THE IMPACT REPORT

IN THE NOW. IN THE KNOW.

Second Quarter 2017

Sign of the Times: Growing Concentration of Many Industries

By W. Michael Cox and Richard Alm

Developing a new drug requires an average upfront investment of $2.5 billion, most of it used to fund a years-long gauntlet of research, testing and regulatory approval. The chemicals needed to produce a single dose might cost as little as a quarter.

In this scenario, the cost of just one pill would be prohibitive—$2,500,000,000.25. As the output of pills ramps up into millions and perhaps even billions, the average cost of a dose plummets from astronomical to affordable at a few dollars or even a few cents. Each user's purchase contributes to paying the product-development costs.

Pharmaceuticals exhibit a cost structure that's increasingly common in today's knowledge-based economy—the combination of high fixed costs and low marginal costs.

Stay with us as we introduce some economic jargon—we'll be quick about it. Fixed costs are expenses a company pays no matter how much it produces. Traditionally, they include buildings and machinery; today, they're likely to extend to intellectual property—what companies know how to do. Economists usually show fixed costs as a flat line over the relevant production horizon—i.e., they don't change.

Marginal costs measure what it takes to produce one additional unit of output. A product's marginal cost depends on expenses that rise with output, such as labor, raw materials and utilities. Economists typically show marginal cost as falling initially but eventually rising as the company produces more units.

The traditional structure of marginal cost emerged from industrial capitalism, which from its very beginnings exploited economies of scale to help sell goods at lower prices. However, the physical nature of factory production entailed inherent limits on how long marginal costs could be kept low. Enterprises could only get so big before inefficiencies sent average costs and prices upward.

In the 21st Century, much of the U.S. economy has moved beyond its industrial roots. Today, many companies are seeing marginal costs that remain low far beyond what was possible in the Industrial Age—and that has important implications for the size of enterprises.

When fixed costs are high, new competitors find it difficult to grab a share of the market. By contrast, incumbents that have already paid the fixed cost can easily expand to meet new demand when marginal costs stay low and average costs continue to fall. Companies can still increase profits as they add customers.

The bigger the better becomes the best strategy for growth and perhaps even for survival. The combination of high fixed costs and low marginal costs favors an industrial structure with a few dominant producers—all big, all with large shares of the market.

A KNOWLEDGE BOOM

The phenomenon isn't new—the railroad boom of the 19th Century stands out as an example. Laying miles upon miles of track required huge capital investments—i.e., high fixed costs. Once trains started running, marginal costs were negligible because taking on another passenger or an additional mail sack cost virtually nothing.

Fast-forward to today's economy. We see a proliferation of industries with high fixed costs and low marginal costs, centered on goods with a high degree of "knowledge" as a primary input. The technologies fueling the trend are biotechnology, microprocessors, computers, software, the Internet and cellular communications.

In one way or another, all of these knowledge-intensive technologies extend the range of low marginal costs. Companies reap the advantages of larger size over a greater number of customers, so a mere handful of them can serve national and even global markets without having to raise prices.

As companies grow larger, each consumer pays an ever-smaller share of the fixed costs, and they see the benefits

Continued on page 2

of persistently falling average costs over the entire range of the business enterprise.

So the knowledge economy's products become affordable as the companies selling them get larger. Measured in the currency of work hours, real prices for many products have been falling. For example, it took nearly a week of work to earn enough to buy a DVD player in 1999; now, it's only about two hours. Cell phones and computing power are 99 percent cheaper than when first introduced. Prices for iPads declined almost 15 percent just since 2010 (*see "Capitalism's Endless Opportunity," MPACT Report, second quarter 2016*).

With falling real prices, more households find they can afford these products, raising standards of living. For example, household ownership has reached 98 percent for cell phones, 95 percent for DVD players, 84 percent for computers, 81 percent for the Internet and 74 percent for smart phones.

Household ownership has reached 98 percent for cell phones, 95 percent for DVD players, 84 percent for computers, 81 percent for the Internet and 74 percent for smart phones.

