

# Monopoly Myths: Are Superstar Firms Stifling Competition or Beating It?

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Antitrust advocates allege market-leading “superstar” firms—particularly in digital industries—succeed through anticompetitive conduct. But evidence shows they outperform competitors by investing in innovative technologies and global operations that create more value.

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## KEY TAKEAWAYS

- Many firms in the Internet era have emerged as “superstars” by growing rapidly to gain substantial market share in their industries. Critics charge this is largely due to anticompetitive conduct, not inherently superior business performance.
- This market-power explanation of superstar firms’ success is faulty. Evidence suggests current process and product technologies plus global operations simply enable some firms to outperform others, creating more public value in the process.
- Rather than decry this development and attempt to hold back successful firms, advocates should be celebrating it and identifying ways to help lagging firms do better.
- Regulators should ensure adequate market competition. But current antitrust law and practice—which stresses various aspects of consumer welfare including prices, quality, and innovation—is already capable of addressing violations.
- More broadly, regulators need to ensure that in worrying too much about concentration they don’t end up worrying too little about productivity and consumer welfare.

## INTRODUCTION

Over the past few decades, many firms have gained market share in their industries, so much so that they have been coined “superstar” firms. This phenomenon has been especially true in digital markets wherein the nation’s largest Internet firms have created platforms fueling rapid growth, but it has occurred across many industries.

Some economists, advocates, and policymakers, especially those embracing the “neo-Brandeisian” approach to antitrust policy, have expressed alarm at this trend. They allege that the firms’ growing market share is largely due to anticompetitive conduct, rather than inherently superior business performance. They argue that this market power in turn has allowed firms to raise margins and profits, cut spending on innovation, and unfairly preempt competitive challenges. Even when firms have grown due to superior performance, these advocates warn that the firms often preserve their advantage by adopting a variety of anticompetitive practices.

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This market power explanation of superstar firms appears to be flawed. Although some firms have gained even more market share, this has generally not been because the firms used market power to succeed, nor does it suggest reduced economic welfare. Rather, in this environment, a few firms appear to have figured out how to be much more innovative and competitive, and have acted effectively on those insights, enabling them to outperform laggard firms. Indeed, there appears to be something about the nature of current process and product technologies and global market operations that enables some firms to perform better than others, creating more public value in the process. Rather than decry this development and attempt to hold back successful firms, advocates should be celebrating it and identifying ways to help lagging firms do better.

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Indeed, the evidence shows that the firms that have grown the fastest also tend to be the most productive. Explanations for why some firms have been able to significantly outperform others include the ease of price comparisons, especially over the Internet, the growing importance of network effects and economies of scale, and the increased importance of intangible capital and information technology (IT) systems. Any increase in concentration, markups (usually defined as price divided by marginal cost), or profits that has occurred is largely a result of increased economic performance, not anti-competitive predation.

Advocates for tougher antitrust enforcement are correct that competition officials need to focus on ensuring adequate market competition. But current antitrust law and practice, which stresses various aspects of consumer welfare including prices, quality, and innovation, is already capable of handling violations of the law. That is why, after 40 years, it continues to enjoy support from a strong majority of scholars and practitioners. Meanwhile, the presence of superstar firms creates great benefits in the form of lower prices, better products, and U.S. international

competitiveness. Regulators need to ensure that in worrying too much about concentration they do not worry too little about productivity and consumer welfare.

It is far from clear that current markets are suffering from lax antitrust enforcement. Although market concentration has increased, most industries remain far below the level of concentration that would normally trigger antitrust concern.<sup>1</sup> Nor have large companies enjoyed exceptional margins or profits.<sup>2</sup> When one looks at the data, the obvious signs of market power are hard to find.

On the contrary, there are signs that whatever concentration has occurred is due to the effects of enhanced competition within markets and greater investment by certain companies in IT and hard-to-measure intangible assets including software, employee skills, and organizational design. These investments have allowed the companies to gain market share against their rivals. This is how competition should work. If there is a policy problem, it is not the success of “superstar” firms. Instead, it is the failure of laggards to catch up.

## **WHAT ARE SUPERSTARS?**

A central point of debate is the extent to which increased concentration in certain markets is due to regular companies exercising market power or to “superstars.” The distinction between the two is important.

The former are companies that have similar production capabilities as other firms in the same industry but have been able to grow by acquisitions and by exerting market power to gain advantage. They differ from other firms in the same industry only by size. In this case, their increases in size do little or nothing to boost overall U.S. economic welfare and may in fact harm it by reducing competition.

In contrast, superstars differ from other firms in the same industry not just because they are big. Rather, they outperform other firms in the same industry along a variety of variables, including innovation. They have gained this differentiation not by using market power, but by crafting better strategy and executing more effectively than their competitors. Most of them have invested heavily in IT systems, as well as in complementary intangibles, including organizational change, worker training, and intellectual property (IP). When successful (often they are not), these investments have made them more productive and more competitive, allowing them to grow by taking market share from laggards in their industry. When that happens, workers, consumers, and the overall economy benefit as the economy becomes more innovative, productive, and competitive.

## **CONCERNS ABOUT SUPERSTARS**

Americans have a love/hate relationship with big business. Antitrust laws attempt to protect market competition in the belief that it gradually produces lower prices, higher quality, more innovation, and higher social welfare. However, antitrust statutes allow, and even encourage, companies to grow by outcompeting rivals. And indeed, in some industries, firms on average have gotten larger in order to take advantage of economies of scale (marginal costs often fall as quantities increase) and network effects (the value of a product to each user can rise as the number of users increases) as IT and globalization enable larger markets.

