

Opening the ‘Black-Box’ of Health Facility Management?

Administrative and Financial Dynamics of Performance-based Financing and Community-based Health Insurance Funds Management at the Health Facility-Level in Rwanda and South Kivu.

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Abstract

Objective. Over the past 10 years, performance-based financing (PBF) and community-based health insurances (CHI) have been implemented in Rwanda and South Kivu (DRC). Much research has been dedicated to the impact of these schemes on service delivery but less is understood of their financial and administrative dynamics at the local level. We study the impact of PBF and CHI on health facilities management and organisation with the purpose of improving the system.

Methods. We interviewed 175 representatives from general and financial management as well as controlling committees of 82 health facilities in Rwanda and South Kivu operating on PBF and CHI in June-July 2012. Questionnaires focused on administrative, financial and managerial, and organisational aspects of PBF, CHI in their health facility.

Main Findings. The two schemes occupy a central place in the health facilities, accounting for slightly more than half of the revenue and often leading to new activities, mostly infrastructures. The schemes are relatively well understood. Understanding of general management principles is average and expectedly highest among health facility managers, with other management actors reporting lower levels of mastering key management steps. Decision rights, or the ‘who does what’, are rather unclear. Interviewees often disagree and the general autonomy on deciding on core management activities is low. Transparent and accountable budgeting and planning procedures are most of the time in place and considered important. However, some operational flaws are identified such as the absence of separate CHI and PBF accounts in South Kivu, the low level of peers’ influence on premium heights and the lack of a proper external budget audit.

Discussion & Conclusion. Rwandese facilities appear to have clearer, more transparent and more consistent management than South Kivu’s; this may be due to strong state support. The limited understanding of the management cycle, reported as just about average among most HF actors, and its concentration in the officer-in-charge, is a concern for the felt ownership of the HF management. Ownership may more particularly be compromised by differences in perception on decision rights and the actual ‘autonomy’ that HF managers experience in running their facility. Limited ownership together with some budgeting and planning issues raise questions about the durability of the scheme and the engine beyond the PBF and CHI success described in the literature, especially for South Kivu. Increased ownership of the management decisions and processes by local actors may improve the performances of the facilities and the sustainability of PBF and CHI. This will still require support systems focusing on management development, basic management and financial planning skills and organisational procedures.

Keywords: health facility management, performance-based financing, community-based health insurance, decentralisation, health policy, Rwanda, DR Congo.

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Introduction

Over the past 10 years, Performance Based Financing (PBF) and Community-based Health Insurance (CHI) schemes have had an important influence on the health sectors of Rwanda and the province of South Kivu in the Democratic Republic of Congo (DRC). CHI is an already old but still promising health financing strategy (Devadasan et al., 2010) while PBF is arguably the most 'in vogue' health financing strategy (Meessen et al., 2011; Soeters & Vroeg, 2011) and a growing body of research is describing its (potentially positive) effects on health indicators and for health systems reform in developing countries (Rusa et al., 2009; Soeters, Peerenboom, Mushagalusa, & Kimanuka, 2011; Gorter, Ir, & Meessen, 2013). However, there remain many questions about the impacts and viability of these two schemes (De Allegri, Sauerborn, Kouyaté, & Flessa, 2009; Eldridge & Palmer, 2009). Recent critical notes have not only put PBF achievements in perspective but also cast doubts about whether this 'philosophy' can serve as the basis for sustainable health system reform at all (Ireland, Paul, & Dujardin, 2011; Kalk, Paul, & Grabosch, 2010). The impact of CHI schemes on health indicators and systems is often considered positive (Saksena, Antunes, Xu, Musango, & Carrin, 2010), despite the fact that its impact is limited (Spaan et al. 2012; Acharya et al. 2012; Ekman, 2004). It is generally argued that among the key success factors that the PBF and CHI to better health outcomes is not only the 'incentivization' of health workers and the increased financial accessibility to healthcare for users (Fifty-eighth World Health Assembly, 2005), but also the improvement of the organisation of the administrative and financial dynamics of health systems (Werner, Devadasan, Durairaj, & Criel, 2010; Meessen et al., 2011). Yet, although the macro-level health system changes are beginning to be documented (Bertone & Meessen, 2012), the impact of PBF and CHI on the administrative and financial dynamics at the health facility (HF)-level have not been researched so far.

Theoretically, CHI and PBF schemes both instil and require efficient management capacities at the HF-level. The two schemes bring additional resources to HFs, which require additional administrative, managerial and planning activities, especially since those resources are channelled through new budget lines. In the context of fragile and low-income settings, an improvement of basic management skills at the frontline level has been described as instrumental to the success of PBF and CHI initiatives (Toonen, Canavan, Vergeer, & Elovainio, 2009; Carrin, Waelkens, & Criel, 2005). More generally, efficient and transparent financial governance at both facility and government levels are suspected to play a crucial role in health systems improvement (World Health Report, 2010). CHI -and to a probably greater extent PBF- strategies are said to improve this management efficiency and transparency as they not only promote individual incentives but also implement new or renewed management tools at the HF-level, such as planning, budget and control rules and team organisation.

Our research focuses on the implementation of CHI and PBF in the broader context of HF management and administration in the low-income contexts of Rwanda and South Kivu province. In both cases, CHI and PBF are jointly implemented and we decided to study them together, as each of them is expected to have an impact on HF management. HFs of this part of the world have been chronically underfunded and often remain in precarious situations: health expenditures per capita per year were US\$ 56 for Rwanda and US\$ 16 for DR Congo in 2010ⁱⁱ (World Bank).

In this article, we explore the financial and organisational management of HFs that have benefited from both PBF and CHI funds from a local-level perspective. To do so, we look at the 'black-box' of the management, financial and organisational skills of the HF staff in relation to the HF management structure and planning cycle. In the first section, we explain our conceptual framework, which draws from New Institutional Economics, Strategic Management and Public Services Accountability literature. In the subsequent section, we present the PBF and CHI arrangements in Rwanda and South Kivu as described in official documents. This is a necessary background before we look at the HF-level financial and

administrative management of PBF and CHI in the results section. The results are presented in three subsections. The first one gives contextual findings about the importance of the two schemes for the activities and financial health of the HFs. The second one is the core of our research, it looks at the management cycle capacities and the overall management of HFs, including the decision rights of the different actors. The third subsection reports complementary findings about aspects of PBF and CHI that touch budgeting and planning. We eventually discuss the challenges of PBF, CHI and HF management in the two countries.

