

Reversing the productivity slump: Why we need a revolution in management

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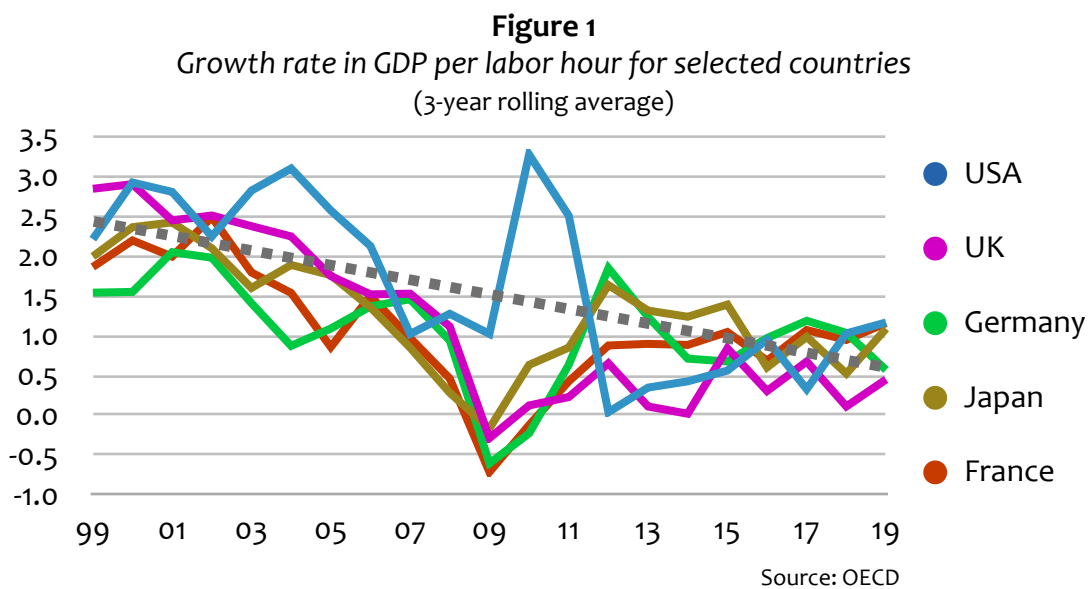
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The productivity slump

Despite being a fractious lot, economists agree on one point: productivity matters—a lot. Growth in output per labor hour is the only sustainable way to raise incomes and living standards. That’s why the recent productivity drop-off has economists worried.

From 1947 to 2005, US labor productivity grew at an annualized rate of 2.3%. Since then, growth has sagged—averaging a scant 1.4% between 2005 and 2019. According to the US Bureau of Labor Statistics, this deterioration has cost the US economy nearly \$11 trillion in lost output, or \$95,000 per employee. Other developed economies have experienced similar declines. [See Figure 1].



Between 1998 and 2004, US productivity growth raced ahead at 3.1% per year. At the time, many observers thought the boom, fueled by the adoption of new information technologies, heralded a new age of above average productivity growth. Unfortunately, the gains turned out to be narrowly distributed and short-lived. Just three industries—computers, retailing and wholesale trade—accounted for 85% of the uptick, and since 2005, these sectors have contributed less than 10% to overall US productivity growth.

Northwestern University economist Robert Gordon believes the benefits of the “computer revolution” have now been fully metabolized, and doubts the US economy will ever again match the productivity gains it achieved between 1920 and 1970, when productivity growth averaged 2.8% per year. Since then, and setting aside the IT-enabled millennial boomlet, the growth rate has been a meager 1.6% per year, and Gordon believes we will be lucky to achieve even that over the next twenty years.

