Causes, Consequences, and Policy Responses to Market Concentration

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ABSTRACT

I review the causes and consequences of rising concentration of market shares that is occurring in most U.S. industries. While concentration is not necessarily harmful to the economy, my assessment of the available evidence leads me to conclude that rising market concentration since the early 2000s has produced market inefficiencies. Increased barriers to entry have resulted in lower investment, higher prices, and lower productivity growth. I estimate that the associated decline in competition has likely decreased aggregate labor income in the United States by more than $1 trillion between 2000 and 2019. Policy responses should include regulatory reform, which in some instances will mean less regulation (e.g., less occupational licensing that protects incumbents in an industry) and in other instances increased regulation (e.g., with regard to business practices of two-sided digital platforms) and a renewed focus on antitrust enforcement. Finally, I review specific actions that should be taken to promote competition among two-sided, internet platforms.

* New York University, the Center for Economic and Policy Research, and the National Bureau of Economic Research. tphilipp@stern.nyu.edu. This memo builds on a research project with German Gutierrez, Callum Jones, and Matias Covarrubias, and on an extensive analysis of the U.S. economy over the past 20 years from my forthcoming book, *The Great Reversal*. I have benefitted from feedback and discussions with many people, Janice Eberly and Chad Syverson in particular. I am grateful for financial support from the Smith Richardson Foundation.

1. Introduction

The American economy is less dynamic than it used to be. Fewer jobs are being created or destroyed, fewer new firms are starting, and fewer old firms are dying (Haltiwanger, Jarmin, & Javier, 2011). The secular decline in market dynamism across U.S. sectors was first observed in the retail sector during the 1980s and has since spread to nearly all sectors of the American economy, including the high-growth, information technology sector (Decker, Haltiwanger, Jarmin, & Miranda, 2015). Declining dynamism is a troubling sign for the health of the American economy, as it may signal that market leaders have gained the ability to maintain their market position at the expense of competition, innovation, and higher productivity growth. The decline in market dynamism also coincides with increasing profits and concentration across industries (Council of Economic Advisors, 2016; Grullon, Larkin, & Michaely, 2019) and a falling labor share of income (Elsby, Hobjin, & Sahin, 2013; Karabarbounis & Neiman, 2014). Taken together, these trends suggest that rent-seeking and anticompetitive practices may be creating or reinforcing a less dynamic economy.

An important question for policymakers is the extent to which growing market concentration is a symptom of increased rent seeking, or the result of more benign factors, such as changes in the distribution of productivity across firms or a shift toward intangible assets with strong scale effects. The purpose of this memo is to shed light on this important question by reviewing recent trends in market concentration and documenting how the characteristics of many U.S. industries diverge from counterparts in Europe, Asia, and other non-U.S. markets. Finally, I discuss the policy responses to increasing market concentration.

1.1 Market Concentration Is Not Necessarily Bad

Increasing market concentration does not necessarily imply that competition is weakening. Trends in concentration reflect a complex interplay of market forces and regulatory actions, so we must better understand why a change in concentration has taken place in order to assess whether that change promotes or inhibits competition.

An increase in concentration can reflect healthy competition in the marketplace. When producers in competitive markets drive down profit margins and drive out inefficient producers, measures of concentration in that market will increase. For example, a new technology could make it easier for customers to compare prices and judge the quality of competing goods and services within an industry. Lower search costs make it harder for inefficient producers to survive. Eventually, less efficient producers will exit the market or merge with another firm, which will cause measures of concentration in that market to *increase*. Measures of productivity will also increase because the remaining firms in the market are more productive, in

aggregate. The rise of superstores and e-commerce in the retail industry exemplifies this trend. Lower search costs weeded out inefficient retailers, which led to greater concentration, price competition, and aggregate productivity (Hortacsu & Syverson, 2015). A market with low search costs might therefore be a "winner take most" marketplace, as suggested by Autor, Dorn, Katz, Patterson, and Van Reenen (2017) and Van Reenen (2018).

Increasing differences between firms on measures of productivity and relative sales might also reflect capabilities—managerial, technological, reputational—that are not easily transferred between firms. These persistent differences might be embedded in intangible assets. Intangible capital might in turn explain the decline in private investment, as argued by Crouzet and Eberly (2018).

1.2 Rising Concentration May Signal Weakening Competition

An increase in market concentration can also signal weakening competition that results from lax antitrust enforcement and rising barriers to entry. In the absence of strong antitrust enforcement, rent-seeking behavior reduces investment and innovation both because the incentives to innovate are reduced and because the resources that firms expend to prevent other firms from entering or catching up to them could have been put to more productive uses.

Numerous studies demonstrate the association between recent increases in concentration and other indications of rising market power. Firms in concentrating industries have higher profits, positive abnormal stock returns, and more profitable mergers and acquisitions (Grullon et al., 2019). The decline in competition also plays a significant role in explaining the falling labor share of income (Barkai, 2017). De-Loecker, Eeckhout, and Unger (2018) argue that markups—which is the amount by which a firm can charge for a good or service over what it costs to produce the last unit of good or service—have risen substantially since the 1980s. Gutiérrez and Philippon (2017) show that rising concentration has led to weak investment. Gutiérrez and Philippon (2018) and Gutiérrez, Jones, and Philippon (2019) argue that domestic competition has declined in many U.S. industries because of increasing entry costs, lax antitrust enforcement, and lobbying. This has led to higher prices and lower investment. In an efficient economy, capital should flow to where it is most valuable. Gutiérrez and Philippon (2019) show that this has stopped happening in recent years: Rents are not competed away by free entry any more.

Nevertheless, there are cases in which it is less clear-cut whether an observed increase in market concentration reflects efficiency gains and enhanced productivity or more pernicious anticompetitive behaviors. In particular, the returns to scale associated with two-sided technology platforms, such as Facebook and Google, are difficult to characterize. On the one hand, industry leaders can become increasingly

more efficient than their followers. However, once an industry leader has gained a dominant position, they can exploit that position to prevent competitors from entering the market, and thereby increase their economic rents. Thus, the final assessment of the merits and drawbacks of concentration in the high-tech industry should depend on whether or not an increase in concentration is associated with rising wages, investment, and productivity growth.

