



Healthcare in Emerging Markets: Exploring the Protection Gaps



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The Geneva Association

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Foreword



Emerging countries continue to suffer from gravely insufficient healthcare funding, which adversely affects access to healthcare, quality and ultimately the health status of citizens. According to the World Bank, some 400 million people lack access to essential healthcare services, mostly in Africa and South Asia. The low-income countries' physician per inhabitant ratio is less than one thirtieth of the level enjoyed by high income countries. The maternal mortality ratio exceeds the level recorded in high-income countries by a factor of 60. Life expectancy at birth in low-income countries falls short by more than 20 years. Anecdotal evidence of health protection gaps abounds.

Funding gaps are widening in middle-income and upper-middle income countries too, primarily as a result of accelerating medical inflation, i.e. the cost of medical treatments, and a higher prevalence of non-communicable lifestyle-related diseases such as cancer, diabetes or cardiac syndromes. Ageing populations in a number of emerging countries add to the pressure.

Against this backdrop, the following report offers a comprehensive overview of the various current sources of healthcare funding in emerging markets. It further attempts to quantify health protection gaps and discusses the potential for private voluntary health insurance to make a more meaningful contribution to addressing the financial and non-financial facets of health protection gaps. The study concludes with an examination of the prospects for digital technology and advanced analytics as a catalyst for expanding coverage, enhancing quality and optimising cost in emerging countries.

Through this publication The Geneva Association hopes to offer some important and original insights. We aspire to enhancing stakeholder debates, as well as informing policymaking and business decisions on sustainable solutions to one of the biggest societal challenges of our time.

Jad Ariss
Secretary General
The Geneva Association



1. Management summary

In the last two decades, the share of total aggregate global expenditure on healthcare in GDP has increased from about 8% to almost 10%, or close to an estimated USD 8 trillion per annum, driven by the accelerating cost of medical treatment, expanding treatment options and increasing customer demands. Based on a number of studies published over the past four decades, there are five main drivers of global healthcare expenditure: demographics (especially ageing); income (the link between wealth and demand for healthcare services); productivity (the cost-efficiency of providing healthcare); technology (as both a driver of efficiency gains and additional cost inflation) and public policy measures (encouraging or discouraging demand and supply).

From 2000 to 2015, the share of health spending funded from compulsory prepaid sources, such as taxation and social health insurance contributions, has increased from an average of 48% to 51% in middle-income countries, and from 66% to 70% in high-income countries. In contrast, in low-income countries domestic government sources have lost relevance, with their share decreasing from 30% to 22%.¹

Encouragingly, out-of-pocket spending which entails a high risk of financial hardship and even impoverishment, has receded. Between 2000 and 2015, its share in total healthcare expenses fell from an average of 46% to 38% in low-income countries, from 45% to 40% in lower middle-income countries and from 37% to 31% in upper middle-income countries.

Pre-funded solutions based on private voluntary health insurance (PVHI) remain insignificant from an aggregate point of view. In the emerging markets, as defined by the World Bank and covered by this publication, the median share of private voluntary insurance in total healthcare expenditure is less than 2%.

A generic definition of protection gaps, widely used in the natural disaster space, refers to the portion of uninsured losses in total losses. Approaching the protection gap in healthcare is more complex. It requires certain assumptions concerning the desired standard of care. Further, uninsured healthcare expenses can either be financially stressful or, in their more benign form, merely economically suboptimal. Also, phenomena like non-treatment and under-treatment due to limited access to and availability of services defy any rigorous quantification from a protection gap point of view. In order to mitigate these shortcomings, The Geneva Association has examined the correlation for all emerging markets between health outcomes (as measured by life expectancy) and metrics such as the quality of medical infrastructure, the share of population covered by healthcare services and the share of out-of-pocket spending in total health expenditure. The statistical relevance of these findings is relatively weak but points to a positive correlation between health outcomes and population coverage.

¹ This publication uses the World Bank's most recent country classification: low-income countries exhibit a GDP per capita of roughly less than U.S.D 1,000; lower middle-income countries of between USD 1,000 and USD 4,000; and upper middle-income countries of between USD 4,000 and USD 12,000. The wealthier high-income countries are not covered by this publication.

Based on the notion of financially stressful out-of-pocket spending and using World Health Organization data for the year 2015, The Geneva Association estimates the annualised health protection gap for all emerging markets at around USD 310 billion, or 1% of these countries' combined GDP. Our estimate assumes that 100%, 75% and 50% of out-of-pocket spending in low-income, lower middle-income and upper middle-income countries, respectively, can be considered financially stressful and, therefore, is part of the health protection gap. This approach, however, disregards protection shortfalls as a result of lacking access to or the affordability of health services.

There is a broad consensus that private (voluntary) health insurance is preferable to out-of-pocket spending, which is the most inequitable and economically inefficient form of funding, with potentially catastrophic financial implications for households. If properly regulated in order to address potential market failures such as

adverse selection and moral hazard, private voluntary health insurance can make an important and beneficial contribution to the sustainability, quality, availability and cost-efficiency of health services in a multi-pillar system. Policymakers in emerging markets can harness private insurance as a catalyst for a socially beneficial and economically efficient transition to pooled pre-funding of healthcare expenses, including public, private and public-private schemes. This contribution will become even more attractive to society as the role of private health insurers is shifting. They are evolving from payers of claims and benefits—as well as underwriting data collectors—to an expanded service proposition as providers of comprehensive healthcare advice and solutions. This trend is enabled by digital technologies and advanced analytics which, more generally, offer great potential to address some of the biggest health challenges in emerging markets, such as prohibitive costs, poor quality of data and services, insufficient access and low awareness.



2. Funding healthcare

The following chapter lays the foundation for an in-depth discussion of health protection gaps and the role of pre-funded private voluntary health insurance solutions in later sections. It offers an overview of some key trends and drivers which determine current and future healthcare spending, both globally and with a particular focus on emerging markets (covering low-income, lower middle-income and upper middle-income countries as per the World Bank's classification, i.e. countries with a per capita income of less than USD 12,235; see footnote 1 for details). In addition, we will discuss healthcare funding options in emerging markets, including their relative strengths and weaknesses. On that basis, we will explore the most recent data describing the current healthcare funding mix in those countries. Even though our examination in the following section focuses on funding shortfalls, in later chapters we will also discuss a broader characterisation of health protection gaps, taking into account access, quality and health outcomes.

Box 1: The health protection gap (HPG)—A definition

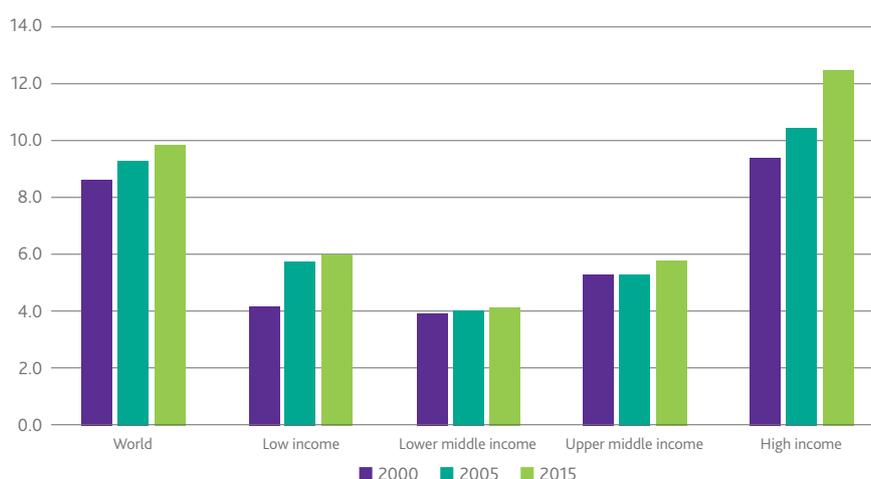
A generic definition of protection gaps, widely used in the natural disaster space, refers to the portion of uninsured losses in total losses. Approaching the HPG is more complex though. First of all, it requires certain assumptions concerning the desired standard of care. Second, uninsured healthcare expenses can either be financially stressful or, in their more benign form, merely economically suboptimal (see chapter 3). Third, phenomena like non-treatment and under-treatment due to limited access to and availability of services defy any rigorous quantification.

For the purpose of this publication and consistent with Swiss Re (2018) we define the quantifiable HPG as the sum of financially stressful out-of-pocket expenditure and the estimated cost of non-treatment due to unaffordability.

2.1. Global healthcare expenditure—Trends and drivers

In the last two decades, and driven by medical inflation, expanding treatment options and higher customer expectations, the share of total aggregate global expenditure on healthcare in GDP has increased steadily from more than 8% to almost 10%, or close to an estimated USD 8 trillion, with hospital care, physicians and prescription drugs accounting for the lion's share (Deloitte 2018). Low-income countries recorded the highest relative increase, followed by high-income countries. In the lower-middle and upper-middle segments, however, healthcare expenditure hardly outgrew overall GDP (see figure 1).

Figure 1: Healthcare expenditure as a percentage of GDP (2000, 2005, 2015)



Source: World Bank (World Development Indicators)

The Global Burden of Disease Health Financing Collaborator Network (2017) estimates that global spending on health will almost triple to USD 24 trillion by 2040. The authors expect per capita health spending to increase fastest in upper middle-income countries at an average 5.3% per year. This expansion is expected to be driven by continued growth in GDP, the rise of the middle class and government spending. Lower middle-income countries are expected to grow at 4.2%. A health spending increase of 2.1% and 1.8% in high-income and low-income countries, respectively, is projected to lag behind.

