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Original Article

Do efficiency gains really translate into more budget for health? An assessment framework and country applications

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Abstract

Efficiency has historically been considered a key mechanism to increase the amount of available revenues to the health sector, enabling countries to expand services and benefits to progress towards universal health coverage (UHC). Country experience indicates, however, that efficiency gains do not automatically translate into greater budget for health, to additional revenues for the sector. This article proposes a framework to assess whether and how efficiency interventions are likely to increase budgetary space in health systems Based on a review of the literature and country experiences, we suggest three enabling conditions that must be met in order to transform efficiency gains into budgetary gains for health. First there must be well-defined efficiency interventions that target health system inputs, implemented over a medium-term time frame. Second, efficiency interventions must generate financial gains that are quantifiable either pre- or post-intervention. Third, public financial management systems must allow those gains to be kept within the health sector and repurposed towards priority health needs. When these conditions are not met, efficiency gains do not lead to more budgetary space for health. Rather, the gains may instead result in budget cuts that can be detrimental to health systems' outputs and ultimately disincentivize further attempts to improve efficiency in the sector. The framework, when applied, offers an opportunity for policymakers to reconcile efficiency and budget expansion goals in health.

Keywords: Efficiency, health financing

Introduction

All governments face budgetary pressure, especially in the context of COVID-19. To meet sectoral expectations, policymakers must either redirect existing public expenditures towards a particular sector or search for additional funding sources. The potential to do this while sustaining the public sector's financial position has commonly been referred to as fiscal space (Heller, 2005).

While the concept of fiscal space is typically used to assess public budgets as a whole, it has been adapted for the health sector (Heller, 2006; Tandon and Cashin, 2010) in an effort to support health policymakers seeking to address funding needs. Five key mechanisms have been identified as a means to expand fiscal space for health: i) economic growth; ii) budget reprioritization; iii) earmarked taxes; iv) new external resources; and v) improved efficiency. The search for fiscal space has become more urgent, especially in low- and middle-income settings and within the confines of domestic funds, due to a renewed emphasis on moving towards UHC within the context of the Sustainable Development Goals and the unfolding of the COVID-19 crisis (Barroy *et al.*, 2017; Curristine *et al.*, 2020; Gaspar *et al.*, 2019).

In recent years, the concepts of fiscal space and fiscal space for health have evolved to incorporate new views related to both revenue and expenditure. The International Monetary Fund (IMF) expanded the list of factors impacting overall fiscal space to include a set of 50 key components covering economic growth, revenue, fiscal policies, debt, contingent liabilities, access to capital market financing, deficit rules and monetary policies (IMF, 2016, 2018). On the expenditure side, public financial management (PFM) has been added as another important driver to maximize budgetary space for

Key messages

- Efficiency has historically been considered as a key mechanism to expand the amount of budget available to the health sector.
- Country experience indicates, however, that efficiency gains do not automatically translate into greater budgetary space for health.
- To transform efficiency gains into more budgetary space for health, three key enabling conditions must be met: there must be well-defined and targeted efficiency interventions that change the price or the mix of inputs; the interventions must generate sizable financial gains; and public financial management (PFM) systems must allow those gains to be kept within the health sector and repurposed towards prioritised health needs.
- Only flexible PFM at a central, purchaser and provider level can allow savings to be kept and repurposed within the sector.
- When these conditions are not met, efficiency gains do not lead to more budgetary space for health. Rather, the efficiency gains may instead result in health sector budget cuts that can disincentivize further attempts to improve efficiency.

health (Barroy and Gupta, 2020). For instance, better budget execution in health is likely to make significantly more resources available for the sector (Barroy *et al.*, 2019). The terminology has been adjusted to reflect this change. The term *budgetary space for health*, as opposed to the more historically used term *fiscal space for health*, has been introduced in the literature to refer to 'potential resources to be budgeted and used for health through the PFM system' (Barroy and Gupta, 2020), including overall revenues, the budget share allocated to health and PFM improvements.

The definition of health system efficiency has also evolved over the years. Traditional approaches considered an entity—whether a specific provider, hospital or health system—to be efficient if it achieves the maximum possible volume and/or quality of outputs for its given level and/or mix of inputs, or alternatively, the minimum possible inputs for any given output(s) (Evans *et al.*, 2001; Lauer *et al.*, 2004). These are commonly referred to as technical and allocative efficiency. In recent years, others have categorized inefficiencies based more on misuse or waste of resources at any stage of the production process (Cylus *et al.*, 2016; Jacobs *et al.*, 2006). In either case, efficiency gains refer to increases in the volume or quality of outputs produced for a given level of inputs, or reductions in inputs while still producing the same or greater outputs.

Against this evolving conceptual backdrop, the relationship between efficiency and budgetary space for health has remained largely unexplored. It is, however, central for policy reform as improved efficiency in the use of resources may lead to significant gains for fixed health budgets. Inefficiencies occur across all types of public services and there is ample empirical evidence of inefficiencies in health (Banzon and Mailfert, 2018; Grigoli and Kapsoli, 2013; Herrera and Pang, 2005; Organisation for Economic Co-operation and Development, 2017), including inefficiently produced services (e.g. hospital care for patients that could be treated in outpatient settings) as well as pure waste (e.g. unused vaccines). Estimates suggest upwards of 20% of health spending may not be put to good use (Chisholm and Evans, 2010; World Bank, 2017). As noted by Jowett *et al.* (2016), the wide variations in performance at low levels of public spending on health indicates that even without increased spending levels, there is scope for obtaining better value for money if inefficient health expenditures can be successfully repurposed and put to better use.