Conceptual Framework

Our framework uses two different viewpoints: (1) a five-phase management cycle is used for analysing CHI, PBF and general management of HFs; and (2) a focus on accountability principles and decisions rights helps us explore the organisational structure of the HFs.

1. PBF, CHI and General Day-to-Day Management Cycle

The efficient management of schemes such as PBF and CHI requires a planning and monitoring process that can be decomposed in different phases. Working on PBF, Soeters, Habineza & Peerenboom (2006) identify four such phases: (1) planning, (2) service delivery, (3) monitoring & control, and (4) a contract renewal phase. This framework is applied for the evaluation of CHI and PBF management at the HF-level in order to explore the HF management 'black-box'. In another study on the management cycle that focuses on planning, White (2002) identifies six steps (goals, objectives, strategies, action plans, monitoring, and evaluation) and stresses the virtues of a self-correcting cycle that takes into account previous experiences.

We decide to adopt these approaches to develop our own framework. The main reasons for not using the existing frameworks are (1) our need to identify steps that can be easily and empirically observable, that is tied to concrete actions at the HF-level; (2) our focus on the financial and administrative management and planning of the funds rather than service delivery or planning; and (3) our focus on the HF- rather than health system-level. We aim to highlight and separate the planning and financial budgeting phases and make the reporting process explicit. Moreover, the preparation of periodical reports on (financial) performance and achievements in relation to the planning is a key instrument for both PBF and CHI management. Incentive payments (in PBF) and reimbursements (in CHI) are based on these reports, which are also expected to enhance transparency and accountability at all levels (Naimoli & Vergeer, 2010).

We therefore use our own management cycle framework. It considers five different stages (figure 1): (1) planning, (2) budgeting, (3) spending, (4) accounting and (5) reporting. The planning component of Soeters & al. remains unchanged: their service delivery component is mostly considered through the lens of spending; their monitoring and control is mostly our accounting phase; and their contract renewal phase is part of our reporting, planning and budgeting phases that also draw from White (2002). The management cycle we propose must be seen in a 'strategic' perspective (Bracker, 1980), where managers are expected to go beyond one-time planning cycles and look at the continuous review of strategies. This notion is important to understand the allocation of funds and growth in quality of services in dynamic and rapidly changing environments such as Rwanda and South Kivu.

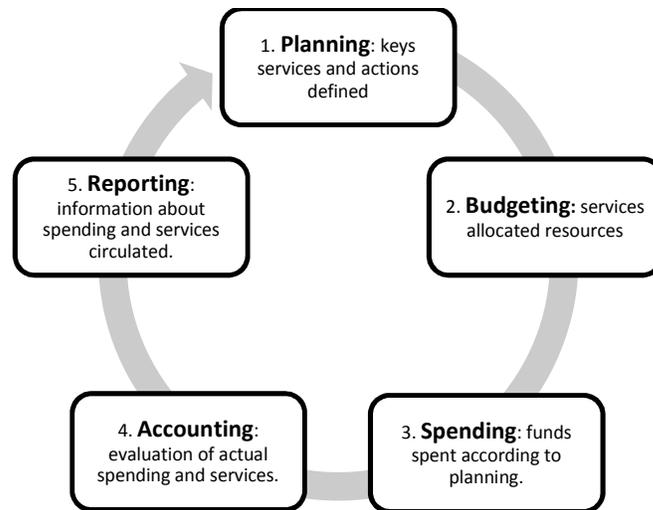


Figure 1TheManagement Cycle

2. Organisationof and Accountability in Health Facilities

A framework engaging with the organisational structure of the HFs usefully complements the management cycle perspective. This second viewpoint focuses on the relationships between the stakeholdersof an organisation(the HF) and the decision-making process they are engaged in.As it will be depicted in the next section, HFs are structures supposedly jointly managed by different actors or stakeholders that include among others the chief-nurse, managerial staff such as an accountantand control committees.For this type of multi-stakeholders organisation to work, it is expected that all the actors will collaborate and develop a sense of ‘ownership’ of the organisation. It is only under these conditions that managers are able to be modern managers who evaluate the changing environment, analyse data, develop new strategies and translate them into actions that contribute to the longer term (‘strategic’) viability of the organisation (Swayne, Duncan, & Ginter, 2006).

A possibility to understand the level of ownership and collaboration inside a HF and to evaluate who orientates and controls the management cycle is to look at decision rights. We use a New Institutional Economics framework inspired by Meessen (2009) that aims at identifying ‘who decides on what’ (and with whom). This requires identifying a key set of decision areas at the HF-level, such as hiring and dismissing staff members, ordering and buying medicine, setting prices, and authorising investments in the infrastructure or equipment.

Decision rights also lay the foundations for exploring the issues of accountability and transparency, whichare often described as apre-condition for organisation (including public services)improvement(McGee et al., 2010).Central to this study is ‘financial’accountability, which is about tracking and reporting on allocation, disbursement and utilisation of financial resources using the tools of auditing, budgeting and accounting(Brinkerhoff, 2004). When analysing accountability, one canlook at: (1) the misuse or abuse of resources and/or authority; (2) the legal procedures, professional standards and societal values that are followed; and (3) the support and promotion of improved service delivery and management through feedback and learning (Aucoin & Heintzman, 2000).

Background: PBF and CHI in Rwanda and South Kivu

In both countries, HFs operate with a relatively high degree of autonomy. Officially, most decisions are made at the HF-level. They include hiring support staff, purchasing drugs and equipment and even, for

South Kivu, setting the prices of drugs and services (DR Congo Ministry of Health, 2011; Rwanda Ministry of Health, n.d.). Qualified staff members such as nurses and doctors are usually appointed by the health authorities, following a HF request. The tariff of services and drugs remains mostly managed from the central level in Rwanda. Against this background, we briefly present the CHI and PBF arrangements in Rwanda and South Kivu, with a focus on the implications for HFs management.