2. Survey of Recent Trends

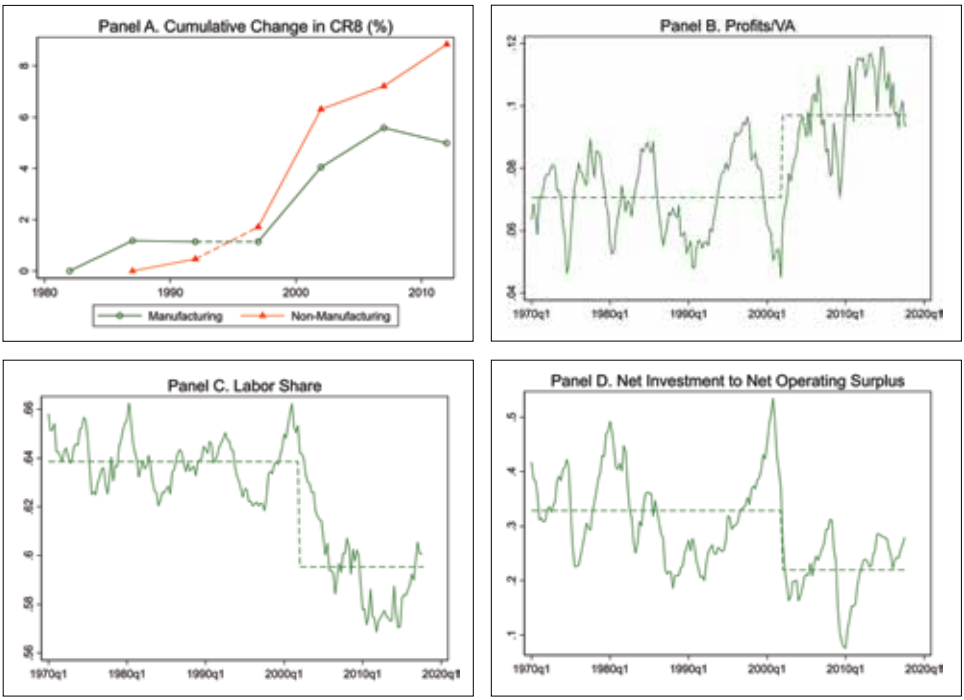
2.1 Aggregate Trends

Figure 1 illustrates that concentration and profits have increased in the United States, while the labor share of income and private investment have declined (Grullon et al., 2019; Autor et al., 2017; Gutiérrez & Philippon, 2017). Panel A shows the sales-weighted average change in the eight-firm Concentration Ratio (CR8), which measures the market share of the eight largest firms in an industry, across manufacturing and non-manufacturing sectors. Concentration has been growing at an accelerated pace in the non-manufacturing sector over time. Panel B shows that the profit rate, which is the ratio of after-tax corporate profits to value added (i.e., Gross Domestic Product), has risen from an average of 7% between 1970 and 2002 to an average of 10% in the period since 2002. Panel C shows the decline in the labor share of income over time by about 5 points of GDP. Finally, Panel D shows the ratio of net investment to net operating surplus. Firms used to reinvest about 30 cents of each dollar of profits. Now they only invest 20 cents on the dollar, which accounts for the weakness of corporate investment in recent years.

Figure 2 illustrates that these patterns are unique to the United States. Panel A shows that profits increased only in the United States while in Europe and other advanced Asian economies (Japan and South Korea) they remained stable or even declined. Panel B shows that concentration increased in the United States, while it remained roughly stable in Europe and Asia.[1] Panel C shows that the labor share has declined in the United States since 2000, but it has remained stable in Europe. Assuming that all advanced economies use similar technologies, the uniqueness of U.S. trends suggests that technology alone cannot explain them.

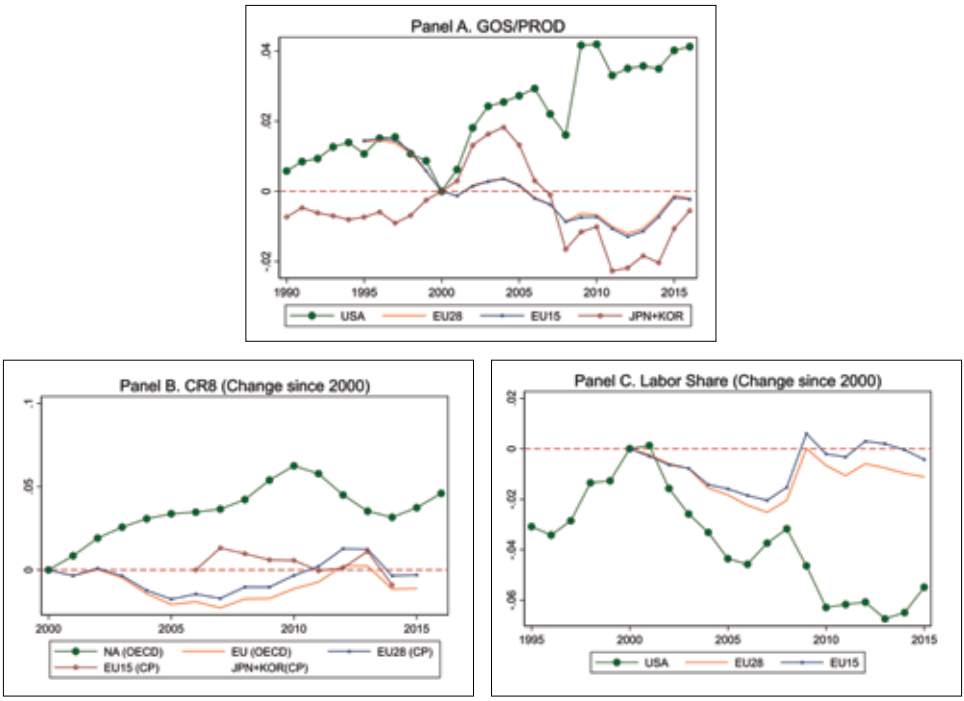
1 For this figure, we measure concentration as the ratio of sales by the eight largest firms in Compustat that belong to a given KLEMS industry x region to total Gross Output reported in OECD STAN. Corporate consolidation is therefore accounted for, as dictated by accounting rules. The appendix provides additional details on the calculation, while Gutiérrez and Philippon (2018) provide a detailed comparison across a wide range of concentration measures for the United States and Europe. Bajgar, Berlingieri, Calligaris, Criscuolo, & Timmis (2019) use ORBIS data to include private firms; and take into account that some firms are part of larger business groups. When they measure concentration at the business group-level within two-digit industries, they find a moderate increase in concentration in Europe, with the unweighted average CR8 increasing from 21.5% to 25.1%. In North America, CR8 increases from 30.3%– 38.4%.