Yet, throughout America's history, a number of politicians and writers have expressed concern that big companies threaten the economy and society.<sup>3</sup> These firms supposedly use market power to raise prices, lower supply, and lobby governments to pass laws protecting them from competition. In the 1930s, U.S. Senator Huey Long stated, "I would rather have thieves and gangsters than chain stores in Louisiana."<sup>4</sup> Indeed, in 1949, the U.S. Court of Appeals for the Seventh District upheld a trial court ruling convicting the grocery chain A&P and its owners of criminal restraint of trade.<sup>5</sup> In 1966 the Supreme Court blocked a merger between two grocers who would have had a 7.5 share of the market, citing "threatening trends toward competition."<sup>6</sup>

A number of studies show that concentration has risen in about two-thirds of industries. A previous report by the Information Technology and Innovation Foundation (ITIF) shows that this is not a cause for alarm.<sup>7</sup> In most industries, concentration ratios remain well below the levels that traditionally spark antitrust concerns. In addition, the statistics commonly used do not correspond very well with relevant markets, often using overly broad market definitions that include a lot of companies that do not compete against each other. They also do not include the impact of imports. In fact, some studies show that local markets, which are more relevant to many industries such as retail and restaurants, are becoming less concentrated even as national markets are consolidating.

Still, concentration has grown in many markets. Moreover, within markets, some firms are clearly doing better than others. What is causing this trend? And how dangerous are the firms that grow? One theory holds that successful companies have found ways to restrict competition, thereby gaining market share, driving other firms out of the market and preventing new ones from entering. Even if companies originally grow by legitimate means, once they have acquired market power, they may use it to restrain competition in a variety of ways.

Bonnie Kavoussi of Equitable Growth has worried: "It appears that declining antitrust enforcement and changing court attitudes toward monopolies have allowed dominant firms to grow bigger and more powerful, leading to increased market power."<sup>8</sup> Consultancy.uk agreed: "Going largely unchecked by meaningful regulation for the best part of four decades, the companies at the top of the food chain have come close to operating an international monopoly, with the biggest 10% of entities capturing 80% of economic profits globally."<sup>9</sup>

Similarly, Ram Shivakumar of the University of Chicago Booth School of Business wrote:

The bigger a company is, the more easily it can gobble up nascent competitors, or take anticompetitive measures against them—for instance, starving them by driving up the cost of materials. Low prices, high wages, and high-quality goods and services are the product of competition between healthy rivals; if one market participant reaches an unassailable point of power, it can create distortions that make everyone worse off.<sup>10</sup>

Likewise, Neil Irwin of the *New York Times* wrote, "Mainstream economists are discussing questions like whether 'monopsony'—the outsize power of a few consolidated employers — is part of the problem of low wage growth. They are looking at whether the 'superstar firms' that dominate many leading industries are responsible for sluggish investment spending."<sup>11</sup>

## ACADEMIC PAPERS ATTRIBUTING SIZE TO MARKET POWER

These claims are fueled by studies purporting to show that a main cause behind the rise of large firms has been lax antitrust enforcement leading to market power and reduced competition. For example, many cite a study by Jan De Loecker and others that uses firm-level data on public companies to claim that firms raised markups and profits in a number of industries.<sup>12</sup> In a companion paper, they attributed this rising market power to a combination of technology (larger spreads in productivity within an industry) and a change in market structure (less competition).<sup>13</sup>

Another paper, led by Gustavo Grullon of Rice University, uses Compustat data from 1972 to 2014 to study concentration in three-digit North American Industry Classification System (NAICS) industries other than finance and utilities. The authors found that firms in industries with the largest increases in market concentration also demonstrated higher profit margins and more profitable mergers and acquisitions. They concluded that their results suggest that market power is becoming an important source of value: “Overall our results suggest that the US product markets have undergone a shift that has potentially weakened competition across the majority of industries.”<sup>14</sup> They concluded that higher profits are not coming from either an increased reliance on capital (whether tangible or intangible) or improvements in efficiency, but rather, “The unique combination of lax enforcement of antitrust laws in the USA and technological innovation may have contributed to increased concentration and barriers to entry.”<sup>15</sup>

Economists Gauti Eggertsson, Jacob Robbins, and Ella Wold arrived at similar findings. They found an increase in the ratio of firms’ market values to the replacement cost of their assets, implying that firms are reaping high profits and not investing enough. They argued that these trends can be explained by an increase in market power leading to monopoly profits.<sup>16</sup> The authors did try to estimate the effect of greater investment in intangible assets, but they ignored the largest category of intangibles—economic competencies (brand equity, advertising, marketing, and worker training)—arguing that these expenses do not increase production but merely transfer it from one firm to another.

All of these studies have difficulty with both measurement and causation. An earlier ITIF report shows that the most relevant measure of profits is domestic nonfinancial profits, and depends on the ability to measure the true cost of capital and the inclusion of all costs.<sup>17</sup> Profit rates are lower than they were in the 1960s when antitrust policy was much tougher. Markups are even more difficult to measure because they require data on marginal costs. If fixed costs or intangible investments rise, then markups will rise even if a company has no profits. Measured properly, margins have not risen significantly.<sup>18</sup>

Some of these studies acknowledge their limitations. For example, Eggertsson et al. cautioned that there are other “compelling” explanations for what they have seen in the data. These include an increase in the risk premium of capital, difficulty measuring intangible investments, and a decrease in labor’s bargaining power.<sup>19</sup> In the end, they stated: “This paper is concerned with the macroeconomic effects of an increase in monopoly power, and does not take a stand on the underlying cause of this increase.”<sup>20</sup>

Luckily, there is another explanation for why some companies outperform others. A number of studies find that technological change, integrated global markets, and low interest rates have disproportionately benefitted firms that have been able to take advantage of this new operating environment. The increased importance of intangible assets, including research, software,

marketing, training, and business model development, has also helped, giving an advantage to firms that can leverage them over a larger market. But large firms that fail to invest and change typically fall behind their more innovative rivals.

## **SUPERSTARS RESULT FROM SUPERIOR PERFORMANCE**

As early as 1981, economist Sherwin Rosen wrote about the fact that better professionals, including comedians, athletes, singers, attorneys, and doctors, were commanding larger audiences and much higher incomes than others, including those who were only slightly “less good.”<sup>21</sup> He attributed this partially to new technologies that reduced the cost of entertainment services and allowed individuals to reach a much wider audience, allowing the best to operate on a national or even international scale. In other words, the ability to reach a larger customer base gave rise to “superstar” characteristics.

