by Any Means Necessary, *Ars Technica*, July 21, 2018. See <https://arstechnica.com/gadgets/2018/07/googles-iron-grip-on-android-controlling-open-source-by-any-means-necessary/>.

⁵⁶ Mike Isaac and Jack Nicas, “Breaking Point: How Mark Zuckerberg and Tim Cook Became Foes,” *New York Times*, April 26, 2021.

⁵⁷ Ben Thompson, “An Interview with Eric Seufert About the Post-ATT Landscape,” *Stratechery*, May 19, 2022.

⁵⁸ Salvador Rodriguez, “The Secret Talks That Could Have Prevented the Apple vs. Facebook War,” *Wall Street Journal*, August 12, 2022 and Nils Wernerfelt, Anna Tuchman, Bradley T. Shapiro, and Robert Moakler, “Estimating the Value of Offsite Data to Advertisers on Meta,” *Working Paper*, July 29, 2022.

⁵⁹ One study showed that the average customer had a higher willingness to pay for a Wal-Mart store versus competitors, after consideration for price and distance. See Lesley Chiou, “Empirical Analysis of Retail Competition: Spatial Differentiation at Wal-Mart, Amazon.com, and Their Competitors,” *Working Paper*, May 27, 2005. One noteworthy example of the last point is Blockbuster Video, which reported earned \$800 million, in excess of 15 percent of the company’s revenues, from late fees. The company charged customers a late fee if they failed to return a movie to the store by a specific date. Naturally, customers disliked them, but they became a key source of sales for the company. Blockbuster filed for bankruptcy in 2010. See Frank Olito, “The Rise and

Fall of Blockbuster,” Business Insider, August 20, 2020, see www.businessinsider.com/rise-and-fall-of-blockbuster.

⁶⁰ Gediminas Adomavicius, Jesse C. Bockstedt, Shawn P. Curley, and Jingjing Zhang, “Effects of Online Recommendations on Consumers’ Willingness to Pay,” *Information Systems Research*, Vol. 29, No. 1, March 2018, 84-102.

⁶¹ Wendy Wood and Dennis Rünger, “Psychology of Habit,” *Annual Review of Psychology*, Vol. 67, 2016, 289-314 and Greenwald and Kahn, *Competition Demystified*, 32-33.

⁶² Wenying Li and Jeffrey H. Dorfman, “The Implications of Heterogeneous Habit in Consumer Beverage Purchases on Soda and Sin Taxes,” *Food Policy*, Vol. 84, April 2019, 111-120.

⁶³ Chance Miller, “Analysts: Google to Pay Apple \$15 Billion to Remain Default Safari Search Engine in 2021,” *9to5Mac*, August 25, 2021.

⁶⁴ Michael Grean and Michael J. Shaw, “Supply-Chain Partnership between P&G and Wal-Mart,” in *E-Business Management: Integration of Web Technologies with Business Models*, Michael J. Shaw, ed. (New York: Springer Science+Business Media, 2003), 155-171.

⁶⁵ Chad Syverson, “What Determines Productivity?” *Journal of Economic Literature*, Vol. 49, No. 2, June 2011, 326-365 and Sharat Ganapati, “Growing Oligopolies, Prices, Output, and Productivity,” *American Economic Journal: Microeconomics*, Vol. 13, No. 3, August 2021, 309-327.

⁶⁶ Besanko, Dranove, Shanley, and Schaefer, *Economics of Strategy*, 70-75.

⁶⁷ Tomas Chamorro-Premuzic, “Does Money Really Affect Motivation? A Review of the Research,” *Harvard Business Review*, April 10, 2013.

⁶⁸ Lea Cassar and Stephan Meier, “Nonmonetary Incentives and the Implications of Work as a Source of Meaning,” *Journal of Economic Perspectives*, Vol. 32, No. 3, Summer 2018, 215-238.

⁶⁹ Daniel H. Pink, *Drive: The Surprising Truth About What Motivates Us* (New York: Riverhead Books, 2009).

⁷⁰ Eirik Sjøholm Knudsen, Lasse B. Lien, Bram Timmermans, Ivan Belik, and Sujit Pandey, “Stability in Turbulent Times? The Effect of Digitalization on the Sustainability of Competitive Advantage,” *Journal of Business Research*, Vol. 128, May 2021, 360-369.

⁷¹ Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1980).

⁷² Greenwald and Kahn, *Competition Demystified*, 19.

⁷³ Abhi Bhattacharya, Neil A. Morgan, and Lopo L. Rego, “Examining Why and When Market Share Drives Firm Profit,” *Journal of Marketing*, Vol. 86, No. 4, July 2022, 73-94.

⁷⁴ The field of industrial organization studies the exercise and control of market power. Jean Tirole, “Market Failures and Public Policy,” *Nobel Prize Lecture*, December 8, 2014. See www.nobelprize.org/uploads/2018/06/tirole-lecture.pdf.

⁷⁵ Susanto Basu, “Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence,” *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 3-22 and Maximilian Koppenberg and Stefan Hirsch, “Markup Estimation: A Comparison of Contemporary Methods at the Example of European Food Retailers,” *Agribusiness*, Vol. 38, No. 1, Winter 2022, 108-133.

⁷⁶ Jan De Loecker and Frederic Warzynski, “Markups and Firm-Level Export Status,” *American Economic Review*, Vol. 102, No. 6, October 2012, 2437-2471.

⁷⁷ For a layman’s discussion on the production function, see <https://boycewire.com/production-function-definition/>.

⁷⁸ Maarten De Ridder, Basile Grassi, and Giovanni Morzenti, “The Hitchhiker’s Guide to Markup Estimation,” *Working Paper*, July 29, 2022.