In contrast to techno-optimists such as Erik Brynjolfsson and Andrew McAfee (authors of *The Second Machine Age*¹), Gordon is doubtful that AI, robotics and biotechnology will deliver

the sort of sustained, economy-wide gains that were generated by the 20th century's "big five" innovations—indoor plumbing, electricity, the automobile, petrochemicals, and the telephone. The challenge of matching past performance is made more difficult by the fact that the productivity baseline is considerably higher today than it was in the late 19th century, when output per worker was roughly 6% of current levels.²

As Gordon notes, other factors are also working against a productivity rebound, including an aging population, income inequality, the costs of environmental remediation, unprecedented levels of private and public debt, an educational system that often fails to equip students with future-relevant skills, and an economy heavily skewed toward service industries (where R&D investments are minimal). In the absence of unforeseen breakthroughs, these headwinds will impede productivity growth for years to come. "Winter," says University of California economist Gregory Clark, "is coming."³

Policymakers are understandably worried. During her tenure as Chair of the Federal Reserve, Janet Yellen called the productivity slowdown "very disappointing,"⁴ and her successor, Jerome Powell, has said current trends are "troubling."⁵ Ordinary citizens should be equally concerned.

Between 1979 and 2019, the pay for an American worker at the 50th percentile of wage earners grew by a scant 8.8% in real terms.⁶ That's a compound growth rate of just one-fifth of one percent per year. Many factors are to blame for the wage plateau, including global competition, the declining power of labor unions, and the growth of the gig economy. But whatever the cause, without a significant boost in productivity, wage growth will remain stubbornly low. As in recent decades, millions of human beings will have little chance to better their lives, and their frustrations will fuel the flames of social discord and political polarization.

Meager productivity growth also limits the ability of governments to fund critical programs—like universal health care, green energy, wider access to education, infrastructure development, and humanitarian aid. In this regard, imagine what could have been done with the \$11 trillion that was lost to lackluster productivity growth over the past 15 years.

Decomposing productivity growth

Three things power productivity growth: (1) more capable employees; (2) greater capital investment; and (3) innovation. The first two components can be directly calculated, but measuring the productivity gains from innovation is more tricky. Economists typically use "total factor productivity" as a proxy. This catch-all category includes all the gains that can't be attributed to improved skills or more investment—and it's the single biggest contributor to long-term productivity growth.

Since 1948, 50% of US productivity gains have come from advances in TFP, 41% from capital deepening, and just 9% from enhanced skills. [See Table 1.] From 2005 to 2018, TFP increased by a scant 0.4% per year—less than a quarter of the rate that was achieved during the 1997-2005 tech boom, and less than half the growth rate since 1948. The fall-off has been

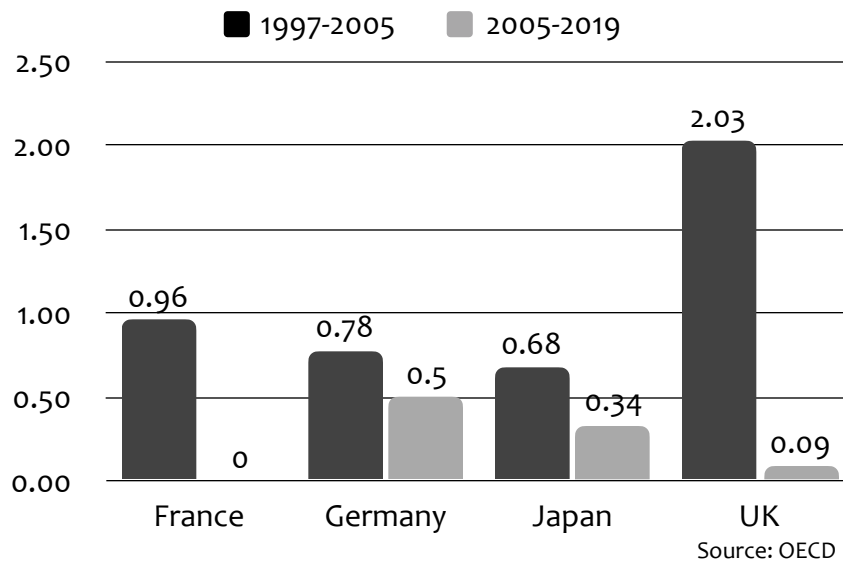
mirrored in other major economies. [See Figure 2.] Little wonder that many economists believe we’re experiencing something of an innovation drought.