We see this dynamic in basketball. Bill Russell, inarguably one of the greatest basketball players of all time, earned only about \$600,000 per year at his peak (in current dollars).<sup>22</sup> Compare that with Golden State Warrior guard Stephen Curry, who brings in more than \$40 million per year.<sup>23</sup> Larger markets—the NBA is global due to satellite technology—play a key role in that increase. The ability to reach those larger markets, in part due to IT and global integration, plays a similar role in industry.

But why does Stephen Curry make more than his team’s bench players? He is a better player. That dynamic also applies in industry. A recent study by the Organization for Economic Cooperation and Development (OECD) attributes the rise of concentration in a number of sectors in the United States to a small share of firms that have become more productive than their peers. The study points to investment in a combination of IT and intangible assets, thereby creating a better business model.<sup>24</sup>

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OECD looked at the relationship between spending on intangible assets and concentration (measured by the market share of the top eight groups of jointly owned companies) between 2002 and 2014. The data covered manufacturing and non-financial market services in nine countries, including the United States. Concentration increased in about 70 percent of country-industry pairs. The average increase was around 5 percentage points (from 39 percent to 44 percent of the industry, or an average of 0.5 percentage points per firm).<sup>25</sup> A 10 percentage point increase in intangible investment within an industry (measured by patents) was associated with 1.5 to 2.2 percentage points more concentration over four years. The linkage was strongest for industries that were more digitized, open to trade, and more concentrated to start with. It was also strongest for investments in innovative property such as patents, research and development (R&D), and new products and systems. The authors summarized that the results “suggest that [increased concentration] may be mostly of the ‘good’ variety in the sense that it was associated with investment in innovative assets and new intangible business models rather than anti-competitive forces.”<sup>26</sup>

A subsequent OECD study finds differences in multifactor productivity between companies, looking specifically at the dynamics within both the top and bottom half of companies across 34 industries between 2000 and 2015. Using cross-country data on both productivity dispersion within industries and levels of intangible investment, it concluded that a 10 percentage point increase in intangible investment within an industry is associated with a 1.5 percentage point increase in the dispersion between firms at the 90th and the 10th percentile of the productivity distribution.<sup>27</sup>

Different forces were operating in the top and bottom halves of the market. Again, industries with higher levels of intangible investment experienced higher increases in productivity dispersion between firms. The dispersion in productivity at the top of the market was associated with the ease of extending intangible capital to other parts of a firm since bigger firms can spread these costs out over a larger volume of production. However, dispersion at the bottom half was linked to synergies between intangible capital and factors such as digital intensity, exposure to trade, and the availability of venture capital. Laggard firms seem to have difficulty effectively making the complementary intangible investment needed to fully exploit digital technologies. Unlike the earlier OECD study, the authors found that the most important type of intangible investment was in economic competencies (branding, market research, employer training, and organizational structure) rather than innovative property such as patents. These are the costs that Eggertsson et al. omitted, arguing that they only diverted sales from one company to another.

A team led by David Autor of MIT tried to explain another problem commonly attributed to a lack of competition: the decline in the share of national income going to labor, especially low-skilled workers. Using micro-panel data on six sectors (manufacturing, retail trade, wholesale trade, services, utilities, and transportation) from the U.S. Census going back to 1982, the authors concluded that globalization and technology were increasing competition and pushing sales toward the most productive firms within each industry.<sup>28</sup>

This finding seems to explain the growing concentration in a number of four-digit NAICS industries that neo-Brandeisians attribute to unfair competition. But it also explains some facts that the neo-Brandeisians cannot, such as industries experiencing the greatest concentration also have faster productivity growth and innovation (measured by patents and value added per worker) and similar patterns exist in other nations that have very different approaches to antitrust enforcement. They also found that both the fall in labor share and the rise in margins occurred mainly in the firms that grew the most. The average among all firms in an industry remained relatively flat. This is less likely to be the case if a lack of competition is driving profits up across an industry because even smaller companies would benefit from a general increase in prices or markups. As the authors stated:

If a change in the economic environment advantages the most productive firms in an industry, product market concentration will rise and the labor share will fall as the share of value added generated by the most productive firms (superstars) in each sector, those with above-average markups and below-average labor shares, grow. Such a rise in superstar firms would occur if consumers have become more sensitive to quality-adjusted prices due to, for example, greater product market competition (e.g. though globalization) or improved search technologies (e.g. greater availability of price comparisons on the internet...)<sup>29</sup>

The study points to a number of structural changes that could give larger, more innovative firms an edge in the market. These include a decline in trade barriers allowing more competitive companies to expand overseas, an increase in consumer price sensitivity, the rise of Internet platforms that benefit from network effects, and the growing importance of efficiencies of scale. If the margins of the most productive companies are increasing because costs are falling rather than because of higher prices, consumers will not be harmed and society will benefit. As economist James Bessen stated:

[I]f proprietary IT allows some firms to become more productive than others in the same industry . . . then the more productive firms can earn quasi-rents. These would also be reflected in higher operating margins. Even in a competitive market, more productive firms could sell at the market price but profit from lower costs.<sup>30</sup>

These profits not only benefit shareholders, including pension funds, but society as a whole in that a share of these profits is paid in taxes.

The international scope of these changes has led the authors to believe that lax antitrust policy is an unlikely primary explanation. Interestingly, with the exception of a few companies, most firms are becoming more concentrated in their primary lines of business but less integrated across other activities. A key concern of Neo-Brandeisians has been that firms would use market power in one industry to expand into others, thereby increasing the damage to competitive markets. But this seems not to be happening.

