

# The Productivity Riddle

Research finally links management skill to macroeconomic growth.

by Glenn Hubbard

**R**obert Lucas, a Nobel laureate in economics, famously wrote that once one starts to think about economic growth, it is hard to think about anything else. In other words, even slight increases in growth rates, when accumulated over time, have an overwhelming impact on quality of life. Not just corporate profits, but the livability and prosperity of nations and regions depend on economic growth. Moreover, economic growth and the firm-level performance that underlies it are not givens, but can be shaped. The most critical and overlooked factor is the quality of management.

A peasant toiling on a farm in East Anglia in 1600 was not much better off than his Druid ancestors. But his descendants were. Economic and social conditions began to change dramatically when the Industrial Revolution took hold in England in 1750. But why did the Industrial Revolution begin there and then, and not in 1650 or even the year 50, when Hero of Alexandria developed a steam engine? And why in England and

not in China or the Roman Empire, states brimming with technical genius? Why did Hero's contemporaries use steam engines to wow Roman tourists with magical toys, instead of powering instruments of production with them?

History proffers an intriguing answer. As a consequence of the Glorious Revolution of 1688 (when a group of nobles overthrew James II and crowned William of Orange as king), the British government committed itself to upholding private property rights, protecting wealth, and eliminating arbitrary increases in taxes. These institutional changes gave entrepreneurs the incentives they needed to make the most out of the technological inventions of that time. Though China may have had a more sophisticated economy then, it lacked the business institutions that would allow entrepreneurship to flourish.

In his article "The Good Life: How Managers Made the Modern World" (*Hermes*, Winter 2004, [www2.gsb.columbia.edu/hermes/winter2004/article\\_greenwald.cfm](http://www2.gsb.columbia.edu/hermes/winter2004/article_greenwald.cfm)), Columbia Business School Professor Bruce Greenwald puts the point more crisply. The Industrial Revolu-



tion, he writes, “appears to have arisen largely from the application of sustained management attention to everyday enterprise.” But economists and business analysts need to go further still and inquire *why* management matters. The reasons have powerful implications for business — and business education.

### Productivity’s Hidden Effects

Let’s start with a “macro” perspective on one of the most interesting economies in the world today — that of the United States, where productivity is growing about a full percentage point faster than it did a decade ago. This increase is the reason that, despite all contrary or negative economic indicators, corporate performance and living standards continue to improve in the U.S. It is important to recognize that this improvement is *not* the result of more labor or capital. It reflects the ability of American enterprise to produce more output per unit of input each year than it did the year before. Moreover, the rate of productivity growth rose noticeably during the 1990s in the United States and stayed high through the difficult early 2000s, even when productivity growth in many other major economies headed in the opposite direction.

American productivity growth is often attributed to the effect of information technology. But those who chalk it all up to IT have spent too little time in Tokyo, Seoul, and Berlin. Technology is more sophisticated in many other countries than it is in the United States. Cell phones and PDAs in Europe and Asia do things that American mobile devices cannot; they pay for goods and display far more information. Broadband Internet access,

both wireless and fixed, is also faster and more ubiquitous elsewhere.

But if America’s greatest companies did not become more effective simply by buying faster computers or networking their operations, what then is the answer to the productivity riddle? At first glance, there is an obvious answer: There were enough American companies in which leaders and managers knew how to integrate these investments with new business models to raise their effectiveness. They also benefited from a distinctive economic context: The flexible financial markets of the United States foster the celebrated resilience of its economy, in which entrepreneurs can swiftly respond to external shocks — from financial market downturns to disasters such as Hurricane Katrina — and to opportunities for innovation and expansion.

Individual entrepreneurs may succeed or fail, but when taken in aggregate, this speedy and resilient culture of entrepreneurship supports economic stability, if only because those who succeed tend to learn from experience (and each other). Twenty-five years ago, when a large firm had shortages or gluts in inventory, it might have taken weeks to uncover the imbalance. Companies responded to those imbalances by buying or building excessive stocks of inventory; then, in downturns, they cut production much more sharply than would have been needed had inventory knowledge been current. Today, entrepreneurs and managers routinely apply information technology to respond in real time.

Nowhere is this entrepreneurial contribution to economic stability more evident than in financial services. Deregulation, coupled with

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innovative technologies, has fostered the development of financial products, such as asset-backed securities and credit default swaps, that make possible a much greater spread of risk than was previously available.

Some observers have concluded that this pace of productivity growth is unsustainable. But conversation with many business leaders suggests that there is still more

ences, collectively called “fixed effects,” but merely attributed them to variations in managerial quality without exploring the effects of any specific management practices on firm performance. It remained for business schools to identify the sources and examples of high-quality management practices, and for consulting firms to conduct *de facto* “on-the-ground” experiments

perceived as more beneficial.