Table 1
Decomposing annual labor productivity growth rates for the US

	Labor productivity	Capital deepening	Education & skills	Total factor productivity
1948 - 2018	2.2	0.9	.1	1.1
1997 - 2005	3.2	1.3	.2	1.7
2005 - 2018	1.4	0.7	.3	.4

Source: US Bureau of Labor Statistics

Figure 2
Growth in total factor productivity



It’s telling that in a typical list of the “greatest inventions of all time,”⁷ most of the breakthroughs—the printing press, the lightbulb, the assembly line, the airplane, refrigeration, antibiotics, vaccinations, nuclear fission, the transistor, spacecraft, contraceptives, and the personal computer—occurred decades or centuries ago. Even the Internet (1969), the mobile phone (1973), and GPS (1973), are well into middle age. There are, of course, more recent innovations, such as gene editing, machine vision, and quantum computing, but the overall trend is clear: big leaps are becoming rarer—a conclusion that’s backed up by US patent data. Over the past century, the proportion of patents that incorporate new-to-the-

world technologies has steadily declined, while the number that recombine existing technologies has risen.⁸

What chance is there, then, for reversing the slide in TFP growth? More than you might think. There's a technology, essential to all modern economies, that's ripe for a radical rethink. Economists pay it little heed, and most would doubt it can be fundamentally reinvented. Thankfully, they're wrong.

Management and productivity growth

Management—defined here as “the structures, processes and tools used to mobilize and organize human activity to productive ends”—is one of humankind's most important technologies. Without fundamental advances in planning, coordinating and controlling, the productivity gains of the past 150 years would have been impossible. [See Table 2.]

Table 2
Value of output per hour in constant 2010 dollars

	<u>1870</u>	<u>2016</u>	<u>Change</u>
Great Britain	4.96	54.7	11.0
United States	3.19	62.54	19.6
Germany	3.01	60.71	20.2
France	2.24	61.22	27.3
Japan	0.65	41.72	64.2

Consider the car. The first combustion-powered vehicle may have been invented by Gottlieb Daimler (in 1886), but it was Henry Ford who brought mobility to the masses. The innovation that made this possible was organizational, not mechanical. Ford's Highland Park plant, where the Model T was built, was nearly 900 feet long and covered 102 acres. When completed in 1910, it was the largest manufacturing facility in the world. The factory generated its own electricity and was capable of producing 5,400 vehicles per day. It was here that Ford and his associates developed the model for large-scale industrial production that would spawn the consumer economy. Key components included vertical integration, optimized work flows, standardized performance metrics, cost accounting, variance analysis and detailed financial controls.⁹ What distinguished Ford Motor Company in the early 20th-century was less what it made than its ability to choreograph an immense array of disparate activities on a scale never before imagined—an accomplishment that allowed Ford to slash the price of a Model T by 69% (from \$825 to \$260) during its production run.

During the first half of the 20th century, the technology of management advanced at a furious pace. In 1900, General Electric set up America's first industrial laboratory, and began applying management discipline to scientific inquiry. Over the following half century, GE would claim more patents than any other company in the world. In 1903, DuPont developed

the first tools for evaluating the returns of competing investment projects. Twenty years later, following parallel development efforts, DuPont and General Motors introduced the concept of the divisional organization—a model that would become the template for virtually every multi-business company. In the 1930s, recognizing the potential value of intangible assets, Procter & Gamble began laying the foundations of modern-day “brand management.” A decade later, in war-ravaged Japan, Toyota launched its epic quest to perfect the art of continuous improvement, or *kaizen*. By the 1980s, “The Toyota Way,” had become the gold standard for thousands of manufacturing companies across the globe.

By facilitating the ever more efficient production of increasingly complex goods and services, management innovation made an extraordinary and irreplaceable contribution to productivity growth. Problem is, in recent decades, the pace of management innovation has stalled out.

