

# Increased corporate concentration and the influence of market power

Barclays analyses whether decreased competition is threatening the US economy or whether current competitive pressures are beneficial to industries, investors and consumers.





# Foreword

Welcome to the fifth report in our Impact Series. Here, the Barclays Research team investigates rising levels of concentration across industries in the United States. We analyse the potential causes and shine a spotlight on the likely economic and policy implications.

March 26, 2019

Market concentration is fast becoming one of the signature marks of a US economy that has been changing at a rapid pace since the start of the 21st century. Seen by some as the beginning of a return to the all-powerful mega-monopolies of years gone by, concentration is interpreted by others as a paragon of hyper-competition in which unproductive laggards are pushed aside by more efficient and innovative companies to the benefit of all.

The reality is far more nuanced, as our research highlights. Our analysts looked at several macroeconomic measures over a 25-year period, including labour's share of income, business dynamism and investment, which revealed correlated declines in all three across nearly all sectors of the economy on aggregate. However, these measures can tell a different story when applied to individual sectors. This is why our analysts created a new measure for competitiveness: the Barclays Competitiveness Indicator.

In a world of often contradictory data and statistics, this new metric could provide a useful tool to investors, business heads and regulators evaluating the competitive health of particular industries. We hope it brings you some much-needed insight.



**Richard Haworth**  
Chief Executive Officer, Americas

# US market concentration: One trend, two competing causes

The US economy has been changing in a series of fundamental ways since around the year 2000. One notable change has been a gradual but significant rise in industrial concentration, which could have far-reaching implications for investors, consumers and workers.

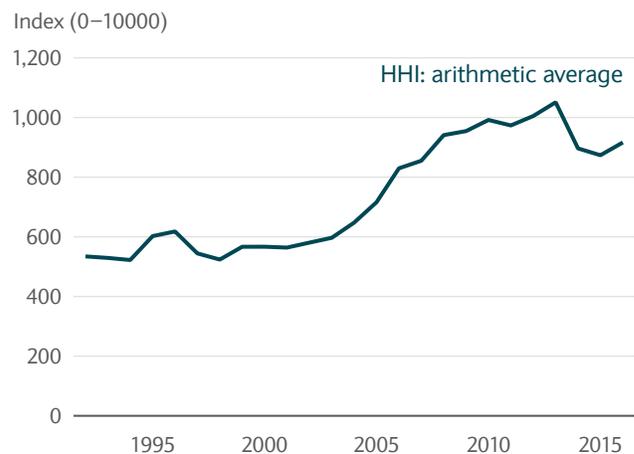
Concentration is a process of dividing an industry among fewer firms and is measured in terms of how much market share companies command. Across the economy, a smaller and smaller number of firms have been taking control of larger and larger portions of markets.<sup>1</sup>

People are used to the dominant position enjoyed by a few large firms in the technology industry, but now it appears that similar consolidation is occurring in many other parts of the economy. Since 2000, concentration has increased in nearly three-quarters of the nonfinancial sectors we examined, rising more than 60% over the past two decades even after some recent declines (Figure 1).

The increase in concentration is important because it is often associated with a less competitive economy. Various US antitrust authorities, including the Department of Justice (DoJ), the Federal Trade Commission (FTC) and the Federal Reserve (Fed), all use measures of concentration to evaluate the implications of proposed company mergers.

FIGURE 1

## US industries have become more concentrated



Source: Barclays Research calculations using company-level Compustat data

Two contrasting arguments, which hold very different implications for the economy, are often used to explain increased concentration:

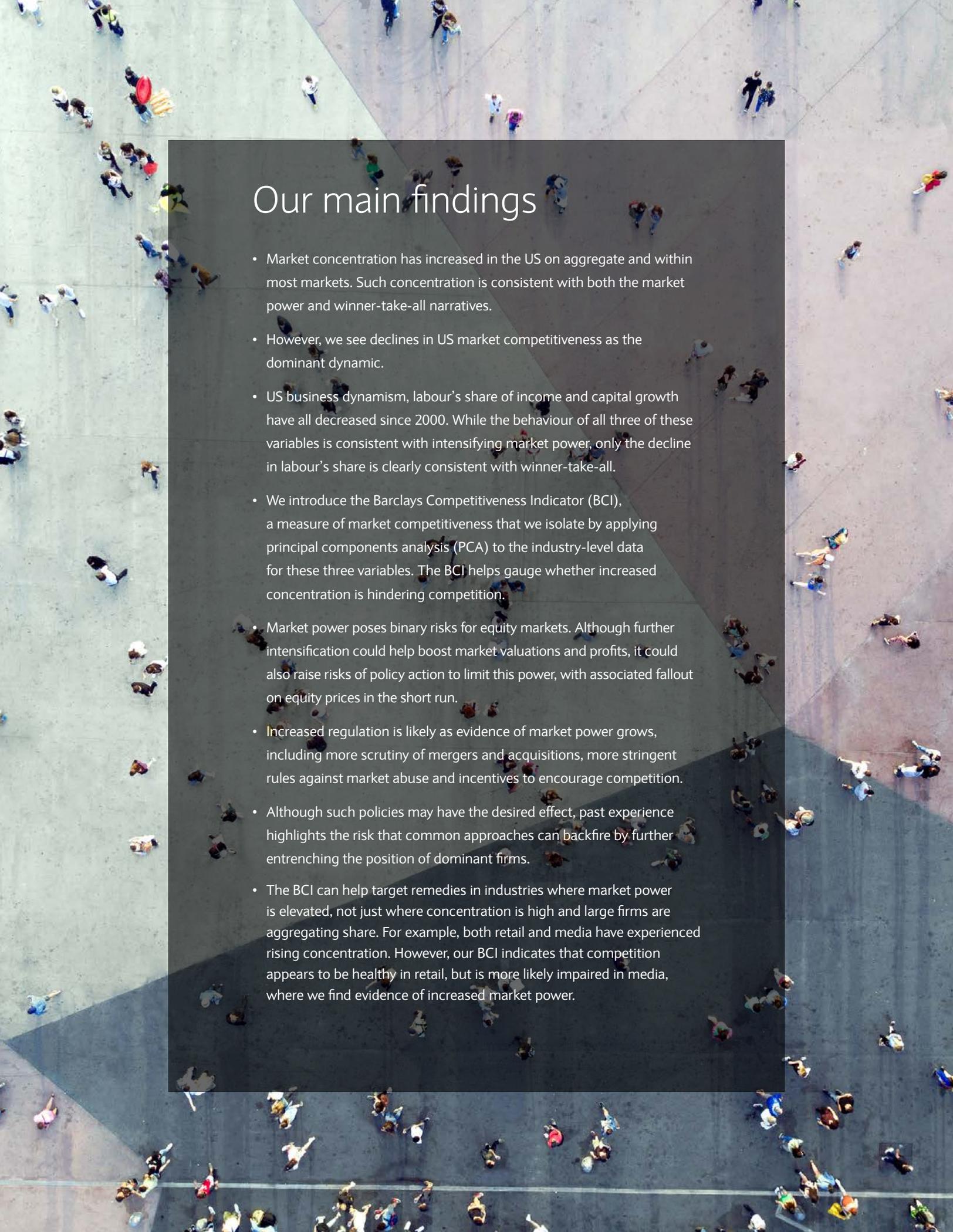
**Market power:** In this narrative, increasing concentration undermines overall wellbeing – reducing the economy’s vigour and growth – and tends to distribute economic gains into fewer hands as a few companies dominate their markets.

**Winner-take-all:** In this narrative, markets become more concentrated because of technologies that enable the most productive firms to capture market share from the least productive ones.

## What is covered in this report?

We first focus on the distinguishing features of the market power and winner-take-all arguments before we highlight economic trends and puzzles of the past two decades, including a diminishing labour share of income, business dynamism and investment in the US. We then outline our research into concentration, including a new measure of competitiveness, before we tackle the likely policy responses to rising market power.

1 Our calculations use domestic data from public companies. This is a limited view of concentration, which should also include private companies and international firms. Several academic papers have shown that the conclusions are robust to adjusting for those factors. See, for example, “Investmentless Growth: An Empirical Investigation,” Germán Gutiérrez and Thomas Philippon, Brookings Papers on Economic Activity, Fall 2017, pp. 89-174.



# Our main findings

- Market concentration has increased in the US on aggregate and within most markets. Such concentration is consistent with both the market power and winner-take-all narratives.
- However, we see declines in US market competitiveness as the dominant dynamic.
- US business dynamism, labour's share of income and capital growth have all decreased since 2000. While the behaviour of all three of these variables is consistent with intensifying market power, only the decline in labour's share is clearly consistent with winner-take-all.
- We introduce the Barclays Competitiveness Indicator (BCI), a measure of market competitiveness that we isolate by applying principal components analysis (PCA) to the industry-level data for these three variables. The BCI helps gauge whether increased concentration is hindering competition.
- Market power poses binary risks for equity markets. Although further intensification could help boost market valuations and profits, it could also raise risks of policy action to limit this power, with associated fallout on equity prices in the short run.
- Increased regulation is likely as evidence of market power grows, including more scrutiny of mergers and acquisitions, more stringent rules against market abuse and incentives to encourage competition.
- Although such policies may have the desired effect, past experience highlights the risk that common approaches can backfire by further entrenching the position of dominant firms.
- The BCI can help target remedies in industries where market power is elevated, not just where concentration is high and large firms are aggregating share. For example, both retail and media have experienced rising concentration. However, our BCI indicates that competition appears to be healthy in retail, but is more likely impaired in media, where we find evidence of increased market power.

# How do market power and winner-take-all stack up?

## Higher concentration might be harmful: The market power argument

One interpretation of increased concentration is that the private sector is accumulating greater market power. A company with market power has the ability to manipulate the prices of its products and services, those it pays suppliers and employees, or both.<sup>2</sup> Companies can use their power to generate excess profits by raising consumer prices, price-discriminating across different customers, holding down wages, discouraging entry by competitors, or using their influence to tilt regulations and government incentives in their favour.

