

Privatization and the allure of franchising: A Zambian feasibility study[†]

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SUMMARY

Efforts to privatize portions of the health sector have proven more difficult to implement than had been anticipated previously. One common bottleneck encountered has been the traditional organizational structure of the private sector, with its plethora of independent, single physician practices. The atomistic nature of the sector has rendered many privatization efforts difficult, slow and costly—in terms of both organizational development and administration. In many parts of Africa, in particular, the shortages of human and social capital, and the fragile nature of legal institutions, undermine the appeal of privatization. The private sector is left with inefficiencies, high prices and costs, and a reduced effective demand. The result is the simultaneous existence of excess capacity and unmet need.

One potential method to improve the efficiency of the private sector, and thereby enhance the likelihood of successful privatization, is to transfer managerial technology—via franchising—from models that have proven successful elsewhere. This paper presents a feasibility analysis of franchizing the successful Bolivian PROSALUD system's management package to Zambia. The assessment, based on PROSALUD's financial model, demonstrates that technology transfer requires careful adaptation to local conditions and, in this instance, would still require significant external assistance. Copyright © 2003 John Wiley & Sons, Ltd.

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'You cannot walk away from Zambia's reform effort saying, "We helped Zambia dive into the river of comprehensive Health Reforms... and those chaps were courageous, but Zambia's infant mortality rate has become worse; its infrastructure remains unfixed; its drug supplies still inadequate; its epidemics uncontrolled..."'

Hon. Deputy Minister, Dr Katele Kalumba (World Bank, 1994: 11)

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'To have an efficient economic system it is necessary not only to have markets but also areas of planning within organizations of the appropriate size.'

R.H. Coase (1992: 716)

Privatization has become a virtual mantra in the health sector reform efforts of many countries throughout the world. The most difficult part of privatization has often been regarded as making the initial political decision to pursue it. Thereafter, it has often been thought that privatization is a relatively simple, straightforward process: private markets will spontaneously develop and flourish, resulting in efficiency gains as private agents pursue profits. There are numerous examples of this having occurred across a range of countries and industries (Harper, 2000). Just as often, however, reform has been characterized by slow starts, false starts and less-than-stellar results, as the fears of Zambia's Deputy Health Minister quoted above reflect. These disappointing experiences testify to what is becoming increasingly recognized: namely, that privatization is not an automatic, foolproof process for spawning relatively more organized and efficient organizational structures. This is especially likely to be the case in the health care markets of poor countries. Ronald Coase's insight above pinpoints the essence of the problem. It is not enough simply to 'allow' markets to exist: markets (as with governments) must develop appropriate organizational structures. The institution-building, organizational development process takes time and considerable learning-by-doing (World Bank, 1996: 85). How much so, depends upon (among other things) the nature of the activity to be privatized and the nature of the market in which it is to be introduced.

As issued by the World Bank in its 1993 *World Development Report*, the call for privatizing portions of the health sector involves several complex and interrelated activities, including the narrowing of the scope of the public sector, transforming the state from a provider of care to a financier and regulator of care, and promoting the growth of the private health sector—both indirectly (by removing legal obstacles) and directly (by, for example, contracting out services). Implementing the practical details involved in these various, at times very different, types of processes, has revealed numerous potential stumbling blocks. A common bottleneck to initiating change in most lower and middle income countries (with the exception of some socialist states) has been the traditional organizational structure of the private health care sector, with its plethora of independent, single physician practices. The atomistic nature of the private sector is likely to render privatization efforts difficult, slow and costly—in terms of both organizational development and administration.

Physicians, in general, are not known for their entrepreneurial or managerial skills: rather, evidence suggests that they often follow practices that constrain the size and growth of their businesses. For instance, doctors commonly pursue target-income pricing policies. They have an expected or desired level of income which, if they find they are unable to attain, they respond to by increasing the prices of their services, thereby discouraging patients, reducing demand and further dampening incomes. This practice creates a vicious negative spiral such that physicians may become significantly under-employed. Privatization thus runs head-long into the reality that private practices historically have not been run efficiently, which

is to say, their organizational structure and management practices have not minimized costs for consumers.

Rather than reviewing failed attempts at privatization, this paper instead seeks to promote privatization and, more generally, health care organizational management skills by encouraging the transferring of organizational and managerial technology from one developing country to another via franchising. Franchising offers economies of scale and scope, as well as other organizational advantages over the generally prevailing, single-provider structure. It provides a means for improving the organization of the private sector and thereby the probability that privatization schemes will be successful. In this study we demonstrate how a private sector business model—developed and applied in a socially responsible, highly successful manner in one developing country, Bolivia—can be adapted to improve efficiency in the private health care sector in another country, Zambia. More specifically, this paper conducts a financial feasibility analysis of replicating the Bolivian-based PROSALUD model in Zambia. The assessment uses empirically based parameters in order to ground the model in the specific market characteristics of Zambia. The introduction of Zambian health care market parameters into the model alone, however, does not provide all of the information necessary to make the assessment. A number of critical data parameters still must be assumed, however, and sensitivity analyses are used to investigate the robustness of various key assumptions. For reasons discussed below, franchising represents a business practice that is not likely to germinate spontaneously in Zambia's private health care markets.

PRIVATIZATION: WHY THE PROFIT MOTIVE IS OFTEN NOT ENOUGH

In recent years privatization has been spurred by two factors: first, a pragmatic concern over a persistently inefficient public sector (coinciding with large and growing central government deficits); and second, an ideological consideration, namely the growing preference of some governments and of many international agencies to reduce the scope of the public sector. Too often it has been forgotten that privatization is a natural outgrowth of long term economic development itself. For example, private sector services have high income elasticities of demand. Thus, as average income increases, so too does the demand for and utilization of private health care services. Whatever the reason, the move toward private sector health service providers has generated growth in both for-profit businesses and non-profit, non-governmental organizations (NGOs).

In many Latin America countries (particularly the Andean and Central American countries), the private sector has been relatively slow to develop because it has historically been crowded-out by free or low-priced Ministry of Health services and mandatory enrollment in social security systems with their own health care delivery systems. This situation has often been compounded by the distribution of private physicians and hospitals, which are overwhelmingly concentrated in capital cities (Fiedler *et al.*, 1999). As a consequence of these factors, the considerable growth in the private sector over the past decade in much of Latin America has not occurred at anything approaching its potential. The market has been demand-constrained—evidenced by the excess supply of private physicians and hospital capacity that exists in many countries (even as the health care needs of substantial portions of the

population remain unmet). A World Bank survey in El Salvador, for instance, found considerable excess capacity: physicians on average reported only 1.2 consultations per hour in their private practices and 20% of physicians reported they could increase the number of private consultations by between 50% and 100%. Meanwhile, private hospitals had an average occupancy rate of just 54% (Iunes, 1994: 12–13). Similar results have been found in Ecuador and elsewhere (Fiedler and Nelson, 1996: 5).

This situation, however, is changing. As technology lowers transportation and information costs, and as average real per capita incomes increase, the private health sector in these countries is growing. The transformation of these historically small, fragmented and inefficient markets has created a large gap in service potential which domestic and foreign multinational managed care organizations have recently started to recognize and are today trying to fill (Freudenheim and Krauss, 1999). All agents, public and private alike, are trying to define the future nature of the firm, its organizational structure, its size and its composition in terms of its foreign versus domestic ownership. This has been the recent experience of Latin America, a middle income region of the developing world.

What about Africa?

African countries have low numbers of medical care providers: on average there are only 200 doctors per million persons in Africa, compared with 824 per million in Latin America and 2381 per million in OECD countries (Hanson and Berman, 1998: 198–199). Of these, privately employed physicians constitute 46% of the total in both Africa and Latin America, and 55% in the OECD. African countries, on average, have a higher share of private hospital beds (34%) compared with Latin America (21%), but many fewer beds in total: hospital beds in Africa number on average just 17 per 10 000 persons compared with nearly twice that (29 per 10 000) in Latin America.

There is no reason to think that the pressure for privatization will subside, or that such privatization that does occur in Africa will proceed any easier than in Latin America. Indeed, the shortage of human and social capital, along with the fragile nature of both legal institutions and the rule of law, suggest instead that privatization in Africa will encounter far greater difficulties. The thesis of this paper is that appropriate technology developed in other regions may be adaptable to Africa, lessening the need to 'reinvent the wheel.' Certainly, imported technologies must be tailored to, and sensitive of, local conditions and cultural attitudes.