Performance-based Financing

PBF encompasses mechanisms by which funds for health care are tied to concrete and measurable results. In Rwanda, this strategy was introduced in 2001 by NGOs that were disillusioned with the traditional line-item approach. It became a national policy in 2006 (Rusa & Fritsche, 2007). Since that time, and despite criticisms about the sustainability, management and control of the programme (Kalk, 2011), Rwanda has been presented as success story for the implementation of PBF. It inspired NGOs active in the province of South Kivu in Eastern DR Congo. They started PBF schemes in 2005 (Soeters, Mushagala & Peerenboom, 2011; KIT, 2013). South Kivu is characterised by political instability and important deficiencies in formal health systems, including health care regulation. Hence, PBF fund holders remain NGOs and performance indicators are determined at the provincial level (Mayaka, Lushimba, Bertone, & de Borman, 2011).

Although there are minor differences—mainly linked to the fact that PBF is a national strategy in Rwanda and an NGO-led initiative in South Kivu—their PBF mechanism is essentially the same. Health providers that have signed PBF contracts are required to prepare business plans and spell out strategies for attaining results and innovations that will enable them to deliver improved services with increased coverage (Toonen et al., 2009). The HFs performances are measured through indicators that capture the quality and quantity of services provided. These indicators are externally verified on a regular basis and the funding (subsidy) is allocated accordingly.

PBF necessitates careful planning, administration and management. It also requires HFs to make decisions about the internal allocation of the PBF funding. A well-constructed strategy with multi stakeholder participation seems therefore instrumental to PBF success. Rwanda and South Kivu HFs use dedicated tools to establish this strategy: an action plan gives the strategic direction for at least one year while business plans describe how the strategic direction is implemented quarterly (sometimes less frequently). Budget documents support the plans and specify how the funds are allocated (Cordaid – SINA, 2009). In both countries, the operationalization of all these documents is made at the HF-level and is supposed to involve not only the entire medical staff but also the community through its representatives in the management of the HF (health committee).

Community-based Health Insurance

CHI covers a wide variety of health insurance arrangements in terms of ownership, management, membership and services. It has been implemented in Rwanda since 1999, with external donor and strong government support. In 2008, a reported 86% of the population was covered (National Institute of Statistics of Rwanda, 2008) and affiliation was made mandatoryⁱⁱⁱ for nationals and residents (Twahirwa, 2008; Rwanda Ministry of Health, 2010). Although CHI is a core component of the government strategy to improve the quality of care, its financial stability and peripheral management capacity remain relatively weak (National Institute of Statistics of Rwanda, 2008; Werner et al., 2010). CHI initiatives in the DR Congo, although common, are restricted to some health zones and are often led by faith-based or civil society organisations. A 2004 survey highlighted evidences of a countrywide renewal in CHI activities since 2000 and the Congolese government encourages CHI development (Programme National de Promotion des Mutuelles de Santé, 2009).

The impact of CHI on the HF management is mostly expected to come through the extrafinancial resources CHI funds bring to HFs and the necessity for HFs to have a clear view of CHI-related expenses and prepare neat invoices for reimbursement and control by the CHI fund-holder. Reimbursement is implemented in two ways in Rwanda: (1) fee-for-service payments, which means the provider receives a payment after producing an invoice and (2) capitation payment, which means the provider receives a fixed amount for each enrolled member for a given reference period (usually a year) (Rwanda Ministry of Health, 2010). South Kivu has various CHI schemes that have fee-for-services arrangements similar to Rwanda. In both cases, a controlling committee that include local community members has a say on the funds. Rwandese CHIs are coordinated at the district level and have elected mobilisation committees at the local level.

Data Collection and Methods

We carried out 175 interviews in 82 HFs of Rwanda and South Kivu during the period April-June 2012, of which 57 located in Rwanda (45 health centres and 12 district-level hospitals) and 25 in South Kivu (17 health centres and 8 hospitals). The HFs were randomly selected from all facilities that operate on both PBF and CHI funds – most HF in Rwanda and a few health zones (3/25) of South Kivu do operate so. The interviewees were selected among three categories: general management of the facility (chief-nurse/doctor), finance staff (accountants and managers) and controlling committees (management committee and community health committee) (table 1). The reason we interviewed different actors per HF is double: (1) they are in different positions and may have a different experience and view of the CHI, PBF and general HF management, and (2) we wanted to triangulate the information we were collecting. We aimed to have a minimum of two independent sources of information per HF; this is effectively the case for 66 HFs. In 16 HFs we could not interview more than one individual because it would have disrupted the activities too much or because there was no financial administrator or controlling committee member on the spot.

Table 1: Interviews Sampling

		Rwanda	South Kivu (DR Congo)
<i>Function in</i>	<i>Management (chief nurse/ doctor)</i>	53	27
<i>Health</i>	<i>(Financial) administration</i>	49	4
<i>Facility</i>	<i>Controlling committees</i>	23	16
Total		125	47

Given this sample, the results we present are based on two types of evidence: (1) data at the interview level -from one to four interviews per HF, which reflect what people think about the funds and HF management; and (2) data at the HF-level, which are quantitative pieces of information triangulated from the interviews done in a same HF. Only in a limited number of cases were there slight differences in the statements of interviewees of a same HF. In this case, we averaged the answers as we are more interested in ranges than precise figures.

The HFs of our sample are located in the five provinces of Rwanda, including Kigali, and in the politically most stable health zones of South Kivu of Miti-Muresha, Katana and Idjwi (around the provincial capital Bukavu). The study is not *per se* a comparative study between Rwanda and South Kivu, it rather seeks to analyse the main patterns of CHI and PBF joint management in a representative sample of HFs experiencing the two schemes. When compared, means and proportions are tested at a 95% confidence margin. We used (multinomial, probit and ordered logit) regression models to better understand the weight of the (interrelated) different factors influencing the HF management. These methods allow us to

simultaneously take into account different key factors, including possible determinants independent from the CHI and PBF schemes (see appendix).

Results

A. Importance of the CHI and PBF Schemes.

Before considering the management of CHI and PBF schemes, it is important to understand how central they are for the HFs. Table 2 reports key findings about the importance and use of the two funds.

