

RESEARCH BRIEF

The Industrial Revolution in Services

Based on BFI Working Paper No. 2019-87, "[The Industrial Revolution in Services](#)," by Chang-Tai Hsieh, Phyllis and Irwin Winkelried Professor of Economics and PCL Faculty Scholar, UChicago's Booth School of Business; and Esteban Rossi-Hansberg, professor, Princeton University

KEY TAKEAWAYS

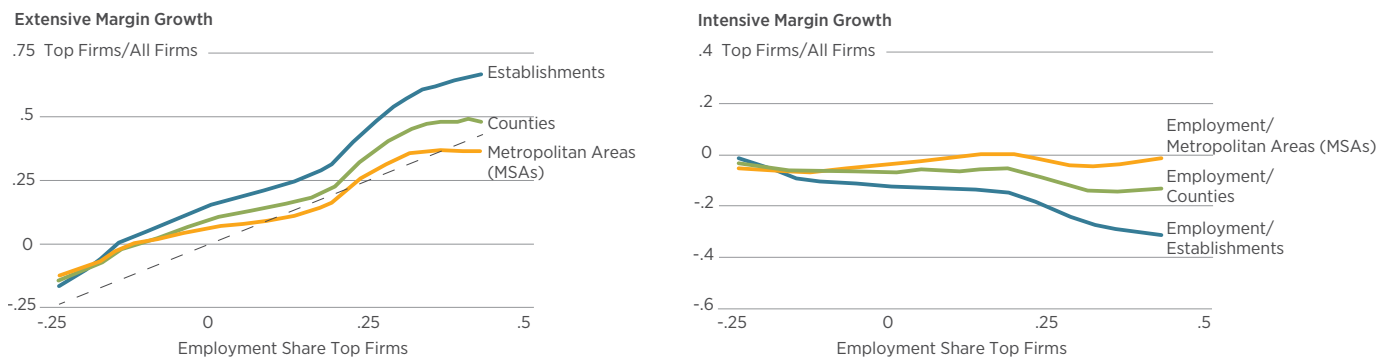
- ✓ Advances in technology and managerial techniques have revolutionized how firms in wholesale, retail, and service sectors conduct their business
- ✓ These firms are now able to expand geographically and increase their market share
- ✓ However, this increased market share within sectors, as measured by employment, is not reflected in the aggregate economy
- ✓ These firms are getting larger, but only relative to other firms in their sector

One key feature of the industrial revolution was the efficiencies gained from scale: If a company invested in the physical and human capital to produce 100 cars in one location, for example, then scaling up to 1,000 or 100,000, and so on, made sense. Production efficiencies meant it was cheaper to produce in one spot and ship worldwide.

This seems so obvious today that trying to imagine the counterfactual—tiny neighborhood auto manufacturers producing bespoke cars for picky customers—seems almost ridiculous. However, over time, that is exactly what happened with the production of everything from a cup of coffee or a Cobb salad, to healthcare and many accounting and legal services. If a consumer wanted any of those items, she likely shopped somewhere convenient where that service was delivered on the spot. Each location served a product somewhat distinct from another.

Not anymore. In recent decades, spurred in part by developments in information and communication technologies (ICT), along with important advances in management practices, the efficiencies long present in typical manufacturing sectors have emerged within wholesale, retail, and service (or non-traded) industries.

Figure 1 • Extensive vs. Intensive Margin Growth of Top Firms



Note: The left panel shows non-parametric regression of $\Delta \log \#$ of MSAs, Counties or Establishments of top 10% firms relative to all firms on $\Delta \log$ employment share of top 10% firms, both from 1977-2013. The thin solid line is a 45° line. The right panel shows non-parametric regression of $\Delta \log$ employment per MSA, County or Establishment of top 10% firms relative to all firms on $\Delta \log$ employment share of top 10% firms, both from 1977-2013.

According to UChicago Booth's Chang-Tai Hsieh and Princeton's Esteban Rossi-Hansberg in their recent paper, "The Industrial Revolution in Services," this phenomenon has driven the development of efficiencies across many non-traded sectors. Firms have incorporated new methods that have allowed them to deliver similar products across space. However, as the authors reveal, while some of these firms have grown to dominate particular sectors in terms of employment, their share of employment in the overall economy has remained stable.

"You want fries with that MRI?"

Recent decades have seen a revolution in technology that allows companies to apply information and communication in ways similar to how legacy manufacturers used physical capital to gain efficiencies of scale. Beginning in the 1980s but intensifying in recent decades, companies were able to gather and prepare large amounts of information and deliver it quickly and cheaply to franchises, subsidiaries, branches, and other affiliates around the world.

These modern advances in business management have allowed companies to more efficiently deliver such disparate products as food and health care, and everything in between. Importantly, these advances have allowed larger firms, which are typically based in bigger markets, to expand into often smaller markets. These new markets can be located in different metropolitan areas, counties, states, or even within neighborhoods that are in close proximity to the larger firm. Geography or space, in other words, was no longer a limiting factor for expansion.