⁷⁹ Hendrik Döpper, Alexander MacKay, Nathan H. Miller, and Joel Stiebale, “Rising Markups and the Role of Consumer Preferences,” *Harvard Business School Working Paper 22-025*, March 2, 2022.

⁸⁰ For example, see Jan De Loecker, Jan Eeckhout, Gabriel Unger, “The Rise of Market Power and the Macroeconomic Implications,” *Quarterly Journal of Economics*, Vol. 135, No. 2, May 2020, 561-644; Jan Eeckhout, *The Profit Paradox: How Thriving Firms Threaten the Future of Work* (Princeton, NJ: Princeton University Press, 2021); Gauti B. Eggertsson, Jacob A. Robbins, and Ella Getz Wold, “Kaldor and Piketty’s Facts: The Rise of Monopoly Power in the United States,” *NBER Working Paper 24287*, February 2018; and

Thomas Philippon, *The Great Reversal: How America Gave Up on Free Markets* (Cambridge, MA: Belknap Press, 2019).

⁸¹ David Autor, David Dorn, Lawrence F. Katz, Christina Patterson, and John Van Reenen, “The Fall of the Labor Share and the Rise of Superstar Firms,” *Quarterly Journal of Economics*, Vol. 135, No. 2, May 2020, 645-709.

⁸² The HOLT Cash Flow Return on Investment (CFROI) metric reflects economic returns by measuring a company's inflation-adjusted cash flow return on operating assets. With CFROI, HOLT aims to cut through the vagaries of traditional accounting results and to provide a consistent metric that allows for comparison of performance over time and across a portfolio, a market, or a global universe of companies. HOLT calculates CFROI for a company using two steps. First, it measures the inflation-adjusted gross cash flows available to all capital owners and compares that to the inflation-adjusted gross investment made by the capital owners. Second, it translates this ratio into an Internal Rate of Return (IRR) by recognizing the finite economic life of depreciating assets and the residual value of non-depreciating assets. CFROI is a trademark or registered trademark of Credit Suisse Group AG or its affiliates in the U.S. and other countries.

⁸³ To be more specific, we exclude companies with the following NAICS codes: 52 (Finance and Insurance), 53 (Real Estate and Leasing), 55 (Management of Companies and Enterprises), 92 (Public Administration), and 93 (Unclassified Establishments). We also exclude companies with less than \$0.1 million of annual sales, cost of goods sold (COGS), selling, general and administrative (SG&A) expense, or research and development. All data are calendarized.

⁸⁴ Mike Konczal and Niko Lusiani, “Prices, Profits, and Power: An Analysis of 2021 Firm-Level Markups,” *Roosevelt Institute*, June 2022.

⁸⁵ This includes NAICS sectors 52, “Finance and Insurance,” and 53, “Real Estate and Rental and Leasing.” Having these sectors in the results lifts the aggregate markup about 0.20-0.25. See Jan De Loecker, Jan Eeckhout, and Gabriel Unger, “The Rise of Market Power and the Macroeconomic Implications—Online Appendix,” December 10, 2019.

⁸⁶ Eric D. Bostwick, Sherwood Lane Lambert, and Joseph G. Donelan, “A Wrench in the COGS: An Analysis of the Differences between Cost of Goods Sold as Reported in Compustat and in the Financial Statements,” *Accounting Horizons*, Vol. 30, No. 2, June 2016, 177-193. Here is the relevant passage from the paper (emphasis added): “The Compustat income statement format presents a separate line item for both cost of goods sold (Compustat COGS; hereafter, C_COGS)¹ and depreciation, depletion, and amortization (Compustat DP). To accomplish this, S&P modifies data from 10-K filings so that the DP variable can be created and presented without altering bottom-line net income. When a company reports the allocation of DD&A among specific line items (e.g., COGS and SG&A expenses), S&P will remove the specified amounts of DD&A from each of the items indicated and will collect all DD&A in the DP variable. However, when companies do not disclose the allocation of DD&A among line items, S&P will still collect all DD&A in the DP variable, but they will also subtract total DD&A from other line items within the financial statements. *Most often, the entire amount of DD&A is deducted from COGS.*” Further, some estimates of markups include financials, insurance, and real estate companies. These are among the highest markup industries and suffer from measurement challenges. Removing these industries lowers the aggregate markup considerably but does not change the general trends. See Appendix 10 in Jan De Loecker, Jan Eeckhout and Gabriel Unger, “Online Appendix for The Rise of Market Power and the Macroeconomic Implications,” December 10, 2019.

⁸⁷ Our approach follows that of Konczal and Lusiani. We calculate changes within each sector as: (Sector's share of total sales at end of prior year) \times (Average markup for all companies in that sector for the current year – Average markup for all companies in that sector for the prior year). We then sum that for all sectors. We calculate changes between each sector as: (Sector's share of total sales at end of current year – Sector's share of total sales at end of prior year) \times (Average markup for all companies in that sector for the prior year). We then sum that for all sectors. For both series, we then calculate the cumulative sum over time since the beginning of our measurement period (1990/1991).

⁸⁸ Autor, Dorn, Katz, Patterson, and Van Reenen, “The Fall of the Labor Share and the Rise of Superstar Firms,” Prasanna Tambe, Lorin Hitt, Daniel Rock, and Erik Brynjolfsson, “Digital Capital and Superstar Firms,” *NBER Working Paper 28285*, December 2020; and Alexander Schiersch and Caroline Stiel, “Testing the Superstar Firm Hypothesis,” *Journal of Applied Economics*, Vol. 25, No. 1, 2022, 583-603. Sherwin Rosen, an economist,

discussed the concept of “superstars” in the early 1980s. See Sherwin Rosen, “The Economics of Superstars,” *American Economic Review*, Vol. 71, No. 5, December 1981, 845-858.