Despite its relevance for policy reform and health system outputs, there is no consensus on the exact role efficiency plays in driving increases in resource availability. Often, reductions in costs or expenditures lead to the reverse. For instance, an efficient reorganization of hospital services may induce budget cuts. In the case where budgets for facilities are estimated on a bed number basis, efficiency interventions that reduce the number of beds can lead to reduced budgets, as happened in several former Soviet Union countries at the end of the 1990s (Kutzin *et al.*, 2010). In turn, this reduces the overall budget available for the sector, penalizing efficiency gains and, as a result, diminishes the incentive for further gains within the sector.

There have been few attempts to explore systematically whether efficiency gains increase fiscal or budgetary space for health and under what conditions. One recently published study (Zeng *et al.*, 2020) found no direct empirical evidence proving that efficiency gains translate into more resources for the health sector. Zeng *et al.* (2020) reviewed 28 fiscal space for health case studies and found that they varied widely in terms of how efficiency was evaluated, the extent to which efficiency was explored, and how efficiency gains could be achieved. Half of the studies reported assessing both technical and allocative efficiency, and the other half assessed technical efficiency only. The most frequently cited inefficiencies stemmed from PFM (budget allocation and execution rules) and strategic purchasing issues (provider payment systems and level of provider autonomy). The second most cited set of inefficiencies were those related to health service delivery. Procurement and delivery of input factors was also mentioned as a source of inefficiency. Though most studies conceded that efficiency gains were a potential means to improve budgetary gains for the sector, very few quantified the potential gains or explored practical PFM mechanisms to effectively translate efficiency gains into more budgetary space for health.

This article proposes a framework to help policymakers assess whether conditions to facilitate the translation of efficiency gains into more budgetary space for health have been or could be met. The proposed approach builds on an extensive review of the existing literature on both fiscal space for health and efficiency. In addition, country reviews were conducted in five countries between 2018–2020 to shed light on the links between efficiency and financial gains and to test the analytical framework. The article includes findings from three of those five countries—Ethiopia, Lithuania and Thailand—to show how meeting certain conditions can result in efficiency gains being transformed into more budgetary space for health. The article also considers the experiences of the two other countries—Ghana and Gabon—to demonstrate what can happen when enabling conditions are not clearly met.

Methods

Assessment framework

We propose a set of key enabling conditions that facilitate the transformation of efficiency gains into budgetary space for health (Figure 1). Countries that successfully transform efficiency gains into budgetary space for health share the following characteristics:

- Efficiency interventions put in place are specific, well-defined, focused on reducing health system inputs (as opposed to increasing health system outputs) and implemented over a medium-term time frame;
- Efficiency interventions yield significant financial gains that are roughly quantifiable pre- or post-intervention (e.g. X amount of savings occurred over the policy implementation period); and
- Supportive PFM systems are such that they allow financial gains to be repurposed within the health sector's budget (e.g. allowing expenditure to be reprogrammed at the central, purchaser or provider level).

We describe these in greater detail in the sections below.

Implementing efficiency interventions

Identifying and characterizing efficiency interventions is not always a straightforward process, especially since many policy initiatives serve multiple purposes and are implemented concurrently. Conceptually, the term efficiency reflects a ratio of inputs relative to outputs. For this article, we focus on efficiency interventions that target health system *inputs*, as opposed to health system *outputs*. Inputs may refer to: i) money, which is used to purchase other inputs, such as ii) labour, capital and intermediate goods, which can be combined to create iii) specific activities, such as medical tests. Based on this definition, we would consider efficiency interventions that reduce prices or that modify the mix of inputs, while maintaining or increasing the level of outputs. It is hard to imagine an intervention leading to financial savings if it does not target health system inputs (e.g. reducing prices or changing the mix of inputs).

In practice, a focus on health system inputs covers a wide range of interventions. Monetary interventions include price or spending reductions that do not harm health outputs or outcomes. These may include reductions in the price of medicines paid to manufacturers through the use of health technology assessments (HTA), efforts to strengthen strategic purchasing (e.g. change in payment incentives for providers), external reference pricing (Vogler *et al.*, 2019), and other mechanisms that enable price negotiations.

Interventions that target the level and/or mix of labour, capital and intermediate goods can also lead to efficiency gains. These may include efforts to tackle an inappropriate mix of skills (e.g. task-shifting if overqualified health workers are performing tasks that could be done by others, less qualified) or targeting capital inputs (e.g. reducing excess capacity such as unused beds while still allowing for a potential surge in demand).

Efficiency gains can also be generated by focusing on more effective use of intermediate goods, for example by reducing irrational drug use and the use of poor quality or substandard drugs, or shifting towards lower-cost medications like generics, at least in settings where quality-assured generics are the lowest priced option. Efficiency interventions may include efforts to reduce unnecessary or duplicative procedures or to ensure that care is delivered in an optimal setting. Shifting the locus of care from hospitals to community or primary care settings, for example, could lead to efficiency gains if the latter setting maintained or improved outputs at a lower cost (e.g. requiring fewer or less costly health-care workers). Activity-related interventions may also include efforts to reduce the length of stay at hospitals while maintaining the same quality of care, since this would mean fewer days in