On the tail of the S-curve

The question facing early industrialists was how to build organizations that were as reliable as machines, since repeatability was the secret to achieving economies of scale. The answer—industrial bureaucracy—was a mashup of military command structures and industrial engineering. Surprising though it may be, most organizations still adhere closely to the bureaucratic template. [See Table 3.]

Table 3
Principle features of industrial bureaucracy

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1. A stratified organization with multiple administrative layers.
 2. A scalar authority structure where power correlates with rank.
 3. An executive group that sets strategy and allocates resources.
 4. Performance goals that are disaggregated into hundreds of detailed targets.
 5. A large number of unique and highly specialized job roles.
 6. Detailed protocols and work rules for most tasks.
 7. Powerful staff groups that define policy and ensure compliance.
 8. A phalanx of mid-level managers who assign tasks and assess performance.
 9. Career pathways that are tied to “climbing the ladder.”
 10. Significant status distinctions between “managers” and “employees.”
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In this sense, management is a mature technology, and recent innovations, like self-service HR portals, collaboration tools, and remote working, have been largely incremental. Arguably, the only significant advances in the past quarter century have been open innovation and agile teams—inventions initially aimed at improving the efficiency of software developers. [See Table 4 for a timeline of significant management innovations].

Like all technologies, bureaucracy is a product of its time. In the late 19th century, the typical employee was poorly educated and needed close supervision. Administrative skills were rare

and managerial competence highly valued. Information was expensive to gather and a hierarchical reporting structure was the most efficient way of capturing and sharing data. Scale advantages were paramount and the pace of change, by current standards, glacial.

Table 4
Management innovation timeline

<p>1880 Scientific management Profit sharing</p>	<p>Matrix organization Strategic planning ESOPs</p>
<p>1890 Commercial R&D labs</p>	<p>Project management</p>
<p>1900 Cost accounting Personnel departments Return on investment analysis</p>	<p>1960 Account management Self-managing teams Servant leadership Scenario planning Job enrichment Strategic planning</p>
<p>1920 Divisional organization Management training Discounted cash flow analysis</p>	<p>1970 Consortia/ecosystems Diversity programs Benchmarking</p>
<p>1930 Brand management Statistical process control Operations research</p>	<p>1980 Activity-based accounting Six sigma</p>
<p>1940 New business incubators Management by objectives T-groups</p>	<p>1990 Re-engineering</p>
<p>1950 Kaizen Portfolio analysis</p>	<p>2000 Open source development Agile teams</p>

Today’s realities are vastly different, and yet, as noted, bureaucracy persists. That’s a problem. In a world of light-speed change, omnipotent customers and disruptive innovation, organizations need to be more than reliable and efficient—they must also be daring, resilient and creative. These qualities are not, by and large, hallmarks of bureaucracy.

Growing bureaucratic drag

Every technology has its own mix of costs and benefits, and as circumstances change, so do the trade-offs. For example, while most of us are grateful for the mobility advantages of the automobile, we’re increasingly aware of the environmental damage done by petrol and diesel-powered cars.

The same is true for bureaucracy. While bureaucratic structures facilitate control, coordination and consistency, these benefits come at a cost. Bureaucracies are, by their nature, rigid,

conservative and insular, and as change has accelerated, these pathologies have become increasingly debilitating.

Bureaucracy is particularly a problem for large organizations which are, on average, more bureaucratic than small ones. It’s telling that in recent years, America’s top 100 companies by revenue (excluding the technology superstars) have consistently underperformed the Russell 3000, an index of the 3,000 most valuable publicly listed companies in the US. [See Table 5.] What one sees in this data are the performance deflating effects of bureausclerosis—or what might be called managerial diseconomies of scale.

Table 5
Average total shareholder returns for selected US companies (%)

	<u>10-year</u>	<u>5-year</u>	<u>1-year</u>
Top 100 (by sales)	301	125	12
Rest of the Russell 3000	568	384	55

Note: Calculations exclude Facebook, Apple, Amazon, Netflix, Google, Microsoft and Tesla.

