

# Supporting role of non-governmental health insurance schemes in the implementation of universal health coverage in developing countries

DOI:10.7365/JHPOR.2020.1.4

## Authors:

**Tímea Almási<sup>1</sup>**  
**Ehab Abul-Magd<sup>2</sup>**  
**Mohsen George<sup>3</sup>**  
**Fernando Arnaiz<sup>4</sup>**  
**Baher Elezbawy<sup>5</sup>**  
**Balázs Nagy<sup>6</sup>**  
**Zoltán Kaló<sup>6</sup>**

1 - Syreon Research Institute, Hungary  
2 - Egyptian Healthcare Management Society, Egypt  
3 - Universal Health Insurance Authority, Egypt  
4 - Department of Health System Strategy, HC Funding & Financing, Global Access, F. Hoffmann-La Roche Ltd, Switzerland  
5 - Syreon Middle East, Egypt  
6 - 1) Center for Health Technology Assessment of Semmelweis University, Hungary and 2) Syreon Research Institute, Hungary

## Keywords:

*complementary and supplementary insurance, developing countries, medical savings account, private health insurance, universal health coverage*



**How to cite this article?**

Almási T, Abul-Magd E, George M, Arnaiz F, Elezbawy B, Nagy B, Kaló Z. Supporting role of non-governmental health insurance schemes in the implementation of universal health coverage in developing countries. *J Health Policy Outcomes Res* [Internet]. 2020 [cited YYYY Mon DD];1. Available from: <https://www.jhpor.com/article/2242-supporting-role-of-non-governmental-health-insurance-schemes-in-the-implementation-of-universal-health-coverage-in-developing-countries> DOI: 10.7365/JHPOR.2020.1.4

contributed: 2020-06-05

final review: 2020-08-19

published: 2020-09-13

## Abstract

An incremental move towards universal health coverage (UHC) is an important issue in many developing countries. There is often limited fiscal capacity for UHC implementation, which results in restricted access to health care and high level out of pocket payments. An important policy question is whether health insurance (HI) provided by non-governmental actors – either on non-profit or for-profit basis – can support UHC implementation to resolve problems? This paper argues that the nature of HI arrangements provided outside the governmental schemes strongly depend on the structure and evolution of the publicly funded system and on the extent to which regulators let non-governmental health care actors support the publicly funded system. Collaboration between public and private stakeholders is important to facilitate the implementation of UHC supported by supplementary and complementary HI schemes.

## Introduction

### 1.1 Financial protection and health status

In those developing countries, where universal health coverage (UHC) is not fully implemented, treatment of severe diseases may be too expensive for individuals and may end up in catastrophic financial burden to households [1]. Even relatively small out of pocket payments (OOP) for pharmaceuticals, medical supplies and transportation may cause serious financial difficulties, especially for the poor.<sup>[2]</sup>

High level of OOP contributes to impoverishment in many developing countries. In Cambodia, Kyrgyzstan, Niger, Tajikistan, Uganda and Tanzania 2% of population were impoverished due to excess health spending. In Argentina, Georgia and Tajikistan 4% of households were

reported to have catastrophic health care expenditure.<sup>[3]</sup> Poor households tend to receive less preventive care,<sup>[4]</sup> insufficient follow-up<sup>[5]</sup> and thus may have poorer health status.<sup>[6]</sup> Regressive fund raising methods for health care financing (e.g. indirect taxes)<sup>[7]</sup> and the high share of OOPs further deepen the poverty trap.<sup>[8]</sup>

### 1.2 UHC and share of public expenditures in LMICs

The United Nations Sustainable Developmental Goals set target for implementation of universal health coverage in all member states by 2030.<sup>[9]</sup> Models or pathways to achieve UHC are adaptable over a number of elements across a wide range of domains. According to the World Health Organization (WHO) report changes over three dimensions of coverage are crucial: i) population covered ii) level or rate of reimbursement and iii) types of services included in the basic benefit package.<sup>[10]</sup>

