



THE PRODUCTIVITY OF HEALTHCARE SYSTEMS

*Doctors and hospitals respond predictably
and consistently to their economic incentives*

*As a result, there are wide variations in how
patients get treated in the US, Germany,
and the UK*

*The conventional wisdom that the US wastes
resources in healthcare is wrong*

*Key factors are competition and integration
of care. The US and the UK appear to be
moving in the right direction*

*But reforms to date in Germany may not be
pushing it far enough along*

Lynn Dorsey

Bernard T. Ferrari

Andrew Gengos

Ted W. Hall

William W. Lewis

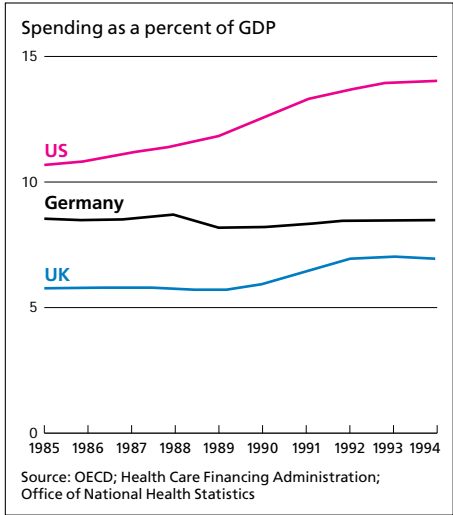
Charles O. Schetter

HEALTHCARE ACCOUNTS for a large and rapidly growing portion of the developed world's gross domestic product. As a result, governments and healthcare organizations are increasingly interested in ways to rethink and reform their healthcare systems (Exhibit 1). Yet we are early in the process and many fundamental questions remain. What is at the root of the differences in spending among countries, and why do the differences appear to be unrelated to variations in overall life expectancy?

To help provide a foundation for future reform, we examined and compared the healthcare systems in the US, Germany, and the UK by

Lynn Dorsey is a principal, Bernie Ferrari and Charlie Schetter are directors, and Andrew Gengos is a consultant in McKinsey's Los Angeles office. Ted Hall is a director in the San Francisco office. Bill Lewis is Director of the McKinsey Global Institute. Copyright © 1996 McKinsey & Company. All rights reserved.

Growth in healthcare spending in the US, the UK, and Germany Exhibit 1



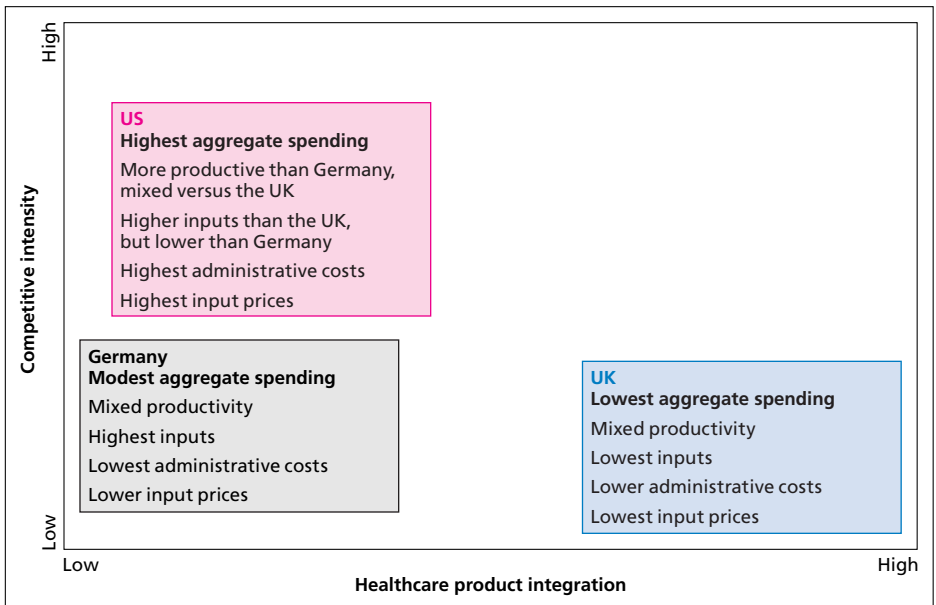
assessing productivity in the treatment of four diseases during the late 1980s: diabetes, cholelithiasis (gallstones), breast cancer, and lung cancer. We looked at the day-to-day actions of doctors and hospitals and tried to connect these actions to differences in longevity and quality of life. Surprisingly, differences in actions mainly arose from variations in how doctors and hospitals were paid and the constraints they faced in providing treatment.