THE ALLURE OF FRANCHISING

Ronald Coase's insight quoted at the start of this paper highlights the importance of the institutional structure of production. When compared with the atomized business activities of a plethora of individual physician practices, an appropriately sized 'firm' can substantially reduce costs. When choice of technology is flexible, firms lower costs of production by economizing on expensive inputs. In the health care markets of most African countries, entrepreneurial and managerial talent is relatively scarce. By adopting production technology that reduces the requirements for these resources, more efficient forms of organization than the single physician

practice can be developed and developed more rapidly, thereby improving opportunities for privatization and gains in the efficiency of the health care market.

A franchise consists of one entity granting legal permission to another entity to sell a product or to use a trademark or a technology to produce and sell a particular good or service. Franchising is a mechanism for replicating a proven business strategy that is based on the concept of minimizing start-up time and costs, and economizing on scarce entrepreneurial and managerial talent. In this paper we consider a particular type of franchise, one that is likely to be especially amenable to entering into a public–private partnership; namely, a social franchise. A commercial (for-profit) franchise system would favour the production of higher-profit medical services and would likely reduce or eliminate unprofitable activities (such as prevention and wellness clinics); a commercial franchise would likewise establish itself in locations which are most profitable (likely avoiding poorer-income neighbourhoods). By contrast, a non-profit ‘social’ franchise system strikes a balance between equity and sustainability concerns (Population Services International, 1996: 24).

The envisioned social franchise of clinics: (1) is designed to provide a high volume of low-income persons with quality primary health care; (2) must be more efficient and be able to recover more costs than public sector delivery systems; and (3) as a consequence of this should achieve a substantial level of self-financing after an initial start-up phase. The social franchise would receive start-up funding by a donor agency and in return its clinics would perform public health functions in poorer neighbourhoods. These criteria allow for considerable discretion (particularly the last one) in defining what level of self-financing is adequate and what is the duration of the start-up phase. Maintaining innovation and cost efficiency within a non-profit organization is a critical issue that is addressed at length below.

The franchising technology: the PROSALUD model

While franchising is a common practice in a wide variety of retailing operations, its application to health care delivery is relatively new in developing countries. An attractive model for a social franchise is provided by PROSALUD, a private–public partnership that has been in operation in Bolivia for more than two decades. PROSALUD was conceptualized in 1983 with support from the United States Agency for International Development (USAID). Two years later it began operations with six health centres (half in urban areas), and three health posts (all rural). By 2000, the organization had expanded nationally to encompass 34 health centres, a 25-bed referral hospital, a child development centre, and provided primary health care services to 400 000 people—nearly 5% of Bolivia’s population.¹

¹PROSALUD probably does not meet all of the technical requirements for being a ‘franchise’ operation. Although franchises entail marketing, branding and other activities in common, one generally thinks of each franchise as being a legally distinct operation (e.g. an independent McDonald’s franchise in Detroit is not legally or financially tied to a McDonald’s franchise in San Francisco). It is this separation of ownership that is distinct about a franchise operation compared with say, a branch bank. By contrast, PROSALUD health centres in wealthier urban areas subsidize health centres in poorer rural areas. Nevertheless, PROSALUD in many respects acts like a franchise operation in terms of management, marketing, training and other operating aspects. For current information on PROSALUD’S see its official website: <http://www.prosalud.org/index.htm>.

PROSALUD's network is distinguished by its patient-focus and its provision of a large volume of high-quality services with impressive levels of patient satisfaction (for analysis of these issues see Fiedler, 1990; Fiedler and Hougén, 1995; Cuellar *et al.*, 2000). Just as importantly, PROSALUD provides relatively cost-efficient service, such that in the mid-to-late 1990s it was about 75% self-financed through user fees. As a not-for profit, public-private partnership, PROSALUD does receive an operating subsidy. The subsidy allows PROSALUD to carry out public health activities: for example, it provides all preventive services entirely free-of-charge (including immunizations, well-baby visits and prenatal care—roughly half of all of its care). In addition, roughly 10% of curative care is provided to indigents free-of-charge. All other patients pay relatively low (sliding-scale) prices.

PROSALUD's centres are staffed by a general practitioner (GP) who also serves as the director of the clinic, and, depending upon the caseload, a minimum of one nurse, a nurse auxiliary and a laboratory technician, who are all salaried employees. In addition, most clinics have a dentist, an obstetrician/gynaecologist and a paediatrician. These staffers are non-salaried and operate under a fee-splitting arrangement (which allows PROSALUD to avoid substantial fixed personnel costs). In return for splitting-fees, PROSALUD provides doctors with the use of a consulting room, a high volume of patient traffic, and marketing and management support (terms vary by specialist). Administration is carried out by the central office or management service unit (MSU), which oversees system development and management (e.g. marketing, planning, personnel hiring and training, and the purchase and distribution of drugs and other supplies).

One of the foremost elements in PROSALUD's successful control of costs is its well-documented and well-institutionalized management system. It is this system that provides the basis for its technological advantage and that sparks interest in assessing its potential adaptation in Zambia and elsewhere. The two major features of the system are: (1) the development of and reliance on a monitoring, evaluation and planning information system (MEP) for tracking patient services, revenues and costs; and (2) its procedures for personnel recruitment, processing and training. The data-driven MEP information system emphasizes and makes transparent the connection between service delivery, patient satisfaction and financial performance; PROSALUD has made the MEP a centerpiece of a participatory management process that utilizes public meetings of employees and patients to create a heightened consciousness about the business aspects of health care that are conspicuously lacking in many other systems, be they in the low- or high-income countries.

At its heart, this operating and management system is based on transparency, flexibility, and wide participation by stakeholders, especially its customers—the patients. The development of a committed labor force needed for such a non-profit organization to thrive, in particular, the performance and retention of key employees, relies on a mix of pecuniary and non-pecuniary incentives. Pecuniary incentives are used in fee-splitting arrangements with part-time doctors who supplement the staff. Full-time clinic medical directors receive salaries which are at least competitive and probably exceed what most doctors could earn in an under-utilized single-provider practice. Since performance measures are transparent and regularly evaluated, each clinic's medical director faces the threat of repercussions if job

performance is inadequate. Nevertheless, owner-agent problems inevitably arise and these financial incentives alone may not be sufficient, particularly among staff who do not split revenues.

In the case of PROSALUD, management has additionally relied upon strong motivational leadership that stresses participatory and community-building activities that build worker self-esteem and generate self-actualizing rewards. Social and community links provide status and incentives for workers to perform well, similar to micro-credit financing regimes. That such non-pecuniary motives can provide powerful incentives has been documented in the case of PROSALUD (Fiedler, 1990; Fiedler and Hougen, 1995) and elsewhere (Fiedler and Wight, 2000).

In light of the number of fairly specialized functions handled by a franchise, it should be clear why the typical physician might face serious managerial hurdles in attempting to expand from a single-provider model to achieve the large economies of scale and scope of a franchise, and also why barriers to privately developing such technology might exist in countries currently lacking entrepreneurial inputs. By the same token, compared with the compelling evidence of waste and mismanagement in centralized MOH bureaucracies—with a lack of accountability and the existence of severe obstacles to improving efficiency (e.g. civil services laws and a deficiency of incentives)—the not-for-profit franchising alternative offers the potential for expanded quality health care in a format that enhances economic efficiency. PROSALUD has in fact offered technical assistance to eight other countries in Latin America and two countries in Africa where MOHs were interested in starting public-private partnerships.²

A CASE STUDY: ZAMBIA AND ZAMHEALTH

Like Bolivia, Zambia is a landlocked country which ranks near the bottom of its continent's economic hierarchy. As did Bolivia, Zambia for too long relied upon a single commodity export, copper, and thus experienced dramatic swings in its terms of trade. While Bolivia's per capita income rose in the 1990s to about \$1000, Zambia's per capita income remains less than \$400 and fell throughout the 1990s. Health indicators mirror the economic decline, as the public health infrastructure deteriorated. Over the period 1990–1998 life expectancy in Zambia dropped from 47 years at birth to 43 years; and infant mortality, estimated at 92 per 1000 live births in the mid-1980s, had risen to 114 by 1998 (Diop *et al.*, 1998: 2; World Bank, 2000). Malnutrition, tuberculosis, intestinal parasites and leprosy have been the traditional health risks; since the 1980s, AIDs has spread rapidly through urban populations. These factors severely tax the poorly managed public health care system, and suggest that improved efficiency within the sector is of the highest urgency. Privatization of health system delivery is held out as a model for bringing improvements in both the cost and quality of care, yet as noted in the quote at the start of this paper, the private sector has not provided a panacea.