When it comes to implementation of UHC developing countries do not perform similarly. Several emerging economies have made good progress in recent years. In Ghana for example, between 2003 and 2007 national insurance system was introduced to cover hospitalizations, outpatient care, basic diagnostic tests and therapies, achieving population coverage of 47%.<sup>[11]</sup> In South Africa between 2005 and 2011 public expenditure on health increased by 20%.<sup>[12]</sup> In Thailand the health care reforms started in 2001 and the proportion of population with public health insurance increased from 40% to 95.5% over 5 years.<sup>[13]</sup> In Colombia, the population with public health insurance increased from 15.7% to 88.2% between 1993 and 2009.<sup>[14]</sup>

In some other countries UHC implementation has so far been less successful. In Egypt, Morocco, Sudan, Syria and Yemen the average public expenditure on health remained less than one-third of total health expenditure. The share of public spending amongst developing countries is the lowest in the Middle East and North Africa (MENA) region and South Asia, with 8.7% and 8.3%, respectively.<sup>[3]</sup>

### 1.3 Financial constraints of UHC implementation

Financial resources to support the introduction or extension of UHC are often limited. In developing countries many households are not able to contribute to public funding in the form of tax and/or health insurance premiums.<sup>[15]</sup> Due to the low nominal volume of health care expenditure even when relatively high growth is achieved in the share of public health spending (i.e. as % of Gross Domestic product, GDP), the absolute amount often remains marginal. The small amount of pooled resources can easily slow down the implementation process.

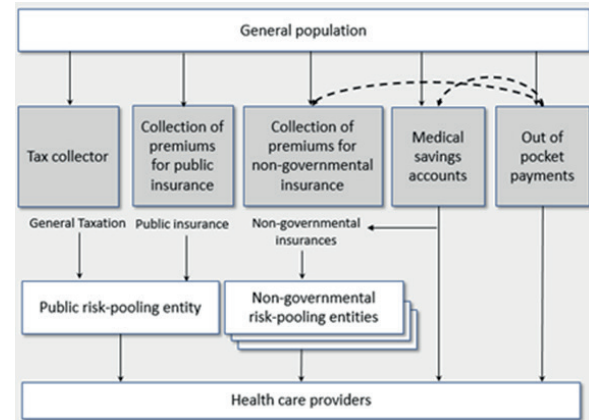
The World Health Report proposes for developing countries a constant increase for health in domestic budgets (as % GDP) and states that spending below the 4-5% of GDP retards UHC implementation.<sup>[16]</sup> According to international benchmarks<sup>[17]</sup> low-income countries should spend 86 US\$ per person per year on average to ensure access to the essential health services. While 72% of low and middle income countries reached this level in 2012, only two low income countries spent on the required level or above.<sup>[17]</sup> As a consequence, access barriers may be present on both the demand and supply sides, through such factors as long waiting lists, limited geographical accessibility, shortage of medical staff and lack of demand for effective interventions.<sup>[15,18]</sup>

## 2. Supportive role of private prepaid schemes

In reality UHC, especially in developing countries, cannot cover the full scope of health care services. Even with a fully operational public coverage the share of OOP remains substantial.<sup>[17]</sup> To prevent households to fall below the poverty line when health problems occur and to reach good quality care on time, prepaid schemes provide alternatives. An important policy question is whether health insurance (HI) provided by non-governmental actors - either on non-profit or for-profit basis - can address some problems of UHC implementation in the transition period and beyond?

In November 2018 an issue panel discussion was organized at the European ISPOR conference to answer this question. Although panellists were selected to represent different - including public payer, private payer, pharmaceutical industry and academic - perspectives, all stakeholders acknowledged the arguments and consensus statements described in this paper.

Through channelling future expenses into prepayment schemes financial risk and pathways of care can be managed in a more sustainable way for individual households. **Figure 1** illustrates the types of financing mechanisms, and how non-governmental prepayment plans may reduce the burden on OOP in the form of medical savings account (MSA) or health insurance arrangements.