⁸⁹ Quoted from Autor, Dorn, Katz, Patterson, and Van Reenen, “The Fall of the Labor Share and the Rise of Superstar Firms.”

⁹⁰ Susanto Basu, “Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence,” *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 3-22; Steven Berry, Martin Gaynor, and Fiona Scott Morton, “Do Increasing Markups Matter? Lessons from Empirical Industrial Organization,” *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 44-68; and Chad Syverson, “Macroeconomics and Market Power: Context, Implications, and Open Questions,” *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 23-43.

⁹¹ Basu, “Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence.”

⁹² Carol A. Corrado, Charles Hulten, and Daniel Sichel, “Measuring Capital and Technology: An Expanded Framework,” in Carol A. Corrado, John Haltiwanger, and Daniel Sichel, eds. *Measuring Capital in the New Economy* (Chicago: University of Chicago Press, 2005); Carol A. Corrado, Charles Hulten, and Daniel Sichel, “Intangible Capital and U.S. Economic Growth,” *Review of Income and Wealth*, Vol. 55, No. 3, September 2009, 661-685; Carol A. Corrado and Charles R. Hulten, “How Do You Measure a ‘Technological Revolution’?” *American Economic Review*, Vol. 100, No. 2, May 2010, 99-104; and Jonathan Haskel and Stian Westlake, *Capitalism Without Capital: The Rise of the Intangible Economy* (Princeton, NJ: Princeton University Press, 2017).

⁹³ For a small sample of this research, see Nicolas Crouzet and Janice C. Eberly, “Understanding Weak Capital Investment: The Role of Market Concentration and Intangibles,” *NBER Working Paper 25869*, May 2019; James Traina, “Is Aggregate Market Power Increasing? Production Trends Using Financial Statements,” *Booth School of Business, University of Chicago, New Working Paper Series No. 17*, February 2018; Luminita Enache and Anup Srivastava, “Should Intangible Investments Be Reported Separately or Commingled with Operating Expenses? New Evidence,” *Management Science*, Vol. 64, No. 7, July 2018, 3446-3468; Baruch Lev, “Ending the Accounting-for-Intangibles Status Quo,” *European Accounting Review*, Vol. 28, No. 4, September 2019, 713-736; Baruch Lev and Feng Gu, *The End of Accounting and the Path Forward for Investors and Managers* (Hoboken, NJ: John Wiley & Sons, 2016); and Feng Gu, Baruch Lev, and Chenqi Zhu, “All Losses Are Not Alike: Real versus Accounting-Driven Reported Losses,” *SSRN Working Paper*, May 2022.

⁹⁴ James Traina, “Is Aggregate Market Power Increasing? Production Trends Using Financial Statements,” *Booth School of Business, University of Chicago, New Working Paper Series No. 17*, February 2018; Meghana Ayyagari, Asli Demircug-Kunt, Vojislav Maksimovic, “The Rise of Star Firms: Intangible Capital and Competition,” *Working Paper*, September 2021; and Rajgopal, Srivastava, and Zhao, “Do Digital Technology Firms Earn Excess Profits?”

⁹⁵ Meghana Ayyagari, Asli Demircug-Kunt, Vojislav Maksimovic, “Who are America’s Star Firms?” *World Bank Policy Research Working Paper 8534*, July 2018 and Ayyagari, Demircug-Kunt, Maksimovic, “The Rise of Star Firms: Intangible Capital and Competition.”

⁹⁶ Ryan H. Peters and Lucian A. Taylor, “Intangible Capital and the Investment-q Relation,” *Journal of Financial Economics*, Vol. 123, No. 2, February 2017, 251-272. Peters and Taylor are broadly consistent with Michael Ewens, Ryan H. Peters, and Sean Wang, “Measuring Intangible Capital with Market Prices,” *NBER Working Paper*, October 2020.

⁹⁷ Academics are working on refining this percentage based on industry. See Aneel Iqbal, Shivaram Rajgopal, Anup Srivastava, and Rong Zhao, “Value of Internally Generated Intangible Capital,” *Working Paper*, February 2022.

⁹⁸ Sree Ramaswamy, Michael Birshan, James Manyika, Jacques Bughin, and Jonathan Woetzel, “What Every CEO Needs to Know About ‘Superstar’ Companies,” *McKinsey Global Institute*, April 2019; Sara Calligaris, Chiara Criscuolo, Luca Marcolin, “Mark-Ups in the Digital Era,” *OECD Science, Technology and Industry Working Papers*, April 25, 2018; and Matej Bajgar, Chiara Criscuolo, and Jonathan Timmis, “Intangibles and Industry Concentration: Supersize Me,” *OECD Science, Technology and Industry Working Papers*, September 22, 2021.

⁹⁹ Bessen, *The New Goliaths*, 30-35.