²These countries are Brazil, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Peru, Uruguay, Zambia and Kenya (PROSALUD official website: <http://www.prosalud.org/activities.htm> accessed 27 July 2000).

Indeed, there are formidable constraints on expanding the private health care sector in Zambia. From independence in 1964 Zambia was ruled by a single party, the United National Independence Party (UNIP), that assumed the role of supreme protector and benefactor. For its first 25 years Zambia's government opposed the private sector, and many laws gave the government indiscriminate power over it. During that period, the private practice of medicine was actually outlawed for a substantial time. Consequently, the Zambian MOH has been the primary provider of medical care for most Lusakans. This massive public health sector has apparently had little concern with, or responsiveness to, patient preferences or cost control.

Nor has the situation in the small existing private sector been markedly different. Providing less than 15% of all care, Zambia's private health care delivery sector grew slowly in the 1990s (Berman, *et al.*, 1995; Scott, 1996). Commercial and not-for-profit private providers are concentrated in or near the larger cities and towns, and most have been in the comfortable position of having long-standing contracts with large private businesses and parastatal organizations. Assured of an adequate revenue stream, most of these larger private clinics were predictably quiescent until recent macroeconomic reforms. Missions operate approximately 29 hospitals and 53 health centres concentrated in Lusaka and the Copperbelt. The mining industry operates 12 hospitals and 66 clinics, and there are 150 commercial private clinics and two small commercial hospitals. There are additionally 20 000–30 000 traditional healers in practice.

Zambia's paternalistic approach proved highly inefficient, and fundamental political shifts have increasingly recognized that individuals can and should bear greater personal responsibility. Elections in 1991 ousted the UNIP, and the in-coming Movement for Multiparty Democracy led by Frederick Chiluba almost immediately began designing a programme of structural reforms in the health sector. The overall theme of the 1992 reforms was to bring equitable, cost-effective services as close to the family as possible. The major goals were improved financial and performance accountability, such as through the introduction of user fees; decentralized planning and managing; funding redirected to more cost-effective, lower levels of the system; and the provision of an essential package of health care services with improved quality. In addition to the direct benefits of these changes, it was anticipated that private involvement would provide a more effective springboard for attracting foreign donor health aid and thus become a catalyst for renewing 'donor fatigue'.

Two reforms are of particular relevance to this study. The first was the focus on allocating available government funding to a set of cost-effective services called the Essential Health Care Package (EHCP). Payment for other non-essential services would be the responsibility of individuals. The second was to have districts contract with public, non-profit and commercial providers for the provision of these services on a performance basis. In light of these objectives, the Government of Zambia decided to assess the viability of developing a private system of clinics (called ZAMHEALTH), based closely on the Bolivian franchise model. The analysis in this paper builds upon that initial feasibility study (PSI, 1996); the assumptions and conclusions are distinct, however, as elaborated in the acknowledgements.

Since ZAMHEALTH would be expected to receive government subsidies, the government felt it important that it not be destructive of competition in the

emerging, private, for-profit sector. In other words, it must operate within a niche not already well-served by the private markets, and into which for-profit providers, for reasons of well-known externalities and free-riders problems, would not adequately service.

In terms of financial feasibility, it is necessary to move ZAMHEALTH beyond the conceptualized national marketplace to a geographically distinct area. Lusaka is the most favourable city in which to initiate ZAMHEALTH because of its higher average income, higher health care utilization rates, and its more than twice as high health-related expenditures vis-à-vis the Copperbelt province (the next most favourable site). Furthermore, as the largest city in the country, Lusaka already accounts for 55% of the national expenditures on modern care providers.

Adaptability

While franchising provides a ready-made technology for starting a business (in this case a not-for-profit NGO) in a particular market niche, the specific nature of that niche is likely to vary depending upon the characteristics of the market. While PROSALUD has been enormously successful in Bolivia, a few observations about the differences in the health care markets of Zambia and Bolivia strongly suggest that any technology transfer must be adaptive to the particular parameters and institutional structures of Zambia's market. Some of these required changes are relatively straight-forward substitutions of known and quantifiable phenomena (see Table 1). ZAMHEALTH's model parameters—including the prevalence of self-reported illnesses, utilization rates, service delivery and patient mix and average costs—were gathered from a variety of sources, including a 1996 Living Conditions Monitoring Survey (LCMS), the Zambian MOH, the Medical Council of Zambia and on-site visits to existing private clinics in Lusaka (Fiedler *et al.*, 1998). Among the more important divergences between Bolivia and Zambia are the substantially different personnel staffing ratios, composition of services provided, utilization rates for first and follow-up visits and shares of indigent patients.

Personnel. One of PROSALUD's most important cost-minimizing aspects is the fee-splitting/risk-sharing arrangement that it has with its paediatricians, obstetricians and dentists, a system that relies critically upon the excess supply of physicians in Bolivia. There are 4.8 physicians per 10 000 persons in Bolivia, more than five times greater than Zambia's ratio of less than 1.0 per 10 000 persons (World Bank, 1993). The much smaller number of physicians in Zambia (1500 in total) raises the concern of whether enough of the fee-splitting physicians and specialists would be willing to work for ZAMHEALTH. However, there are several reasons to think that this problem, if it exists at all, can be surmounted. For instance, macroeconomic reforms in Zambia have forced a restructuring of the existing private health practices of large employers, thus increasing the availability of fee-splitting doctors.

Data from the Medical Council of Zambia (which certifies and regulates all health practitioners in the country) combined with the 1996 LCMS, strongly support the anecdotal impression that there is actually excess capacity in the private health

Table 1. Comparison of base case parameters

	PROSALUD	ZAMHEALTH
Personnel		
GP Medical Director consultations per year	10 000	10 000
Clinical officers	None	Overflow visits
Nursing care	No distinctions	Follow-up visits
	No distinctions	Under-5 child clinics
	No distinctions	Ante-natal visits
	No distinctions	Post-natal visits
Composition of curative care visits		
Upper respiratory	No distinction	19%
Malarial	No distinction	18%
Diarrhoeal	No distinction	14%
All other	No distinction	49%
Dental visits	Provided	Not provided
Utilization		
Curative care utilization (first visits per capita/year)	1.0	1.6
Follow-up visit rate	35%	100%
Deliveries (ratio to first visits)	0.06	0.02
Medications (ratio to first visit) ^a	2.5	3.0
Laboratory tests (ratio to first visit) ^a	0.40	0.41
Indigent patients		
Share of patients	10%	20%

Sources: LCMS, 1996; Fiedler *et al.* 1998, and various additional sources (see text).

^aExcludes upper respiratory, malarial, and diarrhoeal visits, which have distinct multipliers.

care sector. The existing individual private clinics in Lusaka are estimated to operate at between 38% and 50% of capacity, suggesting that hiring a GP Medical Director for each clinic would not be a problem.³

A major distinction between Zambia and Bolivia, however, is the numbers and types of personnel besides GPs that provide patient care in each country. Zambia relies heavily on a type of health care provider unknown in Bolivia: Clinical Officers (COs).⁴ About 40% of private clinics in Lusaka are staffed almost exclusively by COs, with physicians providing, at most, the minimum legal required 3 hours per week oversight (Scott, 1996; Berman *et al.*, 1995). While official registers are

³Of the 130 private individual consulting rooms in Lusaka in 1997, there are an average of just 66 consultations per week, or just 1.7 consultations per hour. Operating capacity figures were based on the assumption that a doctor could see one patient every 15 to 20 min. Accounting for physician preferences (e.g. a preference for a slower pace of work) is an additional factor to be considered. Scott (1996) collected more precise data on the practices of 33 private clinics, and found that the average number of consultations per hour was about 1.8 in these clinics. All of these findings reflect only averages, and several outlier private health clinics were found to be exceedingly active, reporting more than 3500 consultations per month.