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Chang-Tai Hsieh and Esteban Rossi-Hansberg argued that the rise in national industry concentration between 1977 and 2013 was driven entirely by a revolution in three particular non-traded sectors: services, retail, and wholesale (they pointed out that concentration in manufacturing has fallen). Expansion was entirely driven by the number of small markets served by each firm. Thus, as national concentration was growing, local concentration (which is more relevant in non-traded sectors) was falling. This expansion was enabled by fixed-cost technologies, particularly software and related IT systems, that allow adopters to produce at lower marginal cost in all local markets in which they have a presence.<sup>31</sup> Top firms have increasingly specialized in these sectors, while exiting others. The net effect is there was no change in concentration by the top firms in the economy as a whole, and “top firms are now more specialized, are larger in the chosen industries, and these are precisely the industries that have experienced concentration growth.”<sup>32</sup> The authors noted that quality improvement due to firm entry in these markets is not captured by government statistics, resulting in an under estimate of productivity growth.

A recent paper by economist Sharat Ganapati strengthens the argument that the growth of many large firms has been driven largely by better performance. Looking at industry-level data, he showed that rising concentration is correlated with productivity and real output growth, but not with price increases: “Productive industries (with growing oligopolists) expand real output and hold down prices, raising consumer welfare, while maintaining or reducing their workforces,



lowering labor's share of output."<sup>33</sup> A 10 percent increase in the market share of the top four firms is accompanied by a 1 percent increase in real output and a 2 percent rise in productivity. The decline in labor share is due to the fact that top companies hire fewer, but higher-paid, workers. These relationships, however, are not true of every industry. Antitrust action may be needed in markets wherein increased concentration does not produce overall economic benefits of productivity and innovation.

Finally, a paper by John Van Reenen examines the growing differences between firms in terms of their relative sizes, productivity, and wages.<sup>34</sup> While not totally discounting the impact of lax antitrust enforcement, he has suggested that globalization and new technologies have changed the nature of competition without diminishing it. He's pointed to three pieces of evidence. First, the vast majority of changes in markups and labor shares are due to reallocation between firms toward larger, more productive and profitable firms. Most U.S. firms have seen either no increase or a fall in both measures. Second, the industries becoming more concentrated have rising productivity and innovation, consistent with the shift of market share to more efficient firms. Finally, the trends in concentration and markups are similar across countries. Van Reenen has suggested that management differences account for one-third of the differences in productivity between firms.

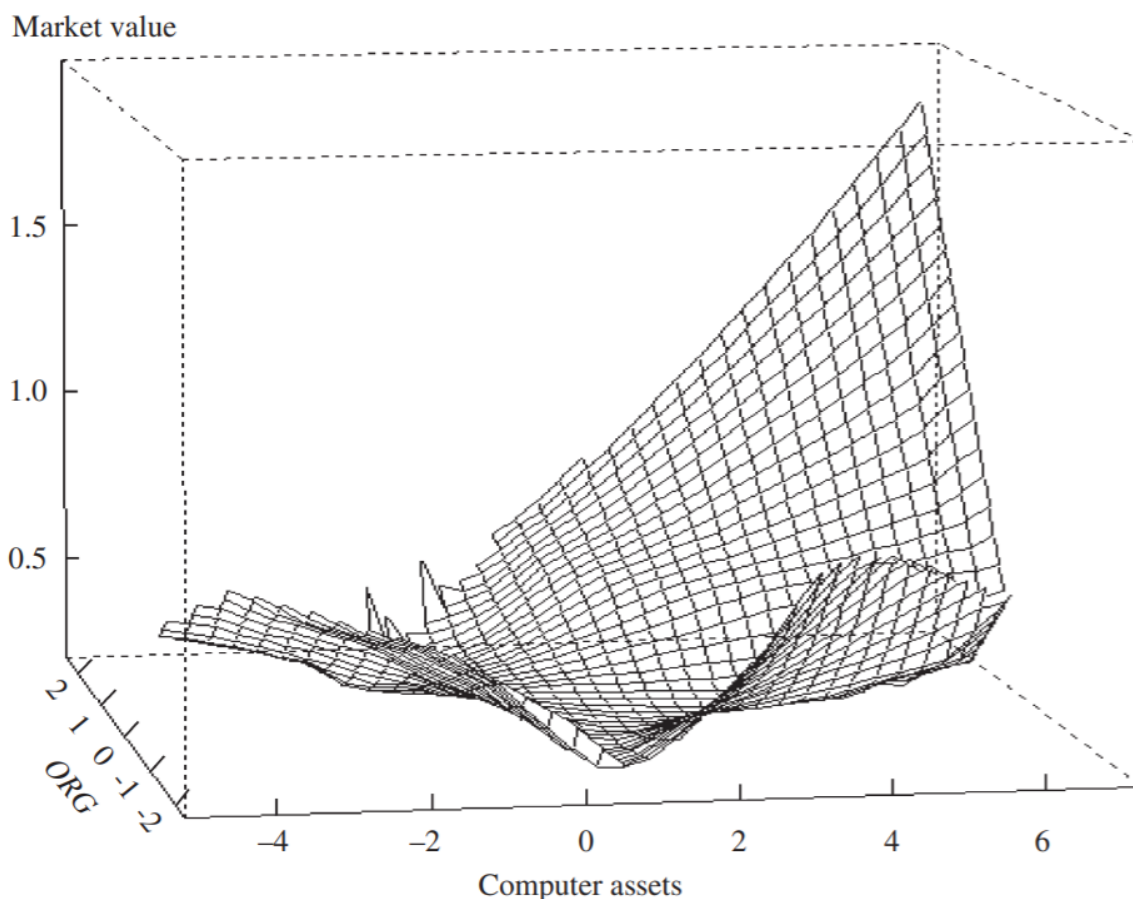
Looking at the cause of these trends, Van Reenen has argued that, outside of merger policy, other aspects of antitrust policy, such as cartel enforcement, have gotten stricter. Meanwhile, several trends, including trade agreements, declines in the cost of shipping and communications, and the growing importance of software as a component of value, all increase market competitiveness. He has also speculated that increased margins may be due to a rise in the importance of intangible capital.