As shown by Ortiz-Ospina/Roser (2018) healthcare expenditure in Europe and the U.S. only began rising more steeply after the Second World War when major medical breakthroughs, such as the discovery and use of penicillin and other antibiotics, started to enable major gains in human longevity and a higher quality of life in the face of most diseases and levels of old age. The U.S., the world's largest healthcare market, may serve as an example (even though it presents some idiosyncratic features such as relatively high structural levels of drug prices and healthcare sector wage inflation). Total health expenditure grew from 4% of GDP in the late 1950s to about 17% in 2018 (see <http://www.eiu.com/industry/Healthcare>),

but has remained broadly stable since 2010. The primary contributor to rising shares of healthcare expenditure in national GDP is so-called 'excess growth', which mostly reflects medical technology advances and/or increased patient demand for services (Jakovljevic/Getzen 2016).

Based on a number of studies published over the past four decades, Marino et al. (2017) identify five main drivers of global healthcare expenditure (see figure 2).

Demographics

The effect of population ageing on healthcare expenditure growth has been widely investigated. Nonetheless, there is no consensus on the specific role of ageing. Some analysts and policymakers view population ageing as the major cause of rapid health expenditure growth whereas others, mainly health economists, argue that ageing as such is largely irrelevant for expenditure growth. Instead, they emphasise the role of 'time to death', i.e. end-of-life morbidity, as a proxy for health, in order to explain healthcare expenditure patterns (Payne et al. 2007). Having said this, it is obvious that the relationship between age and health expenditure depends on health. Even though there is a lack of relevant epidemiological

research, it appears plausible to assume that as individuals age their health generally deteriorates and their reliance on care services increases (see de Meijer et al. 2013 for a comprehensive literature review).

Income

Rising incomes fuel expectations as to the quality and scope of healthcare, thereby increasing healthcare expenditures. In a seminal paper, Newhouse (1977) showed that income explains almost all of the variance in the level of healthcare expenditure among different countries. Goodman (2017) also points out that relative increases in health expenditure outpace the rate of income growth.

Technology

The impact of technology on healthcare costs is ambiguous. On the one hand, new technologies enable medical advancements which extend the scope, range and quality of healthcare services, fuelling expenditure. On the other hand, sensors, telemedicine and other innovations promote the cost efficiency of healthcare services. The net effect of technology, therefore, remains uncertain.

Productivity

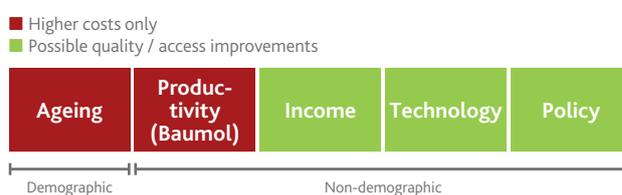
Relatively low productivity in the health sector has been widely identified in high-income countries, contributing to rising healthcare costs. This phenomenon is known as Baumol's cost disease, which describes rising wages in the medical sector that are not on par with productivity growth (Baumol 1993). The main reason for this pattern is not an inherent inefficiency of the sector but the labour intensity and personalised nature of healthcare. Economies of scale are very difficult to reap, and technological progress may drive additional treatment options and levels rather than contribute to substituting labour. Based on limited examples as indicative of global trends and applying a conservative average level of reported inefficiency (15–25%) to the proportion of total health spending on human resources (45–65%, depending on world income region), the World Health Organization (WHO, 2010a) estimates a worldwide workforce inefficiency cost that exceeds USD 500 billion annually.

Policy measures

Another explanatory factor for the variability in healthcare expenditure is the effect of national or international policy measures; for example, the nature of provider payment systems, regulations regarding subsidies for drugs, the relative weights of public and private insurance schemes, the specific benefits offered by publicly funded systems and the breadth and depth of public health infrastructure.

When discussing these drivers it is of crucial importance to distinguish between increased spending that potentially comes with improved quality or access versus factors that, often unintentionally, merely push up costs and prices, translating into higher medical inflation. Not all increases in spending are inherently unwanted. Examples include technological advancements and increases in national wealth, which enable countries to devote more resources to healthcare. This needs to be contrasted with higher costs (Baumol's cost disease and demographic factors in particular) that are not accompanied by gains in quality or access. Policymakers need to evaluate these drivers very carefully in order to separate those effects that need mitigation (higher costs only) from those that require a more differentiated approach.

Figure 2: Drivers of healthcare expenditure



Source: Marino et al. (2017)

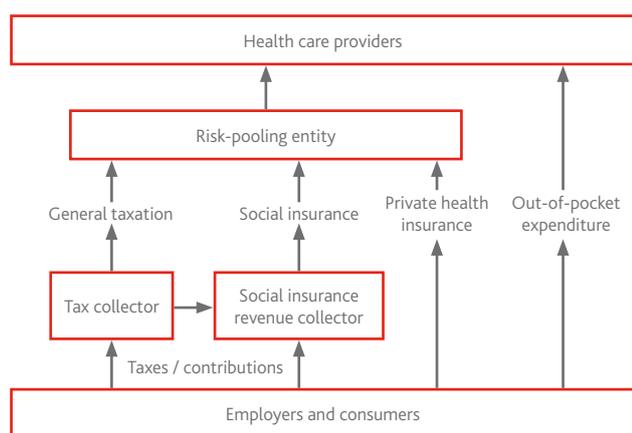
2.2. Healthcare funding options

Generally speaking, there are four main healthcare financing systems: (1) social insurance, based on tax-like contributions and managed or regulated by governments; (2) funding through tax revenues and other government resources; (3) private direct payments (out of pocket); and (4) private health voluntary insurance (Mehrotra and Delamonica 2005). These categories are not mutually exclusive as all health systems represent a mixture of various elements. For example, mandatory health insurance requirements can be met through private health insurance (for example, in Saudi Arabia) which, in turn, often contains elements of cost sharing such as copayments or deductibles in order to discourage moral hazard and overuse of medical services.

Ultimately, consumers and employers pay for healthcare, either directly or through taxes. Having said this, the configuration of funding channels has important implications for income and wealth distribution.

Figure 3 illustrates the various financing systems. However, it is important to stress that there is no standard or best-practice scheme. Country-specific choices depend on a variety of criteria and policy priorities such as efficiency, fairness or adequacy of cover. In addition, historical development paths need to be taken into account.

Figure 3: Healthcare financing systems²



Source: Sekhri / Savedoff (2005)

Social insurance

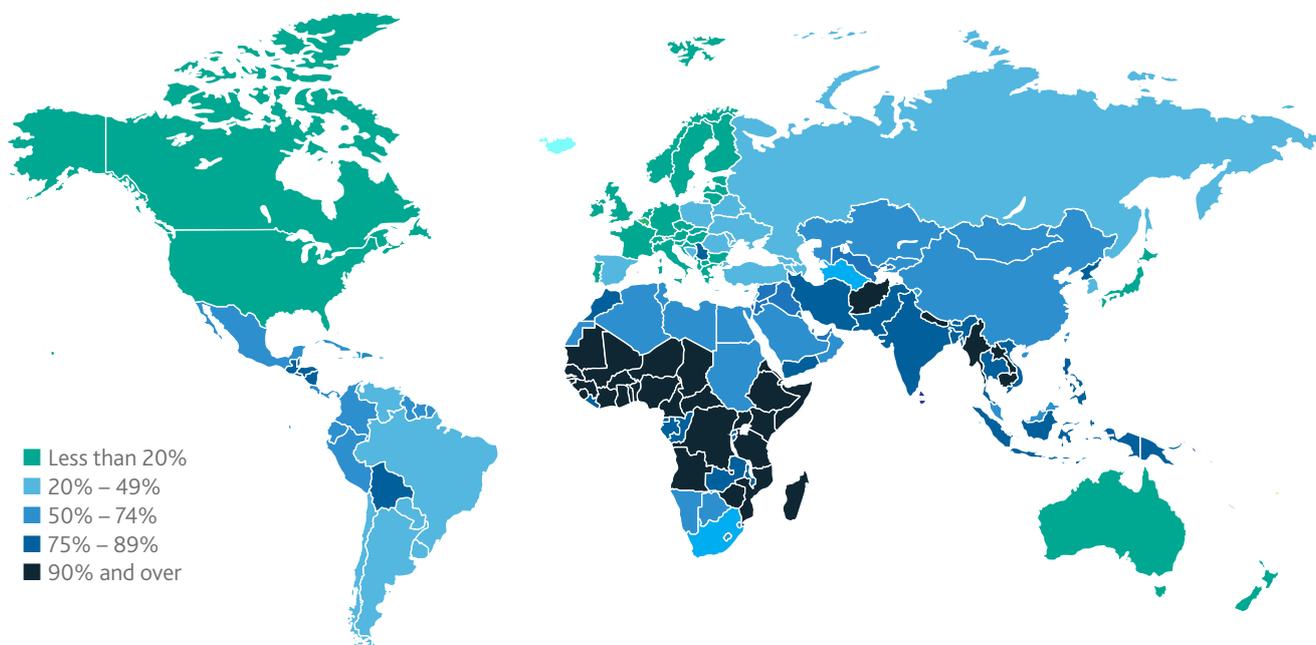
In general, social insurance is compulsory, even though people can sometimes choose between various levels of coverage. Due to its mandatory nature, social insurance can spread individual health risks over a large risk pool, which offers certain advantages compared with other funding options, particularly out-of-pocket expenses. In equity-driven schemes, premiums are flat-rate or based on income rather than individual health risks. Also, participation is generally non-discriminatory. However, critics claim that in most emerging markets

social insurance schemes do not work efficiently due to a perceived lack of public oversight (Preker et al. 2010). More importantly, social insurance often does not cover those large parts of the population in low-income countries who do not belong to the formal employment sector (see figure 4). In addition, social insurance does not necessarily cover all required medical procedures—an important driver of private health insurance demand in a number of countries. Most social insurance schemes are managed by governments. Some, however, are totally or partially run by the private sector through specialised, single-purpose licensed insurance institutions (for example, in Chile and Colombia).