- ¹⁰⁰ See U.S. Bureau of Economic Analysis, National Income and Product Accounts, Table 9.4U. Software Investment and Prices.
- ¹⁰¹ Magretta, *Understanding Michael Porter*, 114.
- ¹⁰² Bessen, *The New Goliaths*, 9-13. Along the same lines, Eeckhout and Veldkamp argue that “firms react to data about demand by shifting their production to high-demand goods” and hence earn higher markups because they “are getting better and better at forecasting future demand.” See Jan Eeckhout and Laura Veldkamp, “Data and Market Power,” *NBER Working Paper 30022*, May 2022.
- ¹⁰³ Bessen, *The New Goliaths*, 53-69.
- ¹⁰⁴ Ayyagari, Demirguc-Kunt, Maksimovic, “The Rise of Star Firms,” Table 1.
- ¹⁰⁵ We apply the methodology explained here to fiscal 2022 figures: Michael J. Mauboussin and Dan Callahan, “One Job: Expectations and the Role of Intangible Investments,” *Consilient Observer: Counterpoint Global Insights*, September 15, 2020.
- ¹⁰⁶ The industries include companies in the Russell 3000 at the end of each year with the following 6-digit NAICS codes: Autos: 336111 (Automobile Manufacturing); Airlines: 481111 (Scheduled Passenger Air Transportation); Word Processing Software: 334614 (Software and Other Prerecorded Compact Disc, Tape, and Record Reproducing), 511210 (Software Publishers), and 541512 (Computer Systems Design Services); and Internet Search: 517919 (All Other Telecommunications), 519130 (Internet Publishing and Broadcasting and Web Search Portals), 541511 (Custom Computer Programming Services), 541519 (Other Computer Related Services), 541840 (Media Representatives), and 511210 (Software Publishers).
- ¹⁰⁷ Willy Shih, “Is It Time to Rethink Globalized Supply Chains?” *MIT Sloan Management Review*, Vol. 61, No. 4, Summer 2020, 1-3.
- ¹⁰⁸ See www.airlines.org/dataset/u-s-bankruptcies-and-services-cessations/.
- ¹⁰⁹ William E. Fruhan, Jr., *The Fight for Competitive Advantage: A Study of the United States Domestic Trunk Air Carriers* (Boston, MA: Harvard Business School, 1972).
- ¹¹⁰ Germán Bet, “A Retrospective Study of Recent U.S. Airline Mergers: What Can We Learn from Production Data?” *Working Paper*, October 2021.
- ¹¹¹ IATA, “Economic Performance of the Airline Industry: 2021 End-Year Report,” IATA, October 4, 2021.
- ¹¹² Germán Bet, “Market Power in the U.S. Airline Industry,” *Working Paper*, August 2021.
- ¹¹³ Ayyagari, Demirguc-Kunt, Maksimovic, “The Rise of Star Firms,” Figure 10.
- ¹¹⁴ Stan J. Liebowitz and Stephen E. Margolis, *Winners, Losers & Microsoft: Competition and Antitrust in High Technology* (Oakland, CA: The Independent Institute, 1999), 180-192 and <https://personal.utdallas.edu/~liebowit/book/wordprocessor/word.html>.
- ¹¹⁵ Nicolás Rivero, “A Cheat Sheet to All of the Antitrust Cases Against Big Tech in 2021,” *Quartz*, September 29, 2021. For a good historical view, see Carl Shapiro, “Antitrust in a Time of Populism,” *International Journal of Industrial Organization*, Vol. 61, November 2018, 714-748.
- ¹¹⁶ Matt Stoller, *Goliath: The 100-Year War Between Monopoly Power and Democracy* (New York: Simon & Schuster, 2019).
- ¹¹⁷ Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Boston, MA: Harvard Business School Press, 1997).
- ¹¹⁸ Andrew A. King and Baljir Baatartogtokh, “How Useful Is the Theory of Disruptive Innovation?” *MIT Sloan Management Review*, Vol. 57, No. 1, Fall 2015, 77-90.
- ¹¹⁹ John Sutton, “Market Share Dynamics and the ‘Persistence of Leadership’ Debate,” *American Economic Review*, Vol. 97, No. 1, March 2007, 222-241.

References

Books

Aghion, Philippe, Céline Antonin, and Simon Bunel, *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations* (Cambridge, MA: Belknap Press, 2021).

Baker, Jonathan B., *The Antitrust Paradigm: Restoring a Competitive Economy* (Cambridge, MA: Harvard University Press, 2019).

Besanko, David, David Dranove, Mark Shanley, and Scott Schaefer, *Economics of Strategy, 7th Edition* (New York: John Wiley & Sons, 2017).

Bessen, James, *The New Goliaths: How Corporations Use Software to Dominate Industries, Kill Innovation, and Undermine Regulation* (New Haven, CT: Yale University Press, 2022).

Cooper, Lee G., and Masao Nakanishi, *Market-Share Analysis: Evaluating Competitive Marketing Effectiveness* (Norwell, MA: Kluwer Academic Publishers, 1988).

Cusumano, Michael A., Annabelle Gawer, and David B. Yoffie, *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power* (New York: Harper Business, 2019).

Eeckhout, Jan, *The Profit Paradox: How Thriving Firms Threaten the Future of Work* (Princeton, NJ: Princeton University Press, 2021).

Fruhan, Jr., William E., *The Fight for Competitive Advantage: A Study of the United States Domestic Trunk Air Carriers* (Boston, MA: Harvard Business School, 1972).

Greenwald, Bruce, and Judd Kahn, *Competition Demystified: A Radically Simplified Approach to Business Strategy* (New York: Portfolio, 2005).

Haskel, Jonathan, and Stian Westlake, *Capitalism Without Capital: The Rise of the Intangible Economy* (Princeton, NJ: Princeton University Press, 2017).

_____, *Restarting the Future: How to Fix the Intangible Economy* (Princeton, NJ: Princeton University Press, 2022).

Klepper, Steven, *Experimental Capitalism: The Nanoeconomics of American High-Tech Industries* (Princeton, NJ: Princeton University Press, 2016).

Knee, Jonathan A., *The Platform Delusion: Who Wins and Who Loses in the Age of Tech Titans* (New York: Portfolio/Penguin, 2021).