Elevated market power would imply a bleak future for the US, in which crony capitalism at its worst would weigh on the economy's dynamism, innovation and investment in ways that would tend to undermine longer-run growth. With wealth flowing into fewer hands, intensifying concentration would also impede efforts to address the problem of rising income disparity.

If companies retain the power to set product prices, their owners may be able to capture a greater slice of the productivity gains that otherwise would be spread more widely among consumers, wage earners and other producers. Such firms may have incentives to devote resources to sustain the status quo, even if doing so is wasteful from a broader perspective. These and other associated trends would tend to persist unless action is taken, such as a major shift in the government's stance towards large dominant firms.

The market power argument would also pose a binary risk for equity markets. Increases in corporate profits have helped propel significant equity gains over the past decade. If market power continues to grow unchecked, this trend would conceivably continue. However, policy action to limit market power could have implications for corporate profitability. While such policy actions could benefit the economy in the long run, the potential fallout on equity prices would likely be immediate.

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<sup>2</sup> Technically, a firm can have market power in either or both of the product markets or input markets. Power in these markets would not necessarily go hand in hand, but both would generically be related to higher concentration.

## Concentration might be more benign: The winner-take-all argument

An alternative interpretation is that concentration is the side effect of super-charged competition. In this seemingly more positive "winner-take-all" view, intensifying price competition is forcing less efficient firms out of the market. According to this view, something – perhaps better price transparency from the internet – has tilted the playing field toward more efficient firms, allowing the most productive companies to capture a greater portion of sales.<sup>3</sup> But unlike a dominant firm with market power, the current crop of "winners" would feel continual pressure to innovate, invest and keep prices down lest they be overtaken by a more efficient rival or entrant. In this way, the effects of winner-take-all seem more benign, with increased competition eventually benefiting the economy through innovation, productivity and efficiency.

In this scenario, government intervention would be neither needed nor warranted: with "the invisible hand" of competition disciplining costs and margins, the benefits of ongoing productivity gains and innovation would be distributed broadly among consumers, wage earners and other producers. Moreover, with heightened returns to productivity, incentives to innovate and invest would remain strong – and may even intensify. Presumably, aggregate data on investment, productivity and growth would eventually adjust to reflect this new reality.

## The two are not necessarily mutually exclusive

The market power and winner-take-all arguments provoke diametrically opposed visions of how the competitive landscape has evolved in the US. In the first, rising concentration is a sign of a more sclerotic economy, dominated by a shrinking number of large incumbents. In the second, the US has entered a hyper-competitive state that is rewarding the most productive and innovative firms and leading the US into a new, more efficient future.

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<sup>3</sup> For example, see "The Fall of the Labor Share and the Rise of Superstar Firms," Autor et al., NBER Working Paper #23396, May 2017 and "Concentrating on the Fall in the Labor Share", Autor et al., American Economic Review: Papers and Proceedings 2017, 107(5), 180-185.

Although the two arguments have very different macro and market implications, differentiating between them is difficult, in part because they both appear to contain elements of truth. This is evident in two current consumer issues:

**Data privacy:** Well-publicised concerns about the privacy of data for customers in the technology sector have highlighted the omnipresent nature of the largest companies in our lives, even as they provide innovative new products and services that benefit consumers. While the expanding footprint of dominant companies may be less obvious in other sectors, such concerns are not limited to big tech. Indeed, they are all the more obvious when one considers the limited options available to consumers in some markets and the substantial anecdotal evidence that dominant companies are using (or abusing) their position to disadvantage competitors or suppliers.

**Price transparency:** At the same time, the trend toward price transparency and heightened price competition emphasised by “winner-take-all” is evident in several sectors, such as retail, where competitive pressures appear to have intensified. Signs of heightened price competition in this sector, which are readily apparent to anyone who shops online, are difficult to square with traditional notions of how firms wield market power. Indeed, in some sectors, such as ride sharing, large, potentially dominant firms have risen to prominence precisely because they have been able to disrupt long-standing dominant interests.

The two narratives need not be mutually exclusive. Companies are not born with market power; they have to acquire it. Shocks to the competitive landscape may reward the most productive firms, which then find themselves in a dominant position that they may subsequently seek to defend and exploit in ways that undermine collective wellbeing. At any given time, different industries may be in different stages of this transition, meaning that both phenomena could be occurring simultaneously.

**It is not necessarily the size of a company that gives it market power. Instead, power is often instilled through a mix of size, intensity of concentration in its market, product characteristics, and regulations that favour incumbents and dissuade start-ups.**



# Alternative views

Several critiques challenge the claim that market power has risen. Here we address three:

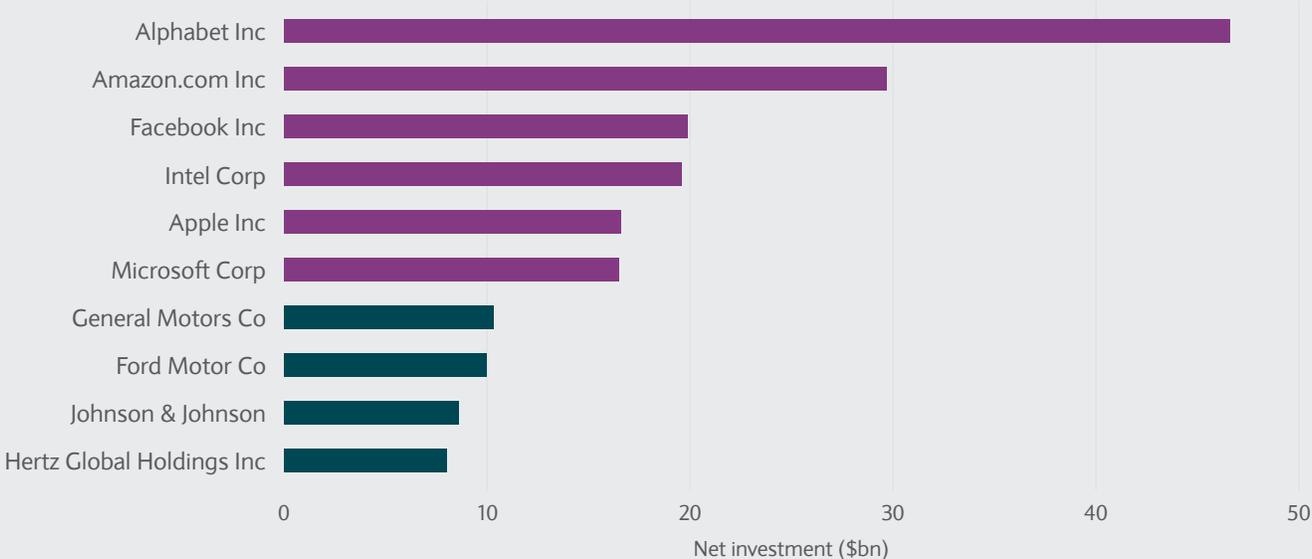
- **Lack of inflation:** It seems logical to reason that inflation should be a natural consequence of elevated market power. Dominant firms can take advantage of their position by charging higher prices, which, if widespread enough, ought to show up in aggregate price statistics. Yet inflation has remained subdued, despite years of accommodative monetary policy.

**Our view:** This critique ignores at least two factors. First, aggregate inflation statistics are affected by several other important influences, including the effects from productivity growth and low-cost import penetration, which tend to reduce costs over time. These pressures differ from sector to sector and are often unrelated to market power. In this way, consumer goods inflation is generally very low (or even negative), while services inflation is positive. However, it is still possible that firms in both sectors have market power. Exercising that to raise prices carries significant antitrust enforcement risks, since abusing a dominant position is illegal in the US. Antitrust authorities primarily pay attention to increases in consumer prices when investigating an abuse of market power. As a result, companies often exercise power through other means, such as by using their power to squeeze suppliers and to limit employee pay increases.

- **Dominant firms tend to be the most innovative and dynamic:** Another critique of the market power narrative is that the most obvious firms that may have dominant positions – the biggest technology companies – are also the most dynamic and innovative. In fact, among the 10 companies in the S&P 500 with the highest absolute levels of capital expenditures, six are high-tech (Figure 2). It seems natural to question how companies driving the most impressive technological advancements could be responsible for undermining competitiveness and economic efficiency.

**Our view:** One cannot assess the overall economy’s dynamism using just a handful of firms, as the effects of market dominance are felt more broadly. In other words, if dominance by several large firms is depressing aggregate investment and technological innovation, then the magnitude of investment and innovation by those large firms is beside the point. Indeed, these dominant firms may be investing and innovating just enough to keep at bay prospective competitors that would otherwise enter, invest and innovate. To assess the broader consequences of market dominance, we must rely on larger industry trends, rather than outputs of individual companies.

FIGURE 2  
Tech giants dominate the list of the top 10 S&P companies in terms of capital expenditures



Note: Net of depreciation and amortisation, includes outlays on research and development  
Source: Compustat, Barclays Research

- **Demographics:** An alternative driver of many of these phenomena is the ageing US population. This important demographic shift in the US and elsewhere could lead to a natural decline in the level of competitiveness of the economy. For example, older workers are less likely to start new businesses, move across the country to take advantage of economic opportunity or change jobs. Reducing this sort of activity decreases the competitiveness of the economy, and some of it – such as starting new businesses – keeps pressure on incumbent firms to invest and innovate. Recent economic research suggests that the scale of the demographic change may be a major contributor to these trends.<sup>4</sup>

**Our view:** Demographics may well contribute to declining competitiveness, which could work in favour of large incumbent firms. However, while demographic change may help explain how companies have acquired market power, it does not address concerns over its detrimental effects. The problems associated with an ageing workforce are not insurmountable, and changing demographics may well determine how we adjust our legal and regulatory regime to ensure that the economy remains as competitive as possible.