If this theory is correct, then in a knowledge-intensive economy, the firms with better practices for process techniques, goal setting, performance evaluation, and human resources management should be found, by reasonably objective observers, to exhibit generally better performance. And indeed that correlation was found in recent research by economists Nick Bloom of Stanford University and John Van Reenen of the London School of Economics. (Their 2006 paper, “Measuring and Explaining Management Practices Across Firms and Countries,” is available at <http://cep.lse.ac.uk/textonly/people/bloom/papers/BloomVanReenen2.pdf>.)

Professors Bloom and Van Reenen studied management practices at more than 700 manufacturing firms in the United States, the United Kingdom, France, and Germany. They adopted a well-established survey of management practice, in which they asked such questions as, “How do you track production performance?” and “Do senior managers get rewards for bringing in and keeping talented people in the company?” Using the responses to their questions and publicly available data, they scored the quality of management practices, grouped into four categories, for each firm. *Operations management* practices included process improvement, lean manufacturing practices, documentation (the ways in which production problems were exposed and fixed), and the use of dialogue among production teams. *Targets* as practices centered on the choice of financial and nonfinancial goals; the survey asked about targets’ reasonableness, transparency, and

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room for productivity growth in most companies. This is bolstered by a body of recent economic research that finds large and persistent differences in productivity performance across firms — within and across countries. Consistent application of better management thinking and practices will have important effects on business and the economy.

### Choice and Competitiveness

To truly understand the productivity riddle, we need to take a “micro” perspective and look, with an economic eye, at the behavior of individual firms. We need to ask why some gain in productivity consistently while others do not. For many years, economists have tried to attribute differences among companies’ performance to workers’ skills, information technology investment, or even the quality of available capital. But even after controlling for these factors, important and unexplained differences in productivity performance remain.

As far back as the early 1960s, economists identified these differ-

implementing particular management innovations. And it was only a small group of economic historians, such as Alfred D. Chandler Jr. and David Landes, who stressed professional management as a key factor in the rise of U.S. industry, relative to that in France or the United Kingdom, in the early 20th century.

Through the lens of economics, management is, at heart, a choice made by each firm. To alter that choice is costly; when a firm changes management, it requires additional personnel, time, attention, and other resources. The decision makers who lead the firm must trade off these costs against the benefits they expect. That is why, if all other factors are equal, the new management practices most likely to be adopted are those that promise the greatest cost reduction. In capital-intensive companies, these tend to be those practices that most improve the efficiency of plant and equipment. In companies where highly skilled workers are integral to a firm’s financial performance, practices related to incentives and human capital will probably be

interconnection. *Monitoring* practices emphasized individual performance tracking and follow-up. Finally, *incentives* as practices addressed compensation, links between promotion and individual performance, and responses to poor individual performance.

The study found that higher management scores were indeed associated with higher productivity, return on equity, and market capitalization relative to book value. The researchers also found that low measures (all else being equal) correlated with the likelihood that the company in question had failed. Moreover, the general management approach, as set by the firm's leaders, was the dominant "management" influence on performance. Intriguingly, this research shed light on international differences in firms' performance. Companies in the United States and Germany had persistently higher management scores than their counterparts in the same industries in other countries. The authors concluded that this strength derived principally from U.S. and German practices related to targets and incentives (practices that boosted flexibility and motivation, for example).

Another intriguing finding concerned family-owned businesses. When managed by members of the family, these companies tended to score particularly poorly, as if to reinforce the value of professional management. In other words, naming a family member as a leader of a company tends to be a poorer choice than recruiting an outside professional manager to do the job.

According to Professors Bloom and Van Reenen, there is one other influence on management differences: the competitiveness of the

business environment. When times get tough — when the setting gets more competitive — firms with bad management earn comparatively lower profits and grow more slowly, or even exit the scene. Under the same circumstances, the comparative value of good general management rises.

Thus, the superior estimated productivity performance of American firms relative to their non-U.S. counterparts may be traced in no small part to the disciplinary effect of the U.S.'s more competitive product markets. Within individual

that face competition and stay in the game gain the ability to make better choices. And companies that make better choices about management practices, as they expand their scale and scope, are more likely to face the constraints of greater competitiveness. In the end, in facing either factor, the flexibility and quality of management matters.

Interestingly, in the work by Professors Bloom and Van Reenen, these relationships hold even if one controls for CEO compensation (as a proxy for the management ability of people at the very top). In other

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industries, for instance, greater competition spurs the necessity to adopt best practices more quickly — or lose out. Likewise, when a nation's consumer goods markets are opened to international trade and capital markets are loosened, this openness tends to enforce the need to adopt better management practices. To be sure, some companies don't adopt such practices, but they face higher costs, lower sales, and extinction in the competitive race. By contrast, when competitive forces are weak, it becomes harder to bring economic discipline to bear; companies grow complacent, and fail to build the managerial capabilities that they will need in more stressful times.