Tax-based funding

Healthcare can be financed through tax-funded programmes that technically have nothing to do with insurance. Funds are raised through general taxation or other government revenues, and every citizen is entitled to benefits. One frequently quoted success story is Thailand, which has achieved close to 100% universal healthcare coverage, devoting about 15% of government spending to healthcare.³ However, such schemes are often limited to basic primary or emergency care, particularly in low-income countries where tax collection capability is weak. If, as in many cases, governments not only pay for healthcare but also provide the services through public facilities, efficiency and quality issues are common.

Figure 4: Share of informal employment in total employment, including agriculture (percent, 2016)



Source: ILO (2018)

² Foreign aid is not included here given its marginal role in global healthcare expenditure.

³ <https://www.theguardian.com/health-revolution/2016/may/24/thailand-universal-healthcare-ucs-patients-government-political>

Out-of-pocket spending (OOPS)

OOPS is the biggest single component of healthcare financing in low-income countries (see chapter 2.3). In many of these countries, social security and government schemes do not provide adequate coverage, and the private insurance market is underdeveloped or not developed at all. The bulk of national healthcare expenditure is direct private payments for services. These payments are made when care is needed rather than pre-event. This can have catastrophic consequences, especially for low-income families. People may not be able to pay for urgently needed care, risking a grave deterioration in their health condition, or they may be reluctant to pay for therapy when it would still be effective or they may have to use a large portion of their resources—potentially sliding towards impoverishment. In addition, another major disadvantage of OOPS-dominated health systems is the general lack of preventive healthcare expenditure (see chapter 3).

Private voluntary health insurance (PVHI)

PVHI plans are pre-paid and enrolment is mostly voluntary. Some schemes may be subsidised (e.g. through the tax deductibility of health insurance premiums) or materially regulated. Regardless of whether premiums are paid by individuals, employers or governments, they are channelled through private insurance companies. The two main pillars of such schemes are prepayment and risk pooling.

The main distinction between social and PVHI is the type of contract between the risk-pooling entity and the insured individual or group. Whereas social insurance is based on tax-like contributions, PVHI rests on a private contract between the insurance company and its customers that defines an insurance premium and a specified scope of benefits. Due to the diversity of existing schemes, it is impossible to offer a strict typology of private risk-sharing arrangements (see chapter 4 for the reasons behind this diversity). A classification of schemes may nevertheless consider the type of supplier, the extent and type of risk pooling and the form of insurance contract (community, group or individual). Additional measures of distinction include the extent of coverage, the type of insurance business (profit versus non-profit) and use or non-use of cost sharing (through copayments, deductibles, and co-insurance). As far as coverage is concerned, the main differentiation is between complementary and supplementary PVHI.

The former is private insurance that complements coverage of government/social insurance services by covering all or part of the residual costs not otherwise reimbursed (e.g. cost-sharing, copayments). It is sometimes referred to as 'gap' insurance. Supplementary PVHI, on the other hand, is private health insurance that provides coverage for health services not covered at all by public schemes. Depending on the country, it may include luxury care, long-term care, dental care or superior hotel and amenity hospital services (Preker et al. 2010).

External aid

In many low-income countries, the contribution of external assistance to national health expenditure is significant; for example, it is estimated at about 33% on average for 2015. In four of 31 low-income countries, external sources constituted more than half of current health expenditure; and in 15, more than 30%. In addition, this share increased between 2000 and 2015 (WHO 2017).

2.3. The financing mix in emerging markets

Figure 5 shows that domestic public expenditure and OOPS are the main payment channels in healthcare systems.

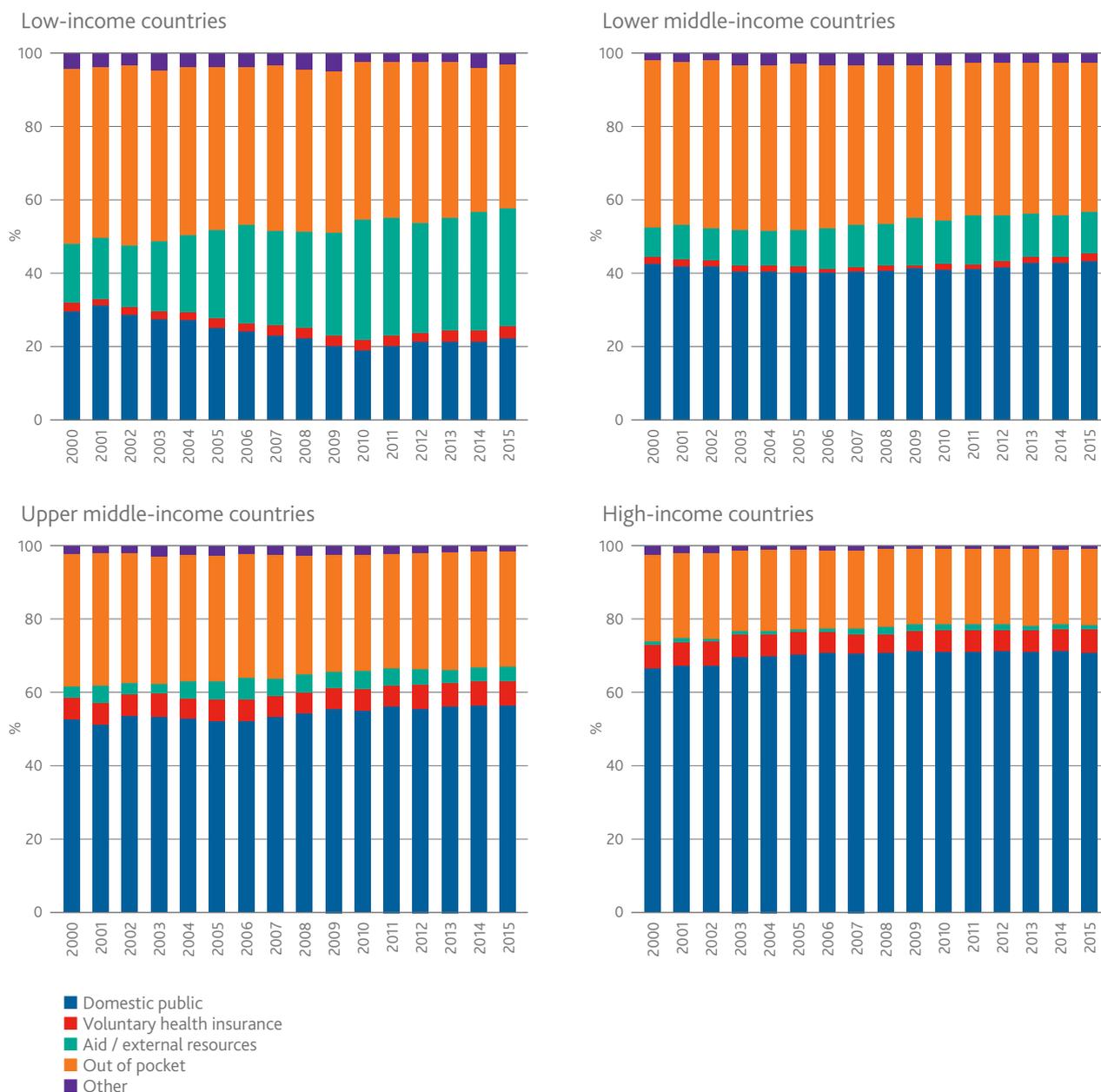
In 2015, development aid for health amounted to less than USD 20 billion (WHO 2017), or less than 0.3% of global health expenditure. However, figure 5 demonstrates that for low-income countries, external resources are of vital importance and, at an average share of 30%, represent the second largest source of healthcare funding for these 31 countries.

In general, middle-income and high-income countries tend to display a higher share of health spending funded from compulsory prepaid sources such as taxation and social health insurance contributions. The share of public funding has increased slightly over the past 15 years from an average of 48% to 51% in middle-income countries and from 66% to 70% in high-income countries. In contrast, in low-income countries domestic government sources have lost their relevance, with their share decreasing from 30% to 22%. This drop was more than offset by additional foreign aid and assistance, although reliance on these sources may prove unsustainable.

It is encouraging that OOPS, which entails a higher risk of financial hardship and even impoverishment, has receded.⁴ Between 2000 and 2015 its share in total healthcare expense fell from an average of 46% to 38% in low-income countries, from 45% to 40% in lower middle-income countries and from 37% to 31% in upper middle-income countries. In high-income countries OOPS shed two percentage points and now accounts for 21% of total healthcare expenses (see figure 5). In

those wealthier countries OOPS has to be looked at differently as it is less frequently associated with the risk of catastrophic expenses and primarily reflects copayments and deductibles as desired elements of health insurance schemes. They also have to be viewed against the backdrop of an increasing household capacity and willingness to pay for health services and the mounting cost of medical goods and services.