Figure 1. Evolution of U.S. Concentration, Profits, Labor Shares, and Investment



Notes: Panel A based on the cumulative sales-weighted average change in eight-firm Concentration Ratio (CR8). Data from the U.S. Economic Census based on SIC-four codes before 1992 and NAICS-six codes after 1997. We include only those industries that are consistently defined over each 5-year period, so that no change is measured from 1992 to 1997. When multiple tax groups are reported, only taxable firms are included. CR8 equals the market share (by sales) of the eight largest firms in each industry. Panels B, C, and D are based on quarterly data for the Non-Financial Corporate sector from the Financial Accounts of the United States, via FRED. Profit rate is defined as the ratio of After Tax Corporate Profits with IVA and CCAdj to Value Added (series W328RC1A027NBEA and NCBGVAA027S, respectively). Labor Share is defined as the ratio of compensation of employees (NCBCEPQ027S) to gross value added (NCBGVAQ027S). NI/OS is defined as the ratio of net investment (gross fixed capital formation minus consumption of fixed capital, series NCBGFCA027N minus NCBCFCA027N) to net operating surplus (series NCBOSNQ027S). Dotted lines show the average of the corresponding series before and after 2002 (which is the year where we have the census concentration measure in Panel A).

Figure 2. Profits, Concentration, and Labor Shares Across Advanced Economies

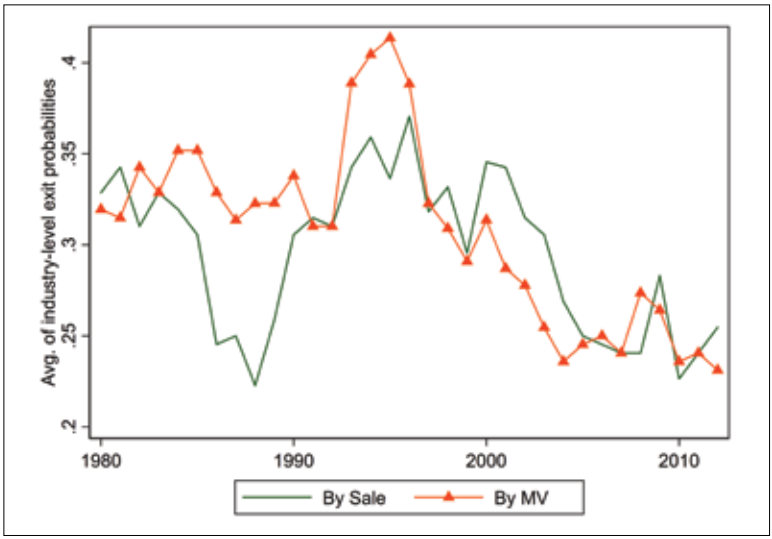


Notes: Gross Operating Surplus divided by Productivity (GOS/PROD) and for Non-Agriculture business sector excluding Real Estate, from OECD STAN. Change in eight-firm Concentration Ratio (CR8) for Non-Agriculture business sector excluding RE, based on Compustat but adjusted for coverage using OECD STAN. CR8 for Japan + Korea reported only since 2006 because Compustat coverage increases rapidly beforehand. Change in labor share for Market Economy, from EU KLEMS. See data appendix for details.

2.2. Turnover Among Market Leaders Has Declined

Simple measures of market concentration cannot tell us whether concentration stems from good (more productive) or bad (less productive) factors. Instead, many economists prefer to use alternate measures of market power, such as the one proposed by Covarrubias, Gutiérrez, and Philippon (2019), which measures the turnover of market shares and market leadership within industries. In particular, it measures the probability that a firm that is at the top of its industry today—defined as being in the top four firms or top 10% of market value—will drop out of that position within the next 5 years. Figure 3 demonstrates that the likelihood of a leader being replaced was 35% in the 1980s, increased to 40% at the height of 1990s dot-com bubble, and subsequently declined to only 25% today.

Figure 3. Turnover of Leaders by Sale and Market Value



Source: Compustat NA, following BEA industries. Only industry-years with five or more firms are included.

2.3 Airlines and Telecoms: Weak Antitrust and Bad Concentration

Until the 1990s, U.S. markets were more competitive than European markets. Today, however, European markets have lower concentration, lower excess profits, and lower regulatory barriers to entry. Two U.S. industries in particular exemplify the evolution of concentration and markups over time: airlines and telecoms. Figure 4 plots the evolution of markups and concentration for the telecom and transportation/air industries, respectively. While the two measures exhibit little, even negative, correlation before 2000, both rise sharply after that year. This is consistent with the cross-country analyses of Gutiérrez and Philippon (2018), which show that concentration explains a significant share of price differences across countries in recent years.