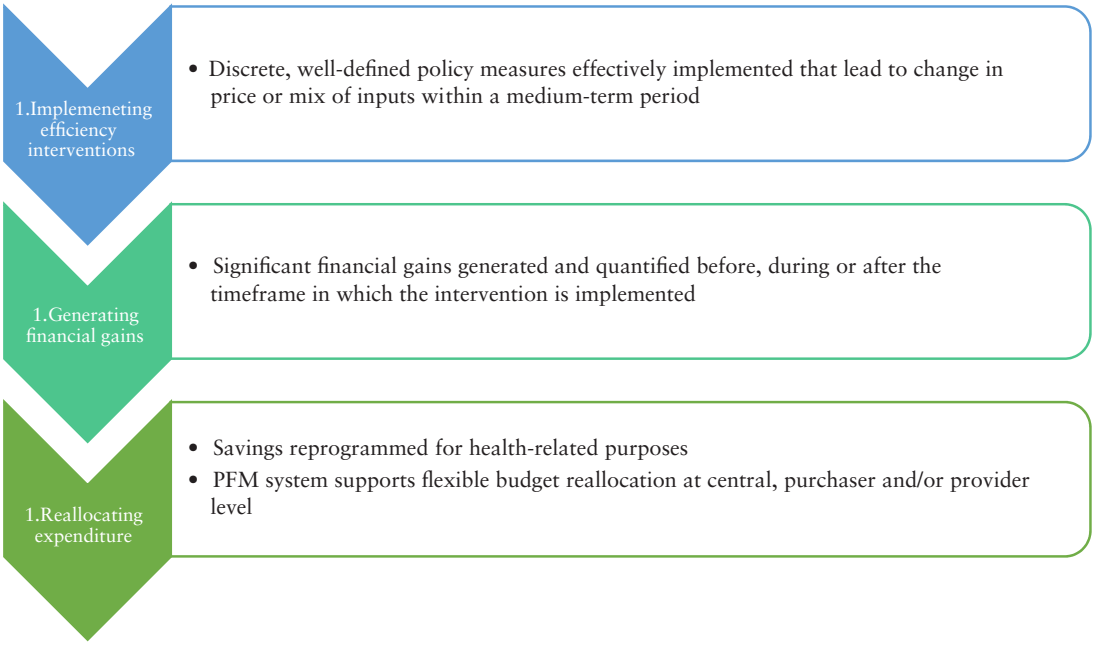

Figure 1. Translating efficiency into budgetary space: key enabling conditions.

hospital and fewer associated costs (National Health Service, 2018).

To ensure that the aforementioned efficiency interventions have an observable effect, they should be implemented over a sufficient period of time, generally two to three years. The medium-term time frame is important for implementation but also from a budget planning perspective. The health sector must have a sense of its budget envelope over a period of a few years to ensure that a better use of inputs will not lead to a decrease in funding (e.g. they will not be penalized for negotiating lower drug prices, task shifting, or shifting the mix between fixed and variable costs).

Generating financial gains

Efficiency gains do not automatically translate into financial gains or savings for the health system. Rather, in some instances, additional spending may be needed to secure efficiency gains (Figure 2, upper right corner). If improved efficiency is to successfully lead to expanded budgetary space, it must reduce inputs (Figure 2, upper left corner), as described above. However, even interventions that reduce price inputs may not necessarily lead to financial gains if they lead to increases in volume or to unwarranted shifts in service delivery. For example, an intervention to reduce provider payments may not create any budgetary flexibility if the price reduction incentivizes providers to increase volume beyond needed levels, to induce demand for other, more expensive services that are not necessarily needed, or to engage in upcoding to increase revenues without delivering more services (e.g. as with refinements in diagnosis-related group-based hospital payments that may change the stimuli for healthcare providers) (Januleviciute *et al.*, 2016; Proshin *et al.*, 2018).

In addition to the need to generate financial gains, the gains themselves must be sizeable—at least more than any amount initially invested to implement the measure—and quantifiable in monetary terms *ex post*, if not prior to the introduction of the measure. The introduction of a generic drugs policy, for example, is often accompanied by estimates of the potential financial gains to be expected from the policy's introduction—estimates that are further updated during implementation (e.g. in France, external evaluation from the government estimated that the policy led to savings of about €10 billion between 1990–2012; Inspection générale des affaires sociales, 2012). If the savings cannot be quantified, then it would be difficult in practice to repurpose the savings. It is essential to know (*ex-ante*) what to measure (e.g. utility cost savings, drug cost savings, change in spending patterns by service or input, etc.).

During Europe's 2008–2010 financial crisis, some health systems were able to institute policy interventions to improve efficiency that led to financial gains, despite the resource-constrained environment. These policies included merging health insurance funds or schemes, improving health procurement mechanisms, lowering the price of medicines, cutting excess capacity, reducing overhead, and reducing worker salaries (e.g. the common percentage pay cut across all staff in Ireland) (Thomson *et al.*, 2015).

Reallocating expenditure within the health sector

Even if efficiency measures lead to financial gains, they still may not translate into more budgetary space for health, often because of rigidities in PFM systems Some budget structures may constrain the transformation of efficiency into budgetary space for health more than others. An example would be where provider payment reforms designed to consolidate inpatient capacity (reducing the number of hospital beds, buildings and utility costs) are compromised by an input-based budget. While efficiency savings may occur within one budgetary year (e.g. reducing number the beds), the budget may be cut in the following years because the number of beds has gone down. More flexible budget formulation, such as through programme or output-oriented budgets, may help ensure that gains are reallocated within the