Figure 5: The healthcare funding mix by income group (2000–2015)⁵



Source: WHO (2017)

4 According to the definition by the World Health Organization, catastrophic health expenditure occurs if it accounts for more than 40% of income remaining after subsistence needs have been met. See chapter 3 for a more in-depth discussion in the context of health protection gaps.
5 See annex for a full list of countries per income group.

Rising incomes enable governments to substitute OOPS with public resources. How much governments actually spend on health is driven by two main factors: (1) fiscal capacity, i.e. the ability to generate tax revenues; and (2) the priority given to health in the allocation of public funds. In addition, fiscal stability matters greatly as healthcare is a recurring expense—unlike infrastructure investments, for example—and a long-term liability for government budgets. Moreover, in times of recession tax revenues generally drop while public healthcare expenses remain largely unchanged. These characteristics add to the attractions of PVHI as a complementary funding source (see chapter 4).

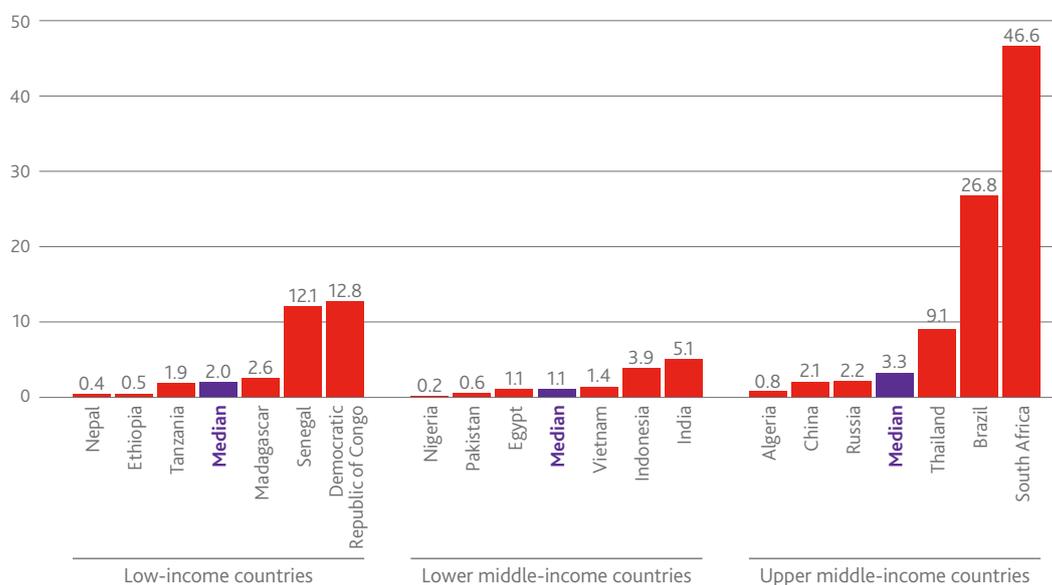
All other things being equal, more public spending on health is associated with greater financial protection as defined by the United Nation’s Sustainable Development Goals (SDGs) framework.

Figure 5 also reveals that pre-funded solutions based on PVHI remain insignificant from an aggregate point of view, even though their share tends to increase with higher levels of income, a reduced share of OOPS and an increased share of public schemes.

Figure 6 illustrates the significant differences in the relevance of PVHI across emerging countries. In low-income countries the median share of PVHI in total

healthcare expenditure is a mere 2%. Senegal is one of the outliers. Private insurers play an important role in the mandatory employee health fund, as well as the health fund for self-employed people. Among the lower middle-income countries, India displays a PVHI share of almost five times the country group’s median. Even though PVHI penetration remains low, the market has grown substantially since its liberalisation and opening in the 1990s. Non-life insurers offer various reimbursement products, whereas critical illness and long-term care plans are available from life insurers. Under the recently launched PPP model known as ‘Modicare’, the role of PVHI is set to strengthen further. Among the upper middle-income countries, South Africa and Brazil stand out with extraordinary multiples over the country group’s median PVHI share. The South African health system is characterised by a two-tier structure, a tax-funded public scheme that caters to the majority of the population, and a private system typically serving the better-off households among the formally employed, with tax benefits available for contributors. Healthcare spending patterns and access to health services in the country reflect its highly unequal income structure. In Brazil, PVHI is an important pillar of the country’s health system, complementing the public schemes, with more than 50 million policyholders, mainly middle- and higher-income families, and through group insurance.

Figure 6: Emerging countries with above and below median PVHI shares in total healthcare expenditure (2015, in percent)

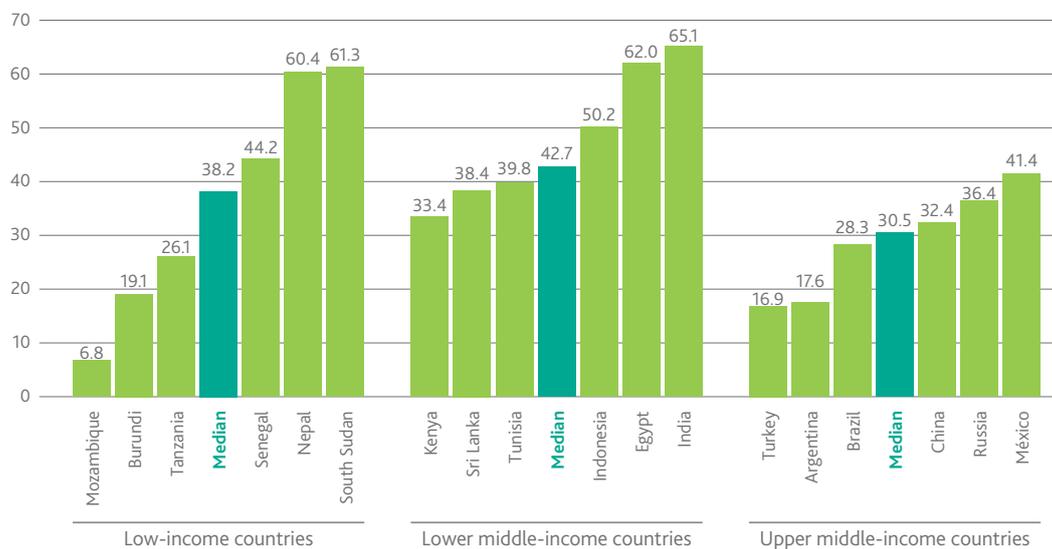


Source: WHO (Global Health Expenditure database), compiled by The Geneva Association

Figure 7 explores OOPS shares in total healthcare expenditure across the three sovereign income groups. The very high levels exhibited by countries such as Nepal and India are largely attributable to severely insufficient benefits available from public and social insurance

schemes. Mexico's share is above the median, given the country's decentralised public health system and a relatively low-profile role of the government in funding healthcare expenses.

Figure 7: Emerging countries with above and below median OOPS shares in total healthcare expenditure (2015, in percent)



Source: WHO (Global Health Expenditure database), compiled by The Geneva Association



3. Exploring and quantifying the health protection gap⁶

3.1. Approaching the challenge

Anecdotal evidence suggests there is a huge health protection gap (HPG) in emerging markets. For instance, at least half of the world's population still lacks access to essential health services. At the same time, almost 100 million people are pushed into extreme poverty each year due to catastrophic health expenditure. Millions of people have forgone treatment altogether due to lack of accessibility, in addition to affordability issues (WHO/World Bank 2017). These figures expose the limitations of the quantitative HPG definition presented above. The limited availability of and access to healthcare infrastructure in emerging markets are integral parts of the HPG, even though—as opposed to the funding dimension—they generally defy any meaningful quantification (see section 3.3. for further elaborations).

Box 2: The health protection gap beyond funding—Access to healthcare in emerging countries

People in lower-income countries tend to have less access to health services than those in wealthier economies. A lack of financial resources or information can create serious obstacles to accessing services.

The relationship between poverty and access to healthcare can be viewed as a vicious cycle because poverty breeds ill health and ill health cements or further exacerbates poverty.

There are many definitions of access to health services, but most researchers agree that access is related to the timely use of services according to need (Campbell et al. 2000). Peters et al. (2008) use a conceptual framework that is based on four main dimensions of access:

1. Geographic accessibility – The physical distance or travel time from service delivery point to the user.
2. Availability – Having the right type of care available to those who need it; for example, waiting times that are conducive to providing effective care, as well as the availability of the appropriate types of service providers and materials.
3. Financial accessibility – The relationship between the price of services (in part affected by their costs) and the willingness and ability of users to pay for those services. This dimension also includes the economic consequences of health costs.

⁶ This chapter benefited significantly from data and intellectual support from the Swiss Re Institute.

4. Acceptability – The responsiveness of health service providers to the social and cultural expectations of individual users and communities.

As shown in table 1, the density of health workers per population is much lower in less wealthy countries, reducing the availability of services to many of the world's poor. Density levels are at just one tenth of those in high-income countries. In addition, the poorer the country, the larger the amount of total health spending that is out of pocket (see chapter 2). Out-of-pocket payments for healthcare are usually the most inequitable type of financing because they tend to hit the poor the hardest by preventing access to healthcare or by denying individuals and families financial protection in the event of catastrophic illness.