Lev, Baruch, and Feng Gu, *The End of Accounting and the Path Forward for Investors and Managers* (Hoboken, NJ: John Wiley & Sons, 2016).

Liebowitz, Stan J., and Stephen E. Margolis, *Winners, Losers & Microsoft: Competition and Antitrust in High Technology* (Oakland, CA: The Independent Institute, 1999).

Magretta, Joan, *Understanding Michael Porter: The Essential Guide to Competition and Strategy* (Boston, MA: Harvard Business Review Press, 2012).

Mauboussin, Michael J., and Alfred Rappaport, *Expectations Investing: Reading Stock Prices for Better Returns—Revised and Updated* (New York: Columbia Business School Publishing, 2021).

McAfee, Andrew, and Erik Brynjolfsson, *Machine Platform Crowd: Harnessing Our Digital Future* (New York: W.W. Norton & Company, 2017).

Oberholzer-Gee, Felix, *Better, Simpler Strategy: A Value-Based Guide to Exceptional Performance* (Boston, MA: Harvard Business Review Press, 2021).

Philippon, Thomas, *The Great Reversal: How America Gave Up on Free Markets* (Cambridge, MA: Belknap Press, 2019).

Porter, Michael E., *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: The Free Press, 1980).

Rappaport, Alfred, *Creating Shareholder Value: A Guide for Managers and Investors—Revised and Updated* (New York: Free Press, 1998).

Stoller, Matt, *Goliath: The 100-Year War Between Monopoly Power and Democracy* (New York: Simon & Schuster, 2019).

Sunstein, Cass R., *Too Much Information: Understanding What You Don't Want to Know* (Cambridge, MA: MIT Press, 2020).

Sutton, John, *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration* (Cambridge, MA: MIT Press, 2007).

Tirole, Jean, *The Theory of Industrial Organization* (Cambridge, MA: MIT Press, 1988).

Papers

Adomavicius, Gediminas, Jesse C. Bockstedt, Shawn P. Curley, and Jingjing Zhang, "Effects of Online Recommendations on Consumers' Willingness to Pay," *Information Systems Research*, Vol. 29, No. 1, March 2018, 84-102.

Agarwal, Rajshree, and Michael Gort, "The Evolution of Markets and Entry, Exit and Survival of Firms," *Review of Economics and Statistics*, Vol. 78, No. 3, August 1996, 489-498.

Ali, Ashiq, Sandy Klasa, and Eric Yeung, "The Limitations of Industry Concentration Measures Constructed with Compustat Data: Implications for Finance Research," *Review of Financial Studies*, Vol. 22, No. 10, October 2009, 3839-3871.

Arthur, W. Brian, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," *Economic Journal*, Vol. 99, No. 394, March 1989, 116-131.

_____, "Increasing Returns and the New World of Business," *Harvard Business Review*, Vol. 74, No. 4, July-August 1996, 100-109.

Atkinson, Robert D., and Filipe Lage de Sousa, "No, Monopoly Has Not Grown," *Information Technology & Innovation Foundation*, June 2021.

Autor, David, David Dorn, Lawrence F. Katz, Christina Patterson, and John Van Reenen, "The Fall of the Labor Share and the Rise of Superstar Firms," *Quarterly Journal of Economics*, Vol. 135, No. 2, May 2020, 645-709.

Ayyagari, Meghana, Asli Demirguc-Kunt, Vojislav Maksimovic, "Who are America's Star Firms?" *World Bank Policy Research Working Paper 8534*, July 2018.

_____, "The Rise of Star Firms: Intangible Capital and Competition," *Working Paper*, September 2021.

Bajgar, Matej, Chiara Criscuolo, and Jonathan Timmis, "Intangibles and Industry Concentration: Supersize Me," *OECD Science, Technology and Industry Working Papers*, September 22, 2021.

Basu, Susanto, "Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence," *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 3-22.

Benkard, C. Lanier, Ali Yurukoglu, and Anthony Lee Zhang, "Concentration in Product Markets," *NBER Working Paper 28745*, April 2021.

Bennett, Victor Manuel "Changes in Persistence of Performance Over Time," *Strategic Management Journal*, Vol. 41, No. 10, October 2020, 1745-1769.

Berry, Steven, Martin Gaynor, and Fiona Scott Morton, "Do Increasing Markups Matter? Lessons from Empirical Industrial Organization," *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 44-68.

Bessen, James, Erich Denk, Joowon Kim, and Cesare Righi, "Declining Industrial Disruption," *Boston University School of Law: Law & Economics Series Paper No. 20-28*, February 2020.

Bet, Germán, "Market Power in the U.S. Airline Industry," *Working Paper*, August 2021.

_____, "A Retrospective Study of Recent U.S. Airline Mergers: What Can We Learn from Production Data?" *Working Paper*, October 2021.

Bhattacharya, Abhi, Neil A. Morgan, and Lopo L. Rego, "Examining Why and When Market Share Drives Firm Profit," *Journal of Marketing*, Vol. 86, No. 4, July 2022, 73-94.

Bloch, Harry, "Innovation and the Evolution of Industry Structure," *International Journal of the Economics of Business*, Vol. 25, No. 1, February 2018, 73-83.

Bostwick, Eric D., Sherwood Lane Lambert, and Joseph G. Donelan, "A Wrench in the COGS: An Analysis of the Differences between Cost of Goods Sold as Reported in Compustat and in the Financial Statements," *Accounting Horizons*, Vol. 30, No. 2, June 2016, 177-193.