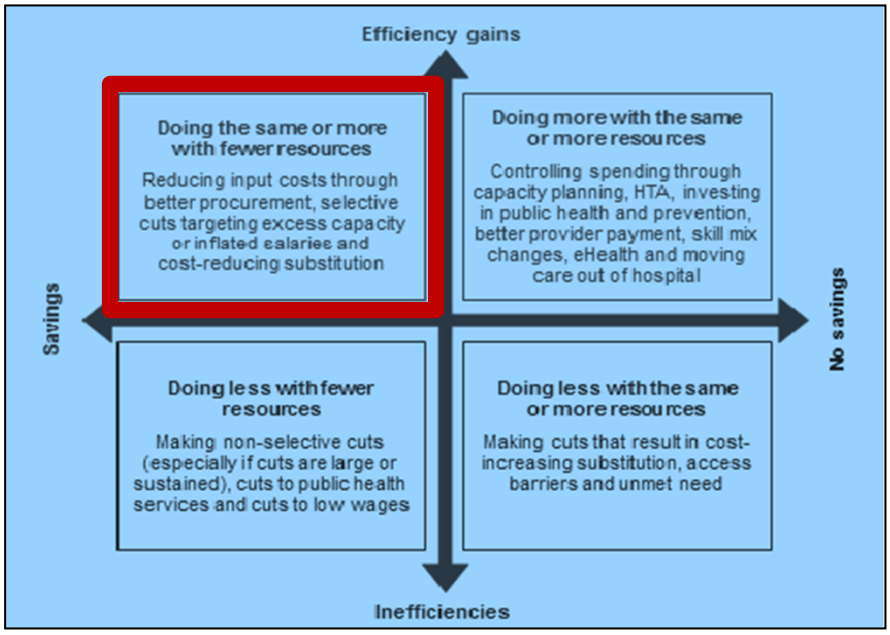

Figure 2. Matching efficiency measures to financial gains.
Source: Adapted from Thomson *et al.* (2015).

sector for other spending purposes (Barroy *et al.*, 2018). Budget caps and spending ceilings set at the provider level may also constrain reallocation and potential savings. By retaining the savings generated within the sector (e.g. savings generated by a reduction in utility costs) and by giving providers greater autonomy over the use of savings, funds can be more easily reprogrammed towards priority needs (Kutzin *et al.*, 2010).

A key question within the health sector is who should have the ability to retain and reinvest financial gains. To transform savings into greater budgetary space, both providers and purchasers need greater flexibility. With more financial autonomy, purchasers could reallocate savings across services and providers, and providers could reallocate resources across budget lines and retain a portion to be used as needed (Kutzin *et al.*, 2010; Piatti *et al.*, 2020). Allowing providers to retain some financial gains and reallocate them in a flexible manner creates an ongoing incentive for providers to use the right mix of inputs to generate efficiency gains and financial gains, now and in future. In such a scenario, efficiency and budget expansion goals would be pursued jointly. In systems with a separate purchaser—an entity that purchases health-care services on behalf of specific population groups or the general population—the management of financial gains may accrue to the purchaser who might then be empowered to retain and reallocate savings more effectively (Mathauer *et al.*, 2019). When a separate purchasing agent is tasked with purchasing individual services, facility-level caps may need to be lifted to enable reallocations across providers and make effective use of savings.

Results

Applying the framework: three country success stories

The above analytic framework was applied to three countries—Lithuania, Thailand and Ethiopia—to see whether efficiency gains translated into budgetary space for health in practice. All three countries face different challenges, so their choice of how and where to seek efficiency gains will naturally vary. We describe each country's efficiency intervention, the context in which the measure was introduced, and the extent to which it is possible to conclude if budgetary space was generated as a result of the intervention.

Case study 1. Reducing the price of medicines in Lithuania

Lithuania was severely affected by the global financial crisis of 2008, with GDP falling by nearly 15% from 2008 to 2009 (Kacevičius and Karanikolos, 2015). Between 2009–2010, Lithuania implemented the Plan for the Improvement of Pharmaceutical Accessibility and Price Reductions (commonly referred to as the Drug Plan). The plan would reduce the price of medicines through a wide range of measures, including through cost/volume agreements with manufacturers and changes in the list of countries used for reference pricing. The plan consisted of 28 measures and led to declines in originator prices and costs per prescription. According to data from the Ministry of Health, the average reimbursed price for a prescription was €17.70 in 2009 but fell to €16.20 in 2010 and €15.4 in 2011. As a result, the National Health Insurance Fund reported savings of €15–20 million in 2010 and 2011.

The number of prescriptions increased concurrently, indicating greater access to medicines through the Drug Plan. As a result of these savings, the Health Insurance Fund was able to expand its benefits package. In 2011, the Health Insurance Fund added new medicines to the package for the treatment of lung, breast, stomach and colon cancer, ischaemic heart disease, mental and behavioural disorders, and some other diseases.

This is an example of a reform introduced to reduce the price of inputs leading to financial gains for a health insurance fund. In this case, the health insurance fund was able to use the savings to improve access to care and expand benefits, thereby contributing to more or better health outputs. The fund was able to achieve this result in large part because its budget allocation is not determined on the basis of prior year expenditures. Revenues come from health insurance contributions and, largely, from state budget transfers which follow a counter-cyclical formula that ensures resource envelope stability for the purchaser, irrespective of the internal savings achieved. The flexible financial management of the semi-autonomous fund also enabled the internal reprogramming of funds, using the financial gains generated through the efficiency measure to expand the purchaser's financial margin and, ultimately, service coverage.

Case study 2. Changing the provider payment system in Thailand

Thailand introduced a tax-based, non-contributory Universal Coverage Scheme (UCS) in 2002 to provide health coverage to all those not covered by the existing scheme for private workers (Social Health Insurance, SHI) or the scheme for civil servants (Civil Servant Medical Benefit Scheme, CSMBS) (Evans *et al.*, 2012; Tangcharoensathien *et al.*, 2018). From a service purchasing standpoint, UCS differs from the other schemes in terms of the governance of its purchaser—the National Health Security Office (NHSO)—which is comparatively more autonomous as a separate purchasing entity compared to the other schemes. A change in provider payments was also introduced in 2002: the UCS worked through per capita allocations for outpatient services and diagnostic-related groups; it worked with a global budget for inpatient services; and it used mixed payment methods for health promotion and disease prevention. The other schemes continued to function with fee-for-service reimbursements, which are known to sometimes contribute to oversupply (Patcharanarumol *et al.*, 2018).