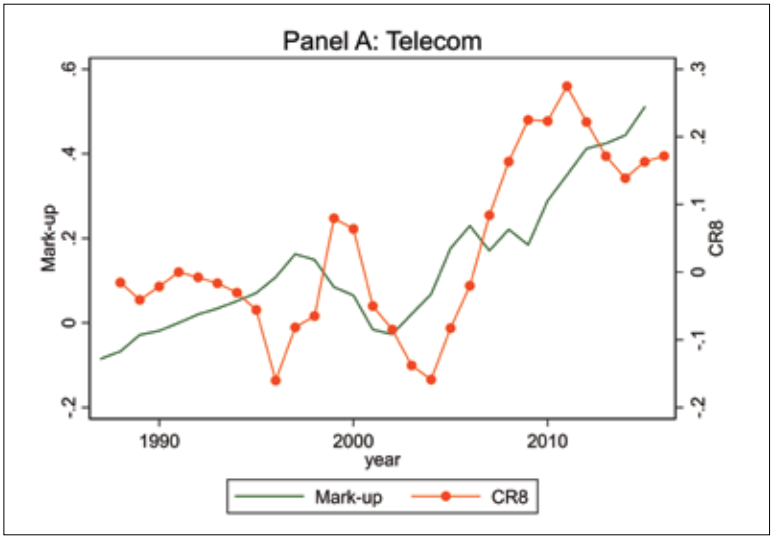
The United States used to be a leader in internet access. Nearly 20 years ago, Economides (2002) observed that one of the key reasons for Europe's lag in internet adoption was the fact that in most countries, unlike the United States, consumers were charged per minute for local calls. As a result, access to the internet was more expensive in Europe than in the United States.

Things have changed dramatically over the past 20 years, however. In 2018 the average monthly cost of fixed broadband was nearly twice as expensive in the

United States ($68) compared to Europe, where costs ranged from $30 to $40 in most countries (Best Broadband Deals, 2019).[2]

Air transportation is another industry in which the United States has fallen behind Europe in market competition. The rise in U.S. concentration and profits aligns closely with a controversial merger wave that included Delta-Northwest (2008), United-Continental (2010), Southwest-AirTran (2011), and American-US Airways (2014). Today, European airlines are far more competitive than U.S. counterparts along measures of both concentration and prices.

Figure 4. Change in Markup and Concentration Since 1991: Airlines and Telecom



Source: Compustat BLS multifactor tables for markups. Compustat for import-adjusted concentration.

2.4 Foreign Competition

Globalization has fundamentally reshaped the structure of American industries exposed to foreign competition. A large literature documents these effects. Capital-intensive plants and industries are more likely to survive and grow in the wake of import competition (Bernard, Jensen, & Schott, 2006). Chinese import competition leads to increased technical change within firms and a reallocation of employment toward more technologically advanced firms (Bloom, Draca, & Van Reenen, 2015).

2 South Korea and Japan were similar to Europe. The authors of the report are puzzled by U.S. prices and conclude that "while broadband in the United States is widely available and uptake is high, lack of competition in the marketplace means Americans pay far more than they should, compared to much of the rest of the world." Faccio and Zingales (2017) estimate that U.S. consumers would gain $65 billion a year if U.S. mobile service prices were in line with German ones.

Research and development (R&D)-intensive firms are better able to cope with Chinese competition than low-R&D firms (Hombert & Matray, 2014). Markups decreased in industries affected by foreign competition (Feenstra & Weinstein, 2017).

Common measures of concentration only include domestic firms, but this can be misleading when trade represents a significant share of an industry's output. Figure 5 shows the normalized number of firms in industries with high- and low-Chinese import exposure relative to the year 1991.[3] Both groups trend together before 2001, but start to diverge after that point, which is when China entered the World Trade Organization (WTO).

Global trade creates a challenge for naive measures of concentration. If we only count domestic firms, we could falsely conclude that concentration has increased when domestic concentration has simply responded to the increasing presence of foreign competitors in the United States. In Covarrubias et al. (2019), we present measures of concentration that control for imports. This trade adjustment plays a significant role in about half of manufacturing industries, which represent less than 10% of the economy. So, while adjusting for trade is important for those sectors, it does not change the conclusion that industries have become more concentrated.

Figure 5. Number of Firms by Chinese Exposure (1991=1)

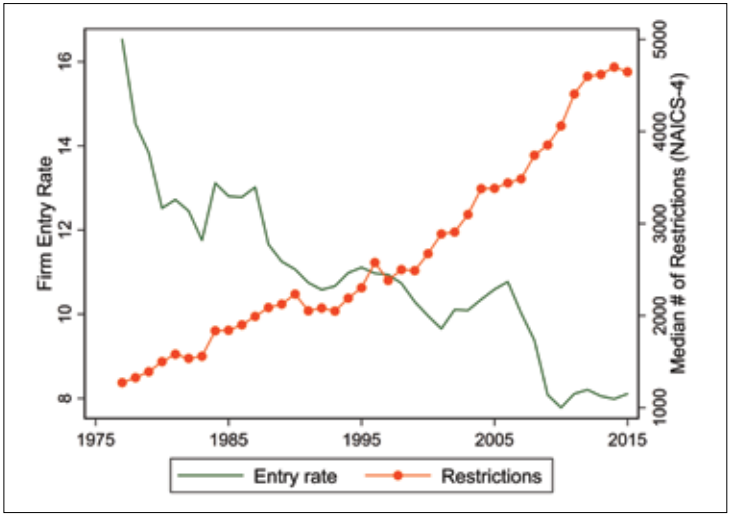
Notes: Annual data. Number of firms from Compustat; import penetration (IE) based on NBER-CES and Peter Schott's data. Manufacturing industries only, split into "high" (above-median) and "low" (below-median) exposure based on import penetration from 1991 to 2015. See data appendix for details.

3 We follow Autor, Dorn, Hanson, Pisano, and Shu (2016) and define import penetration for industry *j* at time *t* as $\Delta IP_{jt} = \frac{\Delta M_{jt}^{UC}}{Y_{j,91}+M_{j,91}-E_{j,91}}$, where ΔM_{jt}^{UC} denotes the change in U.S. imports from China from 1991 to *t*; and $Y_{j,91} + M_{j,91} - E_{j,91}$ denotes the initial absorption (defined as output, $Y_{j,91}$, plus imports, $M_{j,91}$, minus exports, $E_{j,91}$). $Y_{j,91}$ is sourced from the NBER-CES database; while $M_{j,91}$ and $E_{j,91}$ are based on Peter Schott's data. Only NAICS level six industries where data are available across all sources are included in the analyses. See also Pierce and Schott (2016).