Bräuning, Falk, José L. Fillat, and Gustavo Joaquim, "Cost-Price Relationships in a Concentrated Economy," *Federal Reserve Bank of Boston Current Policy Perspectives*, May 23, 2022.

Brynjolfsson, Erik, Avinash Collis, and Felix Eggers, "Using Massive Online Choice Experiments to Measure Changes in Well-being," *PNAS*, Vol. 116, No. 15, April 9, 2019, 7250-7255.

Calligaris, Sara, Chiara Criscuolo, Luca Marcolin, "Mark-Ups in the Digital Era," *OECD Science, Technology and Industry Working Papers*, April 25, 2018.

Caves, R. E., and M. E. Porter, "Market Structure, Oligopoly, and Stability of Market Shares," *Journal of Industrial Economics*, Vol. 26, No. 4, June 1978, 289-313.

Chamorro-Premuzic, Tomas, "Does Money Really Affect Motivation? A Review of the Research," *Harvard Business Review*, April 10, 2013.

Chiou, Lesley, "Empirical Analysis of Retail Competition: Spatial Differentiation at Wal-Mart, Amazon.com, and Their Competitors," *Working Paper*, May 27, 2005.

Coad, Alex, and Rekha Rao, "Innovation and Firm Growth in High-Tech Sectors: A Quantile Regression Approach," *Research Policy*, Vol. 37, No. 4, May 2008, 633-648.

Corrado, Carol A., Charles Hulten, and Daniel Sichel, "Measuring Capital and Technology: An Expanded Framework," in Carol A. Corrado, John Haltiwanger, and Daniel Sichel, eds. *Measuring Capital in the New Economy* (Chicago: University of Chicago Press, 2005).

_____, "Intangible Capital and U.S. Economic Growth," *Review of Income and Wealth*, Vol. 55, No. 3, September 2009, 661-685.

Corrado, Carol A., and Charles R. Hulten, "How Do You Measure a 'Technological Revolution'?" *American Economic Review*, Vol. 100, No. 2, May 2010, 99-104.

Corrado, Carol A., Jonathan Haskel, Cecilia Jona-Lasinio, "Artificial Intelligence and Productivity: An Intangible Assets Approach," *Oxford Review of Economic Policy*, Vol. 37, No. 3, Autumn 2021, 435-458.

Corrigan, Jay R., Saleem Alhabash, Matthew Rousu, Sean B. Cash, "How Much is Social Media Worth? Estimating the Value of Facebook by Paying Users to Stop Using It," *PLoS ONE*, Vol. 13, No. 12, December 19, 2018.

Covarrubias, Matias, Germán Gutiérrez, and Thomas Philippon, "From Good to Bad Concentration? U.S. Industries over the Past 30 Years," *NBER Working Paper 25983*, September 2019.

Crouzet, Nicolas, and Janice C. Eberly, "Understanding Weak Capital Investment: The Role of Market Concentration and Intangibles," *NBER Working Paper 25869*, May 2019.

_____, "Intangibles, Markups, and the Measurement of Productivity Growth," *Journal of Monetary Economics*, Vol. 124, Supplement, November 2021, S92-S109.

Crouzet, Nicolas, Janice C. Eberly, Andrea L. Eisfeldt, and Dimitris Papanikolaou, "The Economics of Intangible Capital," *Journal of Economic Perspectives*, Vol. 36, No. 3, Summer 2022, 29-52.

Davis, Leila, and Özgür Orhangazi, "Competition and Monopoly in the U.S. Economy: What Do Industrial Concentration Data Tell?" *Political Economy Research Institute Working Paper No. 492*, July 2019.

Day, George S., and Robin Wensley, "Assessing Advantage: A Framework for Diagnosing Competitive Superiority," *Journal of Marketing*, Vol. 52, No. 2, April 1988, 1-20.

Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda, "Declining Business Dynamism: What We Know and the Way Forward," *American Economic Review*, Vol. 106, No. 5, May 2016, 203-207.

De Loecker, Jan, Jan Eeckhout, Gabriel Unger, "The Rise of Market Power and the Macroeconomic Implications," *Quarterly Journal of Economics*, Vol. 135, No. 2, May 2020, 561-644.

De Loecker, Jan, and Chad Syverson "An Industrial Organization Perspective on Productivity," *Working Paper No. 2021-109*, September 2021.

De Loecker, Jan, and Frederic Warzynski, "Markups and Firm-Level Export Status," *American Economic Review*, Vol. 102, No. 6, October 2012, 2437-2471.

De Ridder, Maarten, Basile Grassi, and Giovanni Morzenti, "The Hitchhiker's Guide to Markup Estimation," *Working Paper*, July 29, 2022.

Dickinson, Victoria, and Gregory A. Sommers, "Which Competitive Efforts Lead to Future Abnormal Economic Rents? Using Accounting Ratios to Assess Competitive Advantage," *Journal of Business Finance & Accounting*, Vol. 39, Nos. 3 & 4, April/May 2012, 360-398.

Díez, Federico J., Jiayue Fan, and Carolina Villegas-Sánchez, "Global Declining Competition?" *Journal of International Economics*, Vol. 132, September 2021, 103492.

Döppler, Hendrik, Alexander MacKay, Nathan H. Miller, and Joel Stiebale, "Rising Markups and the Role of Consumer Preferences," *Harvard Business School Working Paper 22-025*, March 2, 2022.

Dunne, Timothy, Mark J. Roberts and Larry Samuelson, "Patterns of Firm Entry and Exit in U.S. Manufacturing Industries," *RAND Journal of Economics*, Vol. 19, No. 4, Winter 1988, 495-515.