Managerial choice and economic competitiveness are not mutually exclusive. In fact, they tend to reinforce each other. Companies

words, it's the quality of management throughout the company that matters for firm performance, not just the quality of most senior executive leaders.

The results reported by Professors Bloom and Van Reenen will probably attract attention in economic circles. They suggest that variation in management quality "explains" many of the differences in firm-level productivity. Such a striking correlation between management quality and productivity raises questions about the development of management practices, the choices that managers make about practices, and the value of managerial talent in executing these practices. It also suggests that the connections among competitive conditions, management, and performance are highly significant indicators of which

companies will succeed and which will fail.

### Nondestructive Creation

The idea that management matters has broad implications. It suggests, for example, that financial management is important not so much as a means of tracking and overseeing individual companies, but as a vehicle for improving their productivity and performance. It also suggests that managers could best improve their results, and policymakers could best improve their economic climates, by focusing on two management practices: “learning managing” and “managing learning.”

By “learning managing,” I mean the conscious adoption of methods, such as lean production or better human resources processes, that deploy technology, financial capital, and employees’ time more effectively. The research I have already mentioned demonstrates that the quality of a firm’s management can be adapted, most importantly in that management quality improves in the face of increasing competitive pressures. But the precise nature of how managers adapt to competition requires further study. According to one important economic model of entrepreneurship and management (see “Selection and the Evolution of Industry,” by Boyan Jovanovic, *Econometrica*, May 1982), business managers learn, through the course of their transactions over time, how well their chosen management practices adapt to a changing market. They continually consider whether to remain in business; like species succumbing to extinction, the poor performers drop out. In a compelling extension of this view, best practices also change over time

within companies, as managers respond to sales results and higher competition spurs them to innovate. As a consequence, productivity differences will matter even for well-established firms that last a long time in the marketplace.

Assessment of how “learning managing” occurs is a significant topic for research. For example, the delineation between the art of leadership (or, if you prefer,

investments are associated with financial restructuring, they may have their greatest impact on productivity growth through the managerial changes that they put in place.

A separate avenue of inquiry is “managing learning,” by which I mean the systematic development of management skills and knowledge, inside and outside business, and in society as a whole. Do talented managers learn high-quality

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*general management skill*) and the science of management (or *specific management practices*) may be somewhat artificial. The most important distinguishing factor for U.S. firms may be their flexibility in identifying and capturing opportunities, which could result from either individual genius or training in operational capabilities. Recent evidence indicating that productivity will increase along with the number of MBA holders in a firm — MBA degrees presumably stressing broad flexibility and general management abilities — is suggestive in this regard.

Another potentially significant line of inquiry would be the links among three phenomena: corporate governance (especially the competition for corporate control), day-to-day management practices, and the productivity of individual companies. For example, what role do investments by private equity firms play in improving managerial quality? Although many private equity

management practices in business school or through interaction with other firms in the competitive process? Are the most successful managers generalists who adapt flexibly to best practices, or specialists who apply a particular skill base? Further study of data on firms and their managers and management practices over time would help answer these questions. And it would also help inform regional and national efforts to improve management skills, including those going on in emerging nations such as India and China.

Joseph Schumpeter’s theory of entrepreneurship (popularly known as “creative destruction”) proposed that firm-level volatility and aggregate productivity growth are positively correlated: The faster companies come into and go out of existence, the better it is for the economy as a whole. But suppose that better management has developed through a more evolutionary process — in which the greater

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competition in product markets leads to the gradual selection of managerial processes that ultimately increase productivity? Then restructuring and experimentation may be most important *within* large, relatively stable firms. A decline in firm-level volatility could turn out to be associated with aggregate productivity improvements of the sort we have seen recently in the United States. A recent study by economists Steven Davis, John Haltiwanger, Ron Jarmin, and Javier Miranda supports this view. (See “Volatility and Dispersion in Business Growth Rates: Publicly Traded Versus Privately Held Firms,” 2006, <http://ideas.repec.org/e/pja54.html>.) The study suggests that a kind of cooperation between managers, entrepreneurs, and investors, with the flavor of “nondestructive creation,” would generate better performance for many firms and for the economy as a whole.

If management matters so much, how do we foster better management skills, avoiding hype and focusing on the learning and evolution of genuinely successful practices? Economists have largely ignored this issue in the past, as have policymakers. And even business managers have treated their own skill sets as too much of a black box, without fully investing time or attention in improving their capabilities. Management practice needs a bigger spot on the agenda, not just in business schools, but in boardrooms and government councils. That’s where the leverage may lie for making productivity improvement less of an ongoing riddle and more of a deliberate and reliable aspect of any enterprise. +