**Figure 1. Types of financing mechanisms adapted from Sekhri et al. (2005)<sup>[27]</sup>**

HI and MSA schemes fundamentally differ in their approach to risk pooling. While (for- or non-profit) health insurance (HI) schemes offer the coverage of health care costs beyond the sum of individual contributions, MSA covers costs only up to the sum of individual savings, meaning that individuals relying on MSA cover their health expenses solely from their savings.<sup>[19-21]</sup> MSAs provide a quick and easy solution to prepayment in countries with less financial inequalities, especially for households that can afford to save enough in the present to fully cover their future healthcare expenses.<sup>[21]</sup> MSAs are flexible to link with for- or non-profit HI schemes (e.g. by using the savings to pay into a health insurance scheme); hence they can support the introduction and evolution of non-governmental HI schemes. On the other hand MSAs' financial coverage is limited up to the individuals' budget, thus they are limitedly capable to cover catastrophic costs of individuals. In countries with larger financial inequalities and more exposure of health care costs to individual budgets risk pooling via health insurance often becomes a more favourable alternative than MSA.

Usually private HI companies are established on a for-profit basis, in which the incentives of owners and shareholders are driven by free market mechanisms. The mission of non-profit HIs is to provide solution to an existing demand of health care financing for underserved populations without making profit, and they are typically initiated by the local community, non-governmental organisations (NGOs) or religious groups. Alternatively, large for-profit companies may establish non-profit HI companies for the households of their employees, if the public health insurance provides limited coverage.

From societal viewpoint, risk pooling schemes have more potential to lessen the burden on UHC than MSA, al-

though they – especially for-profit organizations – may stimulate undesired market situations<sup>[22]</sup> (see more in section 2.3 on the caveats of private HI markets).

## 2.1 Link non-governmental health insurance to UHC

According to their relationship with the public system non-governmental HI schemes are divided into two types: supplementary and complementary schemes.

Supplementary health insurance (SuppHI) can function independently from the public scheme, to guarantee faster access to services and provide greater choice of providers.

Complementary health insurance (CompHI) has two subtypes,<sup>[23]</sup> either it complements the publicly provided service package, offering services that are out of the scope of public system, or it covers the direct payments (i.e. user charges) for the privately insureds.

The structure of the benefit package in the public health care system can have a strong influence on the roles of SuppHI and CompHI. In systems with reasonable and wide coverage but with access and quality problems, supplementary schemes – such as faster access or broader choice between providers – are mostly preferred. Nonetheless, complementary functions of HI are more common when the scale of publicly provided services is explicitly limited and/or user charges are in place.

The potential relationship between UHC and the forms of non-governmental HI in developing countries with financial constraints is illustrated in Figure 2 in relation with four types of benefit packages.

Packages	Public health insurance	Private health insurance
Minimum package	<ul style="list-style-type: none"> <li>Population: all citizens</li> <li>Restriction: no copayment and waiting list</li> </ul>	
Essential package I.	<ul style="list-style-type: none"> <li>Population: all patients with insurance</li> <li>Restrictions: copayment, waiting list, second-line, low quality, no choice</li> </ul>	<ul style="list-style-type: none"> <li>Supplementary: copayment, choice</li> <li>Complementary: immediate access, better quality</li> </ul>
Essential package II.	<ul style="list-style-type: none"> <li>Population: all patients with insurance</li> <li>Restrictions: coverage only for subgroup, copayment, waiting list, second-line</li> </ul>	<ul style="list-style-type: none"> <li>Supplementary: copayment, choice for patients</li> <li>Complementary: immediate access</li> </ul>
Equity package	<ul style="list-style-type: none"> <li>Population: selected patients with insurance</li> <li>Restrictions: strict diagnostic criteria, monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Complementary: coverage for patients with no access</li> </ul>
Non-reimbursed services		<ul style="list-style-type: none"> <li>Complementary: coverage for non-covered services</li> </ul>

Figure 2. Potential relationship between non-governmental and universal health coverage in developing countries with financial constraints

The first type is the ‘*minimum package*’ which is provided to all citizens for free (without any cost-sharing) and with immediate access. Free services without cost sharing are

typical for using emergency rooms following accidents, national vaccination programs and other basic wide spectrum public health interventions.

The ‘*essential package I.*’ includes therapies for the most common diseases, such as hypertension, diabetes mellitus or depression and is provided by health professionals in primary care to everyone with insurance (or with the right to access public health care services). For such services the regulator can control access by introducing co-payment, waiting lists, or by restricting the essential package services to pre-specified patient pathways (e.g. first line treatment only). These provisions are usually not delivered at the highest quality and patients have no access to treatment alternatives within the public funding scheme.