Table 1: Availability of health services (2013 data)

Country	Physicians (per 1,000 people)	Nurses and midwives (per 1,000 people)
Low-income countries	0.31	0.82
Lower middle-income countries	0.74	1.76
Upper middle-income countries	2.91	3.35
High-income countries	3.01	8.68
World	1.86	3.14

Source: World Bank Health, Nutrition and Population Statistics, compiled by The Geneva Association

3.2. The funding view—Quantifying the gap

The quantification of the healthcare funding gap is a challenging endeavour for the following reasons:

1. To a major extent healthcare expenditure is discretionary and depends on the quality of healthcare services demanded. Public healthcare services, for instance, are available in many emerging markets at affordable prices, but accessibility, long average waiting times and quality issues could be major deterrents. Consumers seeking state-of-the-art or timely treatment usually face significantly higher costs.
2. In many emerging markets there are informal networks that help ease some of the burden arising from high healthcare expenditure. This relief is difficult to quantify.

3. At the same time the dynamics of socio-economic variables, such as ageing populations, volatile and difficult-to-predict government policies (including subsidies and tax incentives) and cost inflation as a result of medical advancements, can have a notable impact on the cost of necessary treatment.

Despite these challenges various parameters have been used to gauge the size of the HPG. One common proxy is OOPS (The Geneva Association 2018), i.e. the part of national health expenditure that comes from household savings. In general, lower levels of OOPS suggest lower financial risk to households from unexpected and large healthcare spending (WHO 2010b). While OOPS provides a readily available and easy-to-understand view of the HPG, it carries some serious limitations:

1. Not all OOPS is stressful to households, i.e. resulting in the need to reduce discretionary spending on food or education in order to pay medical bills. Informal networks exist that work to ease some of this burden on households. At the same time, OOPS might be absorbed by drawing down on growing household savings or wealth. As a result, simply relying on OOPS could potential overstate the size of the HPG.
2. At the same time OOPS fails to take into consideration cases of non-treatment or under-treatment due to affordability and accessibility reasons, underestimating the HPG (see digression).
3. In wealthier markets OOPS represents copayments for social, medical and health insurance, a form of cost sharing that can be societally and economically beneficial.

In sum, OOPS can only be a rough proxy of the shortfall in financing that is needed to meet the medical requirements of emerging market populations.

Alternatively, some researchers have focused on catastrophic health expenditure (CHE) or the risk of impoverishment from unexpectedly high medical expenses as a key determinant of the health protection gap (WHO 2010b). CHE is defined as OOPS for healthcare that exceeds a certain proportion of a household's total

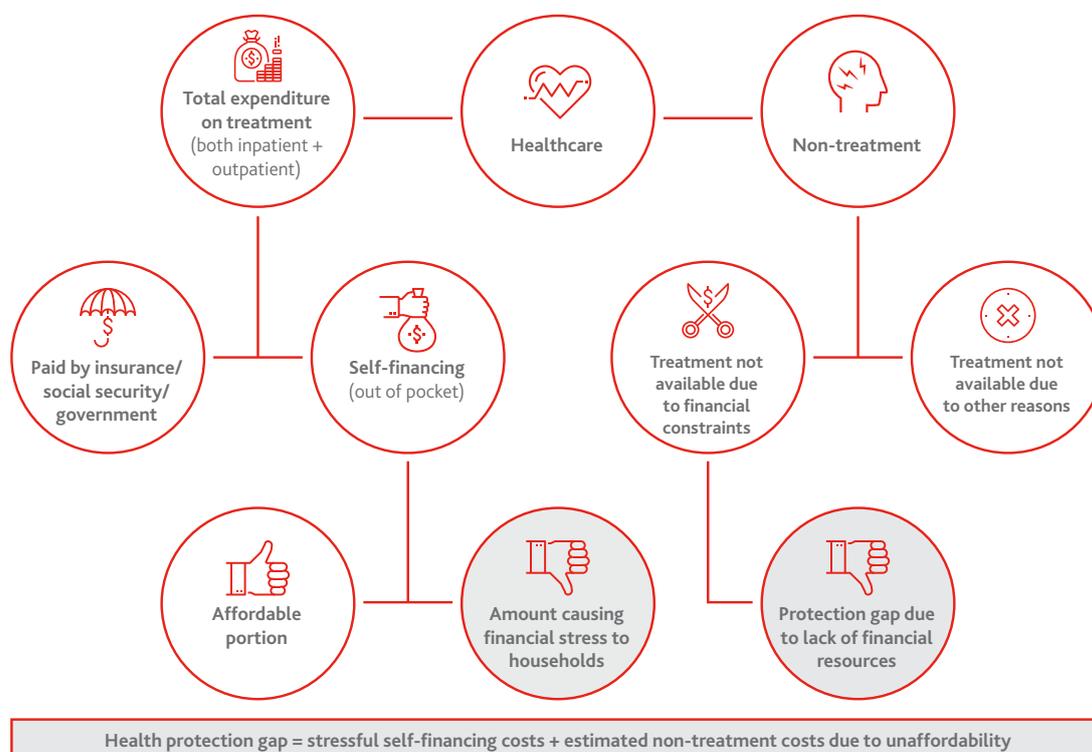
income or consumption. In general, health systems that require lower OOPS provide a higher level of protection to the poor against 'catastrophic' spending. WHO (2010) suggests that such health expenditure remains low in countries where OOPS represents less than 20% of total national health expenditure.

The use of CHE has strong policy implications because those households affected represent the most vulnerable segment of society. Nonetheless, the CHE threshold, which the WHO sets at 40% of household income, appears somewhat arbitrary. It only considers the extreme case where households are pushed into poverty due to excessive healthcare spending. At the same time this approach does not consider the protection gap suffered by those who have not received treatment due to accessibility and/or affordability reasons.

A conceptual framework

Swiss Re (2018) combines existing WHO data with information gleaned from proprietary customer surveys in order to more reliably quantify household financing risk related to healthcare spending. This report defines the HPG as comprised of two components. The first is OOPS that is financially stressful to households. The second is incidences of non-treatment due to affordability reasons. Figure 8 illustrates the underlying conceptual framework which covers financial constraints only.

Figure 8: A graphic illustration of the health protection gap



Source: Swiss Re Institute (2018). Financial stress is defined as circumstances when people have to: (1) cut back discretionary spending (e.g. buy cheaper grocery items, spend less on luxury items); (2) cut back on savings contributions; (3) borrow money from the bank, family or friends; (4) cut back on essentials (e.g. school fees, grocery shopping, bill payments).

As compared with alternative approaches discussed before, this customer survey-based method offers a better understanding of the composition and drivers of the HPG, for example by different age segments or household income levels. Information on family members' health condition is also included. This information can be used to identify vulnerable segments of society who are susceptible to catastrophic health expenditure. The results can effectively substantiate policy deliberation with an aim of reducing household vulnerability to healthcare financing risk. In addition, this method also takes into consideration incidences of non-treatment due to financial constraints, filling a major research gap.

Nonetheless, this approach could still underestimate the HPG due to the following reasons:

1. It only quantifies OOPS that causes financial stress, but it excludes the financial burden from the loss of income, for example.
2. It focuses on 'financially stressful health expenditure' and not 'economically suboptimal expenditure'.⁷ In some cases, individuals and households can finance large and unexpected healthcare spending without feeling the pain. However, this could still be economically suboptimal, because they might need to maintain excess liquidity or unnecessary precautionary savings compared with pre-funded healthcare solutions.
3. In addition, there are mounting concerns about the sustainability of other funding sources, in particular government payments or subsidies. In many markets, government budgets are coming under increasing stress, not least because of ageing populations. Therefore, in future, part of the burden could shift to consumers. This is not factored into current estimates.
4. The estimates do not take into account other factors such as accessibility to healthcare provision due to a lack of infrastructure—a very relevant consideration in many less developed markets (see section 3.3).

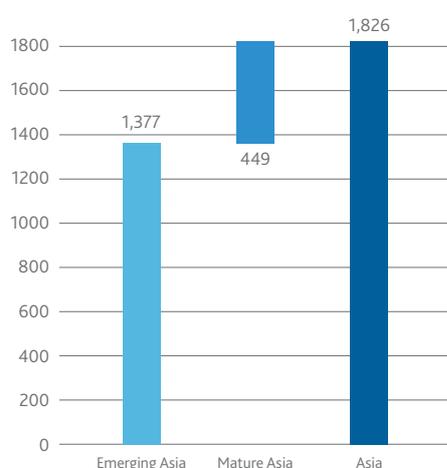
Quantifying the gap

Based on a consumer survey of 16,000 respondents in 12 Asian markets⁸, Swiss Re (2018) estimates the combined size of the regional HPG at USD 1.8 trillion as measured in 2017. This stock figure describes the total estimated funding shortfall, i.e. how much would be needed to eliminate the financial stress experienced by all households in these 12 markets due to spending on

healthcare. It also includes the total cost of providing treatment to those who cannot afford it. This estimate is based on OOPS per household multiplied by a severity score which depends on the income level of the household, OOPS as a percentage of household income and stress caused by OOPS as reported by respondents.

The bulk of the gap—USD 1.4 trillion—originates from Emerging Asia. This massive HPG is equal to about 8% of these countries' GDP and reflects their large populations, low disposable incomes, high out-of-pocket medical expenses and low health insurance penetration levels.

Figure 9: Size of the HPG in Asia, in USD billion, 2017



Source: Swiss Re Institute (2018)

The customer survey also highlights the importance of and allows for a quantification of non-treatment as a component of the HPG. The notional cost of forgone care in the past 12 months region-wide is estimated to be USD 92 billion in 2017. China and India account for more than 75%, or 32 million, of the total non-treatment cases in Asia and for around 90% of the total non-treatment costs—around USD 61 billion in China and USD 22 billion in India.

