CAUSES AND CONSEQUENCES OF RISING CONCENTRATION IN THE UNITED STATES ECONOMY

Fading Stars

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A large and growing literature emphasizes the role of large firms in the economy. Large firms dominate exports, foreign direct investment, and research and development. Previous research has shown that, over the past 20 years, US firms’ profit margins have increased and US industries have become more concentrated.1 Two leading explanations have been proposed. One is that profits and concentration reflect the increasing efficiency of industry leaders (Autor et al. 2017). Another view is that domestic competition has decreased and that leaders have become more entrenched (Gutiérrez and Philippon 2017). The two explanations are not mutually exclusive, in the sense that leaders can become more efficient and more entrenched at the same time—for instance, if they use their superior information technologies and intangible assets as barriers to entry. Fundamentally, however, the two views have opposite implications for efficiency, growth, welfare, and policy.

The optimistic view is based on the idea that superstar firms are indeed becoming larger and more productive than the rest. The actual evidence, however, is weaker and more indirect than commonly acknowledged. Andrews, Criscuolo, and Gal (2015) documents an increased dispersion in output per worker between global “frontier” firms and “laggard” firms. In their data, however, the average frontier firm in manufacturing has about $50 million in revenues and 74 employees (see their table 1b). The revenues of frontier firms in services are about $80 million. These firms are not the superstars as commonly understood. Autor et al. (2017) shows that the fall in the labor share is partly explained by a composition shift toward establishments with low initial labor shares. This, by itself, does not mean that superstar firms are becoming either larger or more productive.

We look directly at superstar firms over the past 60 years in the United States. What we find contradicts the common wisdom. We show that (i) superstar firms have not become larger; (ii) superstar firms have not become more productive; (iii) and the contribution of superstar firms to overall productivity growth has actually decreased by more than a third over the past 20 years.

I. Footprint of the Stars

We start with some simple descriptive statistics. Figure 1 shows the footprint of stars in the US economy. We define star firms in two ways:

2 Discussants: Steven J. Davis, University of Chicago; Katarína Borovičková, New York University; Glen Weyl, Microsoft and Yale University.

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1 Go to https://doi.org/10.1257/pandp.20191065 to visit the article page for additional materials and author disclosure statement(s).


2 See Gutiérrez and Philippon (2019) for results using sales to define stars. Our conclusions remain stable.
Top 20 firms by market value of equity in any given year (top 20): These are economy-wide stars. The industry composition varies significantly over time. The stars of the 1950s were often manufacturing firms (GM, GE). IBM appears in the 1960s. Microsoft and Walmart appear in the 1990s. And of course, Google, Amazon, and Facebook in recent years.

Top 4 firms by market value of equity within each BEA industry (top 4 by industry): These are industry stars. By construction, the industry composition by number of firms is constant. These industry stars include most of the economy-wide stars unless a national star happens to be the fifth in an industry. This happens early in the sample, especially when including oil.

Panel A of Figure 1 shows the shares of stars in civilian employment. The top 20 employed about 4 percent of US workers in the 1960s. It decreased to about 2 percent in the late 1990s and grew back afterward, essentially because of the arrival of Walmart among the stars. The top 4 by industry is relatively more stable around 10 percent. Clearly, as far as employment is concerned, the stars are not becoming larger.

Panel B of Figure 1 shows the shares of stars in sales over GDP. For each group of stars, we report the consolidated sales and the domestic sales. The figure shows that, contrary to common wisdom, the stars have not become larger in terms of sales. For the industry stars, the foreign sales adjustment is quantitatively important.

\[ g_t^{hs} = \sum_{i \in S_t} \omega_{i,t} g_{i,t} \]

FACT 1: The economic footprint of the stars has not increased.

II. Hulten Contribution

The classic Theorem of Hulten (1978)—recently extended by Baqaee and Farhi (2018)—shows that the contribution of an individual firm to aggregate productivity growth equals its own productivity times its Domar weight. Figure 2 shows that the Hulten contribution of the stars has collapsed since 2000. The Hulten contribution is defined as the Domar weight times the firm-level increase in log sales per employee. It is a “within” contribution since it uses the initial Domar weight times future productivity growth:

3 To compute domestic sales, we subtract the industry average share of sales by foreign affiliates from the BEA’s Data on the Activities of US Multinational Enterprises. The data is available at https://www.bea.gov/international/di1usdop.

4 Figure 1 in Gabaix (2011) reports that sales of the top 50 firms are 24 percent of GDP, while the sales of the top 100 firms are 29 percent of GDP. These are consolidated firms and about one-third are exporters. Moreover, the share exported has grown over time, so we cannot rely on these numbers to assess the evolution of large firms. One should either scale global sales by global GDP or domestic sales by domestic GDP, which is what we do in this paper.