CLASH OF TITANS

Developing pharmaceuticals requires laboratories full of highly paid medical researchers, sophisticated equipment and lots of time. The fixed cost of expensive knowledge begets products delivered to patients in relatively inexpensive pills.

The nine largest pharmaceutical firms account for nearly three-quarters of the drug market (*see charts below*). Big Pharma continues trying to get bigger, with multibillion-dollar mergers regularly making headlines.

Like medical researchers, engineers who design computer chips command high salaries. With each passing year, their work has made microprocessors more powerful and efficient, bringing down the cost of computing power. In actual production, computer chips have become mere commodities, selling at an ever-lower price.

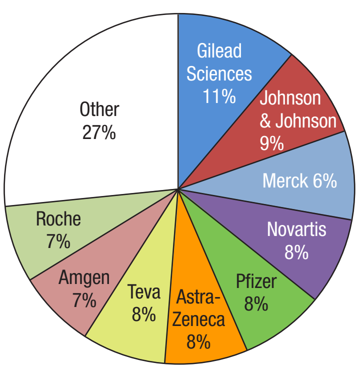
Inexpensive computing power became the source of "smart" gadgets that start out expensive and just keep getting cheaper—computers, cell phones, printers, cameras, DVD players, kitchen appliances, GPS devices and hundreds of others.

For personal computers, five companies make up 85 percent of the industry, led by Hewlett-Packard at 28 percent and Dell at 26 percent. Two companies split most of the market for smart phones, with Android's 53 percent edging out iPhone's 44 percent.

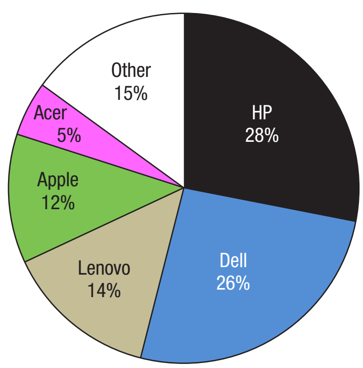
By connecting the world, the Internet has revolutionized the way we communicate. The network's backbone consists of massive computing power connected by miles of fiber-optic cables, but users pay virtually nothing to send and

Continued on page 3

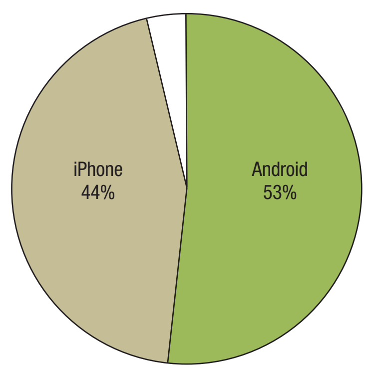
PHARMACEUTICALS



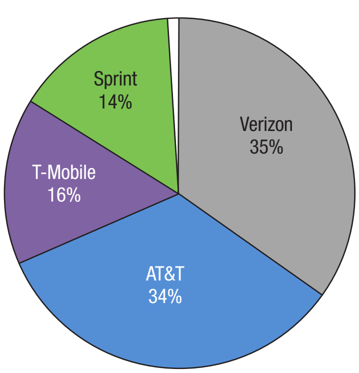
PERSONAL COMPUTERS



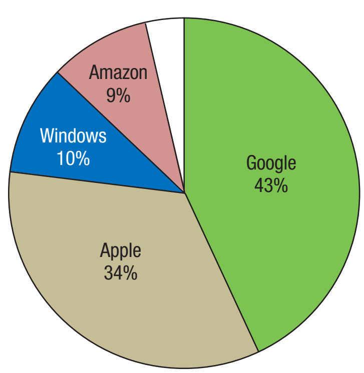
SMART PHONES



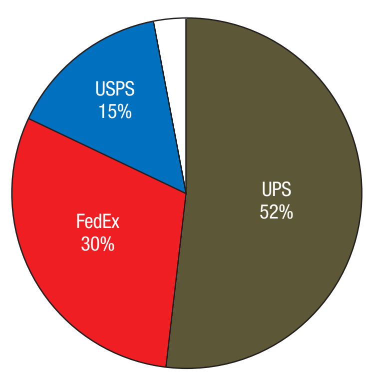
WIRELESS CARRIERS



APPS



PACKAGE DELIVERY



Note: Market share measured by revenues for all industries except apps, which uses the number of units sold.

receive e-mails. The same goes for Google and other search engines, which allow quick access to a world of information.