As a result of the new purchasing strategy, the UCS generated substantial savings. Between 2012 and 2015, the cost per UCS member was estimated, *ex post*, to be four times lower than the cost per member for CSMBS, which continued to rely on fee-for-services (around ฿3 000 per UCS member versus ฿14 000 per CSMBS member). As an autonomous purchaser, the NHSO has the financial flexibility to reallocate its resources within the adopted budget so that gains generated within the scheme can be reallocated to other health-related purposes (e.g. more high-cost medicines and medical devices).

The NHSO has often used its central purchasing and bargaining mandate to purchase services or devices at a lower cost than the prices offered to providers. The financial gains generated are systematically used to support the delivery of all categories of care and services, including outpatient payments and high-cost care. Between 2009 and 2012, the NHSO reduced the prices it paid for some specific medicines and medical supplies by half (55% on average) in comparison to

market prices (Patcharanarumol *et al.*, 2018), which enabled it to subsidize higher-cost care and prevention activities. In sum, the financial flexibility provided to the NHSO enabled it to generate internal savings and reprogramme those gains to better serve beneficiaries through more efficient service coverage and the delivery of lower cost services for UCS members.

Case study 3. Task-shifting in Ethiopia

In the mid-2000s, Ethiopia introduced major reforms in human resources for health (HRH). The aim of the reforms was to meet rural demand for primary health care services more efficiently and reduce the time and costs associated with scaling up conventional health personnel. As part of the reforms, two cadres of mid-level health professionals were introduced: health officers and emergency surgical officers. Some conventional medical tasks were shifted from medical doctors to the mid-level health workers, who received less training and had fewer qualifications. The goal was to make more efficient use of available resources and to reduce the wage bill, as it was significantly less expensive to train and pay mid-level health professionals compared to medical doctors. The task-shifting approach generated an estimated 8 million US dollars in savings per year (Alebachew and Waddington, 2015). The reforms also included the creation of a new cadre of salaried community health workers tasked with delivering a package of services related to basic health and environmental sanitation, disease prevention and control, family health, and health education (Teklehaimanot and Teklehaimanot, 2013; Bilal *et al.*, 2011). The financial gains associated with this second measure are estimated at 20 million US dollars per year (Alebachew and Waddington, 2015; Yip and Hafez, 2015).

When the HRH efficiency measures were introduced, it was decided that any savings generated through the reform would be reprogrammed to fund staff deployment. This enabled the government to deploy about 5 000 additional health officers and 50 000 health extension workers, and to enrol about 800 new emergency surgical officers by 2017. This is a clear example of how a change in the mix of inputs, in this case through task-shifting, can make more resources available for other purposes, such as hiring additional health workers to deliver a wider range of health services. Ethiopia was able to realize these gains thanks to the stability of the health sector budget, the ability to flexibly reprogramme resources within the sector, and the implementation of consistent reallocation rules to generate more outputs.

Discussion

How to apply the analytical approach to other settings?

The Lithuania, Thailand and Ethiopia case studies highlight how countries can translate efficiency gains into more budgetary space for health if they can meet the three conditions described in the assessment framework. The discussion which follows highlights key findings from these country examples and illustrates what might happen when the three enabling conditions are not met, particularly in situations where it is unclear whether there are financial gains resulting from efficiency interventions and where PFM rules do not allow the health sector to retain and reinvest savings.

All three countries targeted health system inputs to expand budgetary space. In Lithuania and Thailand, they reduced prices for medicines and supplies; in Ethiopia, task-shifting lowered the wage bill. All measures were introduced with a specific efficiency goal in mind, either for the sector as a whole (Ethiopia), the sole purchaser (Lithuania) or for one of the financing schemes (Thailand). Lithuania implemented the intervention over a short period of time, while Ethiopia and Thailand implemented theirs over a medium-term time frame.

Each country also achieved substantial financial gains through their targeted policy measures. Lithuania saved 20 million euros per year, Ethiopia saved 20 million US dollars per year, and Thailand saved more than 300 US dollars per UCS beneficiary per year. The cost savings in Lithuania were actual and immediate, following the negotiations with pharmaceutical companies. In Ethiopia, the gains took longer to appear as it took time to train the new cadres of mid-level health professionals and emergency surgical officers (i.e. three to four years).

Not every country who implements similar efficiency measures achieves the same level of success, often because the overall efficiency gains are diluted within the budget, making it difficult to assess whether efficiency gains translate into financial gains and ultimately preventing the savings from being repurposed. In Gabon, for example, different schemes were merged into a large umbrella fund (*Caisse Nationale d'Assurance Maladie et de Garantie Sociale*) to reduce administrative costs and harmonize benefits. However, associated savings were difficult to identify due to escalating expenditures that occurred in the absence of a strategic purchasing policy for provider payments who relied mostly on fee-for-service payments (Aboubacar *et al.*, 2020; Saleh *et al.*, 2014). In Ghana, a Community-Based Health Planning and Services (CHPS) programme was introduced to improve access to care in underserved communities. The programme created new health centres (known as CHPS compounds) that provide basic health care at a lower cost than the same care delivered in hospitals. Unfortunately, no concurrent gatekeeping measures were introduced to encourage patients to seek care first at the health centres. The result was a marginal change in the patient pathway and an increase in overall expenditure for the Ghana Health Service, since more people were accessing services (Nyonator *et al.*, 2005). No observable financial gains were generated through the intervention over a medium-term period. Indeed, in our collective experience, we find the examples from Gabon and Ghana may be the norm rather than the exception, with a high likelihood that efficiency measures will generate limited or unidentifiable financial gains.