Source: Compustat, MLab Analysis

It’s worrying, then, that the bureaucratic burden on the US economy has been growing, not shrinking. Since 1983, the number of managers, supervisors and administrators in the US workforce—the “bureaucratic class,” if you will—has more than doubled, while employment in all other job categories has grown by less than 40%.¹⁰ [See Figure 3]. It seems more than coincidental that as bureaucracy has flourished, productivity growth has withered.

While nimble startups can offset some of the costs of bureaucratic drag, they can’t do it all. At the moment, there are 986 unicorns across the globe—private, venture-backed companies with a value of at least \$1 billion. Roughly half these companies are based in the US, and have a combined value of more than \$1.2 trillion. That’s a big number, but it’s just 4% of the market value of the S&P 500—an index of America’s 500 most valuable companies. The situation outside the US is similar. China’s 160 or so unicorns are worth roughly 7% of the firms listed on the Shanghai Stock Exchange, while Europe’s home-grown unicorns are worth 3% of the European S&P 350. Startups attract a lot of attention, but their contribution to economic vitality is modest.

Squandered ingenuity

As bureaucracy expands, the scope for human ingenuity contracts—an assertion that’s backed up by a wealth of survey data. Consider:

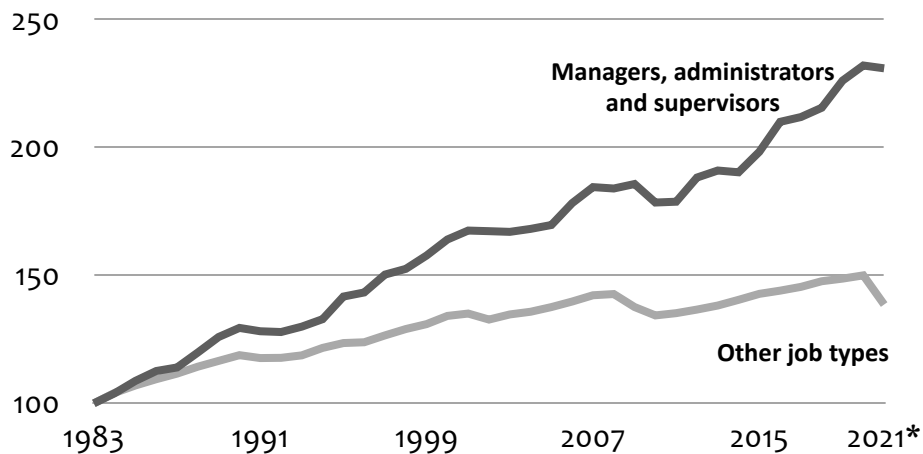
- A 2021 survey by Gallup found that just 20% of employees around the world were fully engaged in their work.¹¹ This disengagement is not limited to frontline em-

ployees. Sixty-five percent of managers were also disengaged.¹²

- In Gallup’s 2019 “Great Jobs Demonstration” survey, barely a third of US employees strongly agreed with the statement: “I have the opportunity to do what I do best every day.” Only 1 in 5 felt their opinions mattered at work, and only 1 in 11 said they were free to experiment and take risks.¹³
- According to the Bureau of Labor Statistics, 70% of all US employees are in jobs that require little or no originality.
- In a 2019 survey of more than 30,000 European businesses by Eurofound, only 20% of the companies polled encouraged employees at all levels to identify and solve new problems, and barely a quarter of the respondents believed that greater employee involvement would bolster competitive advantage.¹⁴
- The Eurofound study also revealed that the single biggest factor influencing the capacity of employees to use their problem-solving skills at work wasn’t the job role, or the employee’s qualifications, but the extent to which the employee was allowed to be self-managing. The study also found a negative correlation between firm size and employee wellbeing.