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4 “From Population Growth to Firm Demographics: Implications for Concentration, Entrepreneurship, and Labor Share”, Hopenhayn, Neira, Singhanian, NBER Working Paper No. 25382



# Concentration's effect on labour's share, dynamism and investment

Higher concentration has been linked to a number of important changes in the US economy. Of particular concern are three trends of the past 20 years: the decline in labour's share of aggregate income, the decline in business dynamism and the decline in the investment rate (or rate of increase in the capital stock). We examine each at the macro, economy-wide level, as well as at the industry level, where we can assess the relationship between these aggregate trends and the rise in concentration. To do so, we used 25 years of industry-level corporate and macroeconomic data on factors including capital growth, Tobin's Q (see box), labour's share of income, concentration and business dynamism.<sup>5</sup>

## Tobin's Q ratio:

Also known as the Q ratio, it is the market value of a company's assets (outstanding stock and debt) divided by their replacement cost (book value).

Source: Financial Times Lexicon

## Why we focused on these three trends

- They are changes of concern to the US economy, seemingly pointing to an economic environment with slower productivity growth and with opportunity and innovation increasingly limited.
- They help us to disentangle the roles of market power and winner-take-all. Although all of them are seemingly linked to rising market power, the winner-take-all argument is consistent only with one of them.
- They are measurable across the entire US economy at the industry level, and even at the company level. The former is particularly important because it allows us to

examine the relationship between the trends and changes in concentration. The fact that these variables can be measured at the company level may prove important for future studies of competition at the sub-sector level, allowing one to sidestep the problems in interpreting concentration measures for specific markets.

## Trend: Labour's share of total income

### Consistent with: Both market power and winner-take-all

**Market power:** In this case, labour's share would tend to decline for two reasons. The first is that firms with power in their product market can charge prices above marginal costs and, thus, earn excess profits, which would accrue to shareholders. The second is that firms with pricing power in a given input market (including the labour market) can pay less for that input than it will contribute to marginal revenue.<sup>6</sup> In both cases, a greater share of a firm's income would flow to shareholders, on aggregate.

**Winner-take-all:** By contrast, in this case, a greater proportion of overall activity shifts to more efficient firms, which, empirically, tend to distribute more of their income to shareholders. The outcome is a decline in labour's share of aggregate income, albeit for different reasons than in the market power case.

**Our findings:** At a macro level, labour's share of aggregate income (gross domestic product) has fallen, as depicted in Figure 3.<sup>7</sup> We used the measure of labour compensation from Bureau of Economic Analysis (BEA) data for the nonfarm business sector, which includes overall wages and salaries as

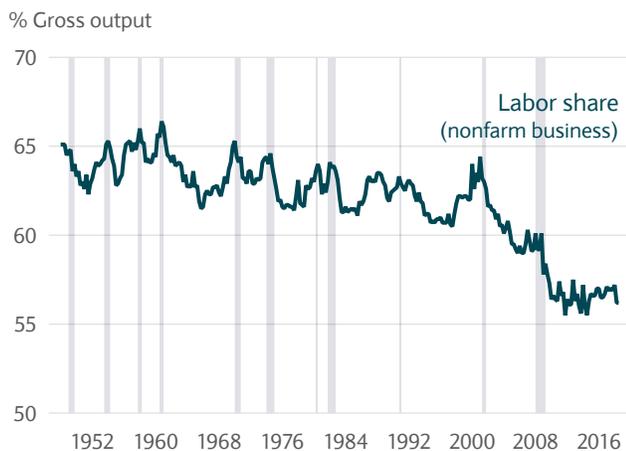
6 It is not obvious that a dominant position in product markets necessarily leads to monopsony power in labour markets. However, some studies document declines in the number employers in various markets (by industry, region or commuting area), indicating that both types of market power may be occurring.

7 The portion of pretax income that does not flow to labour includes returns to capital, economic profits and indirect taxes. Economic profits are defined somewhat differently than accounting profits: the latter include all returns to capital, whereas the former are returns over and above the market cost of capital ("rents"). While accounting profits have clearly risen, there is debate in the literature about whether this reflects higher rents.

5 We used our dataset to run panel regressions that examine testable implications that distinguish the market power and winner-take-all theories.

FIGURE 3

Labour's share of nonfarm business income has been consistently lower since the early 2000s



Source: Bureau of Labor Statistics, Haver Analytics, Barclays Research

well as bonuses and employer-provided benefits.<sup>8</sup> The labour share of income began to fall from a peak of 64% in 2000 to just 56% in 2016. This sharp decline is unprecedented, and the ratio had not fallen below 60% since the 1940s. Most of the recent decline occurred between 2000 and 2010, but flattened in the past few years, which roughly matches the pattern in concentration documented above.

We also examine the relationship between labour share and concentration at the sector level. Our panel regressions indicate that sectors with higher concentration have experienced greater declines in labour share, indicating that higher concentration could be one reason for the trend. However, increased concentration does not explain the entire decline, suggesting that other factors, such as waning unionisation, penetration of Chinese manufactured imports, and various technological advances (robotics, machine learning, big data) may also play a role.<sup>9</sup>

<sup>8</sup> Among other things, this would incorporate higher benefit costs, such as the increased cost of employer-provided healthcare.

<sup>9</sup> For the last example, see the third instalment in our Impact Series, entitled [Robots at the gate: Humans and technology at work](#).

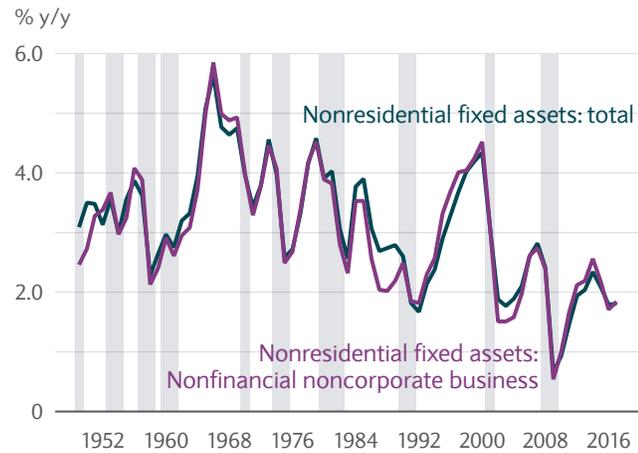
**Rising industrial concentration could be benign if it is a sign of intense competition. But the observed decline of lower business dynamism, investment and labour's share of income could in the long run hurt productivity and innovation, while also worsening rising income inequality.**





FIGURE 4

Capital accumulation has decelerated...



Source: Bureau of Economic Analysis, Haver Analytics, Barclays Research

**Trend: Slower investment rates**  
**Consistent with: Market power**

**Market power:** One would expect investment rates to fall as concentration increases. Since dominant firms exploit their power by holding back production, they have less incentive to invest.<sup>10</sup> Firms in markets with less intense competitive pressures also do not need to spend as much on research and development and other types of investment because they are unlikely to lose share if their products grow stale.

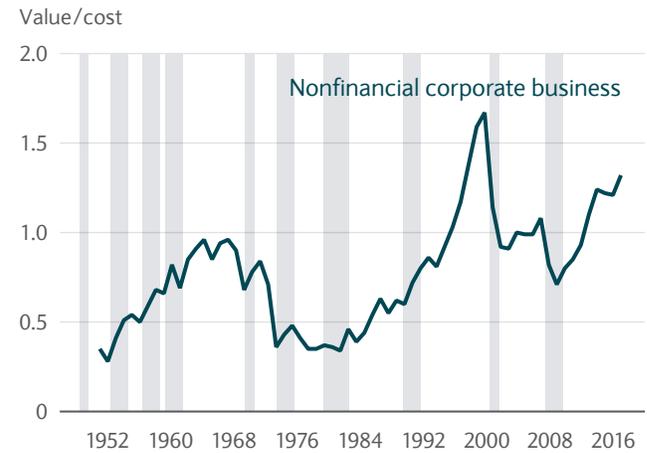
**Winner-take-all:** On the other hand, the heightened competition in a winner-take-all environment should boost investment because even the most productive firms need to defend their advantage against remaining competitors and prospective entrants.

**Our findings:** Consistent with market power, our data show that capital growth has slowed across US industries over the past two decades (Figure 4). Aggregate growth rates should vary over time, rising when companies see potentially profitable opportunities to exploit and declining when they do not. Theoretically, the standard measurement of the investment opportunities available to a company is Tobin's Q, which is the ratio of market value of a company's existing

10 Although most models of market power imply a negative relationship between market power and investment, this is not true of all of them. Some suggest firms with market power actually invest more in order to retain their dominant position – much like in the winner-take-all hypothesis. Empirical work suggests that the standard implication is more likely.

FIGURE 5

...despite a stable or increasing Tobin's Q\*



\* Ratio of the market value of a company's assets divided by the replacement cost of the company's assets.

Source: Flow of Funds Accounts, BEA, Haver Analytics, Barclays Research

capital to its replacement cost (Figure 5).<sup>11</sup> The logic behind this metric is that investors must expect that a company with a high ratio of market to replacement value has significant investment opportunities, as otherwise it would not generate sufficient earnings growth to trade at such a premium. Tobin's Q has been relatively high by historical standards since 2000 and has risen to especially high levels since the financial crisis, suggesting that capital accumulation should have remained robust. Yet our data show that the rate of capital growth fell by about one-half in the past 20 years: the net investment rate in the typical industry declined by two percentage points from 2001 onward, from an average of 3.5-4% during the 1990s.

Our panel regressions also indicate that the decline in investment has been more severe in sectors with higher concentration, in line with results from the academic literature.<sup>12</sup> This is particularly suggestive of the importance of the market power narrative; highly concentrated industries are precisely the ones for which the market power and winner-take-all narratives suggest different things about investment.

**Additional influences:** The decline can also be attributed to the fact that, despite efforts by statistical authorities, investments in intangibles are still not well reflected in official estimates. Although the BEA data are designed to capture

11 As we outline in the appendix, we measure this replacement cost using book values.

12 "Investmentless Growth: An Empirical Investigation," Germán Gutiérrez and Thomas Philippon, Brookings Papers on Economic Activity, Fall 2017, pp. 89-174.

intangibles, they may do so incompletely. As the US economy has migrated away from manufacturing and towards services, it is possible that the nature of investment has shifted away from factories and equipment into IT, intellectual capital and management skill and that the magnitude of any missing investment may have risen.