## WHY MORE SUPERSTARS NOW?

In the early part of this century, Erik Brynjolfsson, Lorin Witt, and Shinkyu Yang studied the effect of investments in IT on business success as measured by market capitalization. Assuming markets accurately value companies, if a company spends one dollar on a new asset, its market valuation should rise by a dollar. The authors found that is roughly what happens when companies purchase tangible assets such as machinery or land. However, their research showed that a dollar of spending on IT added over 12 dollars to a company's worth.<sup>35</sup>

The authors argued that investors observed that, in addition to IT, successful companies were also investing in hard-to-measure intangible assets, such as developing new software, populating a database, acquiring highly skilled workers, or undergoing a major organizational transformation. Internal spending on these activities is normally treated as an expense rather than the purchase of a valuable asset. A significant part of the value of IT was its ability to increase the effect of complementary organizational investments, including greater use of teams, broader distribution of specific decision rights, and increased worker training. Firms that invested in *both* more IT and organizational restructuring relative to others were more valuable than firms that invested in only IT or restructuring. This reflected the fact that the combination of IT and restructuring allowed significant improvements in both productivity and profits (see figure 1). Firms that only invested in IT *or* intangible assets had lower productivity growth and market values. Overlooking these intangible investments may reduce the capital stock of companies by a factor of ten.

**Figure 1: Level plot of fitted values from nonparametric regression of market value on computer and organizational assets<sup>36</sup>**



Successful firms grew, not because of anticompetitive activity and lax antitrust enforcement, but because they used technology and new business models to out-compete other firms. But these changes were hard to document because traditional accounting and economic statistics miss most of what is really important. All that's left to measure is bigness. In the words of Brynjolfsson and Hitt:

A major reason for the gap in interpretation is that traditional growth accounting techniques focus on the (relatively) observable aspects of output, like price and quantity, while neglecting the intangible benefits of improved quality, new products, customer service and speed. Similarly, traditional techniques focus on the relatively observable aspects of investment, such as the price and quantity of computer hardware in the economy, and neglect the much larger intangible investments in developing complementary new products, services, markets, business processes, and worker skills.<sup>37</sup>

A subsequent report by McKinsey Global Institute confirms these trends.<sup>38</sup> The report defines superstars by their economic profit, a measure of invested capital times the rate of return above the cost of capital. It finds that superstars have higher rates of digitalization, more highly skilled labor, more intangible assets (such as internally-developed software, IP, R&D, and innovative business processes), and stronger connections to global flows of trade, finance, and services.

The McKinsey study might also contain the answer to one of the principal objections to the superstar thesis. Skeptics point out that average productivity across the U.S. economy has been slow for several years. If superstar firms are so productive, why isn't this showing up in the national statistics? McKinsey showed that the top 10 percent of large firms ranked by average economic profit (measured after subtracting the firms' normal cost of capital) created an average of over \$1.3 trillion annually between 2014 and 2016. The middle 60 percent of firms destroyed \$138 billion in value, while the bottom 10 percent of firms destroyed almost \$1.6 trillion each year.<sup>39</sup> This gap between superstars and laggards has been growing over time. In such a competitive environment, the relatively few firms creating large amounts of value are truly superstars. But they cannot necessarily make up for the poor performance of those at the bottom.

Moreover, the identity of the most profitable firms changed from decade to decade, something we would not expect if profitability were determined primarily by market power. In each of the past two decades, nearly half of superstar firms fell out of the top 10 percent. Forty percent of those fell all the way to the bottom 10 percent. Looking at just the top 1 percent of companies, two-thirds entered within the last decade. Going the other way, 10 percent of the firms in the bottom decile of economic profit 10 years ago made it all the way to the current top decile. Thus, the group of top-performing companies is not static. Firms that don't continue to outperform in the market are often displaced. McKinsey found that, after incorporating acquisition goodwill, there has been no increase in the return on invested capital among firms. Thus, there has not been a broad increase in profitability as one would expect from rising market power.

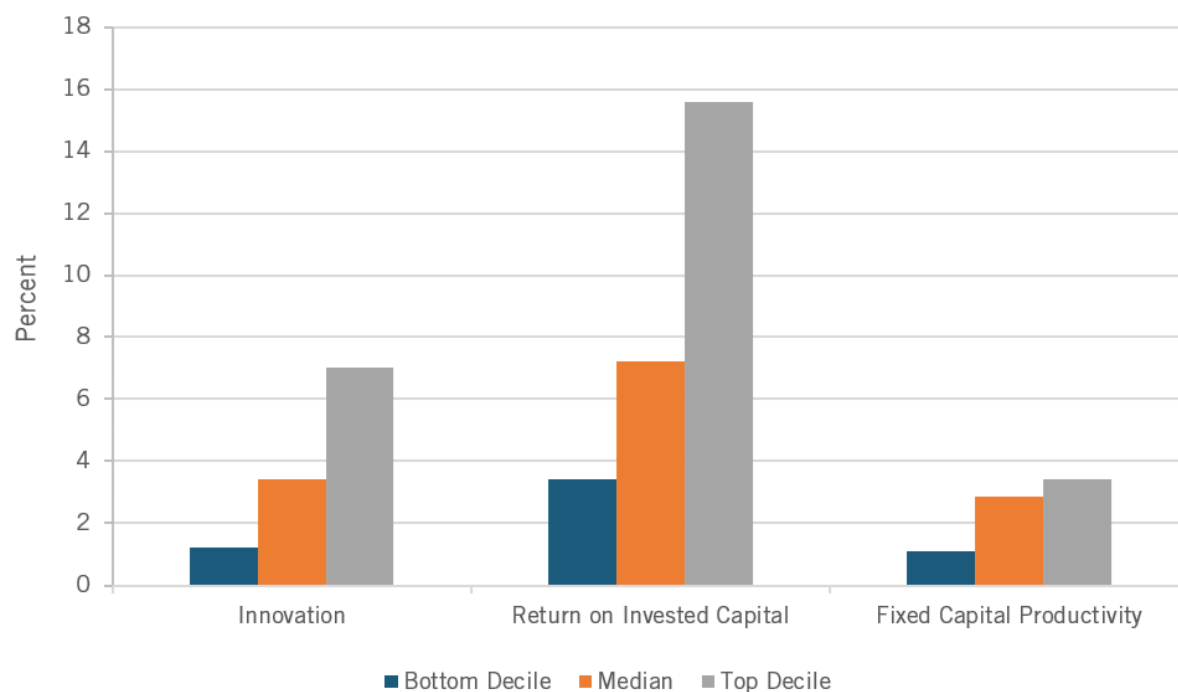
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What makes superstars "super"? They invest more in intangible capital such as R&D, IP, software, business model innovation, and brand value—each of which is hard to measure and usually not included in marginal cost, thereby creating a wedge between average and marginal prices, and making markups look high. The fact that these companies invest heavily in R&D also suggests market power is not the key to their success. OECD estimated that the top 50 largest R&D spenders account for 42.8 percent of business R&D in the United States.<sup>40</sup> As the McKinsey report states: "Superstar firms are larger, more profitable, more innovative, more globalized, and more productive than their peers."<sup>41</sup> They invest six times more in fixed capital than the median firms (although the bottom firms invest twice as much, casting even more doubt on the theory that lax antitrust is the primary cause of their success). Much of this investment goes to intangible assets including IP, software, and brand value. Moreover, a large performance gap has been opening up between more productive firms and others over the last two decades (see figure 2).