Edeling, Alexander, and Alexander Himme, "When Does Market Share Matter? New Empirical Generalizations from a Meta-Analysis of the Market Share-Performance Relationship," *Journal of Marketing*, Vol. 82, No. 3, May 2018, 1-24.

Eeckhout, Jan, "Comment on 'Diverging Trends in National and Local Concentration,'" *NBER Macroeconomics Annual 2020*, Vol. 35, 2020, 151-162.

Eeckhout, Jan, and Laura Veldkamp, "Data and Market Power," *NBER Working Paper 30022*, May 2022.

Eggertsson, Gauti B., Jacob A. Robbins, and Ella Getz Wold, "Kaldor and Piketty's Facts: The Rise of Monopoly Power in the United States," *NBER Working Paper 24287*, February 2018.

Elzinga, Kenneth G., and David E. Mills, "The Lerner Index of Monopoly Power: Origins and Uses," *American Economic Review*, Vol. 101, No. 3, May 2011, 558-564.

Ewens, Michael, Ryan H. Peters, and Sean Wang, "Measuring Intangible Capital with Market Prices," *NBER Working Paper*, October 2020.

Fisher, Franklin M., and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," *American Economic Review*, Vol. 73, No. 1, March 1983, 82-97.

Gale, Bradley T., and Ben S. Branch, "Concentration versus Market Share: Which Determines Performance and Why Does It Matter?" *Antitrust Bulletin*, Vol. 27, No. 1, Spring 1982, 83-106.

Gale, Bradley T., "Market Share and Rate of Return," *Review of Economics and Statistics*, Vol. 54, No. 4, November 1972, 412-423.

Ganapati, Sharat "Growing Oligopolies, Prices, Output, and Productivity," *American Economic Journal: Microeconomics*, Vol. 13, No. 3, August 2021, 309-327.

Gort, Michael, "Analysis of Stability and Change in Market Shares," *Journal of Political Economy*, Vol. 71, No. 1, February 1963, 51-63.

Grean, Michael, and Michael J. Shaw, "Supply-Chain Partnership between P&G and Wal-Mart," in *E-Business Management: Integration of Web Technologies with Business Models*, Michael J. Shaw, ed. (New York: Springer Science+Business Media, 2003), 155-171.

Grullon, Gustavo, Yelena Larkin, Roni Michaely, "Are U.S. Industries Becoming More Concentrated?" *Review of Finance*, Vol. 23, No. 4, July 2019, 697-743.

Gutiérrez, Germán, and Thomas Philippon, "The Failure of Free Entry," *National Bureau of Economic Research Working Paper 26001*, June 2019.

Hou, Kewei and David T. Robinson, "Industry Concentration and Average Stock Returns," *Journal of Finance*, Vol. 61, No. 4, August 2006, 1927-1956.

Hrazdil, Karel, and Ray Zhang, "The Importance of Industry Classification in Estimating Concentration Ratios," *Economics Letters*, Vol. 114, No. 2, February 2012, 224-227.

IATA, "Economic Performance of the Airline Industry: 2021 End-Year Report," *IATA*, October 4, 2021.

Iqbal, Aneel, Shivaram Rajgopal, Anup Srivastava, and Rong Zhao, "Value of Internally Generated Intangible Capital," *Working Paper*, February 2022.

Jacobson, Robert, and David A. Aaker, "Is Market Share All That It's Cracked up to Be?" *Journal of Marketing*, Vol. 49, No. 4, Autumn 1985, 11-22.

Kato, Masatoshi, and Yuji Honjo, "Market Share Instability and the Dynamics of Competition: A Panel Data Analysis of Japanese Manufacturing Industries," *Review of Industrial Organization*, Vol. 28, No. 2, March 2006, 165-182.

Keil, Jan, "The Trouble with Approximating Industry Concentration from Compustat," *Journal of Corporate Finance*, Vol. 45, August 2017, 467-479.

_____, "Explaining the Concentration-Profitability Paradox," *Review of Political Economy*, Vol. 29, No. 2, 2017, 209-231.

_____, "Is There a Causal Effect of Concentration on Persistent Profitability Differentials?" *Industrial and Corporate Change*, Vol. 28, No. 2, April 2019, 241-257.

Klepper, Steven, "Entry, Exit, Growth, and Innovation over the Product Life Cycle," *American Economic Review*, Vol. 86, No. 3, June 1996, 562-583.

_____, "The Capabilities of New Firms and the Evolution of the U.S. Automobile Industry," *Industrial and Corporate Change*, Vol. 11, No. 4, August 2002, 645-666.

Klepper, Steven, and Elizabeth Graddy, "The Evolution of New Industries and the Determinants of Market Structure," *RAND Journal of Economics*, Vol. 21, No. 1, Spring, 1990, 27-44.

Knudsen, Eirik Sjøholm, Lasse B. Lien, Bram Timmermans, Ivan Belik, and Sujit Pandey, "Stability in Turbulent Times? The Effect of Digitalization on the Sustainability of Competitive Advantage," *Journal of Business Research*, Vol. 128, May 2021, 360-369.

Konczal, Mike, and Niko Lusiani, "Prices, Profits, and Power: An Analysis of 2021 Firm-Level Markups," *Roosevelt Institute*, June 2022.

Kulick, Robert, and Andrew Card, "Industrial Concentration in the United States: 2002-2017," *NERA Economic Consulting*, March 2022.

Kwon, Spencer Y., Yueran Ma, and Kaspar Zimmermann, "100 Years of Rising Corporate Concentration," *SSRN Working Paper*, May 2022.

Lamoreaux, Naomi R., "The Problem of Bigness: From Standard Oil to Google," *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 94-117.