The ‘*essential package II.*’ is aiming to cover therapies in specialty disease areas to all patients with insurance, though based upon eligibility for the treatment restrictions (or based on other criteria) for pre-defined subgroups may apply due to high cost of therapies. For this package patient access is often restricted by the introduction of co-payment, waiting lists or financing protocols allowing only second line utilization. Typical examples for restricted access are biological therapies for patients with autoimmune diseases and malignancies, direct-acting antiviral Hepatitis C therapies, transplant surgery and haemodialysis.<sup>[24-26]</sup>

While the ‘*minimum package*’ is instantly available with public reimbursement, restrictions on ‘*essential package I.*’ and ‘*II.*’ open space for alternative funding schemes. SuppHI schemes can provide faster access and better quality of care in these segments of provision. CompHI schemes can help patients cover co-payment (i.e. user charges) or give a broader choice of services or technologies than by the public funding system. Typical supplementary service type is the upgraded quality accommodation in hospitals (e.g. single room). Typical complementary service is fast access to specialist care and high cost diagnostic tests.

The ‘*equity package*’ is provided for a selected group of patients only in highly specialized disease areas, such as orphan drugs in rare diseases. For these cases the public system usually necessitates strict diagnostic and other access criteria and requires continuous monitoring of patient pathways.

The ‘*non-reimbursed services*’ include everything not covered by the first four packages. Actually, there is a wide range of services, from aesthetic plastic surgery to off-label pharmaceuticals in oncology. For- or non-profit prepayment schemes can create complementary access to services not available in the ‘*equity package*’ and to all technologies without reimbursement.

## 2.2 Practices in developing countries

Many developing countries define their benefit package as being comprehensive and free of charge. However, in reality access is limited by implicit (e.g. long waiting lists) or explicit (e.g. eligibility criteria) barriers. This often drives people towards the duplication of insurance coverage and/or purchase of voluntary health insurance. Examples from Africa and South America exist on countries with high shares of non-governmental prepayment schemes (including both MSA and HI schemes). Brazil, Chile, Namibia, South Africa, Uruguay and Zimbabwe financed more than 20% of their health care through non-governmental HI schemes in 2005.<sup>[27]</sup> In the MENA region non-governmental pre-payment schemes represent only the 4.4% of total health expenditure on average; although differences across countries are important to note. Lower share of alternative prepayment schemes was reported from Algeria, Egypt, Iran and Jordan with 1.2%, 0.4%, 1.5% and 3.8% of total health expenditure, respectively. On the contrary Morocco, Lebanon, Oman, Saudi Arabia and Tunisia are characterized by relatively high shares of non-governmental HI as a percentage of total health expenditure, 15.5%, 12.2% 8.9%, 9.2% and 7.8%, respectively.<sup>[28]</sup>

In the MENA region the main drivers are i) growing and more diversified consumer demand, ii) increased wealth, especially in higher socioeconomic groups, and iii) inability to finance increasing health care costs solely from public resources.<sup>[28]</sup>

The case of Egypt is especially interesting, as since 2018 this country has been in the process of introducing UHC for the whole population. Financial constraints (e.g. economic recession) restrict the range and quality of publicly available services. A recent regulation has explicitly allowed individuals to contract with private insurance companies to cover co-payments or upgrade the insurance class within hospitals or for other supplementary services [29]. Recent regulations have also allowed for purchasing public health services from the private sector for those who were covered only by non-governmental HI until the legislative update.

Non-governmental health insurance plays a relatively minor role in Asia.<sup>[30]</sup> While most developed Asian economies, notably Japan, Taiwan, Singapore and South Korea, have long-established social health insurance systems, poorer countries in the region are still struggling to increase government funding and put basic risk-pooling mechanisms in place to reduce high OOP. For the rest of Asia, social health insurance has been gaining prominence recently.<sup>[31-33]</sup>

## 2.3 Caveats of non-governmental HI markets

It is important to emphasize that careful strategic considerations and strong regulatory framework are essential to avoid unwanted situations on not publicly funded health insurance markets.<sup>[22]</sup> Socially undesirable outcomes such as adverse selection and rising inequity are major challenges. Various mechanisms to avoid adverse selection have been proposed by He et al (2017), e.g. full underwriting, targeted benefit exclusions, waiting periods prior to benefit entitlement, and enforcing the involvement of households instead of individuals.<sup>[34]</sup> However, these measures do not always help as asymmetric information and practical difficulties with enforcement often lead to the continued prevalence of adverse selection in many voluntary insurance markets.<sup>[35,36]</sup>

For-profit schemes might undermine equity as most subscribers to voluntary health insurance come from younger, higher-income and educated groups. This is a selective cohort of the population, which potentially prevents insurers from efficient risk pooling.