2.5 Barriers to Entry Have Increased

The secular decline in firm start-ups has coincided with the sizeable increase in the number and stringency of federal regulations in the United States. Figure 6 uses data from the RegData database, which aims to measure regulatory stringency at the industry-level.[4] It relies on machine learning and natural language processing techniques to count the number of restrictive words or phrases such as 'shall', 'must,' and 'may not' in each section of the Code of Federal Regulations and assigns each instance to an industry.[5,6] Burdensome federal regulation can be problematic if market leaders are able to co-opt the regulatory regime to increase the barriers to entry in their industry.

Figure 6. Regulation Index and Firm Birth Rate



Source: Firm entry rates from Census' Business Dynamics Statistics. Regulatory restrictions from RegData. See text for details.

4 Introduced in Al-Ubaydli and McLaughlin (2015)

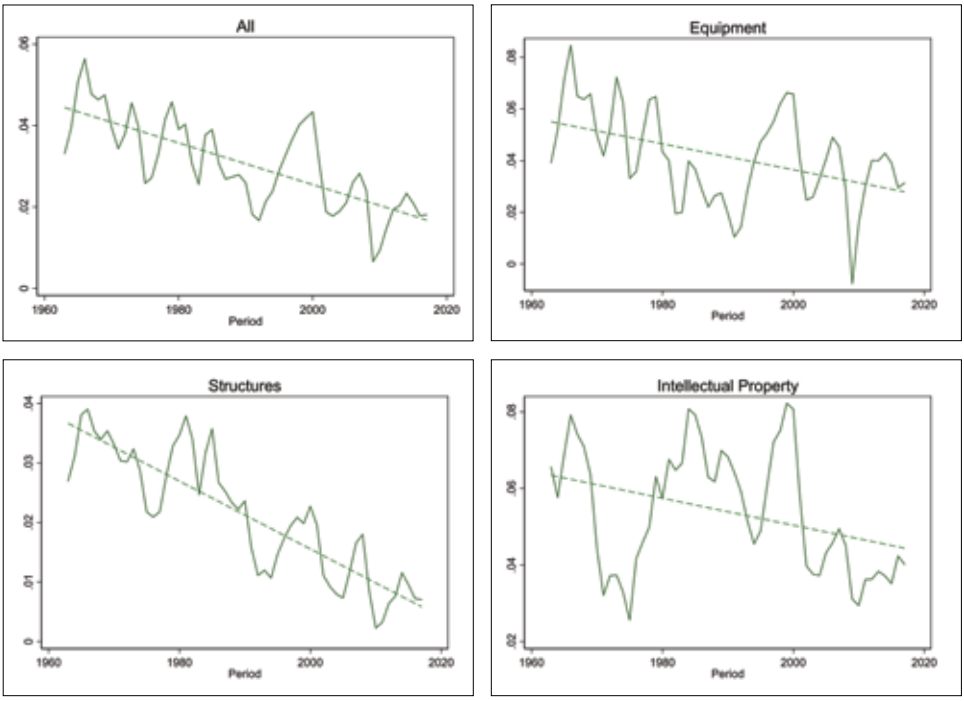
5 This represents a vast improvement over simple measures of "page counts," but it is still far from a perfect measure. Goldschlag and Tabarrok (2018) provide a detailed discussion of the database and its limitations, including several validation analyses that, for example, compare RegData's measure of regulatory stringency to the size of relevant regulatory agencies and the employment share of lawyers in each industry. Goldschlag and Tabarrok (2018) conclude that "the relative values of the regulatory stringency index capture well the differences in regulation over time, across industries, and across agencies." One limitation is that the main RegData database covers only federal regulation. State and local governments also have regulatory responsibilities which further add to the regulatory burden. It is hard to summarize the scale or growth of state and local regulation, but the increase has also been significant. Occupational Licensing is an area that has received substantial attention.

6 One limitation is that the main RegData database covers only federal regulation. State and local governments also have regulatory responsibilities which further add to the regulatory burden. It is hard to summarize the scale or growth of state and local regulation, but the increase has also been significant. Occupational Licensing is an area that has received substantial attention. Council of Economic Advisors (2016), for example, show that the share of workers required to obtain a license increased from under 5% in the 1950s to over 25% in 2008—in large part because of greater prevalence of licensing requirements at the state-level.

2.6 The Growth of Intangible Assets?

Crouzet and Eberly (2018) argue that the rise of intangible capital—such as software, intellectual property, brand, and innovative business processes—can explain some of the weakness in physical capital investment since 2000. It is important to emphasize, however, that investment has been weak in all asset classes, including intangible assets. Figure 7 shows that the growth of the capital stock has fallen across all asset types since 2000. The shift toward intangible expenditures is clearly present across all advanced economies, as shown in Covarrubias et al. (2019). Profits, on the other hand, have only increased in the United States. In the other regions, they have remained flat or even declined.

Figure 7. Growth Rates of Capital Stock



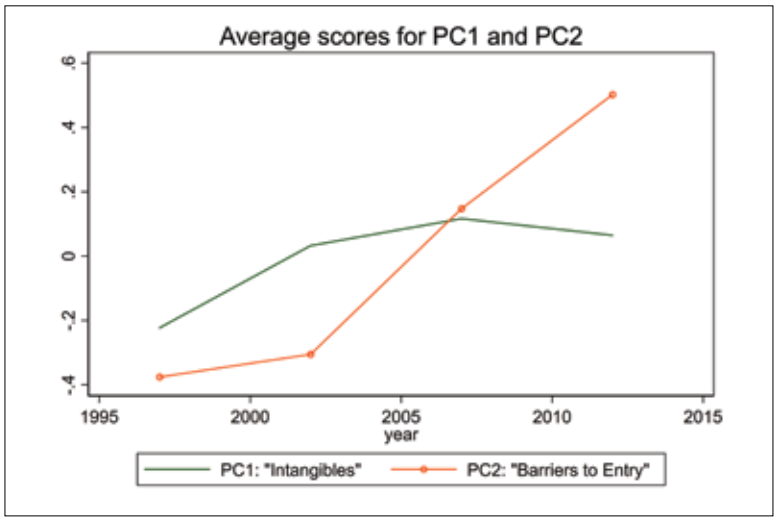
Notes: Growth rate of private nonresidential fixed assets; based on section 4.2 of the BEA's fixed assets tables

3. Policy Implications

3.1 From Good to Bad Concentration

Increasing concentration can be a good or a bad sign for the health of a competitive market. If it is good, then concentration should be associated with *lower* prices and *higher* productivity. If bad, concentration would be associated with *higher* prices and *lower* productivity. Covarrubias et al. (2019) construct a dozen indicators of prices, productivity, investment, and concentration and show that two main factors—called "principal components"—explain the evolution of these various indicators.