Li, Wenying, and Jeffrey H. Dorfman, "The Implications of Heterogeneous Habit in Consumer Beverage Purchases on Soda and Sin Taxes," *Food Policy*, Vol. 84, April 2019, 111-120.

Martin, Stephen, "Globalization and the Natural Limits of Competition," in *The International Handbook of Competition—Second Edition*, Manfred Neumann and Jürgen Weigand, eds. (Cheltenham, UK: Edward Elgar, 2013), 4-56.

Maury, Benjamin, "Sustainable Competitive Advantage and Profitability Persistence: Sources versus Outcomes for Assessing Advantage," *Journal of Business Research*, Vol. 84, March 2018, 100-113.

Oberholzer-Gee, Felix, and Dennis A. Yao, "Antitrust – What Role for Strategic Management Expertise?" *Boston University Law Review*, Vol. 90, No. 4, August 2010, 1457-1478.

_____, "Integrated Strategy: Residual Market and Exchange Imperfections as the Foundation of Sustainable Competitive Advantage," *Strategy Science*, Vol. 3, No. 2, June 2018, 463-480.

Pavić, I., Fran Galetić, and Damir Piplica, "Similarities and Differences between the CR and HHI as an Indicator of Market Concentration and Market Power," *British Journal of Economics, Management & Trade*, Vol. 13, No. 1, January 2016, 1-8.

Peters, Ryan H., and Lucian A. Taylor, "Intangible Capital and the Investment-q Relation," *Journal of Financial Economics*, Vol. 123, No. 2, February 2017, 251-272.

Prescott, John E., Ajay K. Kohli and N. Venkatraman, "The Market Share-Profitability Relationship: An Empirical Assessment of Major Assertions and Contradictions," *Strategic Management Journal*, Vol. 7, No. 4, July-August 1986, 377-394.

Rajgopal, Shivaram, Anup Srivastava, and Rong Zhao, "Do Digital Technology Firms Earn Excess Profits? Alternative Perspectives," *Accounting Review*, forthcoming.

Ramaswamy, Sree, Michael Birshan, James Manyika, Jacques Bughin, and Jonathan Woetzel, "What Every CEO Needs to Know About 'Superstar' Companies," *McKinsey Global Institute*, April 2019.

Rivero, Nicolás, "A Cheat Sheet to All of the Antitrust Cases Against Big Tech in 2021," *Quartz*, September 29, 2021.

Rochet, Jean-Charles, and Jean Tirole, "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association*, Vol. 1, No. 4, June 2003, 990-1029.

Rosen, Sherwin, "The Economics of Superstars," *American Economic Review*, Vol. 71, No. 5, December 1981, 845-858.

Rossi-Hansberg, Esteban, Pierre-Daniel Sarte, and Nicholas Trachter, "Diverging Trends in National and Local Concentration," *National Bureau of Economic Research Working Paper 25066*, September 2018.

Schiersch, Alexander, and Caroline Stiel, "Testing the Superstar Firm Hypothesis," *Journal of Applied Economics*, Vol. 25, No. 1, 2022, 583-603.

Schilling, Melissa A., "Technology Success and Failure in Winner-Take-All Markets: The Impact of Learning Orientation, Timing, and Network Externalities," *Academy of Management Journal*, Vol. 45, No. 2, April 2002, 387-398.

Shapiro, Carl, "Antitrust in a Time of Populism," *International Journal of Industrial Organization*, Vol. 61, November 2018, 714-748.

Shih, Willy, "Is It Time to Rethink Globalized Supply Chains?" *MIT Sloan Management Review*, Vol. 61, No. 4, Summer 2020, 1-3.

Smith, Dominic A., and Sergio Ocampo, "The Evolution of U.S. Retail Concentration," *Working Paper*, February 12, 2022.

Sleep, Nick, and Qais Zakaria, "Nomad Investment Partnership Letters to Partners, 2001-2014."

Stobierski, Tim, "Willingness to Pay: What It Is and How to Calculate It," *Harvard Business School Online*, October 20, 2020.

Sutton, John, "Market Share Dynamics and the 'Persistence of Leadership' Debate," *American Economic Review*, Vol. 97, No. 1, March 2007, 222-241.

Syverson, Chad, "What Determines Productivity?" *Journal of Economic Literature*, Vol. 49, No. 2, June 2011, 326-365

_____, "Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown," *Journal of Economic Perspectives*, Vol. 31, No. 2, Spring 2017, 165-186.

_____, "Macroeconomics and Market Power: Context, Implications, and Open Questions," *Journal of Economic Perspectives*, Vol. 33, No. 3, Summer 2019, 23-43.

Tambe, Prasanna, Lorin Hitt, Daniel Rock, and Erik Brynjolfsson, "Digital Capital and Superstar Firms," *NBER Working Paper 28285*, December 2020.

Tirole, Jean, "Market Failures and Public Policy," *Nobel Prize Lecture*, December 8, 2014.

Traina, James, "Is Aggregate Market Power Increasing? Production Trends Using Financial Statements," *Booth School of Business, University of Chicago, New Working Paper Series No. 17*, February 2018.

Varian, Hal R., "Beyond Big Data," *Business Economics*, Vol. 49, No. 1, January 2014, 27-31.

Wernerfelt, Nils, Anna Tuchman, Bradley T. Shapiro, and Robert Moakler, "Estimating the Value of Offsite Data to Advertisers on Meta," *Working Paper*, July 29, 2022.

Wood, Wendy, and Dennis R  nger, "Psychology of Habit," *Annual Review of Psychology*, Vol. 67, 2016, 289-314.

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