To illustrate their point, the Hsieh and Rossi-Hansberg describe an analysis¹ about such seemingly disparate companies as The Cheesecake Factory and the Steward Healthcare Group of Boston to illustrate their point. In the first case, the Cheesecake Factory was able to optimize such cost factors as staffing and food purchases on a daily basis, across its many restaurants. Importantly, the company can also quickly introduce new menu items (and eliminate others) to its many restaurants from its centralized "research kitchen," allowing the chain to optimize inputs to deliver the most enticing—and efficient—menu items. Such efficiencies have played out in restaurants and other food-delivery companies across the industry.

These service-based economies of scale have also transformed the healthcare industry, where over 60 percent of hospitals are owned by for-profit chains or large research universities (four decades ago, about 85 percent of hospitals were single non-profit establishments). The case of the Steward Healthcare Group, which was formed when a private equity fund purchased six Boston hospitals in 2010, is descriptive of changes that are impacting the entire industry. Steward's goal was relatively straightforward: take the best medicine practiced in each hospital and apply it to the others so that they all operate at the same levels of efficiency for all types of care.

¹ Gawande, Atul, "Big Med," New Yorker, 2012.

What was very recently a revolutionary idea—transmitting real-time medical data to a central location that could monitor progress and provide remote counsel to doctors and patients—has become standard practice among healthcare groups throughout the industry. A doctor no longer has to be in the same room as a patient to provide care, and she also benefits from instant access to the aggregated wisdom of her fellow physicians. In the case of Steward Healthcare Group, which is similar to other such healthcare companies, such efficiencies allowed it to quickly expand to 36 hospitals in nine states and Malta—so far.

How much do such technological and managerial advances explain about the changes in service-based industries in recent decades? Are all such industries equally affected by this revolution in information and communication? What are the implications for sector concentration? To explore these and other questions, Hsieh and Rossi-Hansberg analyzed business data from 1977 to 2013, and applied a theoretical framework that, among other things, weighed the reduction in variable costs of new technologies versus the fixed cost of investing in that technology (larger fixed costs result in greater concentration). Their analysis revealed the following five facts:

- Rising concentration within sectors is only evident among top firms in three

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industries: services, wholesale, and retail, where employment share among the top 14 percent of firms increased from 67 to 73 percent between 1977 and 2013, and not in such sectors as manufacturing, where concentration has actually decreased.

- Concentration is driven by expansion into new local markets, and leads to decreasing employment per establishment among top firms.
- While employment per establishment may fall, total employment rises substantially in industries with rising concentration, even among smaller firms. Importantly, the authors hold that this is evidence for the efficiencies gained and not—contrary to other analysis—on the view that such concentration is the result of declining competition and increasing barriers to entry. Technological and managerial advances, in other words, are not preventing competition but are rather intensifying its effects.
- This new industrial revolution has driven increasing specialization among the top firms in non-traded sectors, meaning that while these firms are focusing on certain industries, they are also leaving others.
- Finally, while the growth of such firms is increasing concentration in terms of employment within sectors, it is not resulting in similar concentration across the aggregate economy.

This last fact is key, especially given the recent focus and concern about the rise of so-called “superstar” firms. Many fear that these firms, which have achieved relative dominance in certain sectors, also have an outsized influence on the total economy. However, this work rebuts that view. Essentially, while this growth has led to increased concentration within certain sectors, there is no change in concentration among the broader economy’s top firms.

Conclusion

The development of large computer databases in the 1960s, followed by the launch of the personal computer and the development of software programs, the introduction of the internet, and the many iterations of smart phones and other electronic devices, have all transformed businesses in all sectors of the economy. However, this impact has been keenly felt within the wholesale, retail, and service sectors, where such factors, for example, as the development of ICT and modern managerial techniques have spurred a new Industrial Revolution.

Hsieh and Rossi-Hansberg's analysis reveals how firms have adapted these technologies to improve efficiencies in many operations across space. Geography, in other words, is no longer a restriction to growth for firms in non-traded sectors of the economy, but rather can offer opportunities for expansion on a scale unprecedented in business history. One important finding of this new research is that while large firms have increased their employment concentration within sectors, those same firms have not increased their share within the broader economy. This finding runs counter to conventional wisdom, which says that the growth of certain service-sector firms has an outsized effect on the aggregate economy.

This work comes on the heels of much similar research, which the paper describes in detail, and it is certainly not the final word on developments within non-traded sectors of the economy. Among other issues, the authors suggest that future research could explore how these developments are impacting labor markets and income. Questions about the types of skills necessary to thrive in these industries will likely determine where these companies are headquartered, for example, and what type of workers will benefit from this new Industrial Revolution. Also, while the authors document large improvements in productivity in non-traded sectors, more research is needed to assess the robustness of these calculations.

CLOSING TAKEAWAY

Many fear that the rise of “superstar” firms, which have achieved relative dominance in certain sectors, means that such firms have an outsized influence on the total economy. However, this work rebuts that view.

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