**Trend: Declines in business dynamism**  
**Consistent with: Market power**

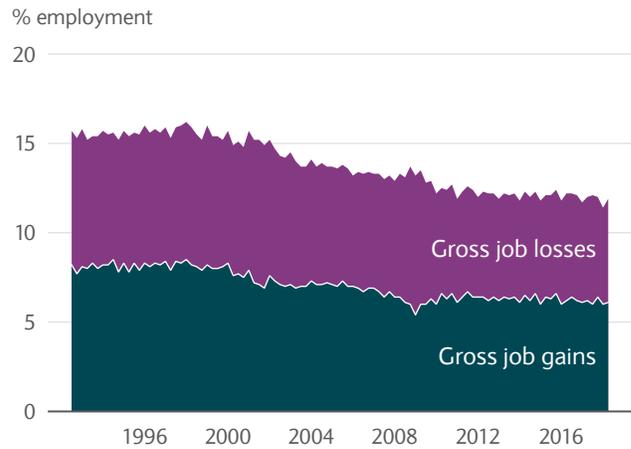
The US has historically been a dynamic economy, with a strong entrepreneurial streak and a flexible and mobile workforce. While it is still dynamic relative to other parts of the developed world, research suggests that it has become less so. This is typically measured via activities such as the rate of new business formation, the quantity of initial public offerings, the geographic mobility of workers and the rate of employee churn. Each indicates that the US is becoming less dynamic: fewer new businesses are being started, people move across geographic regions less frequently, fewer companies are being taken public and workers are switching jobs less frequently.

**Market power:** Dominant firms can use their power to keep new competitors at bay. One example is predatory pricing, where incumbents temporarily undercut new competitors' prices of goods and services, forcing them out of business. While this may imply short-term pain for the dominant firm, it is likely to retain sufficient resources to withstand even extended periods of losses.<sup>13</sup> Dominant firms can also use market power in one product market to steer customers toward their other products. Microsoft was accused of this in the 1990s, when it allegedly used its dominant position in the operating system market to direct PC users to its Internet Explorer browser. More recently, the European Union has accused Google of using its dominant position in internet search engines to push customers towards its shopping services, thereby gaining an advantage over other online vendors. Such behaviour – or even just the threat of it – would discourage entrants. Even if a start-up does gain traction and begin to challenge a dominant firm, the sheer profitability and scale of the dominant firm can allow it to buy out its competition, such as Google's purchase of YouTube and Facebook's buyout of WhatsApp.

13 Although the theoretical viability of predatory pricing is debatable, there is at least anecdotal evidence that it occurs. The "Chicago School" argues that this is not a viable long-term strategy and claims that the examples we see are explained by economies of scale.

FIGURE 6

**Job churn has steadily diminished**



Source: Census Bureau, Haver Analytics

With fewer firms competing, workers in industries with dominant firms have less choice of where to work, and fewer firms compete for them. This tends to result in less job churn. These effects can manifest in obvious ways, such as a one-factory town where the workers have no other options, or less obvious ways, such as non-compete agreements in which tech companies or even franchisees for a given fast food brand agree not to poach each other's workers.<sup>14</sup>

**Winner-take-all:** The winner-take-all narrative is likely to result in higher dynamism, at least temporarily. For example, industries experiencing this effect would be characterized by elevated job churn, from both the winners expanding as they take share, and lesser competitors shrinking or exiting the market.

**Our findings:** We focus on job churn as a measure of business dynamism and define it as the sum of gross job gains in new or expanding establishments plus gross job losses in closing or contracting establishments, divided by total employment.<sup>15</sup> In a more dynamic sector, many businesses will be expanding and contracting; thus, job churn will be high, and vice versa.

14 Among other places, the trend toward non-compete agreements has been documented in "A Proposal for Protecting Low-Income Workers from Monopsony and Collusion" by Alan B. Krueger and Eric A. Posner, Policy Proposal 2018-06, The Hamilton Project (Brookings Institute), February 2018.

15 We choose this metric because it is available from the Bureau of Labor Statistics (BLS) at the NAICS three-digit level. These data are disaggregated into separate rates of job gains and job losses, which we sum to compute our overall proxy for job churn. An alternative measure, also from the BLS, is the rate of establishment creation and destruction. Using this alternative yields similar results.

As with investment, job churn has fallen sharply since about 2000 (Figure 6). The quarterly churn rate was stable at about 15% throughout the 1990s and is currently about 12% – a decline of over 20%. Around the time of the Financial Crisis, the trend temporarily reversed, then quickly resumed its steady decline.

As with the other economic trends, our data show that there is a strong link between concentration and job churn at the sector level. Industries with higher concentration had particularly low churn. However, all the industries in our sample experienced a decline in churn since 2000. As with lower labour share, it is likely that other factors besides elevated concentration are also weighing on mobility. Declining mobility could be due to increased skills gaps that have a regional component (such as Rust Belt workers who are under-equipped for work in Silicon Valley). Additionally,

increased female labour market participation could be reducing mobility because a household with two full-time workers faces a higher hurdle to moving than a household with only one.

**Additional influences:** Other metrics of dynamism have also fallen over the same period, such as the rate of new business formation and the rate of IPOs. Although we believe that increased concentration is likely affecting those metrics as well, just as with churn, one must be careful not to over-emphasise the potential effect of increased concentration. There may be other causes as well. For example, the number of stock market flotations could have declined because of regulatory reforms, such as Sarbanes-Oxley, that have made going public less attractive.<sup>16</sup>

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<sup>16</sup> For example, see “The Sarbanes-Oxley Act and Exit Strategies of Private Firms” by F. Bova et al, *Contemporary Accounting Research*, 31(3), July 2013.





# Economic puzzles

Intensifying market power could also help explain two other economic puzzles in the US since the turn of the millennium:

## Why have wage increases remained sluggish?

Many economists and policymakers would have expected wages to be accelerating much more forcefully in the current environment of low unemployment. While estimates of the natural unemployment rate varied from 5% to 6% in 2010, the actual rate has slipped well below this range in recent years and has been at or below 4% since April 2018.<sup>17</sup> Yet wage growth remains relatively sluggish at close to 3% year-on-year – still not sufficient to push up the labour share of income.<sup>18</sup>

**Possible causes:** One of the simplest explanations is that economists underestimated the magnitude of economic slack. Indeed, recent estimates place the natural unemployment rate closer to 4.5%.<sup>19</sup> Another explanation is nominal wage rigidities, which may have kept real wages higher than otherwise in the earlier stages of economic expansion, thereby restraining wage increases in subsequent years. Even so, the acceleration of wages to date seems surprisingly modest even after accounting for such effects. Other factors that could be suppressing wage growth include slow productivity growth, diminishing union membership, competition from foreign or outsourced workers, and advances in robotics.<sup>20</sup>

**Our view:** Our analysis suggests that intensifying market power should be included in this list of potential structural explanations. This mechanism seems plausible because an ongoing intensification of power in the labour markets by employers would gradually boost their bargaining power at the expense of workers. With fewer alternatives, workers – especially less-skilled ones – would have little choice but to accept slower wage gains.

## Why do corporate profit margins remain so elevated at this stage of the cycle?

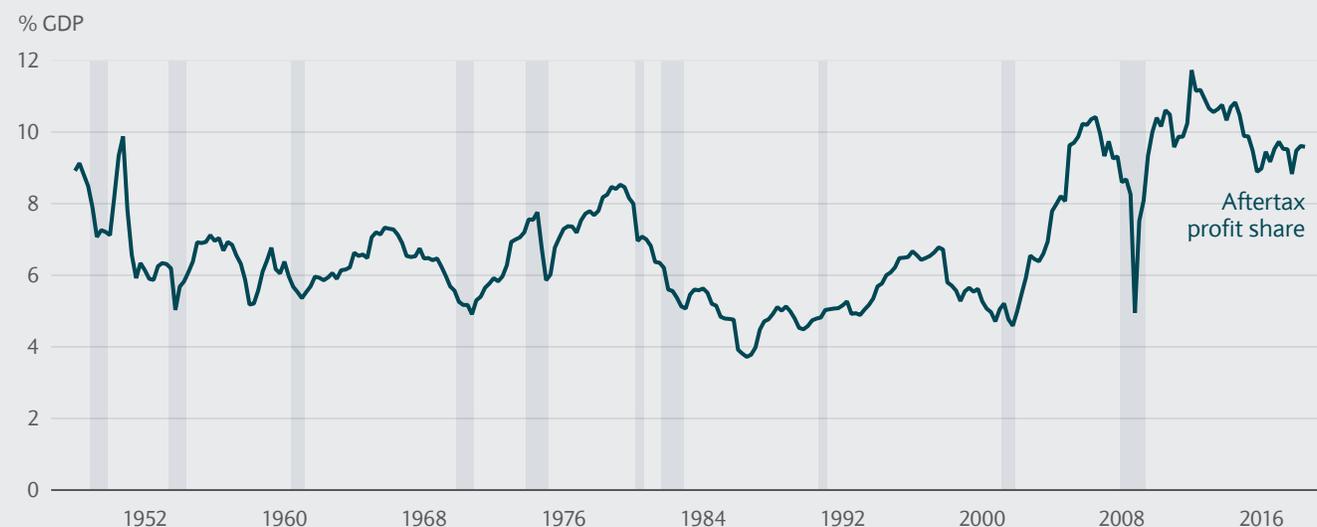
Another puzzle is why profit margins (Figure 7) for many companies have been so durable in the face of cost pressures from tariffs, currency movements and other factors.

**Possible cause:** Companies with market power would have greater scope to pass at least some of these pressures on to consumers and workers through higher prices and slower wage increases.

**Our view:** The durability of profit margins may be indicative of market power. Although such an environment would clearly have negative implications for the well-being of consumers and workers, it may help us understand why profits (and economic activity more broadly) appear to be more insulated from cyclical pressures than in the past.