Figure 8. Evolution of the Good and Bad Concentration



Source: Covarrubias et al. (2019)

Figure 8 plots the scores of the two factors over time: The first measure (PC1) captures the data that is consistent with the idea that intangibles drive concentration. The measure will increase if intangible investment and productivity are higher. The second score (PC2) captures the data that is consistent with the argument that there are rising barriers to entry and weakening antitrust enforcement in the United States. We find that both theories are important for explaining the evolution of U.S. industries over the past 20 years, but the relative importance of each measure has changed over time. In the 1990s and until the early 2000s, we find that the intangibles explanation dominates. However, barriers to entry and weakening antitrust enforcement become increasingly important after the mid-1990s.

3.2 Welfare Losses From Lack of Competition

I estimate that markups in the United States have increased by about 12% since 2000 (see Appendix A for calculations). Such an increase in markups implies that wages and consumption are at least 10% below their potential. With a simple, back-of-the-envelope calculation, I estimate the amount by which higher markups have lowered labor income. Since U.S. GDP is about $20 trillion, and labor income is about 60% of GDP, labor income is about $1.44 trillion. Thus, increasing markups in the United States have lowered labor income by about $1.44 trillion. A return to the level of competition that prevailed in the United States in the late 1990s would add about $1.44 trillion to labor income in the United States.

3.3 Applying the Good Concentration/Bad Concentration Framework

The overarching goal of policy should be to let good concentration happen and to reverse or prevent bad concentration.

Policy should restore competition in markets where it has declined significantly (air travel, telecoms) and reverse the trend toward increasing barriers to entry and anticompetitive regulations at the federal and state levels.

The tools to do so are mostly regulatory, but antitrust policy could also play a role. The details vary from one industry to the next, but here are some concrete examples:

- *Airlines:* Successful reforms in recent years in Europe have improved the allocation of takeoff and landing slots. Slots are now reserved for newer, younger, and smaller carriers at major airports.
- *Regulations:* At the state level, there should be more legislation like the Ice Cream Freedom Bill. This refers to the bill passed in Arizona that loosens licensing requirements for mom-and-pop restaurants that make their own small-batch ice cream. Arizona recently changed its laws to recognize out-of-state occupational licenses for more than 40 professions, from cosmetologists to surgeons.
- *Telecoms:* French households, on average, can choose from five internet providers for their home internet. American households, on average, have 1.5 choices, that is, half of households have two choices, while the other half have only one provider available to them. See Gutiérrez and Philippon (2018) for a discussion of reforms in Europe.
- *Legal professions:* Licensing and other requirements in the U.S. legal profession prevent markets from being competitive. Bar requirements should be transferable across U.S. states.

- *Health care:* The health-care industry is rife with concentration that reflects anticompetitive practices that are driven by an arms' race mentality for greater market power. Each player in the industry (drug makers, insurers, health providers) reacts to an increase in market concentration among industry counterparts by lobbying to obtain even greater market power for itself.

These examples are relatively straightforward in the sense that it is relatively easy to argue that concentration in these industries has led to losses in consumer welfare.

As we have seen, however, productivity gains and winner-take-all dynamics can lead to an efficient form of concentration. This is more likely to be the case when concentration comes together with large investments in intangible assets and technologies that feature increasing returns to scale. This is also why the analysis of digital platforms is complex and requires a separate discussion.

3.4 Concentration and Competition in the Digital Economy

Can we apply the good vs. bad concentration framework to the digital economy? Yes, but we need to clarify two important issues.

First, we must clarify whether a consumer welfare paradigm is still the right one to apply to two-sided, technology platforms such as Facebook, Amazon, and Google. These firms are described as "two-sided" because they do not charge consumers for the use of the platform, but rather earn revenue by charging merchants (e.g., advertisers, retailers, etc.) for access to consumers via their platform. A naive interpretation of the consumer welfare standard would lead one to conclude that consumers cannot possibly be worse off since access to the platform for consumers is free, many services are also offered to consumers for free (e.g., Gmail), and the price of goods that are sold are often lower than those of competitors (e.g., Amazon Prime).

However, it would be incorrect to equate consumer welfare with short-term price decreases. In standard economics, consumer welfare is the sum of all future consumer surpluses. If a firm engages in predatory pricing today to later raise prices, consumer welfare is likely to decrease over the long-run. When a platform uses its monopsony power against producers, it limits their incentives to invest and innovate, and thus consumer welfare declines. For instance, Amazon monitors its own marketplace to determine which products are popular; it has the opportunity to use this data to introduce copycat products that undercut the original seller. This could deter producers from innovating, and in that case, it could result in lower consumer welfare. Policymakers should seek to maximize consumer welfare, as defined in the economic sense rather than in a naive legal sense that only considers short-run price changes.

Second, the stars of the digital economy—Amazon, Google, Facebook, Apple, and Microsoft (GAFAMs for short)—are not as "special" as one might think. In my book

(Philippon, 2019), I compare the star firms of the U.S. economy from each decade since World War II. I find that there have always been stars, and they have always been productive, innovative, and profitable. Along all quantitative dimensions, including profit margins and productivity, the stars of today look quite similar to the stars of the past. If anything, they are smaller than market leaders of the past, and they matter less for overall GDP growth than General Motors, IBM, or AT&T did at their peak. An important implication of these facts is that, to paraphrase Jane Austen, the GAFAMs deserve neither such praise nor such censure. As far as regulations and antitrust policy are concerned, they should be assessed and treated just like other firms.