⁴Clinical Officers (COs) hold a diploma in Clinical Medical Sciences. Admissions qualifications for this degree include five GCE 'O' levels with credits in English Language, Maths, Biology, and Sciences. The study of general medicine lasts three years, focusing on the practical elements of diagnosis, treatment, and management of disease. Virtually all COs in Zambia are trained at the Chainama College of Health Sciences near Lusaka (see <http://www.medguide.org.zm/chainama.htm>).

imprecise, it appears that there are roughly 50% more COs than physicians, and the ratio of those working outside of the MOH is estimated to be much greater, roughly two COs for every physician. Clinical officers are significantly less expensive to hire and are probably more likely to be willing to enter into a fee-splitting arrangement. Since COs constitute a far more available substitute for doctors, this type of personnel is assumed to provide all the overflow patient care in ZAMHEALTH on a fee-splitting basis. First-time visits to a clinic are classified as 'overflow' if they exceed 10 000 per year—the maximum number that can generally be seen by the on-site GP/Medical Director.

The nurse-to-physician ratio is also nearly nine times greater in Zambia than in Bolivia (6.0 compared with 0.7, World Bank, 1993), and Zambians are relatively more accustomed to nurses providing considerably more direct patient care. The ZAMHEALTH model accordingly assigns all follow-up visits to nurses, as well as responsibility for all family planning, pre- and post-natal, and under-5 child visits. Salaries of nurses, doctors, COs and all other personnel were adjusted to Lusaka's market conditions, as were the costs of medicines, laboratory tests and other expenditures.

Composition of services. The mix of preventive and curative services will likely be substantially different in Zambia than in Bolivia. Zambia's HIV/AIDS and STD problems will likely result in significantly higher proportionate levels of family planning services than is the case in Bolivia. That is accounted for in ZAMHEALTH through three cost multipliers for relatively inexpensive nursing care visits which are not separately accounted for in PROSALUD's model. Similarly, the high incidence of three types of costly curative care visits in Zambia (upper respiratory ailments, malaria and diarrhoea) probably means that their treatments will absorb a much larger proportion of total services compared with Bolivia. ZAMHEALTH's model was accordingly modified to incorporate distinct demand or service cost multipliers for these types of visits. Working in the opposite direction, due to the fact that people tend to take care of their teeth and gums from a very young age in southern Africa, there is relatively little demand for dental care in Zambia. ZAMHEALTH would eliminate dental services entirely.

Utilization. Demand for curative care (utilization rates) differ substantially between Zambia and Bolivia. After the establishment of PROSALUD, Bolivia's poor areas had annual utilization rates of only about 1.0 curative care first visits per capita. Lusakan's annual utilization rates are substantially higher on average, estimated at 1.8 visits per year (Fiedler *et al.*, 1998: 13). In addition, follow-up visits in Bolivia occur only about 35% of the time; return visits in Zambia equal (and in some estimates exceed) the number of first-time visits.

Indigents. Finally, while PROSALUD found that 10% of all care was provided free of charge to indigents, it is reasonable to expect that indigent care would constitute a much larger proportion of care in Zambia, where average per capita income is less than half of what it is in Bolivia. Moreover, the government has identified 'exempt' groups from payment, specifically children under 5 and adults over 65 years of age.

These groups have been variously estimated to comprise as much as 40% of the population; for various reasons we anticipate (in the base case) that only 20% of ZAMHEALTH visits will be age- or need-based fee-exempt (PSI, 1996; Fiedler *et al.*, 1998).

The preceding paragraphs highlighted the need to adapt the Bolivian model to better capture Lusaka's specific market characteristics. Other changes to the model are not readily ascertainable *a priori*; these inputs into the model—such as the prices to charge for care, where to locate clinics, the market share that a new ZAMHEALTH clinic can be expected to achieve, and what is a reasonable expected rate of growth in service delivery and market share—require informed judgements, for which we perform sensitivity analyses. While there are important legal, regulatory and managerial constraints to franchising that bear investigation, the remainder of this paper focuses on ZAMHEALTH's financial feasibility, using PROSALUD's MEP spreadsheet model.

FINANCIAL FEASIBILITY

The financial analysis assumes that within a 10-year start-up period ZAMHEALTH would consist of a management support unit (MSU) and eight clinics (one central clinic and seven basic clinics). The MSU would be developed and begin operations very soon after the project is initiated. At the beginning of year 2, the first two clinics—the central clinic and one basic clinic—would be opened. Then, each year in years 3, 4 and 5, two additional basic clinics would be opened. At the beginning of year 5, the entire eight clinic complement is assumed to be operational.

Initial population within each clinic's catchment area is designed to be 33 500 persons, and this would grow by 1.5% per year. The initial market share of each basic clinic within that catchment population is assumed to be 10%, with annual growth in market share of 5% up to a maximum of 42.5% by year 10. The central clinic's market share would initially be 20% and grow to 50% by year 10. These projections rely on the historical market penetration of PROSALUD, and are examined in the sensitivity analysis. Finally, given the fact that external financing may be available, the base case employs a low financing discount rate (3.5%) reflective of the real cost of funds to multilateral organizations.

The central clinic would have five consulting rooms, compared with three in the basic clinics, and would have facilities for training of new staff. The central clinic also would serve as a referral centre for the network's basic clinics for some diagnostics, and would accordingly charge a 25% mark-up for patient visits. The central clinic would have one gynaecologist and one paediatrician employed on a risk-sharing basis, splitting their fees 50:50 with ZAMHEALTH. These specialists would constitute 10% of total demand for curative care (estimated as the product of the clinic's catchment area and its market share). To the extent that the central clinics require additional specialist physicians it is assumed that they would be also hired on a risk-sharing basis.

The medical director in each basic clinic would be a general practitioner. In theory, general practitioners could attend 10 000 patient visits per year, assuming a

5 day work-week and 50 weeks per year. As noted earlier, additional medical staffing beyond its GP-director is assumed (in the base case) to consist entirely of risk-sharing Clinical Officers (COs). Fees charged would vary based on the type of visit and on the type of personnel seen: the base case assumes that patients would pay a user fee of \$2.00 per initial curative care visit with a doctor (all figures in constant 1998 U.S. dollars). Patients seeing a CO pay a reduced fee which is split between the clinic and the CO.⁵ Follow-up curative care visits would be priced at \$1 since patients would generally see a nurse on these occasions. Likewise, nurse/midwife attendances would generally pay \$1.00 per visit; no fees, however, would be assessed for antenatal and children-under-5 visits.

Base case results

Table 2 presents a summary of the projected services and operating costs (excluding depreciation) over the initial 10-year period of this analysis. The franchise's total catchment area population would begin at 67 000 in year 2 and would grow to almost 300 000 by year 10 (as new clinics are brought on-line and as the population grows by 1.5% a year). The number of curative first medical visits over this period would exceed 1 million, and total visits (including preventive services) would exceed 3 million. Almost 4 million ancillary services would be performed.

Operating costs (excluding depreciation) for the combined clinics are shown for each year in constant 1998 dollars. The totals reflect the sum of these numbers, while the net present value (NPV) sums the discounted values (using a discount rate of 3.5% in the base case). In NPV terms, operating costs are comprised mainly of drugs and supplies (54%), with personnel (36%) and other (10%) costs making up the balance. Within the management support unit (MSU), salaries of all personnel constitute the lion's share of costs (almost 60%). Within this, however, it is worth noting that external salaries for technical assistance, and the associated overhead and travel of these advisors, constitute almost a third of the NPV of operating costs in the MSU. In essence, this is the 'franchise' technology fee for importing the 'know-how'. Since PROSALUD was created using public (USAID) funds, there is no additional royalty payment required to the franchiser. Adding network depreciation costs (to ensure sustainability of the clinic and MSU buildings and equipment) raises the 10-year total network accounting cost to \$9.8 million in NPV terms.