Figure 3

Growth of managers, administrators and supervisors versus all other job types



Source: US Bureau of Labor Statistics, Current Population Survey, MLab analysis

Fact is, most companies fail miserably when it comes to harnessing the “everyday genius” of their employees. This shouldn’t be surprising. Writing in 1905, the German sociologist Max Weber likened bureaucracy to an “iron cage,”¹⁵ noting that bureaucracy “develops the more perfectly the more [it] is dehumanized.”¹⁶ While Weber marveled at the accomplishments of bureaucracy—“There is nothing in this world that works as precisely as does this human machine—and as cheaply!”—he knew these victories took a human toll.

Weber warned that “the great question is not how we can hasten and promote [bureaucracy], but what can we oppose to this machinery in order to keep a portion of mankind free from this parceling out of the soul.”¹⁷ Even as Ford was scaling up his Highland Park factory, Weber and others were fretting that bureaucracy's greatest triumph—turning spirited, free-thinking human beings into obedient, rule-following employees—would turn out to be its greatest weakness. Their concerns were justified.

Bureaucracy is a caste systems that divides employees into thinkers and doers, the leaders and the led, the credentialed and the “unskilled.” In a bureaucracy, power correlates with rank. Those on the front lines, seven or eight layers removed from the CEO, typically have few if any decision rights. In most organizations, an hourly employee can't buy a \$300 office chair, enroll in a \$100 online course, or treat a client to a \$50 lunch without getting a manager's sign-off.

Conversely, strategic issues are the sole preserve of senior executives. As three highly experienced consultants put it in *The Harvard Business Review*, “The G3 [the CEO, CFO and CHRO] will shape the destiny of the business by looking forward and at the big picture while others have their heads buried in operations.”¹⁸ The assumption, endemic in bureaucratic organizations, is that only those at the top have the curiosity, intellect and foresight to think beyond the immediate task at hand. This unblushing elitism denies millions of employees the opportunity to learn, grow and innovate, and, in doing so, depresses productivity growth.

Positive deviants

For decades, the economic and human costs of bureaucracy, if considered at all, have been seen as unavoidable business expenses. In his 2018 letter to shareholders, Jamie Dimon, Chairman and CEO of JP Morgan Chase, recalled being told by a consultant that bureaucracy “is a necessary outcome of complex businesses operating in complex international and regulatory environments.”¹⁹ This belief—that bureaucracy is an indispensable tool in managing complexity—is ubiquitous among managers, consultants and academics. (It is notable that Dimon labeled the assumption “hogwash.”)

While many regard bureaucracy as inevitable, and its benefits as net-positive, years of lack-luster productivity growth suggest a close accounting is overdue. In calculating the costs of bureausclerosis, a foundational question is whether bureaucracy is, in fact, necessary? Can a large-scale organization capture the benefits of bureaucracy without incurring the costs? Despite widespread assumptions to the contrary, the experience of a growing band of post-bureaucratic pioneers suggests the answer is “yes.”

Consider four positive deviants: Haier, Nucor, Buurtzorg and Svenska Handelsbanken.

Haier, the world's largest appliance-maker, has divided itself into more than 4,000 micro-enterprises and has just three management layers. Each micro-enterprise has its own P&L and is responsible for setting its own direction. Coordination is achieved through a dense network of internal contracts. Employees are encouraged to invest in their micro-enterprises and receive a substantial payout when their team outperforms industry benchmarks. The

company also makes it easy for employees to launch new ventures, 160 of which have received outside VC funding.

Nucor, America's largest and most consistently profitable steel company, is organized into 75 divisions—typically a single plant—that operate as independent businesses. Within a plant, the typical span of control is one manager for every 140 employees. Nucor's head office comprises fewer than 100 staffers and there are only two corporate functions—finance and IT. Overall, the company operates with one-third the number of managers per capita as its peers. Frontline teams participate in a bonus program that rewards them for raising capital efficiency, and every employee can spend up to \$50,000 without the approval of a manager. Each year, operating teams make hundreds of “best-marking” visits to sister plants—a practice that ensures the rapid diffusion of new methods and technologies.