It is important to note that in several developed countries efficient governmental interventions are already in place. In France and Germany, for the sake of accessibility and to prevent risk selection, it is compulsory to buy private complementary health insurance i) for employees (in France) or ii) those opting out of the social insurance scheme (in Germany).<sup>[23]</sup> In Ireland the so called 'late entry loadings' to the premiums are applied in case applicants to alternative prepayment schemes are above 35 years.<sup>[37]</sup> Affordability concerns may be handled by regulations as i) community-rated premiums and risk equalization mechanisms (Slovenia and Ireland) ii) premium caps (Germany) and iii) public coverage of premium payments for the poorer households (Germany).<sup>[23]</sup> Financial protection can be increased by i) mandating the coverage of individuals with pre-existing chronic diseases (Ireland) or ii) prohibiting capping benefits and guaranteeing a minimum benefit package (France).<sup>[23]</sup> Also, direct and/or indirect regulation may be used in order to allocate some of the burden towards the private sector, by enforcing employer-sponsored private health insurance<sup>[38]</sup> or the inclusion of specific public health provisions in the voluntary health insurance package – such as screening for malignancies and Hepatitis C.

Expertise in handling situations that could lead to the dysfunction of health insurance markets (accompanied by regulation and formal political will) are key factors. Clarity of intentions and their conversion into legislation are crucial during implementation.



## 2.4 Public-private collaboration

The collaboration of the public and private sector can have a strong contribution to the successful alignment of UHC and non-governmental prepayment schemes.

International pharmaceutical companies have been collaborating with insurance companies and local governments to develop innovative funding solutions in developing countries with inadequate public coverage.

Efforts of governments to improve health care coverage and social protection can be complemented by the private health sector with in-depth knowledge on innovation, technical know-how and efficiency. Private sector stakeholders such as multinational companies and commercial health insurers may recommend their own practices for implementation from countries with similar public health or economic status and organize educational workshops to transfer knowledge and skills. Providing patient education programs including awareness campaigns on disease prevention, diagnosis and treatment options, launching continuous medical education seminars to healthcare professionals, supporting national screening programs and improving diagnostic skills and facilities are current forms of private contribution to the public health system.

A health promotion programme from the largest private health insurer in South Africa demonstrated how attainment-based incentives – such as tier status defined by risk assessment following smoking cessation and weight reduction programmes – could increase the engagement in healthy behaviours for disease prevention and management of obesity. As socioeconomic status tends to correlate with the degree of health consciousness, these policies may achieve higher improvement in relative terms among lower income classes, resulting in improved equity.<sup>[39]</sup>

In Egypt private multinational companies financially support the establishment of a postgraduate diploma program in health economics with local and international academic tutors in order to improve the evidence base of policy decisions.

In Ghana, a private health insurer developed a basic comprehensive plan targeting both formal and informal sectors with the support of a pharmaceutical company. A modular add-on to this plan covers full breast cancer diagnostics and treatment, being affordable to 85% of the population.<sup>[40]</sup>

In China since 2007 pharmaceutical companies have been working with insurance companies in parallel to hospitals, laboratories and healthcare networks to develop additional policies that can provide supplementary critical illness insurance covering cancer treatment and advanced diagnostics.<sup>[41]</sup>

## 3. Conclusion

In developing countries introduction and improvement of universal health coverage is essential to improve population health, that reduces inequity and increase financial security of individuals and households. A critical success criterion of UHC implementation is the responsiveness of governments to the diverse needs of a heterogeneous population. Health care system's adaptability for these demands is essential.