FIGURE 7

## Corporate profits have risen as a share of GDP since 2000



Source: Bureau of Economic Analysis, Haver Analytics, Barclays Research

17 Source: US Congressional Budget Office

18 Source: Bureau of Labor Statistics

19 Source: US Congressional Budget Office

20 With regard to technology, see the third instalment in our Impact Series, [Robots at the gate: Humans and technology at work](#)

# Our research on rising concentration

Our findings agree with other studies that there is a strong association between rising concentration on the one hand and higher corporate profitability, a falling labour share of income, diminished business dynamism and reduced investment on the other. We also find that 2000 was a structural break point for many economic trends, not just industrial concentration, including sustained declines in the last three variables being more severe in industries with higher concentration (Figure 8).

Figure 8 notes whether each trend is consistent with the market power or winner-take-all arguments, or both. Some relationships – such as the correlation between higher concentration and declining labour shares – appear consistent with both theories, but the linkages between rising concentration, dynamism and the investment rate appear more consistent with the market power view.

Based in part on these observations formed by analysis of an industry-level dataset, our conclusion is that the rise in market concentration, by and large, reflects an intensification of market power, which has been detrimental to the US economy, on balance.<sup>21</sup>

## Does high concentration tell us much about competitive pressures?

However, this conclusion still raises questions about the reliability of using concentration as a gauge of market competitiveness.

Concentration is commonly used as a metric of competitiveness. However, as we have shown, higher concentration could be present in markets where competitive pressures are very strong and in others where they are very weak. Although our analysis provides evidence linking higher concentration with heightened market power, on the aggregate, it does not dispel the possibility that, in some markets, higher concentration may be a symptom of heightened competitiveness. In other words, one cannot

extrapolate conclusions for the overall economy to each sub-sector of the economy where concentration has increased.

It is also challenging simply to measure concentration in a reliable way. For example, to assess whether a proposed merger of two companies would be anticompetitive, it is essential to have an accurate definition of the competitive landscape. This requires painstakingly adjusting standard metrics to account for the effect of imports (especially relevant in view of the emergence of China as a major manufacturing centre) and the presence of private, unlisted companies.

Moreover, when forming such measures, it is crucial to identify the relevant set of competitors correctly. This can be challenging because the competitive landscape is changing rapidly in many industries. In the media sector, for example, distribution and newly generated content have always been seen as separate parts of the ecosystem, but are now rapidly becoming entwined. Mergers between companies such as Time Warner and AT&T in 2018 would have been far-fetched not so long ago, but are becoming desirable, if not essential, for survival. In such rapidly evolving spaces, correctly identifying all of the public and private entities (and their respective market shares) is very difficult.

In principle, there are more reliable ways to gauge competitiveness than concentration. Theory suggests that market power should be measured using the mark-up of prices relative to marginal costs, but this is difficult to achieve in practice because companies do not report marginal costs. Although some studies have shown that it is possible to generate plausible aggregate measures of the mark-up, these methodologies are less useful when assessing sub-sectors or specific markets, for which data are difficult to obtain.<sup>22</sup>

All of these approaches pose a dilemma when working at a more granular market level.

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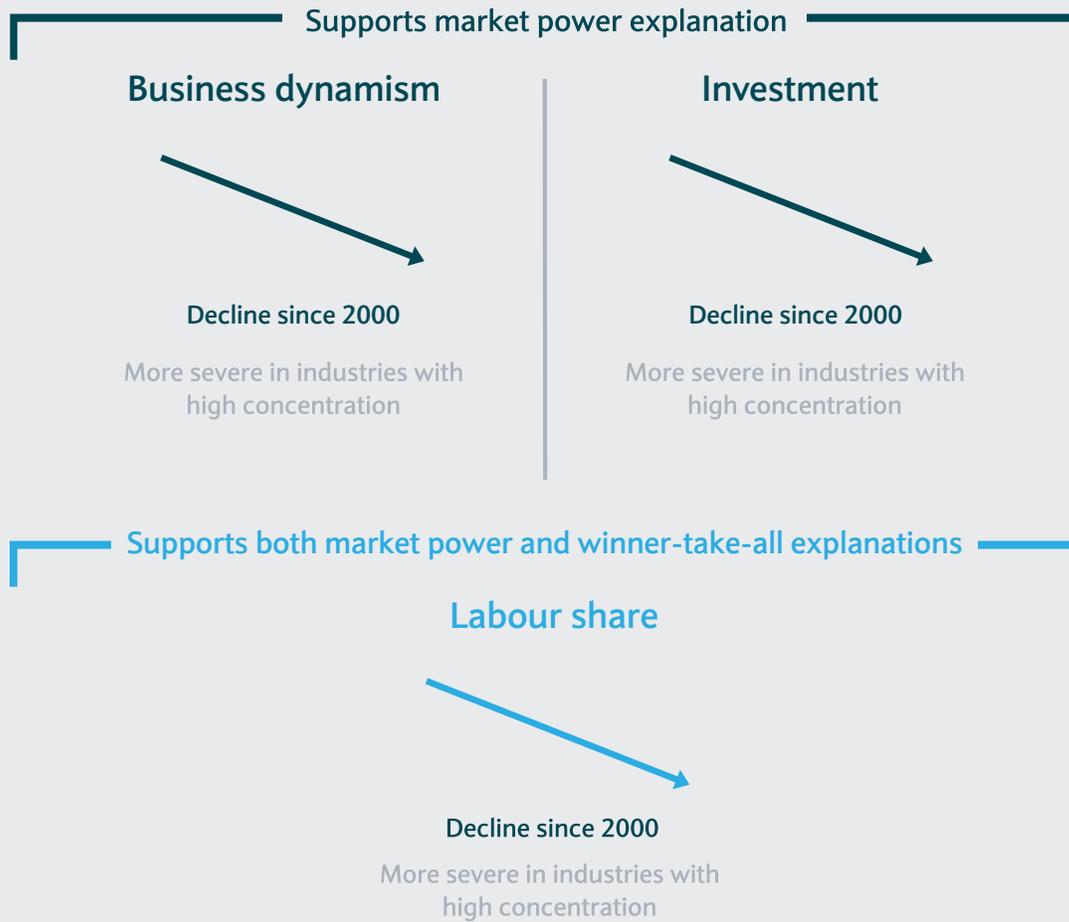
21 Our industry-level data for investment rates and labour's share of income are sourced from the BEA's industry-level GDP and capital stock estimates, data on business dynamism are from the BLS's Business Employment Dynamics survey, and data for Tobin's Q and industry-level concentration are formed by aggregating data on publicly traded companies from Compustat. See Appendix A for more details.

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22 These difficulties are apparent when one considers the lack of robustness in measuring firm-level markups highlighted by a comparison of the papers (1) "The Rise of Market Power and the Macroeconomic Implications," Jan De Loecker and Jan Eeckhout, NBER Working Paper #23687, August 2017, (2) "Is Aggregate Market Power Increasing? Production Trends using Financial Statements," James Traina, University of Chicago-Booth New Working Paper Series No. 17, February 2018, and (3) "New Evidence on the Markup of Prices of Marginal Costs and the Role of Mega-Firms in the US Economy," Robert E. Hall, NBER Working Paper #24574, May 2018.

FIGURE 8

Important changes in the US economy are linked to rising concentration



Source: Barclays Research

**To evaluate whether a proposed merger will harm competition in a market, it is essential to know who makes up that market. What industry definitions are being rewritten by increasing concentration? And what are the ramifications of competition?**



# What is principal component analysis (PCA)?

This technique is used to identify a smaller number of uncorrelated variables known as principal components, or factors, from a larger set of data. The technique is widely used to examine unobserved factors in order to capture patterns in a dataset. Here's how it works...

FIGURE 9

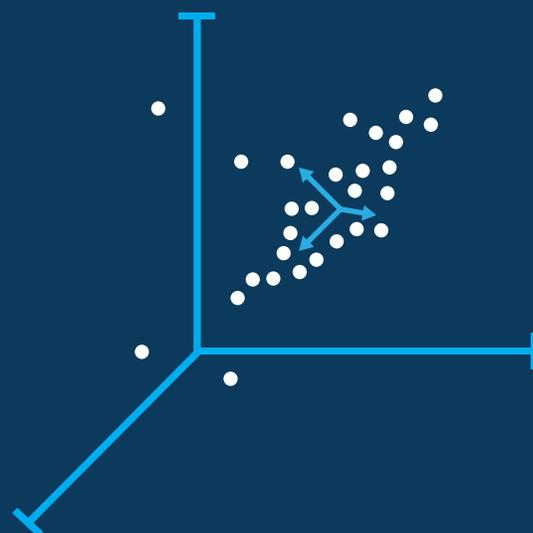
Calculating the PCA



## In our view:

We'd expect a 'competitiveness' factor to affect all the variables in the same direction.

For a winner-take-all factor, we'd expect to see labour's share and investment move in opposite directions.





# 3

## We interpret the data

The important question:  
When any given factor changes,  
how do the variables in our  
dataset respond?

$$\begin{pmatrix} b_1^1 & \dots & b_p^1 \\ \vdots & \ddots & \vdots \\ b_1^p & \dots & b_p^p \end{pmatrix}$$

### Our interpretation

Our first factor is consistent with a ‘competitiveness’ factor.

Our second factor is consistent with a winner-take-all factor.

## We introduce a new measure of competitiveness...

To help remedy this situation, we developed the Barclays Competitiveness Indicator (BCI), a new measure of competition that moves away from the common interpretation that concentration is a direct proxy for market power.

We applied a statistical method called principal components analysis (PCA – see Figure 9) to establish whether there are common factors that help explain the joint evolution of investment, business dynamism and labour’s share of income through time, across all industries in our dataset. The BCI methodology utilises industry- and firm-level data to allow a more granular analysis of market power than approaches based on concentration metrics alone.

The first factor of our panel dataset – which, by construction, is also the most important in terms of explaining the joint evolution of the data – exhibits economic effects consistent with heightened competitive pressures, as it is positively correlated with variables that should be high when market power is low – such as the investment rate, labour’s share of income and business dynamism.<sup>23</sup> Hence, we interpret this component as a new metric of competitive intensity.