Each country's health system had a distinctive structure, level of spending, and level of productivity, all stemming from different kinds of regulation. In particular, we found that degrees of competition and care integration were important in explaining productivity. Recent changes in the UK and US systems – which have increased competition and integration – are likely to be more helpful than changes made to date in the healthcare system in Germany.

Each country's health system had a distinctive structure, level of spending, and level of productivity, all stemming from different kinds of

Our principal findings were (Exhibit 2):

Relationship between healthcare system structure and overall performance, 1990 Exhibit 2



- ◆ That the US spends the most per capita on healthcare, followed by Germany, then the UK. Higher spending in the US was largely due to higher compensation for doctors and other personnel and higher administrative costs (Exhibit 3).

Exhibit 3

Healthcare spending disaggregation, 1990

Relative productivity			Price of medical inputs*	Administrative costs Percent of total healthcare costs	Healthcare spending per capita Dollars PPP
Medical input level*	Disease treatment outcomes	Estimated productivity			
100	Generally higher	Higher than Germany; mixed versus the UK	100	24	2,439
78	Mixed	Mixed	56	16	1,113
116	Mixed	Lower than the US; mixed versus the UK	70	13	1,473

* Indexed values with US = 100; medical input levels determined at a weighted sum of labor (physicians, nurses, and medical technicians), supplies (pharmaceuticals), and capital; prices of medical inputs determined using the OECD price index

- ◆ That the US's higher spending was *not* due to low productivity; in fact, it was more productive than Germany in all cases and than the UK in the treatment of lung cancer and gallstones. It performed about the same as the UK in breast cancer and trailed the UK only in diabetes treatment (Exhibit 4).