Table 2: Importance of the CHI and PBF schemes at the Health Facility-level

	PBF		CHI		
	Rwanda	South Kivu	Rwanda	South Kivu	
<i>Percent of total revenue (cited)</i>	23% (sd ^w : 13.7, min 3.5%, max 67.5%)		28% (sd: 20.6, min 0.23%, max 77.5%)		
<i>in health centres</i>	20% (sd: 11)	39% (sd: 15)	38% (sd: 15)	5% (sd: 4)	
<i>in hospitals</i>	13% (sd: 7)	20% (sd: 8)	39% (sd: 24)	10% (sd: 5)	
<i>in public HF</i>	19% (sd: 10)	37% (sd: 16)	41% (sd: 17)	6% (sd: 4)	
<i>in faith-based HF</i>	17% (sd: 10)	27% (sd: 13)	30% (sd: 13)	8% (sd: 6)	
<i>Cited as prime source of funding for</i> (n=175 interviews)	<i>Staff</i>	17% (CI:10-23)	64% (CI: 49-7)	6% (CI 1-10)	2% (CI:2-6)
	<i>Operations</i>	35% (CI: 27-44)	72% (CI: 59-85)	50% (CI: 42-59)	0%
	<i>Drugs</i>	5% (CI: 0-8)	66% (CI 52-78)	93% (CI: 88-97)	9% (CI: 0-16)
	<i>Maintenance</i>	46% (CI: 38-55)	57% (CI : 43-72)	39% (CI: 31-48)	5% (CI : 0-10)
<i>Most important use of the fund</i> (n=175 interviews)	Staff premium: 85.14% first Drugs: 6.28 % first, 58.28% second Equipment: 4.76% first, 67.42% second		Drugs: 73.14 % first Staff premium: 17.71 first, 9.14% second Equipment: 2.28% first, 77.71% second		
<i>Did lead to new activities</i> (n=175 interviews)	79% (CI: 72-86)	83% (CI: 71-94)	70% (CI: 62-78)	24% (CI:11-36)	
<i>From 1 (really hard) to 5(not too comfortable), how hard would it be without the fund?</i> (n=175 interviews)	3 (sd: 1)	4.34 (sd: 0.89)	3.93 (sd: 0.95)	2.72 (sd: 0.95)	

PBF and CHI funds together amount to just over half of the total revenue of the HFs we surveyed. Using multinomial regression (ordered logit and logit for ordered and binomial variable with cluster at the HF-level - see appendix), we found only two variables statistically correlated with the share of CHI funds in HFs budgets: location (Rwanda or South Kivu) and type of structure (public or faith-based). As the breakdown of the CHI revenue per location shows, in health centres, CHI is clearly considered more important in Rwanda than in South Kivu. CHI is also more important in public structures than in faith-based HFs (t-test: 2.0764, p: 0.04). Repeating the analysis for the share of PBF funds in HFs, we found it is more important in South Kivu than Rwanda, in health centres than hospitals and, at a lower level, in areas with bigger catchment populations. Other variables such as number of beds and qualified staff do not turn out significant in either model. The use of revenues from both sources differs between the countries, which is mostly likely due to the generally stronger regulation of both schemes in Rwanda. PBF revenues constitute an important source for staff incentive payment, whereas CHI's are used predominantly for drugs procurement and equipment/operations. In Rwanda government has issued clear rules about how the funds can be spend and special controls have been put in place for both schemes. In South Kivu, the rules seem to be less strict but the nature of funds often orientates the way money is spent. In practise, Rwandan interviewees agree with the idea that PBF and CHI funds can only be used for certain activities (PBF: 94%, CHI: 83%). Interviewees are much less assertive in South Kivu (PBF: 47%,

CHI: 32%). More than 90% of the respondents thought that knowing the origin payment of the activity is important to essential, with no significant difference between the administrative groups or the two countries. PBF funds are perceived as mainly useful for salary premium in both countries (cited first in 88% (CI: 83-93) of the cases in Rwanda and 77% (CI: 64-89) in South Kivu). For CHI, there are differences across the border; in Rwanda, CHI funds drugs procurement whereas in South Kivu CHI funds seem to also and firstly pay salary premiums (51% of the interviewees cited it first, CI: 37-66).

The extra revenue generated by these funding mechanisms very often induces changes in the HFs. These changes are mainly about building and improving the infrastructures but the interviewees also reported an increase in the outreach activities such as antenatal visits and public hygiene promotion as well as training of staff. These observations are valid for both CHI and PBF in Rwanda but only for PBF in South Kivus only 24% of the Congolese respondents noted changes because of CHI. The funds appear central but overall, when asked how comfortable it would be without the CHI or PBF (*from 1 (really hard) to 5 (not too comfortable)*), our interviewees declared their HF would get by without the funds, although it would not be comfortable. It would be slightly harder without PBF than without CHI (t-test: t: -1.9361, p: 0.054). When we model the situation for PBF using ordered logistic regression (clustered at the HF-level, see appendix), interviewees from Congolese facilities appear more confident they could cope without PBF, and so are those from faith-based structures and facilities with more qualified staff. In the case of CHI, it is interviewees from Rwandese facilities who are more confident they could survive without it, with all other control variables insignificant.

Given the importance of PBF and CHI funds at the HF-level, we enquired how clear an idea our interviewees have of the PBF and CHI schemes (table 3). We find a good self-declared understanding of the two schemes, especially for the case of PBF. Using ordered logit regressions (see statistical appendix), we control for a number of variables and find that, in addition to the country, only the level of education has a statistical impact on the understanding of CHI, which is positive (the more educated, the better the understanding). We repeat the exercise for the understanding of PBF and find it is not statistically correlated to any of our context (HF) or respondent characteristics variables. In neither case is the function the interviewee has in the HF correlated with a better understanding of the schemes.

Table 3 Understanding of regulations of PBF and CHI

(average score, possible answers were: 1 (poor), 2 (needs improvement), 3 (adequate), 4 (good) and 5 (outstanding))

	PBF	CHI
<i>Rwanda (n= 128)</i>	4.71 (sd: 0.45)	3.14 (sd: 0.81)
<i>South Kivu (n= 47)</i>	4.70 (sd: 0.46)	3.55 (sd: 0.80)
<i>difference Rwanda-South Kivu</i>	t-test: 0.19, p: 0.853	t-test: t: 2.99, p: 0.003

B. Management Cycle and Health Facility Management.

We now consider the HF management through the five steps of the management cycle we described in our conceptual framework: planning, budgeting, spending, accounting and reporting. We requested the interviewees to self-report their knowledge of each of these phases, from 1 (none) to 5 (excellent) (table 4). Overall, the self-reported scores for understanding of each phase are higher in Rwanda than South Kivu. Also, the figures show that managers report a better understanding of each step than other staff or controlling committee members.