Table 3 shows revenue projections, accounting profits/losses, and cash flow projections over the initial 10-year period for the base case. During this period total network revenues are projected to grow steadily, reaching about \$1.5 million annually by year 10. The NPV of this revenue stream amounts to \$5.4 million, of which about 27% comes from the central clinic and the remainder from the seven basic clinics. The cost recovery of the system improves every year it is in operation, so that by year 10 revenues cover about 100% of operating costs, and slightly more

⁵In the base case the basic clinics charge \$1.50 for a CO visit (75% of a GP visit). The CO keeps 25% or \$.375 per visit. While this appears quite low, this return is actually higher than the estimated payment of \$0.27 per visit earned by a full time CO (calculated as 20% of a doctor's salary, and assuming 5 patients per hour). Hence, even though the CO's share is small, the total return is higher than other full-time CO's would make.

Table 2. Projected services and costs (base case) (costs in constant U.S. dollars of 1998)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Totals	Net present value
Services provided												
Number of central clinics	0	1	1	1	1	1	1	1	1	1		
Number of basic clinics	0	1	3	5	7	7	7	7	7	7		
Total catchment area population	0	67 000	135 005	204 030	274 091	278 202	282 375	286 611	290 910	295 273		
Physician first curative care visits	0	15 980	33 360	57 933	90 569	121 571	156 257	193 027	225 896	258 350	1 152 942	
Ancillary services	0	54 633	114 055	198 069	309 652	415 642	534 232	659 949	772 325	883 283	3 941 841	
Number of persons served	0	16 002	33 408	58 016	90 699	121 744	156 480	193 303	226 219	258 720	1 154 592	
Number of visits	0	43 944	91 740	159 316	249 066	334 319	429 706	530 825	621 214	710 463	3 170 592	
Clinics operating costs												
Salaries and fringes	0	74 189	148 378	222 566	296 755	296 755	296 755	296 755	296 755	296 755	2 225 664	1 837 154
Drugs and supplies	0	48 053	100 318	174 213	272 356	365 581	469 887	580 462	679 303	776 897	3 467 070	2 766 753
Maintenance, utilities, insurance	0	20 680	41 360	62 040	82 720	82 720	82 720	82 720	82 720	82 720	620 400	512 104
Total (excl. depr)	0	142 922	290 056	458 819	651 831	745 056	849 362	959 937	1 058 778	1 156 373	6 313 134	5 116 011
MSU operating costs												
Local salaries and fringe	72 000	72 000	271 260	276 210	231 210	201 960	201 960	201 960	201 960	201 960	1 932 480	1 640 034
External tech. assis. salaries	120 239	133 749	133 749	113 484	113 484	13 510	13 510	6755	6755	6755	661 990	613 333
External overhead	137 411	192 645	140 220	123 759	131 759	5134	5134	2567	2567	2567	743 761	695 230
/allow./int'l travel												
Domestic travel	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	85 000	73 165
Research and evaluation	24 000	24 000	24 000	24 000	5000	5000	5000	5000	5000	5000	126 000	115 270
Advertising and promotion	0	48 000	52 000	46 000	50 000	36 000	36 000	36 000	36 000	36 000	376 000	321 627
Office operations	30 800	36 840	36 840	36 840	36 840	36 840	36 840	36 840	36 840	36 840	362 360	311 067
Training	5000	15 000	17 000	19 000	16 000	8000	8000	8000	8000	8000	112 000	97 919
Total (excl. depreciation)	397 950	530 734	683 569	647 793	592 793	314 944	314 944	305 622	305 622	305 622	4 399 591	3 867 646
Network oper. costs (excl. deprec.)												
Network oper. costs (excl. deprec.)	397 950	673 655	973 624	1 106 612	1 244 624	1 060 000	1 164 306	1 265 559	1 364 400	1 461 994	10 712 725	8 983 657
Depreciation	7894	41 925	69 631	96 631	123 631	123 631	123 631	123 631	123 631	123 631	957 869	794 736
Total network accounting costs	405 844	715 580	1 043 256	1 203 244	1 368 255	1 183 631	1 287 937	1 389 190	1 488 031	1 585 626	11 670 594	9 778 393

Table 3. Financial summary (base case) (constant U.S. dollars of 1998)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Totals	Net present value
Revenues												
Central clinic revenues	0	84 567	110 291	136 170	165 052	197 218	232 976	272 660	289 436	307 316	1 795 686	1 466 491
Basic clinics revenues	0	30 844	110 996	228 901	386 556	525 871	676 685	832 975	987 237	1 138 529	4 918 596	3 909 792
Total network revenues	0	115 411	221 287	365 071	551 608	723 089	909 661	1 105 635	1 276 674	1 445 846	6 714 282	5 376 283
Costs												
Network oper. costs	397 950	673 655	973 624	1 106 612	1 244 624	1 060 000	1 164 306	1 265 559	1 364 400	1 461 994	10 712 725	8 983 657
(excl. deprec.)												
Depreciation	7894	41 925	69 631	96 631	123 631	123 631	123 631	123 631	123 631	123 631	957 869	794 736
Total accounting costs	405 844	715 580	1 043 256	1 203 244	1 368 255	1 183 631	1 287 937	1 389 190	1 488 031	1 585 626	11 670 594	9 778 393
Total accounting profit (loss)	-405 844	-600 169	-821 969	-838 172	-816 647	-460 542	-378 276	-283 555	-211 358	-139 780	-4 956 312	-4 402 110
Revenues (% of operating costs)	0%	17%	23%	33%	44%	68%	78%	87%	94%	99%	63%	60%
Revenues (% of total costs)	0%	16%	21%	30%	40%	61%	71%	80%	86%	91%	58%	55%
Cash flow analysis												
Total cash inflow (revenues)	0	115 411	221 287	365 071	551 608	723 089	909 661	1 105 635	1 276 674	1 445 846	6 714 282	5 376 283
Network oper. costs (excl. deprec.)	397 950	673 655	973 624	1 106 612	1 244 624	1 060 000	1 164 306	1 265 559	1 364 400	1 461 994	10 712 725	8 983 657
Network building and equip.	993 150	776 250	725 650	720 000	0	0	0	0	0	0	3 215 050	3 069 951
Total cash outflow	1 391 100	1 449 905	1 699 274	1 826 612	1 244 624	1 060 000	1 164 306	1 265 559	1 364 400	1 461 994	13 927 775	12 053 608
Net cash flow	-1 391 100	-1 334 494	-1 477 987	-1 461 541	-693 016	-336 911	-254 645	-159 924	-87 727	-16 149	-7 213 494	-6 677 325

than 90% of total costs. Over the 10-year period, however, revenues will cover only 60% of the NPV of operating costs and 55% of total costs. By contrast, the typical Zambian MOH clinic cost recovery rate in the mid-1990s was only about 5% (PSI, 1996: 7).

On a cash flow basis ZAMHEALTH will require large, early infusions of cash due to MSU start-up and clinic construction when no revenues are coming in. The total net cash outflow over the 10-year period is about \$7.2 million, suggesting that to operate ZAMHEALTH for 10 years the NPV of the subsidy must be \$6.7 million. By year 10, however, the franchise is roughly breaking even in terms of cash flow; revenues cover all expenses including those considered 'public' health expenditures (serving a high proportion of indigent patients and performing a large share of preventive care services for which no fees are charged).

The impact that these projections imply for the average cost of treatment is found in Table 4. Because of the high fixed costs of start-up and operation of the MSU, the cost per person served and per visit in the early years is quite high. As a consequence, the total network accounting cost per visit in year 2, for example, is slightly more than \$16. By year 10 this drops to slightly more than \$2 in constant dollars. Over the 10 year planning horizon, the average subsidy required would be \$1.59 per visit (based on the weighted average of total network accounting losses over this time period).

Sensitivity tests

Given the unavoidably speculative nature of some key parameters, the room for error in the financial analysis is substantial. The sensitivity tests focus on: (a) the expected level of performance (demand), (b) the expected impact of changes in user fees (prices); (c) the treatment of indigents; (d) the use of fee-splitting doctors versus COs; and (e) the chosen discount rate. Alternative scenarios provide potential foreign donors and the government of Zambia a range of outcomes for financing and/or subsidy levels.

The initial level of demand. The parameters critical to estimating projected demand and output are: (1) the franchise clinics' initial catchment area population, that population's growth rate, and the clinics' market share within that population; (2) the public's response to changes in the franchise clinics' user fees relative to alternative providers; and (3) the public's perception of quality relative to alternative providers.