Extrapolating the global emerging markets' HPG

While the Swiss Re survey did not include non-Asian emerging markets, it is possible to extrapolate a glimpse of the global proportions of the emerging markets' HPG which strongly correlates with OOPS and household income levels. Using this correlation, HPGs for non-Asian emerging markets can be estimated. Following this methodology, the size of the HPG for all emerging markets globally totalled around USD 2.9 trillion in 2017, or about 9% of these countries' combined GDP, according to the Swiss Re Institute. It should be noted that this is only a

⁷ As a result, the HPG—as per Swiss Re's methodology—can only be a starting point in quantifying the health insurance protection gap, i.e. the amount of PVHI bought versus the amount that would be economically beneficial.

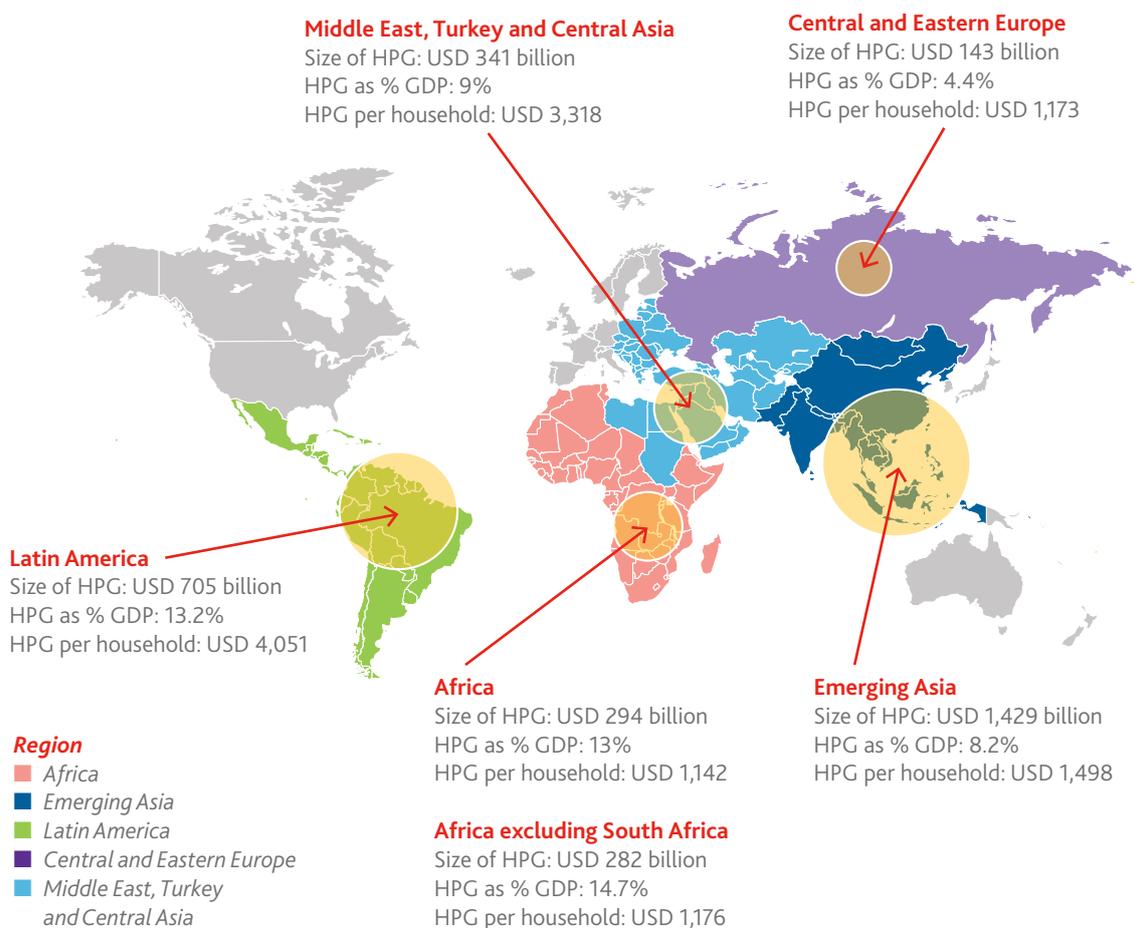
⁸ These markets include Japan, Hong Kong, Singapore, South Korea and Taiwan (advanced markets), as well as China, India, Indonesia, Malaysia, the Philippines, Thailand and Vietnam (emerging markets).

rough estimate to illustrate the total size of the protection necessary to avoid financial stress from unpredictable medical expenses.

As shown in figure 10, Emerging Asia excluding Central Asia displays the highest HPG, reflective of a large population and low insurance penetration. In Latin

America and the Middle East, Turkey and Central Asia, the gap is mainly driven by a relatively higher cost of treatment. In Africa, the financial stress to household balance sheets caused by OOPS is high, as illustrated by the HPG's high percentage of total GDP. This ratio is the lowest in Central and Eastern Europe, mainly due to much lower OOPS and higher income levels.

Figure 10: Estimated size of HPG in emerging regions across the world, 2017



Source: Swiss Re Institute (2018)

An 'annualised' quantification based on OOPS only

OOPS could be financed by a household's income, from its savings or by borrowing. It excludes any reimbursement by a third party, such as the government, a health insurance fund or a private insurance company. Against this backdrop, OOPS is generally associated with compromising a household's financial position and stability. Indeed it can result in household financial hardship and cause millions to forgo needed healthcare (WHO/World Bank 2017).

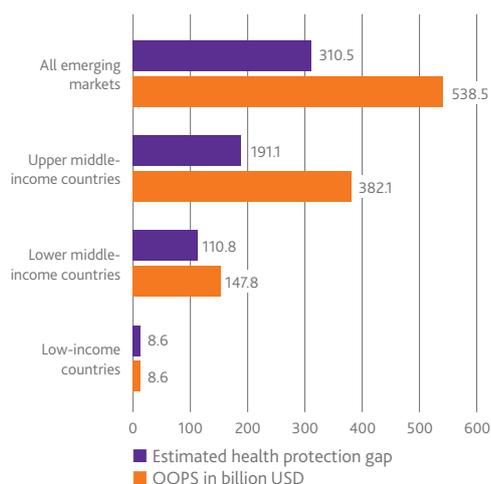
However, as discussed before, OOPS is an imperfect gauge of the HPG. It may overstate the gap as some OOPS is a desirable and economically efficient form of cost sharing

and risk retention. On the other hand, OOPS is unable to capture relevant aspects of the HPG such as non-treatment or under-treatment.

Figure 11 offers an overview of absolute OOPS in emerging markets. Let us assume that 100%, 75% and 50% of OOPS in low-income, lower-middle income and upper-middle income countries respectively can be considered part of the HPG. This assumption not only covers the 'catastrophic' and 'stressful' components of the HPG (as estimated by Swiss Re 2018) but also the part of OOPS which may be suboptimal—and too high—from an economic point of view. As opposed to Swiss Re's stock

estimates, this approach yields an 'annualised' and purely OOPS-based HPG, reflecting actual hospitalisation rates and disregarding protection shortfalls as a result of lacking access to or the affordability of health services. On the basis of this simplified but illustrative logic, the annual HPG in emerging markets came in at around USD 310 billion in 2015, based on total OOPS of USD 538 billion. Upper middle-income countries account for 62% of emerging markets' HPG and 71% of their total OOPS.

Figure 11: Absolute OOPS and estimated health protection gaps in emerging markets (2015, in USD billion)



Source: The Geneva Association, based on WHO data

3.3. A more holistic view—Benchmarking national healthcare systems

As mentioned before, the funding-based approach does not offer a holistic perspective which would take into account aspects such as deficient medical infrastructures, limited access and poor health outcomes. In order to address some of these shortcomings, we compared three national healthcare systems based on the following five criteria: (1) the healthcare funding mix (public spending versus OOPS); (2) national health expenditure as a share of GDP; (3) healthcare coverage; (4) the quality of the medical infrastructure measured by the number of physicians per 1,000 people; and (5) health outcomes measured by life expectancy at birth. Funding, cost, access and quality of service are key components of any health system. These components are interrelated through a cause-effect chain that ultimately affects health outcomes. Criteria 3, 4 and 5 are healthcare system performance metrics which can be contrasted with a country's healthcare funding mix and overall national spending on healthcare as an indicator of cost-efficiency.

For illustrative purposes, we have chosen one country per sovereign income group, with Rwanda, Vietnam and Costa Rica representing low-income, lower middle-income and upper middle-income countries, respectively (see figure 12). All selected countries exhibit life expectancies significantly above their respective group's median. Rwanda also outperforms in respect of the density of physicians, the share of population covered by healthcare⁹, the GDP share of total health expenditure as well as the shares of public spending (higher than the median) and OOPS (lower than the median). Vietnam outperforms its peer group in terms of medical infrastructure and coverage. Costa Rica shows above-median metrics for all categories, except for the density of physicians.

Rwanda is frequently portrayed as a healthcare success story (New York Times 2017). Its near-universal healthcare system, built over the past 15 years, is underpinned by a community-based health insurance scheme ('mutuelles de santé'). Formally, contributions are 'voluntary', but enrolment procedures involve local authorities whose performance is judged by their success in enrolling the populations under their jurisdictions. Annual premiums are small, scaled by income and subsidised by donors. The country also has a national system of computerised medical records. Rwanda's comparatively high life expectancy is primarily attributable to massive falls in the maternal and child mortality ratios. In addition, costs are kept in check by a results-based financing approach which pays providers based on performance.