Table 4: Understanding of the Management Cycle

(Average score: from 1 (none) to 5 (excellent))

	n	Planning	Budgeting	Spending	Accounting	Reporting
<i>Rwanda (all staff)</i>	128	3.18 (sd: 0.86)	3.23 (sd: 0.93)	3.39 (sd: 0.90)	3.50 (sd: 0.93)	3.79 (sd: 0.86)
<i>S. Kivu (all staff)</i>	47	3.17 (sd: 0.99)	2.91 (sd: 1.12)	2.94 (sd: 1.07)	2.66 (sd: 0.98)	3.33 (sd: 1.00)
<i>HF manager</i>	53	3.38 (sd: 0.69)	3.49 (sd: 0.80)	3.80 (sd: 0.69)	3.81 (sd: 0.74)	4.04 (sd: 0.62)
<i>Chief nurse</i>	78	3.2 (sd: 0.88)	3.17 (sd: 0.96)	3.20 (sd: 0.89)	3.18 (sd: 0.88)	3.69 (sd: 0.93)
<i>Controlling committee member</i>	41	2.76 (sd: 1.02)	2.61 (sd: 1.09)	2.66 (sd: 1.06)	2.71 (sd: 1.21)	3.15 (sd: 0.95)
		<i>each of the 5 stages at least "good (4/5)"</i>		<i>each of the 5 stages at least 'average (3/5)'</i>		
<i>HF manager</i>	53	33.96% (IC: 21.0 – 46.9)		71.79% (IC: 61.7 – 81.9)		
<i>Chief nurse</i>	78	19.23% (IC: 10.4 – 28.1)		94.3% (IC: 88.0 – 100)		
<i>Controlling committee member</i>	41	14.64% (IC: 3.6 – 25.67)		46.3% (30.8 – 61.9)		

Using alogit model (clustered at the HF-level, see appendix) to explain who understands the whole process at a level that is at least ‘good’ for each step, we find four variables that correlate at significant level: being the manager of the HF, being from a Rwandese HF and having a higher level of education. There is also a correlation with being from a HF that has a large share of its budget coming from PBF (marginal effect at the mean after logitis 0.007 per percentage point). For understanding at the level of ‘average’ for each step, we find three statistically different groups: 72% (CI: 62-82) of the chief-nurse and directors master the whole process at this level while this value rises to 94% (CI 88-100) for managers and falls to 46% (CI 31-62)for controlling committee members.

86% of the respondents considerthe management cycle well structured, with no statistical difference between the different type of professionals we interviewed ($z = -1.5887$, $p=0.1121$). A logit model indicates that the situation is clearer in bigger facilities and in Rwanda (89% said the cycle is well structured versus 76% in South Kivu. $z: 2.5237$, $p: 0.0116$).

At the level of the actual administration of PBF and CHI, 64% of the respondents in both Rwanda and South Kivu (p value: 0.270) indicate there is enough qualified stafffor the administration of the funds in their HF. However, they overwhelmingly (Rwanda 93% and South Kivu 98%) request more training to better manage the funds, especially in the area of general financial management and financial planning. The use of support systems for the administration is still limited; 54% of the Rwandan HF use computers and this figure dropsto 28% in South Kivu. When the administration is supported by a computer system, it is with a simple spread-sheet. Dedicated financial software is mentioned in a marginal 3% of the cases.

PBF funds are mostly managed by the chief-nurse/hospital director in South Kivu (64% of the respondent said so) and by other staff members (heads of services) in Rwanda (66%). The manager comes in the second place in both cases (18% for Rwanda, 30% for South Kivu). CHI funds are mostly managed by the chief-nurse/director in South Kivu (61%) and by the management committee in Rwanda (46%). Again, the manager comes in the second place in both cases (20% for Rwanda, 34% for South Kivu).

‘Who decide on what’ or the actual *decision rights* is instrumental information to further open the ‘black-box’ of HF management. We identified seven key areas (see conceptual framework) and asked the interviewees what is the level of decision of the main HF actors based on their HF-experience. The possible answers were: no decision (coded as 0), advices/is consulted (1) or takes part in the decision (2) (table 5).

Table 5: Decision Rights at the Health Centre (with difference between Rwanda and South Kivu)

(for each area of decision, the first line is the average level of decision. Respondents could choose between 0 = no decision whatsoever, 1 = advisory position and 2 = take part in the decision. the second line is the difference between the average score for Rwanda and the average score for South Kivu, positive figures indicate more decision rights in Rwanda versus South Kivu)