Rules governing PFM can also complicate the transformation of efficiency gains into expanded budgetary space for health. In Lithuania and Thailand, the autonomy of the purchaser and its separate budget allowed savings to be kept and reprogrammed. In Thailand, savings by UCS were managed at the purchaser level, which translated into improved service coverage for the beneficiaries of the scheme. In Ethiopia, gains were kept within the health ministry's resource envelope and redeployed to support newly trained staff for facilities. In this case, the savings were reallocated within the same budget line (i.e. personnel costs). It may have been harder to shift resources to another line item, for example moving allocations from capital costs to personnel expenditure, which is not allowed under most PFM laws.

When budgets are rigid in structure and in their appropriation rules, it may not possible to reprogramme savings within a sector's budget (Barroy *et al.*, 2018). Indeed, one may even argue that the financial gains resulting from improved efficiency should not necessarily stay within the health sector in the first place. If all sectors retained their efficiency savings, it would be impossible to reallocate resources across sectors in a national emergency. At the same time, allowing the health sector to keep and reinvest its efficiency gains provides strong incentives for the sector to continuously improve efficiency and ultimately improve health system performance. Flexible PFM at a central, purchaser or provider level can allow savings to be used within the health sector, either by reallocating resources to other priority areas or by increasing the volume or quality of the services that are more efficiently delivered, thus addressing unmet needs.

Conclusion

Efficiency gains can be translated into budgetary space for health, but it is not a given. Well-designed efficiency interventions that target health system inputs may generate financial gains, but these gains do not always lead to expanded budget for the health sector, especially in a system with rigid PFM rules. Only flexible PFM at a central, purchaser and provider level can allow savings to be kept and repurposed within the sector.

In this article we have retrospectively applied a framework to assess experiences with efficiency interventions in Lithuania, Thailand and Ethiopia. Moving forward, policymakers are invited to use the approach and consider its three enabling conditions a priori to ensure that new efficiency interventions eventually transform into expanded budgetary space for health. Using efficiency gains as a lever to increase the budget available for health is an important opportunity that could help all countries—especially low- and middle-income countries—recover from the effects of COVID-19, prepare for the impact of future pandemics and progress towards universal health coverage.

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References

Aboubacar I, Essono M, Barroy H, Mailfert M. 2020. *Health Financing and Budgeting Reforms in Gabon: Progress and Challenges on the Road to Universal Health Coverage*. Geneva: World Health Organization. (WHO/UHL/HGF/CaseStudyN°15). https://apps.who.int/iris/bitstream/handle/10665/333604/9789240006881-eng.pdf?sequence=1&isAllowed=y, Accessed 15 September 2020.

Alebachew A, Waddington C. 2015. *Improving Health System Efficiency: Ethiopia: Human Resources for Health Reforms*. Geneva: World Health Organization. WHO/HIS/HGF/CaseStudy/15.6. https://apps.who.int/iris/handle/10665/187240, Accessed 30 August 2019.

Banzon E, Mailfert M. 2018. Overcoming public sector inefficiencies toward universal health coverage. The case for national health insurance systems in Asia and the Pacific. Manila: Asian Development Bank. (N°53) https://www.adb.org/sites/default/files/publication/422596/sdwp-053-overcoming-public-sector-inefficiencies-health.pdf, Accessed 23 October 2019.

Barroy H, Dale E, Sparkes S, Kutzin J. 2018. *Budget Matters for Health: Key Formulation and Classification Issues. Health Financing Policy Brief*. Geneva: World Health Organization. WHO/HIS/HGF/PolicyBrief/18.4. https://www.who.int/health_financing/documents/making-budgets-work-uhc/en/, Accessed 30 August 2019.

Barroy H, Gupta S. 2020. From overall fiscal space to budgetary space for health: connecting public financial management to resources mobilization in the era of COVID-19. *CGD Policy Paper 185*. Washington, DC: Center for Global Development. https://www.cgdev.org/publication/overall-fiscal-space-budgetary-space-health-connecting-public-financial-management, Accessed 18 October 2020.

Barroy H, Kabaniha G, Boudreaux C, Cammack T, Bain N. 2019. *Leveraging Public Financial Management for Better Health in Africa: Key Opportunities and Bottlenecks for Reform*. Geneva: World Health Organization. WHO/UHC/HGF/HFWorking Paper19.2. https://www.who.int/publications/i/item/leveraging-public-financial-management-for-better-health-in-africa-key-bottlenecks-and-opportunities-for-reform, Accessed 15 September 2020.

Barroy H, Kutzin J, Tandon A *et al.* 2017. Assessing fiscal space for health in the SDG era: a different story. *Health Systems and Reform* **4**: 4–7. https://www.tandfonline.com/doi/citedby/10.1080/23288604.2017.1395503?scroll=top&needAccess=true, Accessed 30 August 2019.

Bilal NK, Herbst CH, Zhao F, Soucat A, Lemiere C. 2011. Health extension workers in Ethiopia: improved access and coverage for the rural poor. In: *Yes, Africa Can: Success Stories from a Dynamic Continent*. Washington, DC: World Bank, 433–443. https://www.researchgate.net/publication/265205135_Health_Extension_Workers_in_Ethiopia_Improved_Access_and_Coverage_for_the_Rural_Poor, Accessed 30 August 2019.