Vietnam's national healthcare system consists of a payroll tax-funded social insurance scheme for formally employed workers, as well as a public healthcare fund for the poor. Vietnam actively encourages the use of private voluntary health insurance, e.g. through the opening of the market to foreign insurers.

The Costa Rican Social Security (Caja Costarricense del Seguro Social) is both the administrator of the country's health institutions and the main source of healthcare funding. Worker and employer contributions are mandated by law, with explicit reference to the principle of solidarity. Low-income citizens are eligible to have their coverage paid entirely by the state, based on a means test. Emergency care is provided free of charge to all residents.

⁹ There is no comprehensive country group-specific healthcare coverage data. Therefore, we use the median value (45.3%) of healthcare coverage for the 24 emerging markets covered by World Bank (2015) as a benchmark.

Figure 12: Three national healthcare systems in comparison

	Life expectancy ¹	Physicians per 1,000 people ²	Percentage of population covered by healthcare ^{7,8,9}	THE as share of GDP ³	Public spending as a share of THE ⁶	OOPS as a share of THE ⁵
Rwanda	65	0.06	81.68	7.90	48.38	25.97
Median LIC	59	0.05	N/A	6.15	38.69	38.24
Vietnam	76	0.70	71.6	5.65	46.08	43.48
Median LMIC	68	0.38	N/A	5.53	47.84	43.48
Costa Rica	79	1.20	91.5	8.15	75.98	21.49
Median UMIC	74	1.63	N/A	6.09	60.36	30.52

1 WHO Expenditure Database; data as of 2013

2 World Bank, World Development Indicators; data as of 2010

3 WHO Expenditure Database; data as of 2015

4 WHO Expenditure Database; data as of 2015

5 WHO Expenditure Database; data as of 2015

6 WHO Expenditure Database; data as of 2015

7 Data for Costa Rica as of 2011: <http://documents.worldbank.org/curated/en/936881467992465464/pdf/99455-PUB-Box393200B-OUO-9-PUBDATE-9-28-15-DOI-10-1596-978-1-4648-0610-0-EPI-210610.pdf>

8 Data for Vietnam as of 2014: <http://www.jointlearningnetwork.org/news/vietnam-accelerates-universal-health-insurance>

9 Data for Rwanda as of 2015: <https://doi.org/10.1016/j.worlddev.2018.01.023>

The healthcare metrics of Rwanda, Vietnam and Costa Rica seem to suggest conclusions which are in line with the correlations established by OECD (2016) for a selection of OECD countries and a few emerging economies (Brazil, China, Colombia, India, Indonesia and Russia). According to this study based on selected countries only, a clear positive association exists between life expectancy at birth and universal healthcare indicators such as the population covered by a core set of services, OOPS (negative correlation), the density of physicians and total health expenditure as a share of GDP.

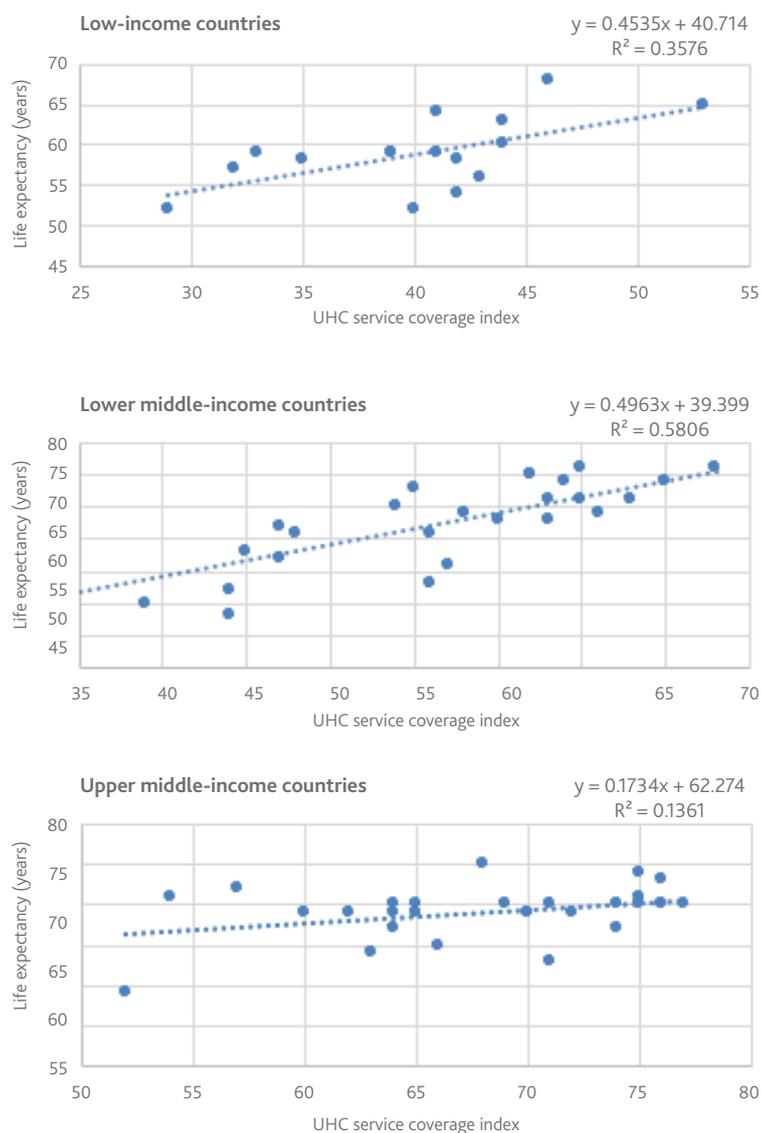
These correlations make intuitive sense: health outcomes improve with increasing coverage and inclusion. Lower OOPS, i.e. higher levels of financial risk protection against impoverishing healthcare costs, have a similarly positive effect on life expectancy as do the quality of the medical infrastructure and the relative importance of healthcare expenditure in a country's GDP.

In the context of this OECD research study, a particularly relevant conclusion is that for societies at large it seems to make sense to convert OOPS into pooled funding,

because an economically more efficient form of financing yields a better reach, which in turn enables better health outcomes (see chapter 4).

Having said this, a major statistical disclaimer needs to be made. Using the most recent data from the World Health Organization and the World Bank, The Geneva Association has analysed the correlations between OOPS as a share of total health expenditure, the quality of medical infrastructure (density of physicians) and healthcare coverage on the one hand, and life expectancy at birth on the other hand, separately for all low-income, lower middle- and upper middle-income countries. Even after adjusting for a few outliers in each regression, the statistical relevance of the correlations remains insignificant for OOPS and its effect on life expectancy. The correlations look slightly more meaningful as far as the density of physicians is concerned, and here especially for low-income countries. The most relevant pattern is the positive correlation between healthcare coverage and life expectancy, in particular for lower middle-income countries (see figure 13).

Figure 13: Life expectancy and universal healthcare (UHC) service coverage



Source: The Geneva Association calculations based on WHO/World Bank (2017)



4. A bigger role for private voluntary health insurance (PVHI)?

4.1. The economic case

As discussed before, PVHI is not without challenges and drawbacks. Compared with compulsory social insurance, PVHI generally results in a smaller risk pool. In risk-based schemes, premiums reflect individual health risks and are not driven by a person's income. In such schemes, the relatively small risk pool makes cross-subsidisation between different risk groups more challenging than in social insurance systems, raising concerns about equity. Furthermore, providers of PVHI are selective about whom to insure. In addition to charging higher premiums for high risk individuals, insurers can simply refuse to insure certain patients (Baicker et al. 2015), which is socially frowned upon as discrimination (Barr 2004).

Another challenge that is particularly pertinent to PVHI is adverse selection. Due to information asymmetries, private health offerings often attract mainly high-risk individuals (Arrow 1963, and Hsiao 1995). The resultant premium escalation further discourages 'good-risk' patients from joining the risk pool. In addition, insured individuals may engage in riskier behaviour or seek more treatment because they have insurance protection, a phenomenon well known as 'moral hazard' (Pauly 1974). Both deficiencies jeopardise insurers' ability to set actuarially fair rates. Having said this, there are effective tools available to mitigate the implications of information asymmetries, such as deductibles, copayments and waiting times.

On the side of benefits, PVHI offers personalised insurance packages and generally competitive premiums to its customers, according to their risk profile. In addition, collecting premiums through PVHI can, in principle, expand coverage beyond formal sector employment and include people who would otherwise be left out of the social insurance programmes (Preker et al. 2010).