### ...and find that competitiveness has declined in line with the market power argument

This analysis paints a picture consistent with market power: competitiveness has declined over time, both on aggregate and across virtually every nonfinancial industry we investigated.

Since the inputs used to construct this analysis are generally available at the company level, we can also use the BCI to measure competitiveness for markets composed of a custom basket of companies. In turn, we can use such customised baskets to assess the intensity of competition in market segments that cut across traditional definitions. Unlike concentration-based measures, the BCI does not require comprehensive data on the entire set of competitors in a market; the influence of any excluded firms will be felt in data for the firms that we do include. In future research, we plan to use this approach to analyse competitive forces in specific markets.

<sup>23</sup> We find that this measure is robust when we expand the set of variables in the PCA to include other measurable variables such as productivity growth, Tobin’s Q and the HHI.

# Our metric in action: Separating competitiveness from concentration

Our analysis thus far suggests that, in aggregate, the US economy is suffering from declining competition (Figure 10). However, at this point, we cannot apply this conclusion to any specific industry, at least when defined in a way that is granular enough to be useful to investors. The BEA sectors that we use in our panel data are too broadly defined for that purpose. Further, the commonly used metric at that granular level – concentration – is flawed. Even though we believe high concentration is linked to low competition in aggregate, it is not necessarily the case for a specific industry. The winner-take-all narrative is itself compelling and at a granular level could be more relevant than declining competition.

Fortunately, the BCI can be estimated using company-specific data. This allows us to assess the competitive environment for more narrowly defined sectors. As two test cases, we estimate our metric for the retail and media sectors.<sup>24</sup> These are interesting because each is going through significant disruption in a new competitive landscape, and both are increasingly dominated by a handful of large firms (Figures 12 and 13).<sup>25</sup>

However, our competition metric using data on the underlying trends of labour's share of income, investment growth and job churn suggests that this concentration is playing out differently in the two sectors. This highlights the importance of looking beyond concentration and into the characteristics we expect from industries experiencing declining competition.

## Retail

E-commerce has raised price transparency and put pressure on margins, but it has also led to the emergence of very large, potentially dominant firms taking substantial market share from traditional brick and mortar retailers.

**Our analysis:** In retail, competition appears not to have changed since 2000, with labour's share of income and investment remaining stable, although job churn has fallen (Figure 14). In aggregate, our findings suggest that competition in retail is strong despite the emergence of several enormous firms. The rise of e-commerce is forcing incumbents to invest, and many of the efficiency improvements are passed on to consumers through lower prices. Of course, this could change if growing concentration allows the market leaders to abuse their position.

## Media:

Giants such as Alphabet, Facebook and Netflix have changed the media landscape as they compete with traditional TV, print and radio. Media has both new competitors entering existing channels (such as Netflix and Amazon producing their own content) and new channels, such as search and social media.

**Our analysis:** In contrast to the retail sector, our competition metric for media has declined sharply, with all three underlying variables contributing to the decline (Figure 15). This suggests that, despite the obvious competitive pressures, the emergence of large firms that dominate the new internet and social channels has depressed the level of competition. We believe that this is driven by increasing market share of the new digital channels (Figure 11), which are more likely to be dominated by a few large companies.

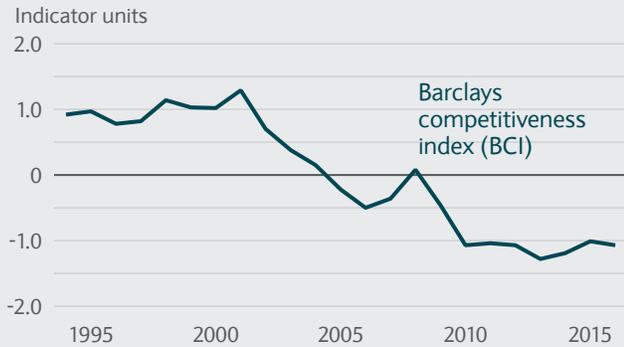
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<sup>24</sup> See "Retail & Media: Assessing the elephants in the room", Jeff Meli & James Martin, Barclays Research, 26 March 2019.

<sup>25</sup> In this chart, we exclude Walmart from retail, as it is officially classified as a grocer. When we include it, the increase in concentration is much more stark for retail.

FIGURE 10

The Barclays Competitiveness Indicator (BCI) shows a decline in competition since 2000



Note: Principal components are estimated after standardising each data series after removing industry means. Sample includes 38 industries, 1993-2016. Source: Barclays Research, using data from the BLS, the BEA and Compustat

FIGURE 11

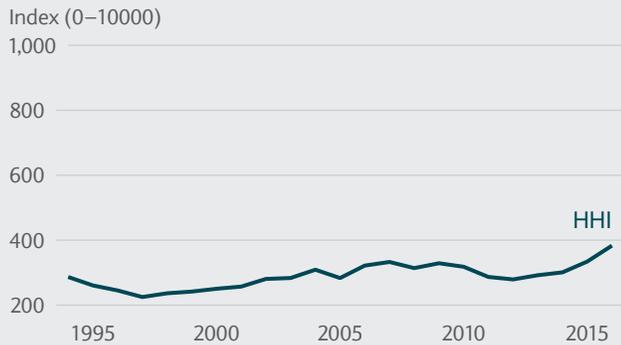
Digital ads have been replacing traditional channels

Segment	\$mn(2018)	% share	2019E %yoy growth
Traditional	93,095	41%	-8.5%
TV	65,170	29%	-7.3%
Print	14,744	7%	-17.8%
Radio	13,181	6%	-4.2%
Digital	105,554	47%	11.3%
Other*	26,820	12%	-3.6%
Total US ad market	225,469	100%	1.4%

Note: Other includes out of home and direct media. Source: MAGNA Intelligence

FIGURE 12

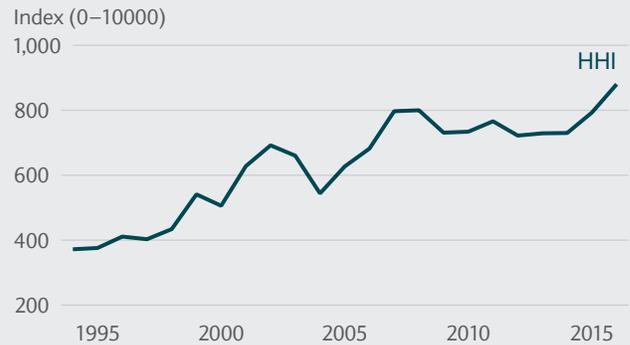
Concentration in retail was stable until 2014



Source: Compustat, Barclays Research

FIGURE 13

Concentration in media has risen steadily



Source: Compustat, Barclays Research

FIGURE 14

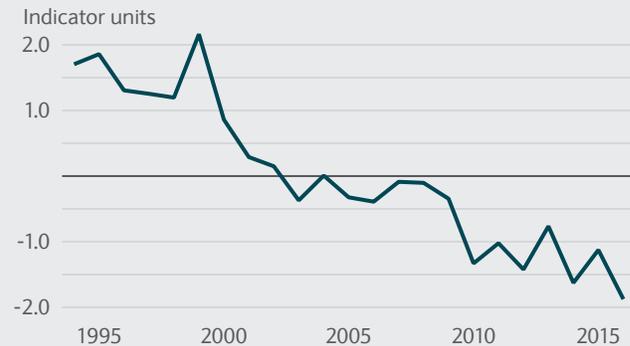
Retail competition is little changed, on balance, since 2000, despite the rise of e-commerce



Source: Compustat, Barclays Research

FIGURE 15

Media competition has declined as concentration rose



Source: Compustat, Barclays Research

# How policymakers might respond and the potential ramifications

Policymakers are likely to feel pressure to respond to the mounting perception of intensifying market power in a number of ways. Here we review several possible approaches, as well as the associated economic and market implications of each.

## Enhanced regulatory scrutiny of mergers

One obvious step to address market power would be to tighten standards for merger approval. This could come in two forms.

### Strengthening existing standards for approving

**horizontal mergers:** Antitrust authorities occasionally object to horizontal mergers that would increase market concentration in ways that pose competitive concerns. US legislation aimed at prohibiting monopolistic business practices has been in existence for some time, including the Sherman Antitrust Act (1890) and the Clayton Antitrust Act

(1914). These attempt to prevent anticompetitive practices such as price-fixing, tying (selling products only on the basis that the buyer will also buy other products from the seller) and exclusive dealing, as well as prohibit anticompetitive mergers and acquisitions.

While it would seem there are laws in place to pursue this remedy already, the courts substantially raised the legal thresholds that antitrust authorities must demonstrate in order to apply them. Following the Chicago School of the 1970s, the legal standard shifted from antitrust protecting small businesses to a broader focus on economic efficiency – that is, consumer welfare – focusing not just on prices, but on quality, innovation and product evolution. However, these more nuanced criteria are difficult for antitrust authorities to demonstrate, so, in practice, the focus has tended to be on prices.

## The difference between horizontal and vertical mergers

**Horizontal merger:** A merger between firms that operate in the same or a similar market. A merger to consolidate market share offers a clear opportunity to abuse this position by raising prices.

**Vertical merger:** A merger that integrates companies that are in different stages of the production process. By acquiring firms that contribute to its value chain, a firm may be able to reduce its production costs and increase efficiency. However, this may also create opportunities for integrated firms to abuse their position, such as by making key inputs more scarce for competitors.