Chisholm D, Evans DB. 2010. Improving health system efficiency as a means of moving towards universal coverage. *World health report background paper*. Geneva: World Health Organization https://www.who.int/healthsystems/topics/financing/healthreport/28UCefficiency.pdf, Accessed 30 August 2019.

Curristine T, Doherty L, Imbert B *et al.* 2020. *Budgeting in a Crisis: Guidance for Preparing the 2021 Budget. IMF Fiscal Affairs Special Series on COVID-19*. Washington, DC: International Monetary Fund. https://www.imf.org/-/media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-budgeting-in-a-crisis-guidance-on-preparing-the-2021-budget.ashx.

Cylus J, Papanicolas I, Smith P, editors. 2016. Health system efficiency: how to make measurement matter for policy and management. *Health policy series*. Copenhagen: European Observatory on Health Systems and Policies https://www.ncbi.nlm.nih.gov/books/NBK436888/, Accessed 30 August 2019.

Evans DB, Tandon A, Murray CJL, Lauer JA. 2001. Comparative efficiency of national health systems: cross national econometric analysis. *BMJ* **323**: 307–10.

Evans TG, Chowdhury AMR, Evans DB *et al.* 2012. *Thailand's Universal Coverage Scheme: Achievements and Challenges. An Independent Assessment of the First 10 Years (2001–2010)*. Nonthaburi, Thailand: Health Insurance System Research Office. https://www.social-protection.org/gimi/gess/RessourcePDF.action;jsessionid=h_QDN_k5bi1CYvNJtgx_CDXQn9EELOc49RfryfgOmnm9O88NAOI5!-1017928187?id=28441, Accessed 31 January 2021.

Gaspar V, Amaglobeli D, Garcia-Escribano M, Prady D, Soto M. 2019. Fiscal policy and development: human, social, and physical investment for the SDGs. *IMF staff discussion note*. Washington, DC: International Monetary Fund. SDN/19/03. https://webcache.googleusercontent.com/search?q=cache:S_AHTmynmk4J:https://www.imf.org/~/media/Files/Publications/SDN/2019/SDN1903.ashx+&cd=4&hl=en&ct=clnk&gl=fr, Accessed 30 August 2019.

Grigoli F, Kapsoli J. 2013. Waste not, want not: the efficiency of health expenditure in emerging and developing economies. *IMF working paper*. Washington, DC: International Monetary Fund. 13/187. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Waste-Not-Want-Not-The-Efficiency-of-Health-Expenditure-in-Emerging-and-Developing-Economies-40899, Accessed 30 August 2019.

Heller P. 2005. Understanding fiscal space. *IMF policy discussion paper*. Washington, DC: International Monetary Fund. PDP/05/4. https://www.imf.org/external/pubs/ft/pdp/2005/pdp04.pdf, Accessed 30 August 2019.

Heller P. 2006. The prospects of creating 'fiscal space' for the health sector. *Health Policy and Planning* **21**: 75–9 https://academic.oup.com/heapol/article/21/2/75/554947#8806263, Accessed 30 August 2019.

Herrera S, Pang G. 2005. Efficiency of public spending in developing countries: an efficiency frontier approach. *World Bank policy research working paper*. Washington, DC: World Bank. 3645. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=757387, Accessed 30 August 2019.

Inspection générale des affaires sociales. 2012. *Evaluation de la politique française des médicamentes génériques*. Paris: IGAS. Rapport N°RM2012-115P. https://www.igas.gouv.fr/IMG/pdf/RM2012-115P_-_DEF_sans_sign.pdf, Accessed 30 December 2020.

International Monetary Fund. 2016. Assessing fiscal space: an initial consistent set of considerations. *IMF staff paper*. Washington, DC: International Monetary Fund (https://www.imf.org/~/media/Files/Publications/PP/pp5080-Assessing-Fiscal-Space-An-Initial-Consistent-Set-of-Considerations.ashx).

International Monetary Fund. 2018. Assessing fiscal space: an update and stocktaking. *IMF policy paper*. Washington, DC: International Monetary Fund https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/06/15/pp041118assessing-fiscal-space, Accessed 15 September 2020.

Jacobs R, Smith P, Street A. 2006. *Measuring Efficiency in Health Care*. Cambridge: Cambridge University Press.

Januleviciute J, Askildsen JE, Kaarboe O, Siciliani L, Sutton M. 2016. How do hospitals respond to price changes? Evidence from Norway. *Health Economics* **25**: 620–36 https://pubmed.ncbi.nlm.nih.gov/25929559/, Accessed 30 December 2020.

Jowett M, Brunal MP, Flores G, Cylus J. 2016. Spending targets for health: no magic number. *Health financing working paper*. Geneva: World Health Organization. WHO/HIS/HGF/HFWorkingPaper/16.1. https://www.who.int/health_financing/documents/no-magic-number/en/, Accessed 23 August 2019.

Kacevičius G, Karanikolos M. 2015. The impact of the crisis on the health system and health in Lithuania. In: Maresso A, Mladovsky P, Thomson S *et al.* (eds). *Economic Crisis, Health Systems and Health in Europe: Country Experience*. Copenhagen: WHO Regional Office for Europe, 217–246. http://www.euro.who.int/__data/assets/pdf_file/0010/279820/Web-economic-crisis-health-systems-and-health-web.pdf?ua=1, Accessed 30 August 2019.

Kutzin J, Cashin C, Jakab M, editors. 2010. *Implementing Health Financing Reform: Lessons from Countries in Transition*. Copenhagen: World Health Organization, on behalf of the European Observatory on Health Systems and Policies. http://www.euro.who.int/__data/assets/pdf_file/0014/120164/E94240.pdf, Accessed 30 August 2019.

