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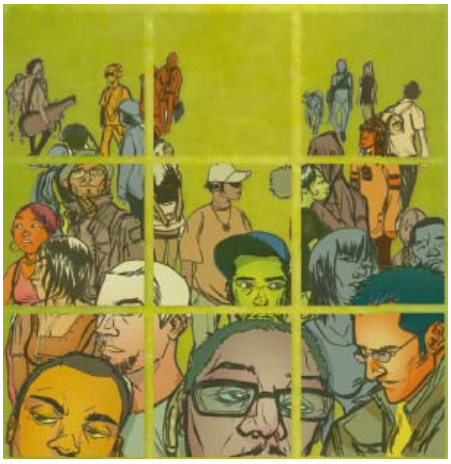

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Public and private roles

The relative roles of the public and private[b] sectors in healthcare provision have and continue to evolve over time. Reforms stem back to 19th century neoclassical economics that market solutions lead to more efficient allocation of resources, uncertainties over how the healthcare market would respond to these institutions[1] [2] and, more recently, to new public management theories[3] and the influence of multilaterals[4] [5]. The debate over the relative merits of private and public provision seeks to answer the question "who would more efficiently provide public goods?"

Proponents of private provision cite the duality of profit maximisation and efficiency as theoretical evidence of its advantage. The competitive market model is argued for potential gains in efficiency, quality, consumer choice and responsiveness, and transparency and accountability[6]. However, arguments against private provision cite failures inherent in the healthcare market and a mismatch between public health orientation and profit maximisation. Ultimately, as Culyer[7] argued, empirical evidence should assist in answering the question of which institution most efficiently provides services. This brief seeks to broadly assess the relative efficiency of public and private delivery in healthcare. It summarises empirical evidence, identifies factors that influence efficiency and outlines policy implications. The evidence-base is limited but growing. Findings are mixed which suggest that efficiency gains in private delivery depend on the context.

What is efficiency and why is important?

The World Health Report 2000 called attention to the importance of efficiency in all functions of a health system and in ultimately achieving the goals of health improvement, responsiveness and fairness in financing[8]. Technical efficiency refers to the extent that resources are being wasted. It measures the degree of producing the maximum amount of outputs from a given amount of inputs or, conversely, using the minimum amount of inputs to produce a given output[9]. Examples of inefficiencies are excessive hospital length of stay, over-prescribing, over-staffing, use of branded over generic drugs, and wastage of stock. It has thus been analogized to a "torn rice sack[10]" as resources are wasted due to inefficiencies in the system. Measurement of efficiency is especially relevant in settings constrained by scarce resources and given the recent economic downturn and escalating healthcare costs. It allows a system to produce more and better at zero cost.

[b] Use of the term "private" refers to private for-profits and private not-for-profits (e.g. non-governmental organisations, faith-based organisations, charitable organisations), and privately motivated individual(s).

Empirical evidence

The efficiency of the hospital sector merits analysis as it represents the largest proportion of total health expenditure in OECD countries[11] and approximately 45-69% of government health expenditure in sub-Saharan Africa[12]. Frontier efficiency measurements[c] of public and private provision in hospitals and similar healthcare settings is summarised below. This selective review provides insight into how efficiency varies with ownership and highlights the diversity across environments.

Hollingsworth[13 14 15] conducted a meta-analysis of 317 published works on efficiency measures and concludes that "public provision may be potentially more efficient than private" [d]. Summary statistics showed average for-profit hospital efficiency levels at 80.1%, not-for-profit at 82.5%, and public at 88.1%. In other words, hospitals could increase outputs by 20% with current levels of inputs or, alternatively, reduce inputs by 20% while still maintaining its current levels of outputs. Taking a few countries as examples, it is evident that the impact of ownership on efficiency is mixed. Lee et al[16] determined that non-profit hospitals in the United States were more efficient than for-profit hospitals, and earlier studies validate this conclusion[17 18 19 20 21 22]. In contrast, Chang et al[23] found the private sector to be more efficient than the public sector in Taiwan. Swiss hospitals' efficiency levels were not predisposed towards inefficiency by type of ownership[24 25 26 27]. Finally, in Germany, evidence is mixed. Herr[28] and Helmig & Lapsley[29] found private hospitals less technically efficient than publicly owned hospitals. However, others conclude the inverse[30] or no found difference at all[31]. Regardless of the source of efficiency, potential savings are great and amounted to $850 billion in one study[32]. Variation in efficiency levels not only occurs across high-income countries but also within a country as state and market reforms evolve. During the 1991-96 period, the efficiency of German private hospitals decreased by 20%. This drop may be attributed to large private investments in supplies and property and to the transfer of inefficient public clinics to private enterprises – both likely in response to the 1992-3 reform which changed the payment system from per diem to prospective payments[33].