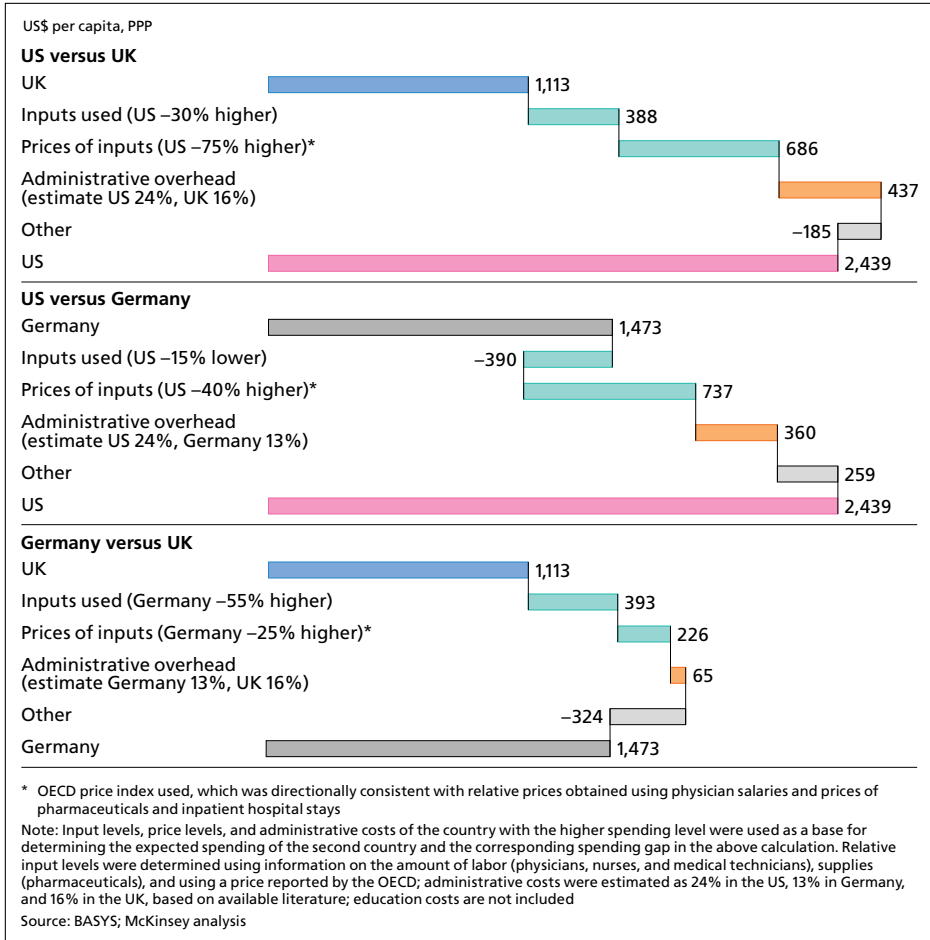
Exhibit 4

Relative productivity by disease case, 1990

Disease	US versus UK			US versus Germany			Germany versus UK		
	Inputs	Outcomes	More productive country	Inputs	Outcomes	More productive country	Inputs	Outcomes	More productive country
Cholelithiasis	↑	↑	US	↓	▼	US	↑	▲	Germany
Lung cancer	↑	↑	US	↓	▲	US	↑	↑	Germany
Breast cancer	↑	▲	?	↓	↑	US	↑	↓	UK
Diabetes	↑	↓	UK	Not studied			Not studied		

In particular, we found that the US led in lung cancer and gallstones treatment because it adopted productive technologies more quickly and broadly and kept patients in the hospital for shorter periods; that Germany was less productive because it used less outpatient care and kept patients in the hospital longer; and that the UK led the US in diabetes care because it focused resources on the patients who could benefit most and integrated the care of multiple specialists better over a patient's lifetime.

Sources of differences in healthcare spending, 1990



Wide variations in treatment and productivity

Assessing productivity in healthcare is more difficult than assessing it in other sectors because treating patients is a far more complex process than producing many other goods and services.* It involves numerous inputs, including the patients’ own behavior. And the output of the treatment process – improved health – is very hard to quantify.

It is possible to cut through the complexities and reach some conclusions, however. The conventional wisdom that the US wastes healthcare resources, for instance, is challenged by our finding that its productivity was higher than Germany’s in all cases and higher than the UK’s in some. While there was

* *Service Sector Productivity*, McKinsey Global Institute, Washington, DC, October 1992; *Manufacturing Productivity*, McKinsey Global Institute, Washington, DC, October 1993.

room for improvement in the treatment of at least one disease (diabetes), the reasons for the US's higher aggregate spending were its high compensation for doctors and other personnel and higher administrative costs (Exhibit 5). Assessing the underlying causes of these was outside the scope of this research effort.

Again contrary to popular perception, the large cross-country differences in productivity for each disease stemmed from variations in how doctors and hospitals treated patients. Despite similar clinical training and access to similar medical expertise and technology, there were surprisingly big differences in the selection of patients for treatment, in how long it took to treat a disease, in when and how broadly technologies were adopted, and in where treatment was given (Exhibit 6, top two sections).

Exhibit 6

Causal analysis of productivity differences

	US versus UK					US versus Germany			
	Diabetes	Cholelithiasis	Breast cancer	Lung cancer	Overall	Cholelithiasis	Breast cancer	Lung cancer	Overall
Benchmark	US	US	?	US		US	US	US	
Productivity									
Inputs	●	●	●	●	●	●	●	●	●
Outcomes	●	●	○	●	●	○	●	○	○
Provider behavior									
Care triaging	●	○	●	○	○	○	○	○	○
Treatment duration	○	●	●	●	●	●	●	●	●
Staffing levels	○	●	●	●	●	●	●	●	●
Setting choice (inpatient or outpatient)	○	○	●	●	●	○	●	●	○
Team-based approach	●	○	○	○	○	○	○	○	○
Technology adoption	○	●	●	○	○	●	○	○	○
Provider incentives and constraints									
Physician incentives	●	●	●	○	●	○	○	○	○
Hospital incentives	○	●	●	●	●	●	●	●	●
Physician supply	●	○	●	●	●	○	○	○	○
Hospital supply	○	●	●	○	●	●	●	●	●
Capital constraints	○	●	●	●	●	○	○	○	○
Substitution constraints	○	○	○	●	○	○	●	●	○
Healthcare system structure									
Product integration and pricing	●	●*	○	○	○	●	●	●	●
Competitive intensity	●*	●	●*	○	●	○	○	○	○
Regulation									
	●	●	●	●	●	●	●	●	●