Lauer JA, Lovell CAK, Murray CJL, Evans DB. 2004. World health system performance revisited: the impact of varying the relative importance of health system goals. *BMC Health Services Research* **4**: 19.

Mathauer I, Dale E, Jowett M, Kutzin J. 2019. *Purchasing of Health Services for Universal Health Coverage: How to Make it More Strategic? Health Financing Policy Brief*. Geneva: World Health Organization. WHO/UHC/HGF/PolicyBrief/19.6. https://apps.who.int/iris/bitstream/handle/10665/311387/WHO-UCH-HGF-PolicyBrief-19.6-eng.pdf?sequence=1&isAllowed=y&ua=1, Accessed 10 September 2019.

National Health Service. 2018. *Guide to Reducing Long Hospital Stays*. London: NHS Improvement. IG 20/18; https://improvement.nhs.uk/documents/2898/Guide_to_reducing_long_hospital_stays_FINAL_v2.pdf, Accessed 30 August 2019.

Nyonator FK, Awoonor-Williams JK, Phillips JF, Jones TC, Miller RA. 2005. The Ghana community-based health planning and services initiative for scaling up service delivery innovation. *Health Policy and Planning* **20**: 25–34 https://www.researchgate.net/publication/8043942_The_Ghana_Community-based_Health_Planning_and_Services_Initiative_for_scaling_up_service_delivery_innovation, Accessed 30 August 2019.

Organisation for Economic Co-operation and Development. 2017. *Tackling Wasteful Spending on Health*. Paris: OECD Publishing

Patcharanarumol W, Panichkriangkrai W, Sommanuttaweechai A *et al.* 2018. Strategic purchasing and health system efficiency: a comparison of two financing schemes in Thailand. *PLoS One* **13**: e0195179 https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195179#sec001, Accessed 30 August 2019.

Piatti M, O'Dougherty S, Ally M 2020. Why strategic purchasing in health and public financial management are two sides of the same coin [online]. *World Bank Blogs Investing in Health* https://blogs.worldbank.org/health/why-strategic-purchasing-health-and-public-financial-management-are-two-sides-same-coin, Accessed 15 September 2020.

Proshin A, Cazenave-Lacroutz A, Or Z, Rochaix L. 2018. *Impact of Diagnosis Related Group Refinement on the Choice between Scheduled Caesarean Section and Normal Delivery: Recent Evidence from France*. Lyon: HAL Archives-Ouvertes. halshs-01812107. https://halshs.archives-ouvertes.fr/halshs-01812107/document, Accessed 30 December 2020.

Saleh K, Barroy H, Couttolenc B. 2014. Health financing in the Republic of Gabon (English). *A World Bank study*. Washington, DC: World Bank Group http://documents.worldbank.org/curated/en/875521468252026617/Health-financing-in-the-Republic-of-Gabon, Accessed 30 August 2019.

Tandon A, Cashin C. 2010. Assessing public expenditure on health from a fiscal space perspective (English). *Health, Nutrition and Population (HNP) discussion paper*. Washington, DC: World Bank. 56053. http://documents.worldbank.org/curated/en/333671468330890417/Assessing-public-expenditure-on-health-from-a-fiscal-space-perspective, Accessed 30 August 2019.

Tangcharoensathien V, Witthayapipopsakul W, Panichkriangkrai W, Patcharanarumol W, Mills A. 2018. Health systems development in Thailand: a solid platform for successful implementation of universal health coverage. *Lancet* **391**: 1205–23 https://

www.ncbi.nlm.nih.gov/pubmed/29397200, Accessed 17 September 2019.

Teklehaimanot HD, Teklehaimanot A. 2013. Human resource development for a community-based health extension program: a case study from Ethiopia. *Human Resources for Health* **11**: 39. https://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-11-39, Accessed 30 August 2019.

Thomson S, Figueras J, Evetovits T *et al.* 2015. *Economic Crisis, Health Systems and Health in Europe: Impact and Implications for Policy. European Observatory on Health Systems and Policies Series*. Berkshire: Open University Press. http://www.euro.who.int/__data/assets/pdf_file/0008/289610/Economic-Crisis-Health-Systems-Health-Europe-Impact-implications-policy.pdf?ua=1, Accessed 30 August 2019.

Vogler S, Schneider P, Zimmermann N. 2019. Evolution of average European medicine prices: implications for the methodology of external price referencing. *PharmacoEconomics Open* **3**: 303–9. https://link.springer.com/article/10.1007/s41669-019-0120-9#citeas, Accessed 30 August 2019.

World Bank. 2017. Second annual UHC financing forum: greater efficiency for better health and financial protection. *Background paper*. Washington, DC: World Bank http://pubdocs.worldbank.org/en/616561494511379987/UHC-Efficiency-Background-Paper-V10-170419-1100.pdf, Accessed 30 August 2019.

Yip W, Hafez R. 2015. *Improving Health System Efficiency: Reforms for Improving the Efficiency of Health Systems: Lessons from 10 Country Cases*. Geneva: World Health Organization. WHO/HIS/HGF/SR/15.1. https://apps.who.int/iris/bitstream/handle/10665/185989/WHO_HIS_HGF_SR_15.1_eng.pdf;jsessionid=48CFD97AA1E1350EDEF61C1B77509D1E?sequence=1, Accessed 30 August 2019.

Zeng W, Yao Y, Barroy H, Cylus J, Li G. 2020. Improving fiscal space for health from the perspective of efficiency in low-and-middle income countries: what is the evidence? *Journal of Global Health* **10**: 020421