Unfortunately, there is a dearth of studies measuring the *relative* technical efficiencies between public and private in low- and middle-income countries. Masiye[34] is perhaps the only study which reported on the significantly positive effect of private ownership on efficiency in Zambian hospitals (mean

[c] Selected evidence are primarily from studies using nonparametric data envelopment analysis (DEA) but also includes a few studies (i.e. Rosko, Herr and Farsi & Filippini) employing parametric stochastic frontier analysis (SFA). DEA defines a production frontier of the most efficient producers which "envelopes" all others such that those on the frontier are considered efficient and those below are inefficient. The degree of inefficiency is the ratio of actual to optimal performance. SFA estimates the production frontier using regression models such that inefficiency is the observed deviation from this prediction. For further information on DEA see Charnes et al (1978), on SFA see Aigner et al (1977), and for measurement techniques as applied to the hospital sector, see Folland & Hofler (2001).

[d] Hollingsworth cautions that results may not represent true differences in efficiency but be due observation, the unusual nature of healthcare as a commodity, and/or methodological differences in studies.

efficiency for private hospitals was 73% compared to 63% for public hospitals). While the existing empirical evidence predominantly explores the extent of inefficiencies in the public sector, it nevertheless underscores the potential for efficiency gains. Studies in African countries reported technical efficiency levels ranging from 26% to 87% with the majority with scores above 50%[35 36 37 38 39 40 41 42 43 44]. This implies significant wastage – total outputs could be doubled with the same level of resources or, conversely, inputs reduced by half while still producing the same level of outputs. These savings are substantial and a great potential to provide more health services, address inequities and/or improve quality of care. In Namibia, savings equated to the construction of 50 clinics[45] and, in South Africa, represented three times user fees collected[46].

Dependent factors

Does private or public ownership predispose technical inefficiency? Empirical evidence on the impact of ownership is mixed across and within settings. The variation highlights the influence of market conditions and institutional arrangements. Three are outlined here – demand and supply factors, lack of resources and decision-making ability, and payment mechanisms.

- *Demand factors* such as income levels, population density and purchasing power of the public sector will influence technical efficiency e.g. in levels of utilisation, standards of care, and duplication in the system. Similarly, *supply factors* influence the input mix through levels of economic development, management of human resources, institutional structures, and the strength of the public sector capacity[47].
- *Lack of resources and decision-making ability* are poor motivators for efficiency and constrain overall ability of providers to choose an efficient input/output mix. Poor infrastructure and human resources will result in a loss of the confidence in the health system. Uniform policies reduce opportunities to increase efficiency and may propagate inefficiencies.
- *Payment mechanisms* can act as strong incentives for providers to act efficiently in the production and delivery of outputs. At the provider level, efficiency incentives are generally stronger under prospective than retrospective reimbursement. At the personnel level, incentives depend on the extent to which remunerations are linked to performance. Akazili et al[48] found those receiving incentives from the Ghanaian District Health Management Team were nine times more likely to be technically efficient. However, healthcare production is complex with many interrelationships. In this interaction, incentives may lead to perverse effects such as over-using inputs or skimping on quality.

These factors cut across all levels of the system and types of ownership. Somanathan et al and Hensher[49] note other factors which influence efficiency by affecting the impact of incentives and constraining the ability of providers to make efficient choices.

Conclusion

The literature on relative efficiency levels between private and public delivery of healthcare shows inconclusive evidence. This underscores that one cannot generalise which ownership model is best across countries or even within countries over time. Countries can, however, move towards its best practice by reducing waste and producing cost-effective interventions. The evidence-base needs to be expanded with routine measurement of inputs and outputs of systems to identify and quantify inefficiency, key causes and constraints, and possible interventions or structural changes to improve performance.

The debate of private vs. public seems anachronistic. Today the role of the private sector in the delivery of health services is undeniable and in Africa accounts for approximately 50% of healthcare provision[50]. It is no longer a question of private vs. public but rather, "what is the best and most efficient mix for the local context?" Empirics but also social values will inform the balance. Ultimately, reaching this balance in the health sector requires strong government stewardship to maximise the systems contribution to population health.

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