Microprocessors and cellular technology combined to put phones in Americans' pockets and purses. Nationwide cellular networks require transmission towers, satellites, switching software and more—the fixed costs are huge. AT&T, Verizon, Sprint and T-Mobile made the investments, and low marginal costs made cell phones affordable for about 95 percent of Americans.

The four big wireless carriers serve all but a thin sliver of the market. They compete ferociously for customers, discounting prices, improving coverage and creating brand identity through advertising.

Connecting cell phones to the Internet spawned a proliferation of apps—taxi-busting Uber and Lyft, for example. Apps are essentially software, costly to develop but inexpensive to replicate and distribute. Many are free, others cost a few bucks.

Apps are now omnipresent and varied, with 2.8 million on Google Play and 2.2 million on Apple's App Store. These distributors dominate a total market that exceeds 6.5 million apps and grows daily.

A big customer base is the key to success for a wide range of industries. The imperative of high volumes has driven consolidation in the airline and auto-rental businesses.

MANY PERMUTATIONS

Dozens of other industries exhibit some version of high fixed costs and low marginal costs. UPS and FedEx, for example, have invested billions in transport networks that make deliveries from anywhere in the world to anyone's doorstep—at an affordable price. As volume grows, the average cost of an additional package shrinks—so it's not surprising that the two companies command 82 percent of the package-delivery market.

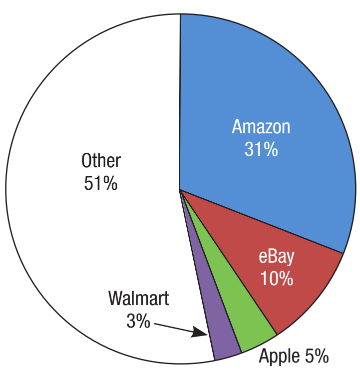
Inexpensive package delivery is fundamental to the business models of such Internet-based retailers as Amazon and eBay. These two companies control 40 percent of a rapidly expanding and crowded market for on-line sales.

Broadcasting's capacity for enlarging audiences at low marginal costs has been basic since the early days of radio, television and movies. Five companies divvy up three-quarters of all U.S. households with cable television. Today's technologies extend the power of low marginal costs in broadcasting through Internet and satellite delivery.

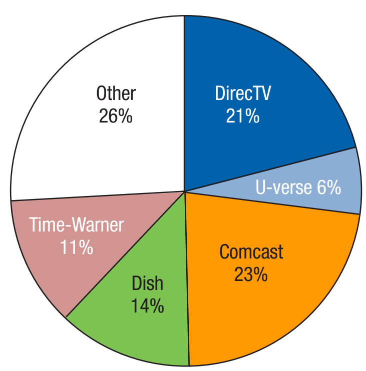
A big customer base is the key to success for a wide range of industries. The imperative of high volumes has driven consolidation in the airline and auto-rental businesses. The same goes for credit cards. In all three industries, making products affordable requires a lot of customers to help pay the cost