* In these cases, a higher degree of the respective causal factor led to lower productivity

For example, more selective delivery of care and slower adoption of technology in the UK led to 23 percent fewer resources consumed than in the US, but mixed productivity relative to the US. The UK's lower productivity in gallstones resulted from later adoption of highly productive laparoscopic surgery (a video-guided technique which requires only a small incision). Its lower productivity in lung cancer resulted from a more restricted

In gallstone treatment, the UK's slower adoption of laparoscopic technology led to lower productivity...

patient selection process and less use of computerized tomography (CT) scans in diagnosis and staging of cancer progression. In diabetes, however, the UK's superior care integration led to lower complication rates and greater productivity, resulting in less resource use through aggressive management

and team-based care in specialized clinics. Finally, in breast cancer, the UK's lack of the broad-based mammographic screening program used in the US appears to have increased productivity in some aspects of treatment.

Germany's greater use of inpatient care led to 39 percent more resource use on average and lower productivity relative to the US. In all three disease comparisons, Germany favored inpatient treatment over less resource-intensive outpatient treatment and had significantly longer hospital stays. In gallstone treatment, German patients also took longer to recover and return to work, even though the adoption rate for laparoscopic technology was similar to that of the US. This relatively consistent pattern suggests that underlying healthcare system characteristics influence provider behavior and approaches to treatment.

In all three countries, doctors and hospitals responded predictably and consistently to their economic incentives and constraints within the boundaries of acceptable medical practice. Incentives and constraints were, in turn, determined by the structure of the healthcare system and the way in which the most important markets – those for health insurance coverage and hospital and physician services – were regulated. The three countries had arrived at very different structures by the late 1980s, particularly in terms of the degree of care integration and competition. Differences in these two dimensions led to different incentives and constraints and therefore to varying productivity by disease. No country was the most productive across all diseases.

Country-to-country comparisons

UK versus US. The UK's more selective delivery of care and slower adoption of technology arose mainly from its economic incentives for doctors and constraints on the supply of physicians, hospitals, and capital. These, in turn, were a product of the UK healthcare system's fixed physician salaries – which contrast with the predominantly fee-for-service (FFS) payments in the US

– its less intense competition between physicians for patients and payor contracts, and stronger regulation (Exhibit 6).

The UK trailed in treating gallstones because competition and FFS incentives in the US led to faster and broader adoption of laparoscopic technology; US physicians had financial reasons to respond more to consumer demand and insurance companies readily accepted the more cost-effective surgical substitute. In lung cancer care, the UK's restrictions on referrals and its cap on capital investments led to a more intense triaging process with far less use of CT scans for diagnosis and staging; this led to a less optimal group of patients selected for surgery, with worse outcomes and lower productivity. In breast cancer treatment, the combination of competition and FFS incentives in the US led to mixed productivity because it encouraged a broad-based screening program, but also encouraged more mastectomy versus the less resource-intensive lumpectomy procedure, shorter hospital stays, and greater use of the outpatient care setting.

In diabetes, however, the UK's more integrated care approach and less intense competition led to higher productivity. The National Health Service (NHS), which provides lifetime health coverage for the entire population, identified diabetes as a priority, provided dedicated funding, and actively

...In diabetes, however, the UK's more integrated care approach and less intense competition led to higher productivity

encouraged healthcare providers to organize in specialized clinics offering aggressive preventive care and disease management. In addition, the limited number of general practitioners and the heavy demands on their time forced them to be better

at selecting diabetics for treatment, referring the most severe cases to the diabetic clinics and encouraging the less severe to follow self-treatment regimens. This led to lower complication rates overall, more economical use of resources, and better outcomes.

The US system discouraged such an integrated approach. High turnover among US insurers' members – up to 40 percent a year – and insurers' fear of attracting too many diabetics if they offered integrated treatment, coupled with FFS incentives for doctors, led to more fragmented care and some unwillingness to invest in specialized or preventive care.

Germany versus US. Germany's greater use of inpatient services and longer treatment lengths can be linked to three factors: incentives for hospitals and some specialists to fill hospital beds, regulations on hospital supply that actually led to surplus capacity, and regulation that discouraged the substitution of outpatient care for inpatient care (Exhibit 6).