3.5 Good Concentration/Bad Concentration in the Digital Economy

Concentration in the digital economy creates two conceptually separate issues: One is market dominance; the other is privacy. The stars of the digital economy—Amazon, Google, Facebook, Apple, and Microsoft—combine features of good and bad concentration as defined above, which contributes to the controversies surrounding these firms. On the one hand, they clearly enjoy high market shares and outsized profits and work aggressively to maintain their dominant positions. The platforms they operate are less than transparent and present the potential for conflicts of interest when the firm running the platform also sells goods and services on that platform. On the other hand, they are very innovative and they "give away" some services for "free," adding to short-term consumer utility as discussed above.

The range of options for addressing increased market dominance of these firms is quite broad, ranging from a laissez-faire approach to breaking up these firms. A laissez-faire approach might be in the best interest of U.S. policymakers, since these firms are profitable for U.S. shareholders but charge high markups in foreign markets, which results in a welfare loss for foreign consumers. Of course, foreign governments are likely to object to the United States taking a laissez-faire approach, rational as such an approach might have been until recently.

At the other extreme, some advocates argue technology monopolies should be broken up. This approach presents two challenges: First, the goal of such a break-up needs further clarification. Is the goal to address market dominance or privacy concerns? Second, breaking up these firms would take a long time.

There are several options that fall on the spectrum between laissez-faire and break-ups that policy makers should consider. These options are similar to those taken in the telecom industry in earlier decades.

- First, platforms should be required to be interoperable, which refers to the ability of a platform to exchange information with other networks. For example, a user cannot easily move information between their Facebook and Twitter profiles. This is analogous to the requirement that customers of

one phone company be able to place a call to customers of another phone company. Today, we take for granted that any phone user can call any other phone user anywhere, but this outcome did not happen spontaneously. It was mandated by regulators. The lack of interoperability between networks today is often a choice made by the dominant network to protect its dominant position.

- Second, data portability should be expanded. Users should be able to move their data from one network to another network. This is the equivalent of the rule that phone users may switch between providers while keeping their phone numbers, which lowers switching costs and increases competition.
- Third, users should have the ability to opt out of horizontal tracking. Google and Facebook are the only companies able to track users on millions of websites today, and this gives them a rich trove of data about each user that can be used to improve ad targeting, giving platforms a significant advantage over other online sellers. Users should be allowed to opt out of horizontal tracking on third-party websites.
- Fourth, conflicts of interests should be minimized across platforms, as Lina Kahn recently called for (2019). In the case of Apple, the controversy concerns its App Store, where prices are hidden and rules are obscure. In the case of Amazon, the platform serves simultaneously as a market place and a merchant, which makes it easy for the company to undercut the prices of competitors or give more favorable product placement to its own products. In the case of Google and Facebook the debate concerns the platforms' power to prioritize some websites over others.

The final point to keep in mind is that competition matters for privacy because of the incentives that it creates. It is not by chance that Facebook started to disregard privacy issues when it felt assured of its monopoly power. Facebook initially promised not to use cookies to track people on third-party sites but reneged on that promise when it became the only dominant social network. The same applies to the other large digital firms. Competition implies that customers can vote with their feet—if they are dissatisfied with privacy issues on one platform they can switch to another. This threat provides a powerful incentive for firms to protect the privacy of their users.

4. Conclusion

Simple measures of industry concentration reveal that the market shares of dominant firms are increasing in most U.S. industries. While concentration is not necessarily harmful to the economy, my assessment of the available evidence leads me to conclude that rising market concentration since the early 2000s has produced market inefficiencies. Dominant firms have succeeded in increasing barriers to

entry, which has resulted in lower investment, higher prices, and slower productivity growth. Policy options should include deregulation at the federal and state level and a renewed focus on antitrust enforcement. In the case of two-sided, internet platforms, the starting point should be enforcing regulations that would give users greater control of their data and promoting the interoperability of platforms, which would be analogous to regulations in the telecom industry.

Appendix

To estimate the size of the markup increase over time, consider a standard profit-maximizing economy, and rewrite the markup μ of price P over marginal cost MC by multiplying and dividing by average costs:

$$\mu = \frac{P}{MC} = \frac{P}{AC}\frac{AC}{MC} = \frac{AC}{MC}\frac{Revenue}{Cost}$$

The ratio of average to marginal costs, $\frac{AC}{MC}$, equals the returns to scale for a cost-maximizing firm taking factor prices as given while $\frac{Revenue}{Costs}$ can be written as $\frac{1}{1-s\pi}$ using the profit share in revenues s_π. There are many estimates of these numbers in the literature. In Covarrubias et al. (2019) we argue that returns to scale have increased by about 5% (say from 1 to 1.05). On the other hand, profits shares of revenues have increased from 2% to 8%. Thus:

$$\frac{\mu_2}{\mu_1} = \frac{1 - 0.02}{1 - 0.08}1.05 = 1.1185$$

The data is thus consistent with an increase in markups by about 12%. This is also in line with a direct comparison of prices and unit labor costs between Europe and the United States, as documented in Gutiérrez and Philippon (2018).

References

Al-Ubaydli, O., & McLaughlin, P. A. (2017). RegData: A numerical database on industry-specific regulations for all United States industries and federal regulations, 1997–2012. *Regulation & Governance*, 11(1), 109–123. https://doi.org/10.1111/rego.12107

Autor, D., Dorn, D., Hanson, G., Pisano, G., & Shu, P. (2016). *Foreign Competition and Domestic Innovation: Evidence from U.S. Patents* (Working Paper No. 22879). National Bureau of Economic Research. Retrieved from https://econpapers.repec.org/paper/nbrnberwo/22879.htm

Autor, D., Dorn, D., Katz, L. F., Patterson, C., & Van Reenen, J. (2017). *Concentrating on the Fall of the Labor Share* (No. dp1476). Retrieved from Centre for Economic Performance, LSE website: https://ideas.repec.org/p/cep/cepdps/dp1476.html

Bajgar, M., Berlingieri, G., Calligaris, S., Criscuolo, C., & Timmis, J. (2019). *Industry Concentration in Europe and North America* (No. 18). Retrieved from OECD Publishing website: https://ideas.repec.org/p/oec/ecoaac/18-en.html