Table 5 provides information with which to examine the impact of different simulations. The base case assumes the initial market share for curative care first visits at basic clinics to be 10%, and at the central clinic to be 20%. Due to substantial fixed costs of infrastructure, increases in initial market shares can be handled with the addition of variable inputs alone, resulting in substantial gains in financial performance. In simulation 1, a 50% increase in the initial market share for curative care first attendees, for example, would allow the net cash flow to turn positive by year 8, and would drop the NPV estimate of the subsidy from \$6.7 million to \$5.7 million. The network would have a total cost recovery rate of 70% in NPV terms. Alternatively, a 50% decrease in initial market share (Simulation 2) generates

Table 4. Average costs (base case) (constant U.S. dollars of 1998)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Weighted average	Net present value
Cost per person served												
Network operating cost	n/a	42.10	29.14	19.07	13.72	8.71	7.44	6.55	6.03	5.65	9.28	7.78
Network total accounting cost	n/a	44.72	31.23	20.74	15.09	9.72	8.23	7.19	6.58	6.13	10.11	8.47
Accounting profit (loss)	n/a	-37.51	-24.61	-14.47	-9.04	-3.83	-2.48	-1.54	-1.01	-0.62	-4.35	-3.86
Net cash flow	n/a	-83.39	-44.25	-25.22	-7.67	-2.81	-1.69	-0.90	-0.46	-0.14	-6.31	-5.83
Cost per visit												
Network operating cost	n/a	15.33	10.61	6.95	5.00	3.17	2.71	2.38	2.20	2.06	3.38	2.83
Network total accounting cost	n/a	16.28	11.37	7.55	5.49	3.54	3.00	2.62	2.40	2.23	3.68	3.08
Accounting profit (loss)	n/a	-13.66	-8.96	-5.27	-3.29	-1.39	-0.90	-0.56	-0.37	-0.23	-1.59	-1.41
Net cash flow	n/a	-30.37	-16.11	-9.18	-2.79	-1.02	-0.61	-0.33	-0.17	-0.05	-2.30	-2.12
Cost per person in catchment area												
Network operating cost	n/a	10.05	7.21	5.42	4.54	3.81	4.12	4.42	4.69	4.95	5.07	4.25
Network total accounting cost	n/a	10.68	7.73	5.90	4.99	4.25	4.56	4.85	5.12	5.37	5.52	4.63
Accounting profit (loss)	n/a	-8.96	-6.09	-4.11	-2.99	-1.68	-1.37	-1.04	-0.79	-0.54	-2.38	-2.11
Net cash flow	n/a	-19.92	-10.95	-7.17	-2.54	-1.23	-0.94	-0.61	-0.36	-0.13	-3.45	-3.19
Financial summary data												
Total accounting profit (loss)	-405 844	-600 169	-821 969	-838 172	-816 647	-460 542	-378 276	-283 555	-211 358	-139 780	0	-4 956 312
Revenues (% of operating costs)	0%	17%	23%	33%	44%	68%	78%	87%	94%	99%	0%	63%
Revenues (% of total costs)	0%	16%	21%	30%	40%	61%	71%	80%	86%	91%	0%	58%
Net cash flow	-1 391 100	-1 334 494	-1 477 987	-1 461 541	-693 016	-336 911	-254 645	-159 924	-87 727	-16 149	0	-7 213 494
												-6 677 325

Table 5. Financial simulations (constant U.S. dollars of 1998)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Totals	Net present value
Base case												
Total accounting profit (loss)	-405 844	-600 169	-821 969	-838 172	-816 647	-460 542	-378 276	-283 555	-211 358	-139 780	-4 956 312	-4 402 110
Revenues (% of operating costs)	0%	17%	23%	33%	44%	68%	78%	87%	94%	99%	63%	60%
Revenues (% of total costs)	0%	16%	21%	30%	40%	61%	71%	80%	86%	91%	58%	55%
Net cash flow	-1 391 100	-1 334 494	-1 477 987	-1 461 541	-693 016	-336 911	-254 645	-159 924	-87 727	-16 149	-7 213 494	-6 677 325
Simulation 1: market share up 50%												
Total accounting profit (loss)	-405 844	-577 624	-776 428	-767 626	-712 462	-329 214	-210 521	-79 527	23 454	125 543	-3 710 248	-3 402 992
Revenues (% of operating costs)	0%	23%	31%	44%	57%	83%	94%	103%	109%	113%	78%	75%
Revenues (% of total costs)	0%	22%	29%	41%	53%	76%	86%	95%	101%	106%	72%	70%
Net cash flow	-1 391 100	-1 311 949	-1 432 447	-1 390 994	-588 831	-205 583	-86 890	44 105	147 086	249 174	-5 967 429	-5 678 206
Simulation 2: Market share down by 50%												
Total accounting profit (loss)	-405 844	-633 848	-890 996	-938 632	-956 661	-631 895	-583 762	-519 101	-476 793	-441 004	-6 478 536	-5 630 877
Revenues (% of operating costs)	0%	9%	11%	17%	25%	42%	50%	59%	66%	70%	39%	36%
Revenues (% of total costs)	0%	8%	10%	16%	22%	37%	45%	53%	58%	63%	35%	33%
Net cash flow	-1 391 100	-1 368 173	-1 547 015	-1 562 001	-833 029	-508 264	-460 131	-395 470	-353 162	-317 373	-8 735 717	-7 906 092
Simulation 3: Prices of doctor visits up by 50 %—elasticity -1.09												
Total accounting profit (loss)	-405 844	-625 973	-884 211	-925 684	-937 152	-600 021	-543 316	-464 102	-410 910	-367 849	-6 165 063	-5 381 579
Revenues (% of operating costs)	0%	10%	11%	18%	26%	45%	54%	64%	71%	76%	41%	39%
Revenues (% of total costs)	0%	9%	11%	16%	23%	39%	47%	57%	63%	68%	37%	35%
Net cash flow	-1 391 100	-1 360 298	-1 540 230	-1 549 053	-813 521	-476 389	-419 685	-340 471	-287 279	-244 218	-8 422 244	-7 656 794
Simulation 4: Price up by doctor visits up by 50 %—elasticity -0.07												
Total accounting profit (loss)	-405 844	-579 396	-786 293	-784 977	-741 900	-367 856	-267 975	-156 175	-70 498	14 515	-4 146 399	-3 747 549
Revenues (% of operating costs)	0%	20%	26%	37%	50%	77%	87%	97%	104%	110%	70%	67%
Revenues (% of total costs)	0%	19%	24%	34%	45%	69%	79%	89%	95%	101%	64%	61%
Net cash flow	-1 391 100	-1 313 721	-1 442 312	-1 408 346	-618 269	-244 225	-144 343	-32 544	53 133	138 146	-6 403 581	-6 022 764
Simulation 5: Price of nurse re-visits lowered to \$0—elasticity -0.07												
Total accounting profit (loss)	-405 844	-624 384	-862 887	-900 513	-907 146	-578 041	-525 972	-463 359	-418 860	-374 703	-6 061 710	-5 289 153
Revenues (% of operating costs)	0%	14%	19%	27%	37%	57%	66%	73%	78%	83%	52%	50%
Revenues (% of total costs)	0%	13%	17%	25%	34%	51%	59%	67%	72%	76%	48%	46%