**Figure 2: Average characteristics of firms in the top and bottom deciles and median firms<sup>42</sup>**



Superstars stand out for their valuable global brands, large investments in R&D, as well as selling, general and administrative spending (which often are not counted in markups), and their disproportionate investment in intangible assets. The gap between them and other firms grew over the last two decades because superstar firms increased their invested capital and have a higher rate of return on that capital.

The phenomenon is not confined to U.S. tech giants. In 2017, American firms represented 38 percent of superstar firms globally, compared with 45 percent 20 years ago. Internet, media, and software companies represented only 8 percent of superstar firms (but 19 percent of the top 1 percent of companies), while computer and electronic firms made up another 8 percent.

The McKinsey study also looks at superstar sectors of the economy, finding that they share common attributes including low capital intensity; greater intensity of R&D; more spending on selling, general, and administrative expenses and skill; and higher levels of digital adoption.<sup>43</sup> Again, this is hard to square with lax antitrust enforcement.

However, in the end, the McKinsey report finds that the cause of the superstar phenomenon remains unknown. Possible explanations, including productivity growth, technological advantage, regulation, and intangible investments, do not fully account for the data.

Other, more focused papers find similar results. James Bessen found a strong link between investments in proprietary IT (measured by the share of total hours worked by IT personnel) and rising industry concentration.<sup>44</sup> This has especially benefitted the top four firms in an industry. He has speculated that proprietary IT may spur productivity by lowering costs, improving service quality, or allowing targeted pricing. Other firms cannot copy these advantages if they are protected by secrecy or patents, or depend on complementary knowledge and skills. Large IT

investments may also pose a barrier to entry for firms that lack the ability to afford them, although the rise of cloud computing and software-as-a-service offerings has likely reduced this cost gap. These same firms tend to have larger plants and higher labor productivity and pay, but a lower labor share of output. Overall, “much of the recent rise in industry concentration and much of the rise in firm operating margins can be attributed to the deployment of proprietary IT systems.”<sup>45</sup>

This is a key insight. In the old economy, firms often improved performance by buying off-the-shelf equipment and machines. Ford had the same stamping presses as GM. And their workers used them the same way. As such, it was more difficult to break out and gain a sustainable and large competitive advantage. But with software combined with business-model reinvention driving more and more economic value, firms that are able to use this effectively can more easily differentiate themselves from their competitors.

Nicolas Crouzet and Janice Eberly of Northwestern University’s Kellogg School of Management documented that the rise of intangible capital (including software, IP, brand value, and innovative business processes) has compensated for much of the weakness in physical capital investment since 2000.<sup>46</sup> This rise is driven by industry leaders and coincides with increases in market share. Intangibles are associated with both market power and productivity gains. However, it is important to look at specific sectors. The link to productivity is especially strong in the consumer sector, which together with high-tech industries shows a strong link between labor productivity and intangible intensity. In contrast, higher productivity in the health care sector has led to higher markups, possibly because more of the innovations are protected by patent. The manufacturing sector had been largely immune to these changes.

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**If the superstar theory is roughly correct, then the implications for public policy are almost the opposite of those advocating tougher antitrust enforcement.**

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Finally, a team of economists led by Prasanna Tambe and including Lorin Hitt and Eric Brynjolfsson looked at what they labeled “digital capital.”<sup>47</sup> They found that, by 2016, digital capital accounted for 25 percent of firms’ total assets, and it was disproportionately owned by a small subset of superstar firms. The market value of superstars rises with investments in AI, even before rising revenues or productivity. This suggests investors anticipate large future rewards from today’s investments in digital capital.

The authors defined digital capital as factors of production that are complementary to recorded investments in IT assets but not otherwise recorded on the firm’s balance sheet. It includes “employee training that is related to new information technologies, firm-specific human capital related to technology systems, and the development and implementation of business processes and other forms of organizational transformation required to support or use new information technologies.”<sup>48</sup> Investment is particularly concentrated in the top 10 percent of firms, which are pulling away from the rest of their industry. IT hardware accounts for only 10 percent of total digital capital, pointing to the importance of complementary intangibles. There is a lag, however, between investments in digital capital and improvements in output and productivity. The importance of management reforms was also emphasized in another McKinsey study, which showed firms that implemented lean manufacturing, performance management and talent

management achieved huge gains in total factor productivity, much higher than if they merely purchased IT equipment by itself.<sup>49</sup>

## HOW SHOULD POLICY RESPOND?

If the superstar theory is roughly correct, then the implications for public policy are almost the opposite of those advocating tougher antitrust enforcement, with two caveats. The first is antitrust authorities need to review each industry and market separately. The fact that one market may have a higher concentration of beneficial superstars does not imply that others also do. Careful empirical studies must guide any agency decisions. Second, antitrust regulators must remain vigilant to ensure today's superstars don't use their market power to anticompetitively inhibit competition.