(n=175)	<i>Chief-nurse/ doctor</i>	<i>Accountant</i>	<i>Manager</i>	<i>Chairman Managing committee</i>	<i>Chairman Health Committee</i>	<i>Managing committee</i>	<i>Controlling (health) Committee</i>
Hire/dismiss unqualified staff	0.98 (sd: 0.62)	0.30 (0.46)	0.10 (0.30)	0.51 (0.61)	0.60 (0.73)	0.71 (0.77)	0.61 (0.94)
Difference Rwanda – S. Kivu (mean (sd))	-0.31 (sd: -0.3)	0.203 (0.12)	0.133 (0.34)	0.121 (-0.2)	0.202 (0.01)	0.503 (0.29)	0.45 (0.18)
Purchase drugs	1.34 (0.71)	0.51 (0.53)	0.57 (0.57)	0.44 (0.70)	0.16 (0.37)	0.15 (0.39)	0.57 (0.70)
	-0.52 (0.04)	0.317 (- 0.09)	0.033 (-0.06)	0.26 (0.07)	-0.07 (-0.06)	-0 (0.04)	0.578 (0.38)
Drugs price	0.51 (0.75)	0.22 (0.52)	0.22 (0.50)	0.16 (0.46)	0.09 (0.30)	0.11 (0.35)	0.21 (0.47)
	-0.7 (-0.27)	-0.12 (- 0.21)	-0.23 (-0.32)	-0.16 (-0.23)	-0.17 (-0.27)	-0.17 (-0.2)	-0.12 (-0.03)
Consultation prices	0.4 (0.71)	0.1 (0.33)	0.08 (0.26)	0.13 (0.46)	0.15 (0.43)	0.12 (0.35)	0.20 (0.44)
	-1.02 (-0.44)	-0.16 (-0.2)	-0.07 (-0.11)	-0.31 (-0.42)	-0.43 (-0.42)	-0.36 (-0.42)	-0.43 (-0.35)
Development / business plan	1.15 (0.77)	0.41 (0.53)	0.18 (0.40)	0.53 (0.71)	0.4 (0.57)	0.40 (0.60)	0.76 (0.73)
	-0.29 (-0.18)	0.279 (0.07)	0.105 (0.12)	0.341 (0.11)	-0.03 (-0.05)	0.074 (0.05)	0.399 (0.17)
Purchase of small equipment	1.18 (0.71)	0.64 (0.57)	0.28 (0.52)	0.52 (0.69)	0.22 (0.46)	0.22 (0.48)	0.88 (0.82)
	-0.48 (-0.21)	0.38 (-0.13)	0.113 (0.1)	0.396 (0.14)	-0.22 (-0.12)	-0.02 (0.07)	0.709 (0.25)
Purchase of wholesale equip.	1.06 (0.63)	0.61 (0.63)	0.18 (0.42)	0.58 (0.66)	0.41 (0.58)	0.45 (0.64)	0.79 (0.67)
	-0.52 (-0.32)	0.312 (- 0.17)	-0.01 (-0.04)	0.49 (0.091)	-0.04 (0.05)	0.181 (0.058)	0.496 (0.118)

(red = average closer to zero, orange = average closer to 1)

HF-level actors (see table 5) declare they have little say in the HF management. This is especially the case for the accountants, managers and managing committee members. In fact, when asked to name other people intervening in the decision-making process, the interviewees massively responded that the Ministry of Health and/or district or zone-level authorities were in charge. This seems to contradict the principles of an ‘autonomous’ management mentioned in the background section. A lot of decisions are indeed supposed to be taken at the HF-level and it is troubling to find that activities such as writing the development/business plan, purchasing equipment, drugs and hiring of non-qualified staff (such as cleaners) are not mainly controlled at the HF-level. Overall, the chief-nurse/doctor is the one with most decision rights at the HF, with support from the health committee in Rwanda.

From the data on decision rights (table 5), it is also possible to explore how much respondents from a same facility agree on ‘who decides on what’. The following table (6) reports the proportion of interviewees from the same HF (when we interviewed more than one person at the HF) who share the same view on the decision rights in their facility.

Table6: Agreement between Interviewees on Decision Rights at the HF

(100% is a total agreement between interviewees that the actor either does not decide, or is consulted or decides)

(n=66)	<i>Chief-nurse/ doctor</i>	<i>Accountant</i>	<i>Manager</i>	<i>Chairman Managing committee</i>	<i>Chairman Controlling Committee</i>	<i>Managing committee</i>	<i>Controlling (health) committee</i>
Hire/dismiss non-qual. staff	57.6% (CI: 45-70)	75.7% (65-86)	87.9% (80-95)	62.1% (50-74)	62.1% (50-74)	66.7% (55-78)	39.3% (27-51)

Purchase drugs	56% (43-68)	62.1% (50-74)	57.6% (45-70)	63.6% (52-76)	75.8% (65-86)	77.2% (67-88)	57.6% (45-70)
Drugs price	56.1% (44-68)	69.2% (58-81)	63.6% (51-75)	83.3% (74-92)	84.8% (76-94)	83.3% (74-96)	68.2% (57-80)
Consultation prices	71.2% (60-82)	84.8% (76-94)	87.9% (80-96)	86.4% (78-95)	80.3% (70-90)	84.8% (76-94)	80.3% (70-90)
Development /business plan	53% (40-65)	69.7% (58-81)	71.2% (60-82)	69.7% (58-81)	63.6% (52-76)	57.5% (45-70)	51.5% (39-64)
Purchase of small equip.	57.6% (45-70)	57.6% (45-70)	62.1% (50-74)	63.6% (52-76)	63.6% (52-76)	71.2% (60-82)	51.5% (40-64)
Purchase of wholesale equip.	68.2% (57-80)	62.1% (50-74)	77.3% (67-88)	71.2% (60-82)	56.1% (44-68)	56.1% (44-68)	47% (34-59)

(red: less than 60% agree, orange: 60 to 80% agree, green: over 80% agree)

The table bespeaks a blurry and disputed picture of who is in charge of what at the HF, especially when it comes to the chief-nurse/doctor and the controlling committee. For all areas but consultation prices and business/development plan, the situation in Rwanda seems more confused than in South Kivu (detail not presented).

C. Budgeting and Planning.

Finally, we focus on two key aspects that have been supposedly strengthened by the PBF and CHI schemes: budgeting and planning.

When asked for the importance of budgets and budget reviews as planning instruments, a large majority of our respondents confirmed they considered this (at least) very important for their HF's functioning (86% in Rwanda and 62% in South Kivu. In Rwanda, 42% considered them essential). Along the same line, 85% of the respondents (with no difference between countries and administrative groups) find financial control important. Control remains most of the time restricted to internal audit or audit by parties genuinely interested in the HF. The district/district hospital does the audit in 85% of the cases (89% for Rwanda, 75% for South Kivu) and the managing committee does it the rest of the time (14% of the cases, 23% for South Kivu). In 76% of the cases, the interviewees recognise that the organisation performing the audit has a direct influence on the height of PBF and CHI funds.

Most HF's have rules, regulations or a policy in place to prevent the misuse of funds (Rwanda 86% and South Kivu 70%). In South Kivu, 11% of respondents acknowledge the policy they have is not yet implemented. The majority of the respondents in Rwanda (66%), but not in South Kivu (36%) also indicate that there are separate budget and planning documents for PBF and CHI. This translates immediately into the financial administration: in Rwanda 89%, of the respondents report a separate administration for the two funds, while 77% of respondents in South Kivu report a single administration system for the two funds. This is also supported by the finding that 50% of the respondents in Rwanda find separate administration very important or essential while only 11% do in South Kivu (with no difference between the three management and administrative groups).