Buurtzorg, founded in 2006, is the Netherlands's largest provider of home health services. The company's 16,000 caregivers, mostly nurses, are organized into teams of 12. Each team is run like a small business and has its own P&L. As self-managing entities, teams are responsible for staffing, training, performance management, quality control and budgeting. The teams are knit together by a proprietary technology platform that provides a forum for sharing best practices and crowd-solving common problems. With only two full-time managers—a managing director and a deputy director—Buurtzorg epitomizes “lean management.”

Svenska Handelsbanken is Sweden's largest bank, and one of the world's most decentralized financial institutions. Each branch operates as an independent profit center, and local teams—typically 8-10 individuals—are empowered to make credit decisions, price loans and deposits, and set staffing levels. This radical decentralization pays dividends in three ways. First, it yields better credit decisions by exploiting the on-the-ground wisdom of local bankers. Second, it makes employees highly attentive to risk, since each branch is responsible for the performance of its own loan portfolio. And third, by pushing power down, it dramatically reduces overhead costs. Thanks to these advantages, Handelsbanken's return on equity has beat the average of its Nordic peer group for 50 consecutive years.

These companies operate with far fewer managers and administrators than their conventionally-managed peers, and enjoy substantially higher productivity. To wit:

- Haier, after adopting its micro-enterprise structure, eliminated 12,000 middle-management positions and radically downsized central staff groups. The HR function, for example, shrunk from 800 employees to 10.
- Between 2015 and 2019, Nucor's net income per employee averaged nearly three-and-a-half times higher than that of its US peer group, while the company's return on capital exceeded the industry average by 50%.
- Buurtzorg, when compared to its competitors, enjoys a 40% productivity advantage in staff hours per patient, and its overhead costs are just 33% of the industry average. The healthcare provider also boasts class-leading patient satisfaction scores.

- For decades, Handelsbanken has out-performed its European peer group on both efficiency, measured by the ratio of cost to income, and loan quality. Between 2011 and 2020, Handelsbanken's credit losses, as a percentage of loans outstanding, averaged half those of its peer group.

Given the extraordinary performance of these and other management renegades,²⁰ one must conclude that bureaucracy is a choice, not a cosmological constant.²¹ The rebels show us what's possible when an organization wriggles free of bureaucratic orthodoxy and commits itself to maximizing contribution rather than compliance.

The productivity dividend

Unfortunately, examples such as these are rare, but it's worth asking, what would happen if every organization operated like Haier, Nucor, and the other members of the management vanguard?

Let's do the sums. At present, 14 percent of American workers are in managerial or supervisory jobs. (This calculation excludes agricultural workers and the self-employed.) An additional four percent have administrative roles in areas such as HR, finance, planning and legal. These individuals, as you might expect, create plenty of busywork for everyone else. A study by Deloitte Economics found that non-managerial employees devote roughly 16% of their time to internal bureaucratic chores. Taken together, then, bureaucrats and bureaucratic tasks consume roughly a third of all labor hours.

Based on the experience of the post-bureaucratic pioneers, it seems reasonable to assume that at least half this work creates little or no value—which prompts a question: What would be the productivity dividend of reducing the number of managers and administrators in developed economies by fifty percent, cutting the amount of time spent on bureaucratic paper-shuffling by a similar amount, and redeploying all that effort into productive activities? The answer, based on modeling by the Management Lab, is \$10 trillion in additional output across the OECD.²²

In addition, there would be the gains from a newly emancipated workforce that is free to learn, improve and innovate. As per Gallup, a better engaged workforce would raise global output by \$8.1 trillion.²³ The total prize, then, for taming bureaucracy and unleashing all that latent initiative and ingenuity, would be in excess of \$18 trillion. If these gains were achieved over the next 10 years, it would more than double current OECD productivity growth rates. At present, no other proposed policy or program offers anything close to this multi-trillion dollar bonanza.

Despite the conceptual and practical challenges, the potential upside is big enough to warrant a coordinated initiative to reimagine the foundations of large-scale human organization. Ideally, such an effort would involve investors, regulators, policymakers and other stakeholders—but the catalyst must come from leaders in business and government who, recognizing that a revolution in management is long overdue, are ready to take lead in rethinking the fundamentals of large-scale human organization.