Barkai, S. (2017). *Declining Labor and Capital Shares.* Retrieved from London Business School website: https://home.uchicago.edu/~barkai/doc/BarkaiDecliningLaborCapital.pdf

Bernard, A., Jensen, J., & Schott, P. (2006). Survival of the best fit: Exposure to low-wage countries and the (uneven) growth of U.S. manufacturing plants. *Journal of International Economics*, *68*(1), 219–237. Retrieved from https://econpapers.repec.org/article/eeeinecon/v_3a68_3ay_3a2006_3ai_3a1_3ap_3a219-237.htm

Best Broadband Deals June 2019 | Compare Broadband Offers - Cable.co.uk. (n.d.). Retrieved June 28, 2019, from Cable website: https://www.cable.co.uk/broadband/

Bloom, N., Draca, M., & Van Reenen, J. (2016). Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity. *The Review of Economic Studies, 83*(1), 87–117. https://doi.org/10.1093/restud/rdv039

Council of Economic Advisors. (2016). *Benefits of Competition and Indicators of Market Power* [Issue Brief]. Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160414_cea_competition_issue_brief.pdf

Covarrubias, M., Gutiérrez, G., & Philippon, T. (2019). *From Good to Bad Concentration? U.S. Industries over the past 30 years* (Working Paper No. 25983). National Bureau of Economic Research. https://doi.org/10.3386/w25983

Crouzet, N., & Eberly, J. (2018). *Understanding Weak Capital Investment: the Role of Market Concentration and Intangibles* [Technical Report]. Retrieved from Federal Reserve Bank of Kansas City website: https://www.kellogg.northwestern.edu/faculty/crouzet/html/papers/IntangiblesInvestmentConcentration_latest.pdf

De Loecker, J., Eeckhout, J., & Unger, G. (2018). *The Rise of Market Power and the Macroeconomic Implications*. Retrieved from http://www.janeeckhout.com/wp-content/uploads/RMP.pdf

Decker, R. A., Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2015). *Where Has All the Skewness Gone? The Decline in High-Growth (Young) Firms in the U.S* (No. 15–43). Retrieved from Center for Economic Studies, U.S. Census Bureau website: https://ideas.repec.org/p/cen/wpaper/15-43.html

Economides, N. (2003). *Us Telecommunications Today* (SSRN Scholarly Paper No. ID 408160). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=408160

Elsby, M. W. L., Hobjin, B., & Sahin, A. (2013). *The Decline of the U.S. Labor Share.* Retrieved from The Brookings Institution website: https://www.brookings.edu/bpea-articles/the-decline-of-the-u-s-labor-share/

Faccio, M., & Zingales, L. (2017). *Political Determinants of Competition in the Mobile Telecommunication Industry* (No. 11794). Retrieved from C.E.P.R. Discussion Papers website: https://ideas.repec.org/p/cpr/ceprdp/11794.html

Feenstra, R. C., & Weinstein, D. E. (2017). Globalization, Markups, and US Welfare. *Journal of Political Economy, 125*(4), 1040–1074. https://doi.org/10.1086/692695

Goldschlag, N., & Tabarrok, A. (2018). Is regulation to blame for the decline in American entrepreneurship? *Economic Policy, 33*(93), 5–44. https://doi.org/10.1093/epolic/eix019

Grullon, G., Larkin, Y., & Michaely, R. (2019). *Are U.S. Industries Becoming More Concentrated*. Retrieved from https://pdfs.semanticscholar.org/138f/249c43bfec315227a242b305b9764d57a0af.pdf

Gutiérrez, G., Jones, C., & Philippon, T. (2019). *Entry Costs and the Macroeconomy* (Working Paper No. 25609). National Bureau of Economic Research. Retrieved from https://ideas.repec.org/p/nbr/nberwo/25609.html

Gutiérrez, G., & Philippon, T. (2017). Investment-less growth: An empirical investigation. *Brookings*. Retrieved from https://www.brookings.edu/bpea-articles/investment-less-growth-an-empirical-investigation/

Gutiérrez, G., & Philippon, T. (2018). *How EU Markets Became More Competitive Than US Markets: A Study of Institutional Drift* (Working Paper No. 24700). National Bureau of Economic Research. Retrieved from https://ideas.repec.org/p/nbr/nberwo/24700.html

Gutiérrez, G., & Philippon, T. (2019). *The Failure of Free Entry* (Working Paper No. 26001). National Bureau of Economic Research. Retrieved from https://econpapers.repec.org/paper/nbrnberwo/26001.htm

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2011). *Historically Large Decline in Job Creation from Startup and Exxisting Firms in the 2008-2009 Recession* [Census Bureau Report]. Retrieved from Kauffman website: https://www.kauffman.org/-/media/kauffman_org/research-reports-and-covers/2011/03/bds_report_32211.pdf

Hombert, J., & Matray, A. (2014). *Can Innovation Help U.S. Manufacturing Firms Escape Import Competition from China?* (SSRN Scholarly Paper No. ID 2542495). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=2542495

Hortaçsu, A., & Syverson, C. (2015). The Ongoing Evolution of US Retail: A Format Tug-of-War. *Journal of Economic Perspectives, 29*(4), 89–112. https://doi.org/10.1257/jep.29.4.89

Karabarbounis, L., & Neiman, B. (2014). The Global Decline of the Labor Share. *The Quarterly Journal of Economics, 129*(1), 61–103. https://doi.org/10.1093/qje/qjt032

Khan, L. (2019). *The Separation of Platforms and Commerce* (SSRN Scholarly Paper No. ID 3180174). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=3180174

Philippon, T. (2019). *The Great Reversal: How America Gave Up on Free Markets*. Retrieved from https://books.google.com/books/about/The_Great_Reversal.html?id=S6riwgEACAAJ

Pierce, J. R., & Schott, P. K. (2016). The Surprisingly Swift Decline of US Manufacturing Employment. *American Economic Review, 106*(7), 1632–1662. https://doi.org/10.1257/aer.20131578

Van Reenen, J. (2018). *Increasing Differences Between Firms: Market Power and the Macro-Economy* (No. dp1576). Retrieved from Centre for Economic Performance, LSE website: https://ideas.repec.org/p/cep/cepdps/dp1576.html