Specifically, German physicians and hospitals were, by law, compensated by their sickness funds (the equivalent of US insurers) on a per day basis. In the US, however, hospital services were compensated on a per case basis through Medicare (a set payment for the entire hospital episode), and in a variety of ways through private insurers – including FFS, day rates, and case rates. And while German and US hospitals alike competed aggressively for patients, only US hospitals faced any competition in their negotiations with insurers; by law, each German hospital negotiated day rates with all sickness funds en bloc.

US private insurers also faced price-based competition for members and therefore had an incentive to manage hospital costs and lengths of stay, whereas German sickness funds were essentially precluded from competing

German hospital department chiefs actually had incentives to increase their hospitals' workload

on price and from bundling hospital care in different ways. German hospitals also faced the threat of regulatory review and capacity cuts if occupancy fell below 85 percent. Furthermore, hospital department chiefs actually had incentives to increase their hospitals' workload: they personally could

earn FFS income from private patients to supplement their hospital salaries, and their departments were allowed bed capacity for private patients in a more or less fixed ratio to their utilized public beds.

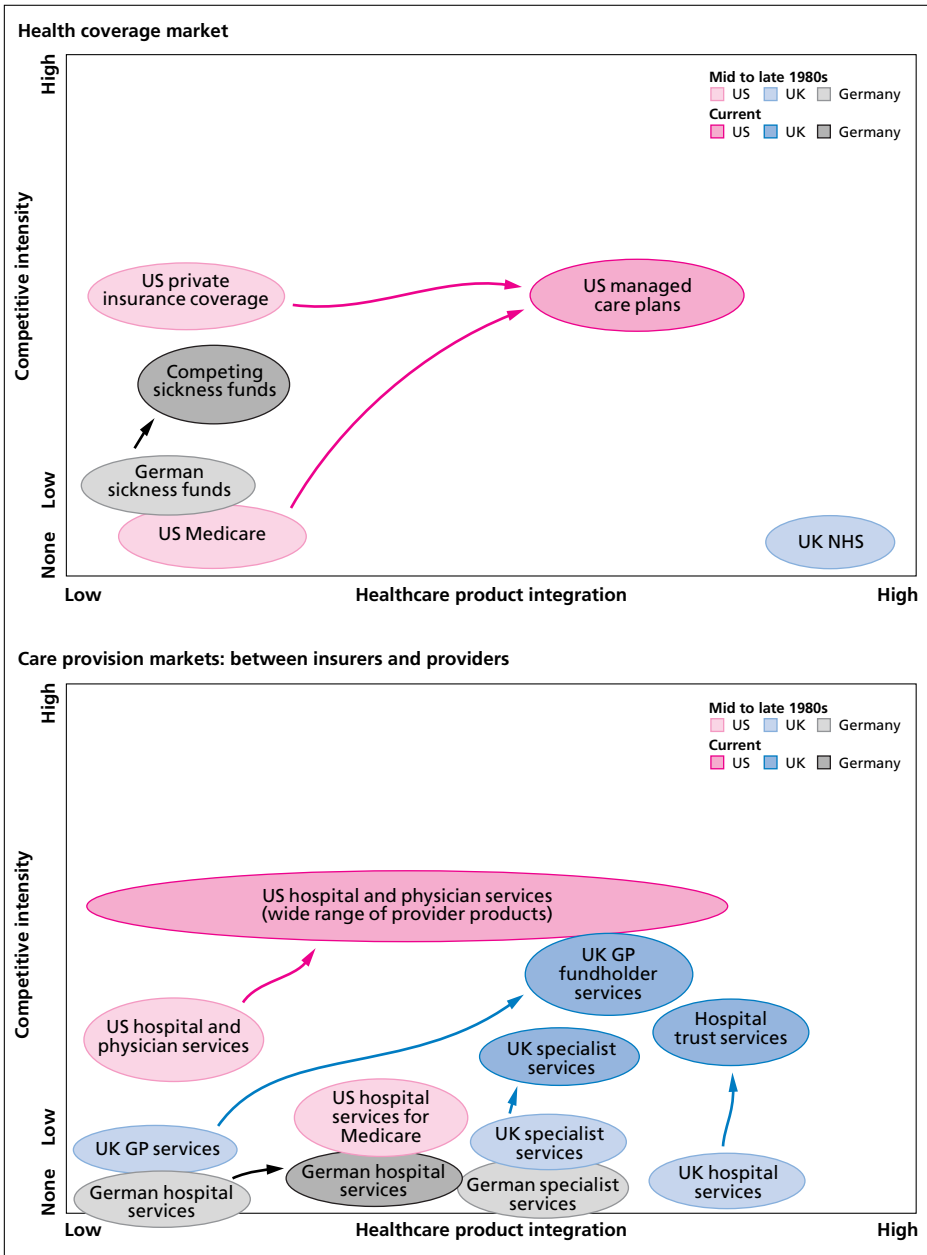
Ironically, Germany's attempts to regulate hospital capacity helped create a surplus. As the regulators, state governments had incentives to increase the number of local hospital beds, because they could create jobs and receive federal transfers from payor funds into their state economies. In addition, the regulatory barrier between inpatient and outpatient care – with each having separate providers and specified services, payment, governance, and oversight – precluded shifting inpatient care to more cost-effective outpatient settings as well as coordinating treatment across these care settings.