Conclusion

Management innovation made a profound contribution to productivity growth in the 20th century, and must do so again in the 21st. The companies and societies that invented “modern” management a century ago reaped substantial dividends, and the same opportunity awaits tomorrow’s management innovators. Management is, after all, the *ultimate* “general purpose technology.” It is management—the structures and tools that help us to do together what we can’t do alone—that sets the outer boundaries on human accomplishment. Given the long slide in productivity growth, and the unprecedented challenges facing our species in this new century, the case for bold, convention-shattering management innovation has never been stronger.

¹ For technology boosterism at its most ebullient, see Erick Brynjolfsson and Andrew McAfee, *The Second Machine Age*, New York: WW Norton & Company, 2014

² Coincidentally, Gordon notes that a task as simple as folding laundry is currently beyond the capabilities of any robot.

³ Gregory Clark, “Winter is Coming: Robert Gordon and the Future of Economic Growth,” *American Economic Review: Papers and Proceedings*, 2016, Vol. 6, No. 5, pp. 68-71.

⁴ <https://www.cnbc.com/video/2016/03/29/yellen-on-productivity.html>

⁵ <https://www.federalreserve.gov/newsevents/speech/files/powell20200827a.pdf>

⁶ <https://sgp.fas.org/crs/misc/R45090.pdf>

⁷ See, for example: <https://www.theatlantic.com/magazine/archive/2013/11/innovations-list/309536/>

⁸ <https://arxiv.org/pdf/1406.2938.pdf>

⁹ One of Ford’s most celebrated innovations was the “living wage.” In 1914, against the advice of his executives, Ford more than doubled the pay of front line workers, from \$2.34 to \$5 per day. The payoff was a dramatic decline in employee turnover— from 31.9% to 1.4% per month.

¹⁰ Some of this growth is attributable to the fact that large companies have been increasing their share of US employment. Between 1978 and 2018, the percentage of the US workers employed by companies with more than 5,000 employees grew from 30 to 35 percent, while the percentage working in companies with fewer than 100 employees fell from 41 to 33 percent.

¹¹ Gallup, “State of the Global Workplace: 2021 Report,” p. 5.

¹² Gallup, “State of the American Manager,” 2015, p. 22.

¹³ Based on analysis of the Gallup “Great Jobs Demonstration Survey,” November 2019. Excludes self-employed or contract workers and non-managerial employees. Data was weighted using Gallup’s suggested population weights

¹⁴ Eurofound and the Centre for European Development of Vocational Training, “European Company Survey 2019: Workplaces Practices Unlocking Human Potential.”

¹⁵ Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, 1905.

¹⁶ H.H. Gerth and C. Wright Mills (eds.), *From Max Weber: Essays in Sociology*, Abington Oxford: Routledge, 1991, p. 216.

¹⁷ J.P. Mayer (ed.), *Max Weber and German Politics*, London: Faber & Faber, 1944, pp. 125-131.

¹⁸ Ram Charan, Dominic Barton, and Dennis Carey, “People Before Strategy: A New Role for the CHRO,” *Harvard Business Review*, July-August, 2015.

¹⁹ JP Morgan Chase & Co., *2018 Annual Report*.

²⁰ For more examples of post-bureaucratic organizations, see Gary Hamel and Michele Zanini, *Humanocracy*, Boston: Harvard Business Review Press, 2020.

²¹ It should be noted that sometimes it takes only a single contrary case to disprove a long-held postulate. For centuries, it was assumed that human beings, lacking wings and feathers, would never soar through the air, but a single flight, in 1903 at Kitty Hawk, North Carolina, forever laid that assumption to rest.

²² To review the detailed calculations, see “Appendix B: Sizing Up the Bureaucratic Class,” in Gary Hamel and Michele Zanini, *Humanocracy*, Boston: Harvard Business Review Press, 2020, pp. 301-303.

²³ Gallup, “State of the Global Workplace: 2021 Report, p. 2.