Continues

Table 5. Continued

Net cash flow	-1 391 100	-1 358 709	-1 518 906	-1 523 882	-783 515	-454 410	-402 341	-339 727	-295 229	-251 071	-83 18 891	-7 564 367
Simulation 6: Indigents at 30% of patients												
Total accounting profit (loss)	-405 844	-608 225	-835 897	-859 506	-847 294	-499 294	-425 436	-339 392	-274 544	-210 252	-53 05 683	-4 683 416
Revenues (% of operating costs)	0%	16%	21%	31%	42%	65%	74%	83%	89%	94%	59%	57%
Revenues (% of total costs)	0%	15%	20%	29%	38%	58%	67%	76%	82%	87%	55%	52%
Net cash flow	-1 391 100	-1 342 550	-1 491 916	-1 482 874	-723 663	-375 662	-301 805	-215 761	-150 913	-86 620	-7 562 864	-6 958 630
Simulation 7: Indigents get free lab and meds												
Total accounting profit (loss)	-405 844	-612 140	-845 668	-878 287	-878 428	-543 019	-483 905	-413 770	-363 090	-312 792	-57 36 943	-5 025 711
Revenues (% of operating costs)	0%	15%	20%	29%	39%	60%	69%	77%	82%	87%	55%	53%
Revenues (% of total costs)	0%	14%	19%	27%	36%	54%	62%	70%	76%	80%	51%	49%
Net cash flow	-1 391 100	-1 346 465	-1 501 687	-1 501 656	-754 797	-419 388	-360 273	-290 139	-239 459	-189 160	-7 994 124	-7 300 926
Simulation 8: Indigents get free lab/meds/deliveries/postnatal												
Total accounting profit (loss)	-405 844	-612 811	-846 997	-880 536	-881 892	-547 643	-489 826	-421 070	-371 597	-322 491	-5 780 707	-5 060 672
Revenues (% of operating costs)	0%	15%	20%	29%	39%	60%	69%	76%	82%	86%	55%	53%
Revenues (% of total costs)	0%	14%	19%	27%	36%	54%	62%	70%	75%	80%	50%	48%
Net cash flow	-1 391 100	-1 347 136	-1 503 016	-1 503 905	-758 260	-424 012	-366 195	-297 439	-247 966	-198 860	-8 037 888	-7 335 887
Simulation 9: Use GP's rather than CO's to handle overflow visits												
Total accounting profit (loss)	-405 844	-600 169	-822 307	-839 512	-819 693	-466 245	-387 697	-297 261	-228 606	-160 548	-5 027 882	-4 457 863
Revenues (% of operating costs)	0%	17%	23%	33%	44%	68%	77%	86%	92%	97%	62%	59%
Revenues (% of total costs)	0%	16%	21%	30%	40%	61%	70%	79%	85%	90%	57%	54%
Net cash flow	-1 391 100	-1 334 494	-1 478 326	-1 462 881	-696 062	-342 613	-264 066	-173 629	-104 975	-36 916	-7 285 063	-6 733 078
Simulation 10: Discount rate rises to 10%												
Total accounting profit (loss)	-405 844	-600 169	-822 307	-839 512	-819 693	-466 245	-387 697	-297 261	-228 606	-160 548	-5 027 882	-3 657 266
Revenues (% of operating costs)	0%	17%	23%	33%	44%	68%	77%	86%	92%	97%	62%	54%
Revenues (% of total costs)	0%	16%	21%	30%	40%	61%	70%	79%	85%	90%	57%	50%
Net cash flow	-1 391 100	-1 334 494	-1 478 326	-1 462 881	-696 062	-342 613	-264 066	-173 629	-104 975	-36 916	-7 285 063	-5 916 058

a less than proportional decrease in cost recovery, and the total cost recovery rate slips to just 33% in NPV terms. Under this scenario, the required NPV subsidy over the first 10 years would approach \$8 million.

User fees. Changing user fees would likewise have dramatic impacts on financial performance. The difficult part of this analysis is to predict how Lusakans would respond to price changes. The price elasticity of demand for private medical care in Zambia has been variously estimated to be between -1.09 (Diop *et al.*, 1998) and zero (Fiedler *et al.*, 1998). According to Diop's estimate, a 1% increase in user fees, assuming all else constant, would reduce the quantity demanded of services by about 1.1% (producing an elastic demand). Simulation 3 thus shows that a 50% increase in the physician visit fee (from \$2 to \$3) would reduce the quantity demanded by about 55%. Raising fees thus reduces total revenues and increases the cash outflows compared with the base case in this instance. (One should quickly note that elasticities are calculated at the margin, and an increase in price of 50% stretches the limit of how such an estimate should be used.)

However, Diop *et al.*'s elasticity estimate is not regarded as particularly pertinent to this exercise for a number of reasons.⁶ It is likely that ZAMHEALTH would be regarded as a differentiated product (patient-focused, high quality approach) for which there are no close substitutes in the private sector at this time. Without adequate price elasticity estimates for this new and differentiated service, simulation 4 adopts the same elasticity for ZAMHEALTH as for existing government health clinics, which was estimated to be -0.073 (Diop *et al.*, 1998: 56). Simulation 4 presents a more favourable outcome for ZAMHEALTH than the prior one: increasing doctors' fees to \$3 per visit raises revenues to 101% of total costs by year 10, and lowers the subsidy required to \$6.0 million in NPV terms. Whether such an increase in user fee is desirable is clearly beyond the scope of this analysis.

ZAMHEALTH would be unique among Zambian providers in distinguishing between first attendee visits and follow-up visit fees. In the base case, for example, follow-up visits are handled by a nurse at a reduced fee of \$1. Simulation 5 explores dropping the re-visit fee altogether. The justification for this lies with public health concerns: no re-visit fee encourages patients to in fact re-visit, which serves to: improve patient-clinician relationships (increasing a patient's desire to follow treatment regimens); improve monitoring the administration of drugs (e.g. ensuring that full doses of antibiotics are taken, reducing the development of resistant bacteria);

⁶Diop *et al.* estimate an aggregate elasticity based on survey data for the whole country. Consumers within Lusaka (the site of ZAMHEALTH) have substantially higher average incomes than the rest of the country which likely would result in less elastic demands for medical care purchases (as income rises, health care purchases constitute a smaller percent of total income, making health purchases less sensitive to price changes). Second, Diop *et al.*'s estimate is based on responses to questions regarding existing private health practices (presumably single providers), which, as we noted earlier, may exhibit attributes of low quality and inattention to patient desires.

In a related estimate, Fiedler *et al.* (1998: 21) found the price elasticity of demand for private health clinics within the capital city of Lusaka to be very close to zero. The reason for this is that, in the absence of adequate/better information, patients may use price as a proxy for quality: higher prices may signal shorter waiting times, cleaner and less crowded physical spaces, larger stocks and ranges of drugs, and more qualified medical personnel.

and improve patient knowledge about diseases, especially contagious ones (such as leprosy and AIDs). All of these factors generate positive public health externalities, for which a zero follow-up charge would encourage. While these arguments apply equally to first time attendees, donors are unlikely to subsidize the very large losses that would result if user fees for initial attendees were so eliminated. Given the high level of re-visits in Lusaka (estimated at one for every curative care first attendance), altering this user fee has a noticeable impact on ZAMHEALTH's cost recovery position. While 91% of total costs are recovered by year 10 in the base case, only 76% of those costs are so recovered in simulation 5 when user fees on re-visits are free of charge.

Indigent care. One of the key issues in determining the viability of ZAMHEALTH is the share of non-paying clients. Indigents and 'exempted' persons constitute a sizable share of Zambia's client base. The base case assumed that these non-paying clients (called indigents) amounted to 20% of consults at ZAMHEALTH. While curative care visits were free for these patients, indigents were expected to pay for medicines, laboratory tests and postnatal visits. Increasing the proportion of indigents to 30% (simulation 6) does not have a large impact on financial viability because most variable costs in clinics are covered by these medicine, laboratory and postnatal revenues. Keeping constant the share of indigents at 20%, however, and allowing them to receive medicine and laboratory tests free, has a much larger negative financial impact (simulation 7). Simulation 8 illustrates that allowing free postnatal visits (as well as free medicines and laboratory tests) causes a very slight additional impact on financial performance.

Substitution of GPs for Clinical Officers. Fee-splitting COs are assumed to handle all overflow patients beyond 10 000 per year per clinic in the base case. The use of COs might be problematic for ZAMHEALTH, however, because it might compromise the high profile, high quality market niche PROSALUD has traditionally worked. In future years, with growth in incomes, the preference of Lusakans for physicians and specialists may become more widespread and intensive. The use of COs could also complicate the organization of care. Clinical officers would need to refer roughly 30% of their patients to the medical director/physician, or alternatively, would require the introduction of a triage system, either of which would reduce the productivity of both physicians and COs (reducing the maximum number of consultations they can be expected to provide annually).