**Enhanced scrutiny of vertical mergers:** The second, and more controversial, step to address market power is to reverse the long-held position that vertical mergers do not pose competitive concerns. The thinking behind the status quo, again based on the arguments of the Chicago School, is that it makes little economic sense for a company with power in one market to use its profits to price out competitors in an upstream or downstream market.<sup>26</sup> Indeed, no vertical mergers were contested by antitrust authorities from 1979 until 2018, when the US DoJ unsuccessfully contested the proposal to merge AT&T with Time Warner (TW). However, a new school of legal thought – the Brandeis School – has

26 The scepticism included a view that government action was more likely to do harm than good – specifically, that the lost efficiency gains from inappropriate challenge of mergers that benefited consumers would outweigh any benefits from blocking bad mergers (for example, see Robert Bork, *The Antitrust Paradox*, 1978). As is evident for the proposed AT&T and TW merger, concerns about blocking “good” mergers remain valid in the eyes of the court, even though recent research pointing to negative economic effects of intensifying concentration suggest that thinking on the part of economists has become more nuanced.

begun to challenge the supposition that vertical integration is harmless.<sup>27</sup> Indeed, one could argue that Amazon is a counterexample, as it uses profits from some segments to subsidise investments in others.<sup>28</sup> Of course, this cross-funding need not itself be anticompetitive, as Amazon would need to be creating dominance and then abusing it.

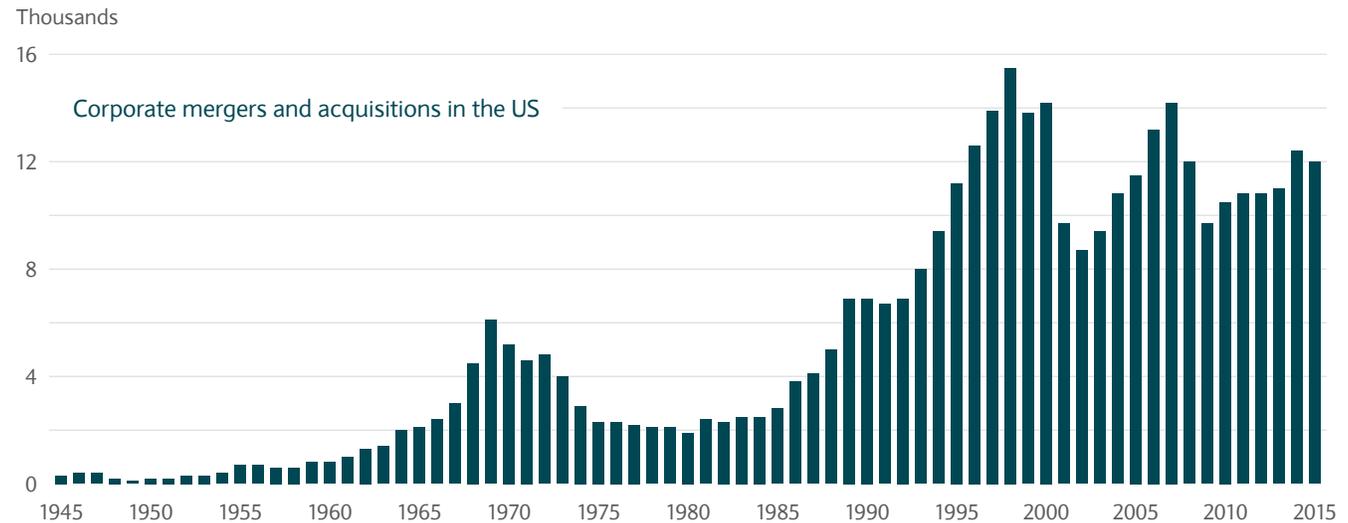
In principle, antitrust measures to limit mergers could help address competitive concerns over time. The elevated volume of M&A activity (Figure 16) may be one possible channel through which companies have accumulated market power. Scrutiny of vertical mergers in particular would be new and could address a previously unrecognised (or ignored) competitive threat.

27 See “The Rise, Fall, and Rebirth of the Antitrust Movement,” M. Stucke and A. Ezrachi, *Harvard Business Review*, December 15, 2017.

28 This is among the arguments that features in “Amazon’s Antitrust Paradox,” Lina M. Khan, *The Yale Law Journal*, January 2017.

FIGURE 16

Corporate mergers and acquisitions have been elevated for some time



Source: Institute for Mergers, Acquisitions, and Alliances



TRUST



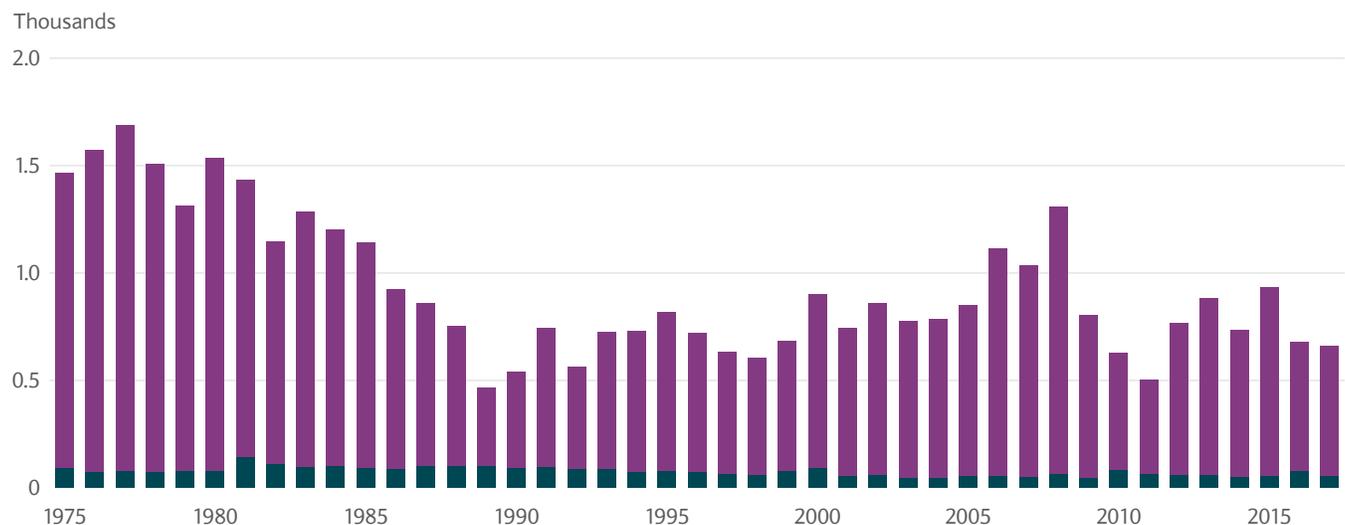
### Challenges associated with the enhanced antitrust approach

- The bar for antitrust authorities to provide evidence of economic harm is very high and is generally focused very narrowly on price effects. As mentioned, it is possible that dominant firms learn to exploit their market power to boost profits in ways other than raising prices – through pressuring suppliers and workers; tailoring research and investment toward activities that strengthen their dominant position without benefiting consumers; or influencing the legislative process. These may help explain the surprising decline in antitrust enforcement that has accompanied the intensification in industry concentration (Figure 17). Although one might expect intensifying market concentration to bring more cases, companies may have learned how to accumulate power in ways that avoid scrutiny.
- An indiscriminate focus on mergers may be misplaced in some instances, as some mergers may actually enhance competition by enabling the resulting entity to better compete with incumbents. One possible example is the DoJ’s challenge of the AT&T-TW merger. The proposal had been contested on the grounds that AT&T (a content distributor) could use its ownership of TW (a content creator) to place competing distributors at a disadvantage in terms of negotiating content. An alternative argument

is that the merger creates another viable competitor in a market whose competitive makeup has been disrupted by the emergence of non-traditional entities such as Amazon, Netflix and Hulu, which have placed single-market entities at a disadvantage by pairing content creation and delivery. This is an example where disruptive entrants are perceived as a threat by incumbents. In such an environment, indiscriminate regulatory scrutiny of vertical mergers may inadvertently strengthen the dominant position of an incumbent.

- Evaluating mergers requires an accurate definition of a market or set of competitors, a task made all the more difficult by the rapidly evolving nature of many high profile industries (such as media).
- More intense regulatory scrutiny of mergers would not help alleviate market power issues posed by existing dominant firms, at least not immediately. Over time, limiting mergers could allow competitors to emerge that otherwise might have been subsumed within the incumbent firms. Although a more immediate remedy would be to attempt to break up these existing firms, this would be extremely difficult to execute and would require a degree of certainty regarding the competitive landscape that is difficult or impossible to achieve in practice.

FIGURE 17  
Antitrust case filings have fallen off since the 1970s



Note: Government totals include civil and criminal cases involving the government as a plaintiff or defendant. Data for 1975-1991 are for the 12-month period preceding June of that year. Data for 1992-2000 are for the fiscal year, and 2001 onward are for the calendar year. Source: United States Courts, Sourcebook of Criminal Justice Statistics

## Enhanced regulation designed to limit the ability of dominant firms to abuse their positions

An alternative approach is to enact regulations designed to limit business practices in ways that prevent dominant firms from abusing their position. This would involve a set of industry-specific rules that apply to all firms or the largest ones within that industry, targeting a set of practices identified as problematic. There are few, if any, recent examples of sweeping rules targeting competition to use as examples. But there have been a number of industry-specific regulations adopted recently motivated by other concerns, that have limited or changed existing business practices. These are useful to consider as they can help illustrate the difficulty of using this approach to mitigate competitive concerns. One example is the US adoption of enhanced banking regulations following the Global Financial Crisis, which were enacted to improve the safety and soundness of the financial system. Those rules were set out in the Dodd-Frank Act (2010), which included specific measures that apply to only the largest banks, such as enhanced capital requirements, heightened merger scrutiny, and prohibitions on proprietary trading. Europe's General Data Protection Regulation (GDPR) is another example, designed to address burgeoning privacy concerns.