We presented different ways on how non-governmental prepayment schemes can support the implementation of UHC. No 'one size fits all' solution exists to this multidimensional challenge. Prepayment schemes, either in the form of medical savings accounts or non-governmental (for- or non-profit) health insurance plans have strong potential. The architecture of UHC coverage determines the space of manoeuvres. Regulation and formal political will are also key factors. It is vital to provide a 'playing field' for the non-governmental actors of health care. Defining responsibilities and duties for each actor through government regulation is essential on this market. We argue that implementation of universal health coverage should be designed in parallel with determining the role of non-governmental health insurance schemes.

A sustainable health care system should be built on collaboration and consensus among stakeholders, including public and private payers, non-profit organizations, local communities, health care providers, professionals, academic experts, pharmaceutical and diagnostics manufacturers and patient representatives. Actors' multinational experience may help transfer know-how between jurisdictions. The involvement of stakeholders into designing the system of UHC in parallel with supplementary and complementary schemes provides ability to balance the needs and concerns of all relevant groups and to ensure sustainable health care system in developing countries.

There has been little research into the impact of health insurance (HI) provided by non-governmental actors on UHC implementation. Ideally, future research will investigate this issue. However, we recognize the political nature and complexity of this task, given the number of factors that vary across countries. Therefore, our perspectives are to be viewed as a first step in a multi-stakeholder dialogue about the supportive role of non-governmental HI in the implementation of UHC in developing countries. Finally, international recommendations should be supplemented by country specific research to validate the generalisability of principles and comparative research across countries to understand the transferability of key experiences to other jurisdictions.

## Funding details

Syreon Research Institute gratefully acknowledges the financial support of Roche Egypt to prepare this policy perspective paper based on the issue panel discussion at the European ISPOR Conference in November 2018. The content of this paper, as well as the views and opinions expressed therein are those of the authors and not the organizations that employ them.

## References

- Xu K, Evans DB, Kawabata K, Zeramini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *The lancet*. 2003;362(9378):111-117.
- World Health Organization. Tracking universal health coverage: 2017 global monitoring report. 2017.
- World Health Organization. Tracking universal health coverage: first global monitoring report. 2015.
- van Deurzen I, van Oorschot W, van Ingen E. The link between inequality and population health in low and middle income countries: policy myth or social reality? *PloS one*. 2014;9(12):e115109.
- DiMartino LD, Birken SA, Mayer DK. The relationship between cancer survivors' socioeconomic status and reports of follow-up care discussions with providers. *Journal of Cancer Education*. 2017;32(4):749-755.
- ACTION Study Group. Health-related quality of life and psychological distress among cancer survivors in Southeast Asia: results from a longitudinal study in eight low-and middle-income countries. *BMC medicine*. 2017;15(1):10.
- Yu CP, Whynes DK, Sach TH. Equity in health care financing: The case of Malaysia. *International journal for equity in health*. 2008;7(1):15.
- Roberts MJ, Hsiao WC, Reich MR. Disaggregating the Universal Coverage Cube: putting equity in the picture. *Health Systems & Reform*. 2015;1(1):22-27.
- United Nations. Envision 2030. 2015; <https://www.un.org/development/desa/disabilities/envision2030-goal3.html>. Accessed 10/08/2020.
- World Health Organization. The world health report: health systems financing: the path to universal coverage. 2010.
- Mensah J, Oppong JR, Schmidt CM. Ghana's National Health Insurance Scheme in the context of the health MDGs: an empirical evaluation using propensity score matching. *Health economics*. Sep 2010;19 Suppl:95-106.
- Marten R. An assessment of progress towards universal health coverage in Brazil, Russia, India, China, and South Africa (BRICS). *The Lancet* 2014;384.9960:2164-2171.
- Aungkulanon S, Tangcharoensathien V, Shibuya K, Bundhamcharoen K, Chongsuvivatwong V. Post universal health coverage trend and geographical inequalities of mortality in Thailand. *International journal for equity in health*. 2016;15(1):190.
- Atun R, De Andrade LOM, Almeida G, et al. Health-system reform and universal health coverage in Latin America. *The Lancet*. 2015;385(9974):1230-1247.
- Mills A. Health care systems in low- and middle-income countries. *The New England journal of medicine*. Feb 6 2014;370(6):552-557.
- World Health Organization. Public financing for health in Africa: from Abuja to the SDGs. World Health Organization;2016.
- Jowett M, Brunal MP, Flores G, Cylus J. Spending targets for health: no magic number. World Health Organization;2016.
- Bright T, Felix L, Kuper H, Polack S. A systematic review of strategies to increase access to health services among children in low and middle income countries. *BMC health services research*. 2017;17(1):252.
- Douglas R, MacCulloch R. Welfare: Savings not Taxation. *Cato J*. 2018;38:17.
- Lameire N, Joffe P, Wiedemann M. Healthcare systems—an international review: an overview. *Nephrology Dialysis Transplantation*. 1999;14(suppl\_6):3-9.
- Justine Hsu. Medical Savings Accounts: What is at risk? 2010. <https://www.who.int/healthsystems/topics/financing/healthreport/MSAsNo17FINAL.pdf>.
- Drechsler D, Jütting JP. Is there a role for private health insurance in developing countries? : DIW Discussion Papers;2005.
- Sagan A, Thomson S. Voluntary health insurance in Europe: role and regulation. Copenhagen Denmark: World Health Organization 2016; 2016.
- Drislane FW, Akpalu A, Wegdam HH. The medical system in Ghana. *The Yale journal of biology and medicine*. 2014;87(3):321.
- Kiely PD, Deighton C, Dixey J, Östör AJ. Biologic agents for rheumatoid arthritis—negotiating