There are also important differences between the two countries in the planning process. In Rwanda, 97% of the HF's prepare a yearly strategic plan while in South Kivu only 40% do. The strategic plan is reviewed quarterly in Rwanda (64%) and often results in changes and updates (59%). In South Kivu, strategic plans are reviewed each semester (36%), quarterly (23%) or monthly (23%) and 53% of the respondents indicate that this only 'sometimes', 'seldom' or even 'never' results in changes or amendments. Similar patterns are observed for the business/action plan, which only seldom seems to be a joint effort of all the HF actors as stipulated per official documents as the data about the decision rights we presented above indicates. Transparency in the payment of the PBF performance salary premium is also part of the performance and financial accountability principles. Although most of the HF's have a staff appraisal policy

in place (Rwanda 99% and South Kivu 72%), co-workers often do not have influence on the height of the performance bonuses of their colleagues (59% of the cases for Rwanda and 30% for South Kivu). The height of the performance bonus is mentioned on the payslip most of the time in Rwanda (86% of the cases) but not in South Kivu (only 49% of the cases).

Discussion

Our sample presents two main limitations we must highlight. First of all, it is based on a relatively small sample of HF's with a large representation of hospitals (57 HF's in Rwanda (with 12 hospitals); 25 in South Kivu (8 hospitals)). This means that results that are not totally clear-cut must be considered cautiously, especially when comparing type of facilities. Second, it is important to bear in mind that our objective was to understand how HF-level actors experience and view (CHI and PBF) management and not to pinpoint financial inputs and outputs, which would be a totally different study. The HF financial figures we provide are estimates from the interviewees and have not been double-checked with actual financial figures recorded in their books. They must be taken as trends rather than precise accounts. Despite these caveats, we remain convinced that our data provide important information on the importance of PBF and CHI funds for HF's management.

The CHI and PBF funds appear central to HF's functioning, both in terms of financing and organisation, with PBF more dominant in South Kivu HF's and CHI more important in Rwanda. We lack detailed information to accurately assess how 'dependant' HF's are on CHI and PBF funding but, interestingly, our interviews indicate that most HF's believe they could still cope, although with difficulties, without the schemes. This positions PBF and CHI as financing mechanisms that, in the view of the HF's, complement rather than compete with the more classical input-based and user-fees mechanisms.

In the two countries the managerial challenges are similar and the medical and managerial staffs all display a good knowledge of the PBF and CHI procedures. Yet, Rwandan HF's appear better equipped in terms of financial and administrative management. Rwandan administrative staffs have better management skills and planning and budget procedures are clearer and better followed there than in South Kivu. In addition to this, the few decisions made at the HF-level seem to be the fruit of a joint chief-nurse/doctor - health committee effort whereas the sole chief-nurse/doctor seems to concentrate authority in South Kivu, contrary to the regulatory documents. This difference in procedures and management may be explained by the strong involvement of the Rwandan government. South Kivu suffers from the difficulties of the authorities to enforce regulations, as it may be reflected by the important standard deviation reported for decision rights in South Kivu HF's. In Rwanda, clear guidelines from the government seem to guide the planning process to regularity, even if there the HF organisation chart (who decides on what and how) is not clear for everyone.

When opening up the black-box of HF management, we realise that HF management staffs and particularly managers do appreciate the importance of key management tools and principles (management cycle, budgeting, accounting, etc.) and use them most of the time. Yet, this understanding is not optimal, even among managers, and few among non-managers seem to understand the management cycle at a decent level, especially in South Kivu. Is this a problem? On the one hand, one may discuss whether understanding the whole management process is really something expected from a chief-nurse or a controlling committee member. But on the other hand, better understanding of the management principles by more actors is believed to be important for the general *ownership* of the two schemes and the HF functioning in general. This ownership may even more particularly be hampered by the reported weak and disputed decision rights. We find a discrepancy between *formal* (regulatory) and *actual* or perceived decision rights (Meessen, 2009). In our survey, health districts/zones are often mentioned as taking part in the decisions on issues such as staff, drugs and even sometimes development plans and equipment. It is

complicated to clearly assess whether this attitude reflects a genuine support to ill-equipped HFs, a difficulty to relinquish power or some mix of both. In practice, HF key actors may well have limited autonomy to efficiently micro-manage their HFs the best possible way and according to their context and constraints, which may well limit their feeling of ownership.

Two questions naturally arise from the concern of limited ownership of the HF management by key HF actors: (1) what is the engine of PBF (and CHI), what makes it a ‘success story’ as depicted by some in the literature?; and (2) what is the sustainability of these schemes? Given the issues with the understanding of basic management principles, particularly in South Kivu, the idea that a main engine for PBF achievements is personal ‘incentivization’ is appealing. This would be relatively consistent with Fox et al. (2013) who find little impact of PBF on the HF management processes in the Katanga province of DR Congo. However, we wish to remain careful as we do not have the means to clearly identify causality. Some managerial changes are clearly under way and little could be enough to drive change. We also found an interesting correlation between the understanding of management principles and the height of PBF in HFs’ budget. The question of the durability of the schemes is fundamental given the centrality of CHI and PBF at the HF-level. Again, we are not in the best position to answer this question but the results show that CHI and PBF are most welcome sources of new resources and new initiatives. For those to last, macro-level stability (funding) is required; PBF projects have been frequently interrupted in South Kivu, which undermines the confidence HF actors and users have in the system as well as HF-level initiatives. At the micro-level, a genuine ‘autonomy with skills’ of the HFs seems to be a condition for the potential of CHI and PBF to fully unleash.

Finally, it is necessary to highlight accountability and transparency issues linked to CHI and PBF funds management. Loopholes remain that could make misuse and misappropriation of funds easy, especially in South Kivu. Obvious elements include the imperfect system of staff appraisal and premium that are not always clearly separated from the pay. Following the conceptual framework of Aucoin & Heintzman (2000), more systemic risks can be identified at three levels: (1) abuse of resources and/or authority is made easier by blurry and disputed decision rights and, for the case of South Kivu, the very central position of the chief-nurse in the decision-making process; (2) legal procedures and professional standards values are usually taken seriously but fail to be fully understood and are therefore not properly implemented in a series of cases; and (3) feedback and learning mechanisms are mentioned by the interviewees but reporting appears mostly effective in Rwanda only. Ideas of participatory budget and community monitoring exist in both countries but are clearly underused in South Kivu. Yet, they could help mitigate the risks of misappropriation and misuse of funds.