### Challenges associated with the enhanced regulation approach

- This approach requires regulators to set out very detailed industry-specific rules, which take years to develop and are exceedingly complex. In practice, the time it takes to craft such rules can render them irrelevant or counter-productive. Further, complexity can often lead to unintended consequences, which can cause severe issues of their own. For example, limits on bank leverage and related rules in Dodd-Frank appeared to place unnecessary pressures on repo markets in the US – so much so that these rules were subsequently revised.
- More important, such rules could risk cementing the position of incumbent firms. This is because complying with this type of regulation is expensive, which presents a significant barrier to entry. Even if such rules mitigate existing anticompetitive behaviour, regulatory overheads can boost fixed costs in ways that tend to discourage competition, thereby stymieing new entrants and reducing the competitive threat to incumbents. As an example, the number of new FDIC-insured commercial bank charters, which had averaged about 170 per year from 2005-2007 in the lead-up to the Crisis, has slowed to about one per year

## Could a series of push-and-pull regulations and incentives improve the level of competition in individual industries?



since the 2010 passage of Dodd-Frank.<sup>29</sup> While there may be other reasons why new banks are not being created, costs associated with ongoing regulatory disclosures and other rules have almost surely contributed to this decline. This is not a critique of Dodd-Frank – it was designed for macroprudential reasons, not to enhance competition – but it does help illustrate the relevance of regulations when considering barriers to entry.

### New regulatory frameworks to encourage competition

An alternative regulatory approach would be to introduce rules designed to enhance competitiveness, rather than eliminate abusive behaviour. Two competition-enhancing regulatory examples from Europe could serve as a means to consider possible approaches in the US.

**Data ownership:** The first is Europe's Revised Payment Services Directive (PSD2). This set of retail banking rules is meant to change the ownership structure of consumer data and allows people to transfer their data to other financial institutions. The intent is to open consumer banking to more competition.

The US high-tech industry is an obvious example where this type of approach could make sense. There is an ongoing debate about who owns data generated as a by-product of consumers' online activities. In the US, such data are owned by the company that engaged in the online interaction with the consumer. However, issues surrounding data collected by Facebook and other online entities have thrust the question of ownership into the spotlight in the US.<sup>30</sup> Transferring ownership rights to consumers along the lines of the PSD2 could give them more control over how their data are

<sup>29</sup> Source: Federal Deposit Insurance Corporation

<sup>30</sup> For example, the "right to forget" that is imposed on internet search providers clearly awards some rights to the data to individuals.

monetised, and companies would be forced to compete for access to these data in ways that could improve the services available to consumers.

**Infrastructure sharing:** The second example is infrastructure sharing, which could be useful in industries that require costly infrastructure, such as telecommunications. This tends to be associated with “natural monopolies” because of the substantial fixed and sunk costs. Sharing would sever the layers of this natural monopoly by creating “common carrier” obligations that allow competitors to access the company’s infrastructure.

Infrastructure sharing has existed in Europe since the introduction of late-1990s EU directives requiring the wholesale liberalisation of telecoms. Local Loop Unbundling (LLU), for example, requires telecommunications incumbents (telephone, cable and internet) to physically disconnect their exchange lines from their networks to enable connections by new entrants. Similarly, some mobile telephone communications networks are required to offer access on a wholesale basis to mobile network providers at a fair price. These competition-friendly measures have had some desirable outcomes: within a few decades, the French telecommunications industry transitioned from a single, government-controlled incumbent (France Télécom) to a highly competitive market in which private providers compete to offer a broad range of quality services at comparatively low prices.

Another example of infrastructure sharing is the deregulation of US energy markets prompted by federal legislative and regulatory initiatives.<sup>31</sup> The regulators of participating states facilitated the break-up of vertically integrated utility monopolies by requiring local distributors to open their lines to private electricity generators.

### The challenges of trying to encourage competition

- Infrastructure sharing may not provide sufficient incentives for owners to maintain a high-quality network. This boils down to setting a regulated access price that adequately compensates the owners for the capital costs of maintaining infrastructure. If done right, such mechanisms may encourage competition

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31 These initiatives include the Public Utility Regulatory Policies Act (1978), which required utilities to buy power on a wholesale basis from unaffiliated producers, and the National Energy Policy Act (1992), which, among other things, created various incentives to facilitate the development of deregulated energy markets. Another key impetus was 1996 orders by the Federal Energy Regulatory Commission (FERC) designed to eliminate abusive price-setting practices by, for example, establishing a system of transmission tariffs that allow generators to access utilities’ transmission services on the same terms as the utility itself and requiring open access to real-time transmission information. For a helpful discussion, see *Evolution of Electric Industry Structure in the U.S. and Resulting Issues*, Navigant Consulting, report prepared for the Electric Markets Research Foundation, 2013.

in industries with natural scale economies while sidestepping the entry barriers (and waste) associated with replicating costly infrastructure. Such mechanisms tend to work well in markets with homogeneous products, such as electricity or data transmission. However, similar ideas might be adapted to other industries where concerns about vertical integration are becoming more prominent, such as media and internet commerce.

- More generally, efforts to harness competitive forces could have some of the same downsides as the rules-based approaches aimed at limiting abuses of market power; notably, they require detailed industry-specific rules. The major benefit of this approach is that in principle, it directly enhances competition, rather than accepting a lack of competition and attempting to manage the side effects. These alternatives could be less disruptive to incumbents in the industries affected, with more immediate positive consequences than heightened regulatory scrutiny of mergers and without imposing fixed costs that discourage new entrants.

### Pro-competitive macroeconomic policies

Another approach is to implement economic policies that encourage competition across the economy. For example, investment tax credits could counterbalance some of the disincentives faced by prospective new entrants to an industry characterised by dominant incumbent firms. The US Tax Cuts and Jobs Act of 2017 aimed to address this by including the immediate deduction of capital investment.

Other policies could attempt to reverse the significant, economy-wide decline in job churn. An unwillingness to change jobs enhances the position of dominant firms and suppresses wage growth. Policies that have been considered include improving the portability of employer-provided health insurance and easing zoning laws in productive cities where high housing costs deter mobility. These approaches are appealing because they require neither industry-specific rules nor the identification of specific pockets of market power.

### The challenges of designing pro-competitive policies

- Studies suggest that investment tax incentives have had mixed effectiveness and may be difficult to design in a way that targets the comparative position of entrants.
- More broadly, poorly designed policies may inadvertently bolster profits, such as by increasing the abundance of labour in areas where an employer is already dominant.

# Beyond concentration

Our analysis demonstrates the importance of looking beyond concentration when assessing the competitive landscape. Some industries where concentration has increased may remain competitive, such as the retail sector. This suggests that equity valuations and market share in retail reflect scale economies benefiting more efficient firms, rather than an abuse of market power.

However, the same does not hold for other sectors, including media. Although competition may be increasing in some parts of media, in aggregate the competitive dynamic appears to be deteriorating, which we believe is due to the increased importance of certain digital channels, where large incumbent firms have achieved dominance. The focus on competition and market power from policymakers is therefore likely to increase, evidenced by the recent creation of a Federal Trade Commission task force on competition in the tech sector.

Our analysis suggests that elevated equity valuations for some of these companies may be at risk. For example, if regulators focus on large firms buying nascent competitors, they could disrupt an important tactic used to maintain market power. Instead, we believe that their efforts should be targeted at the sectors where competition actually appears to have fallen, rather than those where concentration has risen.

## The next steps

If market concentration continues to rise, the economic consequences could be significant, with rising market power in some sectors likely to lead to even higher levels of income inequality and lower levels of growth. Corporates, investors, consumers, workers and politicians will all have to take stock of the trade-offs between short-term gains and the potential long-term effects of declining competitiveness on the economy. The more insight all stakeholders have on the true causes of market concentration, the more effective any potential remedies will be.

# Appendix A: Details about the construction of our industry panel dataset

Our industry-level data for investment rates and labour's share of income are sourced from the BEA's industry-level GDP and capital stock estimates, data on business dynamism are from the BLS's Business Employment Dynamics survey, and data for Tobin's Q and industry-level concentration are formed using data on publicly traded companies from Compustat.

Compustat estimates for each were formed by aggregating across publicly traded firms within each three-digit NAICS industry. To form the Herfindahl-Hirschman Index (HHI) for each industry in each year, we first take the dollar value of gross sales for each firm, then form a sales share by dividing this by the sum of sales for all firms in the industry. We then square these sales shares (stated in percentage terms) across all firms in the industry to obtain an HHI measure.

To form Tobin's Q, we first compute the market value of each firm's outstanding equity and debt securities, then deduct the market value of its financial assets. To convert this to a measure of Q, we divide it by the book value of the firm's nonfinancial assets as reported on the balance sheet. To form an industry-level aggregate, we weight these firm-level Q measures using the same sales shares used for the HHI.

The BLS reports quarterly estimates by industry of job gains at opening and expanding establishments and job losses at closing or contracting establishments, both as levels and as a percentage of average industry employment in the current and preceding quarters. We form our annual estimates by first summing the level estimates of job gains and losses by industry in each quarter, then converting these estimates to annual flows. To express this total industry flow as a percentage of employment, we divide it by the industry's average level of employment in the preceding year (which we back out from the second- and fourth-quarter estimates from the previous year).

Industry-level estimates from the three data sources are combined so that industry definitions are consistent for all variables. This step is necessary because industry source data from the BEA are organized by BEA industry segments, while the source data from the BLS are reported as three-digit NAICS, and our Compustat-based estimates are aggregated within each three-digit NAICS code. The BEA industry segments are somewhat more consolidated than the NAICS categories, so we can easily map from NAICS to BEA industries, but not the other way around. Hence, to impose a consistent sector view, we map from the three-digit NAICS into BEA industry segments.<sup>32</sup> To focus analysis on industries in the nonfinancial nonfarm business sector with good data coverage, our mapping excludes the financial and utilities sectors, as well as a small number of BEA sectors with insufficient representation in Compustat.<sup>33</sup> Given available annual estimates, the result is a full dataset with 38 industry sectors, covering 1992-2016.

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32 We borrow this mapping scheme from "Investmentless Growth: An Empirical Investigation," Germán Gutiérrez and Thomas Philippon, *Brookings Papers on Economic Activity*, Fall 2017, pp. 89-174.

33 The excluded BEA sectors are 230: Construction, 420: Wholesale Trade, 513: Broadcasting and Telecommunications, 514: Data Processing, Internet Publishing and Other Information Services, 531: Real Estate, 532: Rental and Leasing Services and Lessors of Intangible Assets, 550: Management of Companies and Enterprises, and 624: Social Assistance,

# About the authors

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