Continued on page 4

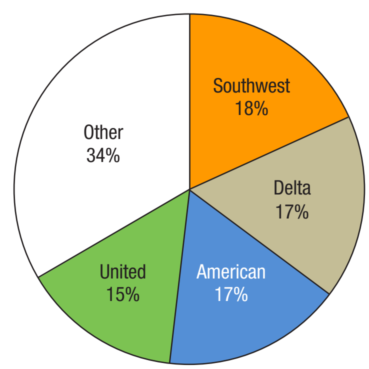
INTERNET RETAILING



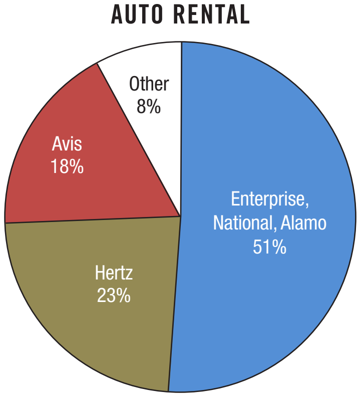
CABLE TELEVISION



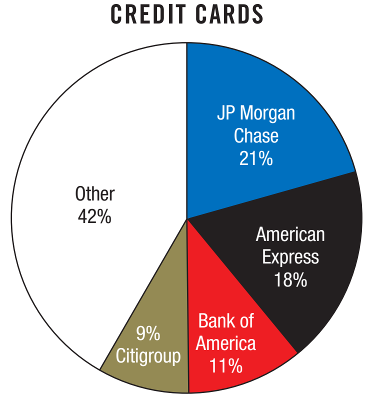
AIRLINES



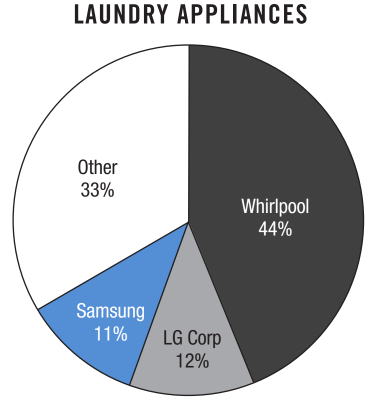
AUTO RENTAL



CREDIT CARDS



LAUNDRY APPLIANCES



Note: Market share measured by revenues for all industries.

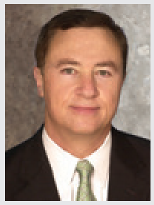
of establishing and maintaining global networks.

Even old-line industries are being transformed. The knowledge economy's many productive advances include computer-aided design and robotic assembly lines. They're expensive to build and equip. Once up and running, automation drives down average costs—so a few producers come to dominate industries like laundry appliances.

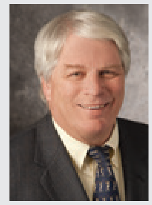
Our quick tour of the world of high fixed costs and low marginal costs shows the many permutations of a varied phenomenon shaping many industries. As concentration increases in more industries, monopoly power will quite properly remain a concern. Markets need to maintain enough competition to ensure that the benefits of low marginal costs flow to consumers.

Greater industry concentration isn't a one-way street. The Big Three automobile makers once ruled the roost, but they failed to deliver for consumers on price and quality. Today, more than a dozen firms are vying for market share in the U.S. car market.

Cable television companies are seeing their dominance shaken as more Americans stream movies and television shows on dozens of new channels, including Netflix and Hulu. Quality television for less. They're using technology to develop business models that continue to lower average costs and benefit America's consumers.



Michael Cox
W. Michael Cox is founding director of the William J. O'Neil Center for Global Markets and Freedom at Southern Methodist University's Cox School of Business. A former Dallas Fed chief economist, he is economic advisor to MPACT Financial Group.



Richard Alm
Richard Alm is writer in residence at the William J. O'Neil Center for Global Markets and Freedom at Southern Methodist University's Cox School of Business.

CHARTING THE ECONOMY

Worried? Want to Find a Safe Haven? Price of Pessimism Runs High

Is the proverbial glass of water half empty or half full? That's the traditional way to quickly tell whether a person's a pessimist or an optimist. The difference might be more than idle curiosity—at least that's what a look at hypothetical investment strategies suggests.

Always worrying about some calamity over the horizon, pessimists tend to seek the relative safety of gold and T-Bills. A $10,000 investment allocated to gold in October 1980 would be worth $18,589 by the end of March 2017. The same amount put into three-month T-Bills would have appreciated to $44,949 over the period.

Optimists expect the future to be brighter—often as a rational assessment, based on the progress in capitalist economies. One expression of optimism is investing in stocks, accepting a risk that's higher than T-bills and betting that capitalism delivers. The $10,000 invested in the Dow Jones Industrial Average stocks in October 1980 would, with dividends reinvested, have grown to $219,381.

Pessimism can be costly. Optimism has paid off handsomely in the long run.