If ZAMHEALTH were to hire fee-splitting physicians instead of COs on a risk-sharing basis, it could further differentiate its product from other Zambian health clinics that rely more heavily on COs. The financial implications of switching to GPs for overflow consults (simulation 9) do not diverge greatly from the base case. The reason for this is that while a GP visit commands a higher fee than a CO visit (\$2 versus \$1.50), GPs also are expected to keep half of this fee-split (\$1). By contrast the typical CO would keep 25% of \$1.50 (\$0.38 per visit), leaving the clinic with \$1.13 per visit. Thus, if GPs are available, the switch from COs to GPs would have little overall impact on revenue projections.

The use of COs, however, is a more involved decision requiring additional criteria in addition to the simple, straightforward one of its impact on revenues and costs. These additional considerations suggest that if adequate numbers of physicians cannot be recruited on a 50:50 risk-sharing basis, that ZAMHEALTH may find it necessary to modify the terms of the risk-sharing arrangement (allowing the physician to keep a larger proportion of the fees he/she generates) in order to recruit adequate numbers of physicians. Alternatively, it could introduce a combination of risk-sharing with some minimal level of salary that is provided independent of the level of service provision. To the extent that it finds it must rely on COs, ZAMHEALTH should strive to provide sufficient training so as to minimize their impact on both the network's productivity and the high quality of care image it seeks to establish.

Discount rate. The base case assumption was that ZAMHEALTH's cash outflows during the 10-year start-up would be provided by the MOH or outside foreign donors. The base case real discount rate was assumed to be 3.5%. Since most cash outflows are front-loaded, the discount rate chosen has only a small impact on NPV. Assuming a higher discount rate of 10% (simulation 10), reduces the NPV of cash outflows by less than \$1 million.

Indirect effects. The existence of a franchise health delivery system might be expected to generate positive impacts in the wider marketplace. These positive externalities include enhanced price competition, greater cost consciousness, greater coordination on public health issues, improvement in the types of services provided, and improved patient amenities in terms of facilities and hours of operation. For example, an independent project evaluation of PROSALUD by Fiedler and Hougen (1995) found exactly these types of effects. Within the public sector there were also improvements in the Bolivian MOH's performance in controlling costs, improving drug inventories, and improving the physical appearance of MOH clinics, attributed to greater competition from PROSALUD. The determination of whether or not ZAMHEALTH is feasible and should be supported therefore requires taking into account more than just the results of the franchise's individual financial analysis.

ZAMHEALTH may have already spurred a similar indirect impact on the health sector of Zambia, even before the organization has been founded. After observing the PROSALUD/Bolivia model in operation a private Lusakan physician began to offer free preventive services in order to attract patients (a basic PROSALUD market penetration strategy). From a public health perspective, this private sector 'borrowing' from the PROSALUD model is a positive development and one that should be encouraged.

Additional considerations. The financial analysis is unquestionably important. It provides (1) an estimate of the direct impacts of ZAMHEALTH on the health care market of Zambia in terms of service provision and covered population, and (2) it provides an estimate of the cost to donors or the Government of Zambia of backing the project. Several caveats deserve mention. The consensus-led, transparent financial operation of ZAMHEALTH would require an organizational culture based on

personal responsibility, loyalty and commitment among employees and patients alike. The cultural and leadership aspects necessary to build the trust and openness of process for this to succeed are issues well beyond the scope of this paper. The charismatic and inspiring leader of PROSALUD, for example, could be an extremely rare input to reproduce in ZAMHEALTH. Moreover, it is well documented that African tribal and familial allegiances often supersede other obligations (especially to Western institutions), and that these relationship-bound structures lead to rational individual behaviour which is nonetheless inefficient from an organization's perspective (e.g. giving away services to extended family members rather than charging). These factors could prove critical to the success of any privatization effort (Dia, 1991).

DISCUSSION AND CONCLUSION

In a country with a paucity of doctors, the private health care market in Lusaka remains underdeveloped, characterized by little pluralism and little competition among under-utilized providers. How do single practice providers overcome the lack of managerial training and inexperience to develop sound business plans to correct this situation and promote the better use of Zambia's scarce medical care resources? We contend that developing an efficient (and equitable) private health care delivery system is not an easy matter. It entails far more than simply eliminating the legal barriers for markets to exist, or simply plying someone to start a company or develop a market. In an impoverished African country, the entrepreneurial and managerial talent required will most likely need to be developed over time.

Adaptive technology exists that could enhance the efficiency and speed with which the private sector fulfills its potential in health sector reform. Commercial for-profit firms, for example, have long used franchising as a model to overcome barriers to delivering a variety of retail services to very poor countries. Franchisers provide entrepreneurial start-up, managerial training and organizational coordination needed for scale economies, resulting in a larger volume of quality services at lower costs (thereby increasing access and utilization). A 'social' franchise system of primary health care clinics retains the emphasis on cost and quality found in for-profit activities, but adds a broader mission to address public health concerns. It represents a new philosophy and a new approach to providing health care compared to the bureaucratic MOH or fixed contract model in Zambia.

This paper illustrates the importance of carefully adapting a franchise's planning model to local market conditions and demonstrates how to do so. The MEP information system utilized here makes transparent the connection between service delivery and financial performance; it forms the basis of a participatory management process which focuses attention (among employees and patients alike) on the business aspects of health care that are conspicuously lacking in other systems. The MEP financial planning tool would be an integral part of management and performance evaluation once the project is introduced. Once the organization is in operation, as information becomes available, actual data can be substituted for the various assumptions that have been made, and appropriate modifications in the structure and operations of the system carried out.

This paper also illustrates the public–private partnership that would be required to finance such a franchise when significant health externalities exist. This point needs emphasis because it is at the heart of the debate about privatization: private markets would not find it profitable to produce pure public health goods. ZAMHEALTH would be a hybrid organization balancing the need for self-financing though generating private revenues and cost controls, with a recognized (and subsidized) public health component to its operations. While the envisioned mix of pecuniary and non-pecuniary incentives has worked in Bolivia’s cultural setting to motivate employees, there is little question that such motivations in Zambia are also critical to the sustainability of this model. If successful, ZAMHEALTH could spur other health care providers—public and private, alike—to adopt various aspects of this model, creating wider spill-over benefits in the health care market, perhaps even to other countries in Africa. In effect, entities like ZAMHEALTH could provide a potentially powerful mechanism for expediting Africa’s health sector’s transformation, to wit: from one which is largely the creature of a paternalistic State to one which is more pluralistic and more market-based, and to one which enhances the efficiency of Zambia’s scarce, yet underutilized, health care resources.

Postscript

The HIV/AIDs epidemic in southern Africa makes most health care projections problematical. The World Health Organization (2002), for instance, estimates that 21.5% of the population in Zambia now suffers from HIV/AIDs. While we have not had the opportunity to ascertain the implications these numbers might have in the franchising assessment, the model does account for differences in the expected composition of services and service delivery costs in Zambia vis-à-vis Bolivia owing to the HIV/AIDs epidemic. Other issues, however, remain unaddressed. One potentially important, but unknown, impact is the effect of the crisis on the availability of health care workers. The franchising model relies on relatively low-cost personnel, in particular, Clinical Officers. Understanding and quantifying the impact of HIV/AIDS on the availability of COs, therefore, is an important issue that warrants investigation before making a definitive judgement on the attractiveness of franchising. Still, given the all too common situation in the private sector of low- and middle-income countries—where medical health resources and services are under-utilized even while there is great, unmet medical need—we believe that a cost-efficient franchise model merits consideration and scrutiny.

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in its theoretical structure and empirical findings from both of these prior efforts.⁷ The conclusions expressed herein remain solely those of the authors and not necessarily any organization with which they are or have been affiliated.

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⁷At the request of the Government of the Republic of Zambia in 1996, PSI reviewed franchising experiences in the health sector, identified PROSALUD as a model worthy of emulation, and, working with PROSALUD, devised a franchising arrangement in Zambia, developed an implementation plan, and conducted a preliminary feasibility assessment of it. That study was found to have inadequately accounted for differences between the two markets, however. The empirical findings of the subsequent PHR report thus diverge notably from the PSI study because the former does account for demand and supply differences between Zambia and Bolivia that give rise to substantially different treatment, revenue, and cost outcomes. The present paper differs from PHR's results in that a theoretical framework has been developed and additions, corrections, and refinements to the MEP empirical estimates have been made.

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