Conclusions and recommendations

In conclusion, we see that opening up the financial and administrative black-box of PBF and CHI at the HF-level reveals a general adhesion to good management principles such as separate management of funds, internal policy and regulation, frequent planning and budgeting, auditing and registering of bonuses. However, despite the fact that these principles are well accepted, judged important and often implemented, the *ownership* of the CHI and PBF schemes as well as the HF general management by the key HF-level actors remains disputable, particularly because of different perceptions of decision rights, that may stem from lack of real autonomy. This raises questions about the sustainability of these schemes, the extent of the ‘trickle-down’ effect of the PBF rhetoric of good management of HFs (Bertone & Meessen, 2012) onto the actual management of the HFs and the factors behind the depicted PBF and CHI success. Those are the areas that will have to be researched in the future.

Recommendations for policy-makers involved in PBF and CHI schemes in Rwanda and DR Congo as well as in other countries include the necessity to set up support systems that can transform the interest and agreement health workers and controlling committees have with good administrative and financial procedures into a deeper practical understanding and practice of these processes. This support system is heavy in terms of human resources and funding (Kalk, 2011; Ssenkooba, McPake, & Palmer, 2012) and requires training and monitoring visits to be conducted following clear guidelines, as it is at least partly already the case for Rwanda. It should aim to provide a framework that is open, understandable and transparent for the local level. Management development can certainly be fostered using the CHI and PBF angles but they need to be sustained actions that aim at local ownership and touch the many aspects of running a HF, including identifying responsibilities and accountability mechanisms for every funds and action. Overall, the empowerment of HFs' management expected from CHI and PBF schemes may be under way but it is certainly not achieved yet.

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Statistical appendix:

Ratio of the PBF and CHI funds (multinomial regression)		
	(1)	(2)
	pbf	chi
Place (1= Rwanda, 2= S Kivu)	17.44*** (4.81)	-32.65*** (-9.54)
Type (0= public, 1= faith-based)	-2.786 (-1.22)	-6.576** (-2.48)
Beds	-0.00927 (-0.28)	0.0511 (0.75)
Population	0.0000316** (2.02)	-0.00000692 (-0.17)
Qualified staff	-0.00949 (-0.23)	-0.0542 (-0.67)
Health Centre (if 0= hospital)	15.74*** (3.52)	-2.057 (-0.27)
_cons	7.963 (1.17)	48.47*** (4.70)
<i>N</i>	173	173

t statistics in parentheses
p* < 0.10, *p* < 0.05, ****p* < 0.01

How could you survive without PBF/CHI? Ratio of the PBF and CHI funds (logit regression, clustered by health facility)

	(1)	(2)
	Ifno PBF	Ifno CHI
Main PBF share	0.00919 (0.67)	
Place	3.118*** (5.56)	-1.757*** (-3.20)
Beds	-0.00534 (-0.58)	-0.00777 (-1.48)
Qualified staff	0.0157 (1.41)	0.00169 (0.22)
Type structure	-0.586** (-1.96)	0.0552 (0.20)
Level education	-0.106 (-1.34)	0.0679 (0.89)
Population	0.00000229 (0.39)	0.00000347 (1.10)

CHI share		0.0169*
		(1.65)
cut1		
_cons	-4.491***	-2.907**
	(-3.79)	(-2.32)
cut2		
_cons	-1.874*	-1.274
	(-1.68)	(-1.07)
cut3		
_cons	-0.538	0.588
	(-0.49)	(0.48)
cut4		
_cons	1.179	2.335*
	(1.07)	(1.92)
N	172	172

t statistics in parentheses
 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Understanding of the schemes (ordered probit regression, clustered by health facility)

	(1) Und. CHI	(2) Und. PBF	(3) Und. PBF
main			
Chief-nurse	0.115	-0.287	
	(0.30)	(-0.65)	
Manager/accountant	-0.0204	-0.272	
	(-0.06)	(-0.60)	
CHI share	-0.00209		
	(-0.21)		
Education	-0.141*	-0.0993	-0.0758
	(-1.85)	(-0.99)	(-0.77)
Place	-1.243***	0.0747	
	(-3.00)	(0.15)	
Beds	0.000872	0.000731	
	(0.35)	(0.28)	
PBF share		-0.000430	
		(-0.03)	
cut1			
_cons	-5.193***	-0.438	-0.0493
	(-4.42)	(-0.35)	(-0.04)
cut2			
_cons	-2.723***		
	(-2.65)		
cut3			
_cons	-0.213		
	(-0.22)		
cut4			
_cons	1.484		
	(1.64)		
N	171	170	173

t statistics in parentheses
 p*< 0.10, *p*< 0.05, ****p*< 0.01

Knowledge of the whole management cycle at the ‘good’ level (logit regression, clustered by health facility)

	(1)
	Knphase
Main	
Chief-nurse	0.0133 (0.02)
Manager/accountant	1.226** (1.98)
CHI share	-0.0183 (-1.53)
PBF share	0.0525*** (3.51)
Education	0.256** (2.38)
Place	-1.341** (-2.12)
Beds	-0.00206 (-0.76)
Type facility	-0.645 (-1.10)
_cons	-4.500*** (-2.79)
<i>N</i>	171

t statistics in parentheses
 p*< 0.10, *p*< 0.05, ****p*< 0.01

ⁱ The terms Community Health Insurance (CHI) and Community-Based Health Insurance (CBHI) are the most frequently in the In the Anglophone literature. Less common is the descriptor ‘Mutual Health Organisation’, although its French equivalent “Mutuelle de Santé” is widely employed in francophone Africa, thereby emphasising an underlying social dynamic. In this article, we will use CHI to cover all equivalents.

ⁱⁱ < <http://data.worldbank.org/indicator/SH.XPD.PCAP> > last accessed 20/02/2013

ⁱⁱⁱ It could be argued that with this characteristic, the Rwandan CHI is more a classic health insurance than a community-based health insurance (Criel, Waelkens, Werner, Devadasan, & Atim, 2005), it remains called ‘community-based’ by the Rwandan authorities and the community indeed has a say in its management.

^{iv} When appropriate, we indicate the standard deviation (sd) and the confidence interval (CI) at 95% level