Regulators should be less worried about the level of profits superstars are earning and focus on the overall increase in social welfare. Margins and some profit measures will both be overestimated if intangible capital is not included. The evidence shown demonstrates that superstars continue to deliver large social benefits in terms of lower prices, better services, more innovation, and, depending on the industry, more international competitiveness. Any regulatory action should protect this flow of benefits. Agencies should be more concerned with ensuring innovation and productivity remain strong, even if it means greater concentration.

If regulators are concerned about concentration, they should put more of their focus on regulations that inhibit entry or give larger firms a relative advantage. They could also examine ways to help laggards adopt new technology and practices, thereby increasing competition and reducing the productivity gap between the top and bottom firms. Increased government investment in research and a greater availability of STEM (science, technology, engineering, and math) workers would also help laggards.

## CONCLUSION

There is plenty of evidence that many industries have become more concentrated, at least through 2012, although almost all industries remain well below the levels that traditionally trigger antitrust concern. What is less clear is why this has happened. A vocal minority of advocates claim that higher concentration is the natural result of lax antitrust enforcement and has led to predictable social problems including rising prices, higher unemployment, reduced innovation, greater profits, and stagnant wages. For them, big companies serve as proof that markets are in danger.

There are problems with that theory. First, as noted, most markets are still not considered concentrated. Second, these trends are international, implying that their causes are also global. U.S. antitrust policy does not directly affect international markets. Forces such as increased trade and technological advancement do. Third, much of the increase in concentration appears to be from the growth in market share of superior firms. Although every market is different, the superstar theory offers a far better explanation of recent developments in highly dynamic markets.

## ABOUT THIS SERIES

In a series of short reports, ITIF is examining many of the key claims behind the argument that a significant change in U.S. antitrust policy is warranted. In most cases, we find that the empirical evidence is weaker than claimed. In other cases, the causal relationships are speculative. Although some of the broader trends, such as a decline in innovation, raise serious social issues, they usually have several causes. Finally, in most cases, it is not clear that antitrust policy is either the cause or an effective cure. Broader social policies need to be enacted for such issues as income inequality and privacy.

## ENDNOTES

1. Joe Kennedy, “Monopoly Myths: Are Markets Becoming More Concentrated?” (Information Technology and Innovation Foundation, June 2020), <https://itif.org/publications/2020/06/29/monopoly-myths-are-markets-becoming-more-concentrated>.
2. Joe Kennedy, “Monopoly Myths: Is Concentration Leading to Higher Profits?” (Information Technology and Innovation Foundation, May 2020), <https://itif.org/publications/2020/05/18/monopoly-myths-concentration-leading-higher-profits>; Joe Kennedy, “Monopoly Myths: Is Concentration Leading to Higher Markups?” (Information Technology and Innovation Foundation, June 2020), <https://itif.org/publications/2020/06/01/monopoly-myths-concentration-leading-higher-markups>.
3. For recent examples, see, Matt Stoller, *Goliath: The 100-Year War Between Monopoly Power and Democracy* (Simon and Schuster, 2019); and Tim Wu, *The Curse of Bigness: Antitrust in the New Gilded Age* (Columbia Global Reports, 2018). For a rebuttal, see Robert D. Atkinson and Michael Lind, *Big is Beautiful: Debunking the Myth of Small Business* (MIT 2018).
4. Quoted in Marc Levinson, *The Great A&P and the Struggle for Small Business in America* (Hill & Wang, 2011), 146.
5. *Ibid*, 242–46.
6. *United States v. Von's Grocery Co.*, 284 U.S. 270 (1966).
7. Joe Kennedy, “Monopoly Myths: Are Markets Becoming More Concentrated?”
8. Bonnie Kavoussi, “How Market Power Has Increased U.S. Inequality.” Equitable Growth blog, May 3, 2019, <https://equitablegrowth.org/how-market-power-has-increased-u-s-inequality/>.
9. “Superstar Companies Capture 80% of Economic Profit,” consultancy.uk blog, June 2, 2019, <https://www.consultancy.uk/news/21710/superstar-companies-capture-80-of-economic-profit>.
10. Ram Shivakumar, “The Market Power of ‘Superstar’ Companies is Growing,” *Chicago Booth Review*, October 26, 2017, <https://review.chicagobooth.edu/economics/2017/article/market-power-superstar-companies-growing>. Yet in the next sentence, Shivakumar cautions that “[n]one of which is to say that we actually are worse off, collectively as a result of today’s superstars.”
11. Neil Irwin, “Are Superstar Firms and Amazon Effects Reshaping the Economy?” *The New York Times*, August 25, 2018, <https://www.nytimes.com/2018/08/25/upshot/big-corporations-influence-economy-central-bank.html>.
12. Jan Eeckhout, Jan Eeckhout, and Gabriel Unger, “The Rise of Market Power and the Macroeconomic Implications,” *Quarterly Journal of Economics*, vol. 135(2), 2020, <https://academic.oup.com/qje/article/135/2/561/5714769>.
13. Jan De Loecker, Jan Eeckhout, and Simon Mongey, “Quantifying Market Power,” Mimeo, 2018.