- the NICE technology appraisals. *Rheumatology*. 2011;51(1):24-31.
26. World Health Organization. Global report on access to hepatitis C treatment. Focus on overcoming barriers. 2016.
  27. Sekhri N, Savedoff W. Private health insurance: implications for developing countries. *Bulletin of the World Health Organization*. Feb 2005;83(2):127-134.
  28. Drechsler D, Jutting J. Different countries, different needs: the role of private health insurance in developing countries. *Journal of health politics, policy and law*. Jun 2007;32(3):497-534.
  29. Egyptian Social Health Insurance Law. Prime Minister Decree No. 909 of 2018 to issue the executive regulation of the Social Health Insurance Law: Law No. 2 of 2018: Article 18. 2018.
  30. O'donnell O, Van Doorslaer E, Rannan-Eliya RP, et al. Who pays for health care in Asia? *Journal of health economics*. 2008;27(2):460-475.
  31. Ekman B, Liem NT, Duc HA, Axelson H. Health insurance reform in Vietnam: a review of recent developments and future challenges. *Health policy and planning*. 2008;23(4):252-263.
  32. Hughes D, Leethongdee S. Universal coverage in the land of smiles: lessons from Thailand's 30 Baht health reforms. *Health Affairs*. 2007;26(4):999-1008.
  33. Meng Q, Xu L, Zhang Y, et al. Trends in access to health services and financial protection in China between 2003 and 2011: a cross-sectional study. *The Lancet*. 2012;379(9818):805-814.
  34. He AJ. Introducing voluntary private health insurance in a mixed medical economy: are Hong Kong citizens willing to subscribe? *BMC health services research*. 2017;17(1):603.
  35. Atim C. Contribution of mutual health organizations to financing, delivery, and access to health care. Bethesda, Maryland: Abt Associates. 1998.
  36. Bassett M, Kane V. Review of the literature on voluntary private health insurance. *Private Voluntary Health Insurance in Development Friend or Foe*. 2007:335.
  37. Irish Life Health. <http://www.irishlifehealth.ie/lcr/>. Accessed 10/08/2020.
  38. Pierre A, Jusot F. The likely effects of employer-mandated complementary health insurance on health coverage in France. *Health Policy*. 2017;121(3):321-328.
  39. Lambert E, Kolbe-Alexander T. Innovative strategies targeting obesity and non-communicable diseases in South Africa: what can we learn from the private healthcare sector? *obesity reviews*. 2013;14:141-149.
  40. Modern Ghana. Nationwide Medical Insurance Launches 'My Health'. 2017; <https://www.modernghana.com/news/785162/nationwide-medical-insurance-launches-my-health.html>. Accessed 10/08/2020.
  41. Roche. Increasing funding for cancer treatment in China. [https://www.roche.com/sustainability/access-to-healthcare/ath\\_health\\_insurance.htm](https://www.roche.com/sustainability/access-to-healthcare/ath_health_insurance.htm). Accessed 10/08/2020.