Recent changes and implications

Combining our productivity findings with aggregate analyses suggests several implications for policymakers and healthcare organizations interested in reform. The critical first step is to identify the problem or opportunity in precise terms: Is productivity low? Are compensation, other medical prices, or administrative costs too high?

Since the late 1980s, each country's healthcare system has changed a lot, moving toward greater competition and integration of care (Exhibit 7). While the impact on productivity, input prices, and administrative costs has yet to be determined, our findings allow us to assess the extent to which the recent changes are likely to improve productivity.

Recent changes to healthcare market structures



In the US, intensifying employer demands and competitive health coverage and care provision markets have led to more integrated care in at least some diseases through the emergence of health maintenance, preferred provider, and other managed care organizations. This has happened without significant regulatory changes. In addition, insurers and healthcare providers have created disease “carve-out” products that integrate care more effectively in

areas such as cancer and diabetes. Not surprisingly, these developments have led to a decline in specialist physician compensation and to actual price reductions for health coverage in some markets. The effects on administrative costs are unclear.

In the UK, the 1991 reforms introduced some competition at the local level between payors and providers and fostered somewhat more integrated care, but left the integrated lifetime coverage and monopoly power of the NHS intact. Many NHS-owned hospitals were also privatized as self-governing trusts with greater control over their capital purchases. The overall budget constraint remained, however.

US developments have led to more integrated care in some diseases and price reductions for health coverage in some markets

While the system changes have actually increased administrative costs, their effect on productivity is still unclear. According to some

estimates, as many as 50,000 nursing jobs and 60,000 hospital beds have been eliminated since 1990, but 20,000 senior managers have been added in the NHS. There is some evidence that the pace of technology adoption has quickened: a targeted breast cancer screening program based on mammography has been established, while the penetration of laparoscopic technology now approaches US levels. Although some hospitals and their specialists still face supply and capital constraints and system competition has been limited to date, we would expect some improvement in UK productivity, at least in the diseases studied.

In Germany, important reforms have been made in the health coverage and, to a lesser extent, in the care provision markets. As of 1996, sickness funds are allowed to compete for members on the basis of price and other factors, but restrictions on their ability to negotiate price differentially with individual providers or to bundle care in different ways (by disease or case, for example) remain intact. While regulated case rate payments for hospitals have been introduced, they cover only 15 to 20 percent of cases. Regulatory barriers between inpatient and outpatient care remain, as do the regulatory processes for controlling hospital and physician supply.

The US and the UK are moving towards productive change in their healthcare systems, with each adopting some of the other's beneficial characteristics

It is unlikely that recent changes in the German system will do much to improve productivity, unless they somehow lead to removal of the regulatory barrier between inpatient and outpatient substitution, greater flexibility in sickness funds' negotiations with providers, or the adoption of case-rate hospital payments across the board.

Thus, the US and the UK appear to be moving in the direction of productive change in their healthcare systems, with each adopting some of the other's beneficial characteristics. But given the questionable impact of German reforms to date, it is likely that the productivity gap between Germany and the US – and possibly between Germany and the UK – is widening. 