14. Gustavo Grullon, Yelena Larkin, and Roni Michaely, "Are US Industries Becoming More Concentrated?" *Review of Finance*, vol. 23(4), July 2019, 697, <https://academic.oup.com/rof/article/23/4/697/5477414>.
15. Ibid, 734.
16. Gauti Eggertsson, Jacob A. Robbins, and Ella Getz Wold, "Kaldor and Piketty's Facts: The Rise of Monopoly Power in the United States" (National Bureau of Economic Research Working Paper No. 24287), February 2018, <https://www.nber.org/papers/w24287>.
17. Joe Kennedy, "Monopoly Myths: Is Concentration Leading to Higher Profits?"
18. Joe Kennedy, "Monopoly Myths: Is Concentration Leading to Higher Markups?"
19. Gauti B. Eggertsson, Jacob A. Robbins, and Ella Getz Wold, "Kaldor and Piketty's Facts: The Rise of Monopoly Power in the United States," 5.
20. Ibid.
21. Sherwin Rosen, "The Economics of Superstars," *American Economic Review*, vol. 71(5), December 1981, <https://www.jstor.org/stable/1803469>.
22. Greg Bouchard, "What NBA Salaries Would These Superstar Players Make Today?" Touchpoint by Firmex Resources, <https://www.firmex.com/resources/uncategorized/what-nba-salaries-would-these-superstar-players-make-today/>.
23. Highest-paid NBA players by Season, Wikipedia, [https://en.wikipedia.org/wiki/Highest-paid\\_NBA\\_players\\_by\\_season](https://en.wikipedia.org/wiki/Highest-paid_NBA_players_by_season).
24. Matej Bajgar, Chiara Criscuolo, and Jonathan Timmis, "Supersize Me: Intangibles and Industry Concentration" (Organization for Economic Cooperation and Development, DSTI/CHE (2019) September 13, 2019).
25. Note that if the eight firms were the same size, each would have gone from holding 4.9 percent of the market to 5.5 percent. Actual market share may be even less since these figures look only at domestic production, omitting the role of imports.
26. Ibid, 29.
27. Chiara Criscuolo et al., "New Evidence on Intangibles, Diffusion and Productivity" (Organization for Economic Cooperation and Development, Directorate for Science, Technology and Innovation, Committee on Industry, Innovation and Entrepreneurship, DSTI/CIIE/WPIA(2020)6, September 2020).
28. David Autor et al., "The Fall of the Labor Share and the Rise of Superstar Firms," *Quarterly Journal of Economics*, vol. 135(2), February 2020, <https://doi.org/10.1093/qje/qjaa004>.
29. Ibid, 648–49.
30. James Bessen, "Industry Concentration and Information Technology," (Boston University School of Law, Law & Economic Paper No. 17-41, June 2019), 29, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3044730](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3044730).
31. Chang Tai-Hsieh and Esteban Rossi-Hansbert, "The Industrial Revolution in Services" (National Bureau of Economic Research Working Paper No. 25968), June 2019, <https://www.nber.org/papers/w25968>.
32. Ibid, 18.
33. Sharat Ganapati, "Growing Oligopolies, Prices, Output, and Productivity," *American Economic Journal: Microeconomics* (forthcoming), 1, <https://www.aeaweb.org/articles?id=10.1257/mic.20190029&&from=f>.
34. John Van Reenen, "Increasing Differences Between Firms: Market Power and the Macro-Economy" (Centre for Economic Performance, CEP Discussion Paper No. 1576), September 2018, <https://ideas.repec.org/p/cep/cepdps/dp1576.html#download>.



35. Erik Brynjolfsson and Lorin M. Hitt, “Beyond Computation: Information Technology, Organizational Transformation and Business Performance,” *Journal of Economic Perspectives*, vol. 14(4), Fall 2000, <https://www.aeaweb.org/articles?id=10.1257/jep.14.4.23>; Erik Brynjolfsson, Lorin M. Hitt, and Shinkyu Yang, “Intangible Assets: Computers and Organizational Capital,” *Brookings Papers on Economic Activity*, 2002, <https://www.brookings.edu/bpea-articles/intangible-assets-computers-and-organizational-capital/>.
36. Erik Brynjolfsson, Lorin M. Hitt, and Shinkyu Yang, “Intangible Assets: Computers and Organizational Capital,” 173. Figure used here with the authors’ permission.
37. Erik Brynjolfsson and Lorin M. Hitt, “Beyond Computation: Information Technology, Organizational Transformation and Business Performance,” 37–38.
38. James Manyika et al., *Superstars: The Dynamics of Firms, Sectors, and Cities Leading the Global Economy*, (McKinsey Global Institute, Discussion Paper, October 2018), <https://www.mckinsey.com/featured-insights/innovation-and-growth/superstars-the-dynamics-of-firms-sectors-and-cities-leading-the-global-economy>.
39. Ibid, 31.
40. Organization for Economic Cooperation and Development, *OECD Science, Technology and Industry Scorecard 2017: The Digital Transformation*, 28, [https://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2017\\_9789264268821-en](https://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2017_9789264268821-en).
41. James Manyika et al., *Superstars: The Dynamics of Firms, Sectors, and Cities Leading the Global Economy*, 25.
42. Ibid, 26. Profitability data excludes banks. R&D intensity is measured as a percentage of revenue. Fixed capital productivity is measured as revenue per unit of net property, plant, and equipment.
43. Ibid, 30.
44. James Bessen, “Industry Concentration and Information Technology.”
45. Ibid, 33.
46. Nicolas Crouzet and Janice Eberly, “Understanding Weak Capital Investment: The Role of Market Concentration and Intangibles” (National Bureau of Economic Research Working Paper No. 25869), May 2019, <https://www.nber.org/papers/w25869>.
47. Prasanna Tambe et al., “Digital Capital and Superstar Firms” (National Bureau of Economic Research Working Paper 28285, December 2020), <https://www.nber.org/papers/w28285>.
48. Ibid, 6–7.
49. Stephen J. Dorgan and John J. Dowdy, “When IT Lifts Productivity” *McKinsey Quarterly*, 2004, No. 4, <https://www.philadelphia.edu.jo/academics/netarchive/uploads/IT%20and%20Productivity.pdf>.

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