5 Our results hold with or without oil companies, but oil shocks in the 1970s create a lot of noise in reallocation measures so we choose to exclude oil and gas in our benchmark figures.
where $S_i$ denotes the set of star firms, as defined earlier. The Domar weight $\omega_{i,t}$ of firm $i$ at time $t$ is based on domestic sales: $\omega_{i,t} \equiv (1 - e_{i,t}) \frac{sales_{i,t}}{GDP_t}$, and $e_{i,t}$ is the share of sales of foreign affiliates. As a robustness check, we also use total costs instead of sales. Productivity growth is averaged over three years:

$$g_{i,t}^s \equiv \frac{\Delta \log z_{i,t} + \Delta \log z_{i,t+1} + \Delta \log z_{i,t+2}}{3} = \frac{\log z_{i,t+2} - \log z_{i,t-1}}{3},$$

where $z_{i,t} \equiv \frac{sales_{i,t}}{q_{i,t} n_{i,t}}$, where sales are deflated using BEA gross-output price indices at the industry level, $n$ is the number of employees, and $q$ is a labor quality adjustment based on relative wages. We obtain the average wage of employees in the top four firms in each industry from the census, and we define $q$ as the ratio to the average wage in the industry. This adjustment makes only a small difference to the Hulten component, but it is important for the reallocation measure, and we introduce it here to be consistent.

Figure 2 shows that superstars have played a key role in making the economy grow. Historically, they have contributed half a percent to total labor productivity growth (based on industry stars, panel B). In recent years, however, their “within” contribution to total labor productivity growth has been essentially zero. The result is the same if we use sales or total cost (appropriate under market power) as Domar weights.

**FACT 2:** The Hulten contribution of the stars has dropped from about 50 basis points per year to zero since 2000.

### III. Reallocation

The Hulten contribution assumes that revenue productivities are equalized across firms. If the stars have higher revenue productivity than other firms, then they can contribute to productivity growth simply by drawing in more resources. This is what the literature calls the reallocation effect, and the Hulten contribution would not capture it. We define the reallocation contribution of the stars as

$$g_{i,t}^r \equiv \sum_{i \in S_i} (z_{i,t} - \bar{z}_I) g_{i,t}^s,$$

where $z_{i,t}$ is labor productivity in industry $I$ at time $t$. The growth of employment is averaged over three years:

$$g_{i,t}^n \equiv \frac{\Delta \log n_{i,t} + \Delta \log n_{i,t+1} + \Delta \log n_{i,t+2}}{3} = \frac{(\log n_{i,t+2} - \log n_{i,t-1})}{3}.$$

Recall that $z_{i,t} \equiv \frac{sales_{i,t}}{q_{i,t} n_{i,t}}$ is quality adjusted. Gutiérrez and Philippon (2019) discusses two possible quality adjustments in detail. One possibility is to control for wages at the top firms relative to their industries. Alternatively, we could assume that stars poach their extra workers from other large firms. For simplicity, we use the average of the two adjusted measures.

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6One issue with this measure of growth through reallocation is that it does not distinguish between organic growth and external growth. In the case of mergers and acquisitions, it might not be valid to apply the initial productivity of the
Figure 3 shows the reallocation contribution of the stars. The reallocation contribution has become quite significant since the mid-1990s, bringing about 20 basis points of productivity growth on average. This happens at the same time as the Hulten contribution decreased.

FACT 3: The reallocation contribution of stars has increased modestly.

IV. Conclusion

Figure 4 shows the total contribution, Hulten plus reallocation, of the stars to US labor productivity growth. The blue and green lines are based on Compustat. From 1960 to 2000, it was about 72 basis points per year on average for the industry stars (33 bps for the top 20). After 2000, the contributions are only 43 basis points (19 bps for the top 20).

One might worry that large private firms are missing from Compustat. The gray line therefore uses the census’ concentration series for nonmanufacturing industries, which report sales and employment for the top 4 firms by industry. The census data exhibit similar patterns as the “top 4 by ind.” Compustat series. The level of contributions is lower because it includes a subset of industries. In fact, restricting the Compustat sample to the industries covered by the census, the series are very close to each other (see Gutiérrez and Philippon 2019).

FACT 4: The contribution of star firms to US labor productivity has decreased by about 40 percent since 2000, and it has shifted from within-firm productivity growth to reallocation driven growth.

Our results challenge the common wisdom about the stars of the new economy. There have always been star firms in the United States, and they have always been large and productive. What we show is that today’s stars are no match for yesterday’s stars.

The next question, of course, is why star firms are not contributing as much as they used to. We do not have a definite answer, but it is clear that something changed around 2000.

Perhaps ideas are becoming harder to find as in Bloom et al. (2018). Or perhaps declining competition and rising barriers to entry allowed incumbents to reduce investment and innovation, as in Gutiérrez and Philippon (2017).

In Gutiérrez and Philippon (2018), we find that the free entry condition starts to break down around 2000. The elasticity of entry with respect to profits and/or Tobin’s Q has declined over the past 30 years and is now zero. Davis (2017) argues that barriers to entry arise from excessively complex regulations. Indeed, we find rising barriers to entry from lobbying and

acquirer to the employees of the target, at least not in the short run. This can affect the decomposition of growth into the “within” Hulten part and the “between” reallocation part. We leave this question for future research.
regulations. We argue that large firms have effectively managed, via lobbying, to partly shield themselves from competition. Facing less competition, their incentives to invest and innovate decrease. Indeed, the investment rate of large and profitable firms has decreased, as their payout rate (dividends and stock buybacks) has increased. This is presumably part of the explanation.

REFERENCES