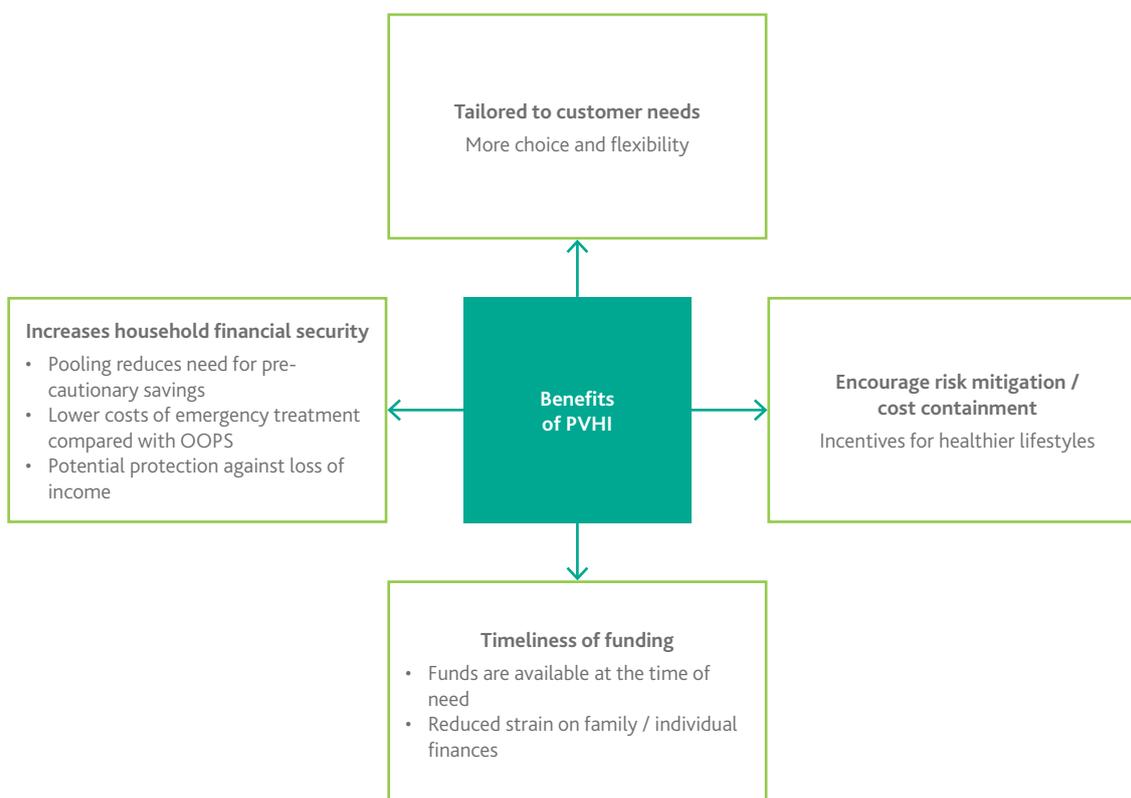
Compared with OOPS, PVHI offers security against the financial impact of medical expenses. From an economic point of view, small regular premiums are more efficient than precautionary savings. PVHI-based risk pooling allows for the reimbursement of medical expenses incurred by a few insureds¹⁰, and the payment of fixed benefits to cover costs such as lost income; avoiding financial hardship and non-treatment or under-treatment due to financial constraints (Swiss Re 2015).

¹⁰ Reimbursement-type medical insurance covers expenses for hospital and other treatments due to illness or injury. Copayments and deductibles are common features of such products to mitigate moral hazard (i.e. people behaving more recklessly once being protected by insurance) and address a potential overuse of medical services. Benefits from fixed-benefit products, on the other hand, are usually not correlated with the actual cost of treatment. Examples include critical illness, disability and long-term care insurance.

Pressure on public finances is set to strengthen the role of PVHI as an intermediary in order to make spending more efficient and outcomes more effective. For example, in the Middle East, a number of governments have chosen

to privatise health insurance. In Saudi Arabia, this line of business now accounts for more than 50% of the market's total premium income. Figure 14 summarises the utility of PVHI.

Figure 14: The potential benefits of PVHI



Source: The Geneva Association, Swiss Re (2015)

4.2. PVHI in emerging markets

Recent estimates put the global premium income of the private health insurance industry at EUR 1.3 trillion or USD 1.6 trillion in 2016, a figure forecast to double by 2025 (McKinsey 2018). This growth is expected to be fuelled by four factors:

1. An ageing population – The global population of elderly people (aged 65 or older) is projected to almost double over the next 15 years.
2. A growing middle-class population – The proportion of the global population with middle-class income is expected to more than double to 59% by 2030.
3. Changing disease patterns – As incomes rise, non-communicable diseases, especially chronic conditions, become more common. In addition, the prevalence of overweightness and obesity has grown dramatically.
4. Pressure on public finances – An increasing number of governments are imposing healthcare spending cuts and seek out private payers as intermediaries to improve the cost-efficiency and effectiveness of healthcare systems (McKinsey 2018).

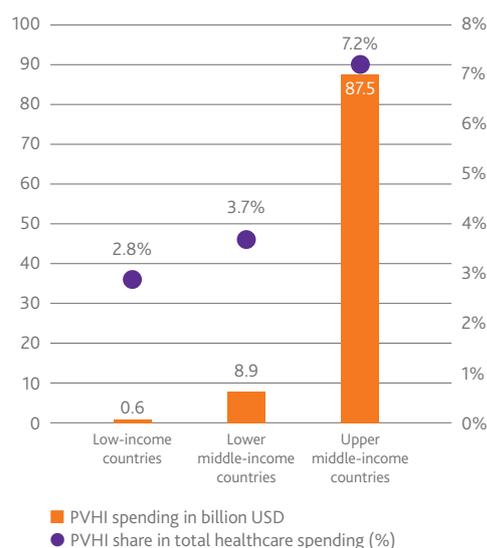
Projections of steep premium growth, however, need to be viewed with some caution, because public policy regime shifts may disrupt growth trajectories and reshape the funding mix, for example in favour of social insurance schemes.

The spectrum of PVHI in emerging countries ranges from large commercial to small nonprofit schemes, which can be run by private entities (including healthcare providers), nongovernmental organisations (NGOs), public-private partnerships or even communities.

In the absence of comprehensive and reliable data sources, figure 15 provides the basis for a very high-level approach to estimating the total health insurance premium volume (including fixed-benefit products) in emerging markets, based on the contribution of PVHI to total healthcare

expenditure in the three relevant sovereign income groups as defined by the World Bank. Assuming that USD 70 in insurance pay-outs correspond to USD 100 in premiums, the health insurance premium volumes in low-income, lower middle-income and upper middle-income countries would amount to about USD 0.9 billion, USD 12.7 billion and USD 125 billion, respectively, i.e. an estimated total of approximately USD 139 billion in 2015.

Figure 15: Healthcare expenses covered by PVHI (2015)



Source: The Geneva Association, based on WHO data

Figure 15 illustrates the differences in relevance of PVHI benefits across country groups, expressed as the share of total healthcare expenditure covered by private-sector insurance payments. In 2015, PVHI accounted for 2.8%, 3.7% and 7.2% of total healthcare expenditure in low, lower middle- and upper middle-income countries, respectively, compared to 20.6% in high-income countries. The relevance of PVHI increases with growing wealth. The major differential between high-income versus upper middle-income countries is primarily attributable to the U.S. health market, which accounts for more than 40% of global spending and an even higher share of the world's PVHI payouts.

4.3. A bigger role for PVHI in emerging markets—Prerequisites and limitations

When discussing the pros and cons of a bigger role for PVHI in emerging countries, one almost inevitably encounters different ideological views about the relationship between individuals and the state. Some vilify PVHI as leading to overconsumption, cost escalation, resource re-allocation to the detriment of the poor and a generally inequitable healthcare system. Others categorically suggest that private financing is generally more effective than public financing because of endemic institutional weaknesses that are considered to be characteristic of the public sector.

Challenges presented by PVHI

One political challenge is the tendency of governments to (over)burden the health system with other objectives, such as a certain distribution of benefits and income. Equity objectives can easily override economic efficiency goals. Such policy preferences would favour publicly financed systems (Wouters/McKee 2017).

In the same context of equitable progress towards access to universal healthcare, Pettigrew/Mathauer (2016) argue that private ways of health expenditure (OOPS in particular, but also PVHI) are usually a more regressive form of funding and offer a more limited form of risk sharing than tax revenue or social security, i.e. public health insurance.

However, these theoretical arguments do not reflect the reality in low-income countries. Stand-alone public schemes may not be the most effective way of securing access to universal healthcare in low-income countries. First, weak taxation capacity is a major constraint on public sector-sponsored healthcare systems, and people's ability and willingness to pre-fund health services through competitive insurance premiums may be far greater than their governments' capacity to mobilise tax revenues. Second, there tends to be a lack of trust in government-run programmes, given the deficits in transparency and political stability. And third, public subsidies in those countries often do not reach the poor, who remain exposed to severe financial risk at the time of illness. High OOPS shares of total GDP in countries where 'universal access' to public sector health services is, in principle, guaranteed, demonstrate the failure of a number of government schemes. (Preker et al. 2010, and Wadge et al. 2017).

In light of these limitations, governments in emerging markets should have an interest in harnessing the risk-pooling capabilities of PVHI in order to make faster progress towards their overarching policy objective—to reduce their populations' vulnerability to (catastrophic) OOPS.

Opportunities offered by PVHI

Against this backdrop, academic studies such as Pauly/Zweifel (2006) highlight potential utility gains from making insurance available in low-income countries with high OOPS. Protection from an infrequent but very high medical expense might motivate individuals to voluntarily buy insurance if it is offered at attractive premiums. Pauly et al. (2008) show that potential demand for PVHI is not limited to the wealthier segments of emerging market populations but can also extend to lower-income levels. In addition, society at large could benefit if the prevalence of poor health outcomes and catastrophic ruin from high medical bills is reduced.

Pauly et al. (2008) also discuss the two fundamental reasons for buying health insurance. First, for many households the possibility of a high out-of-pocket payment, despite its low probability, is real and they are keen to address this risk. Second, the variance of OOPS is significant, so that risk-averse individuals would be willing to pay a 'risk premium' above the expected value of the health benefits which, in turn, would enable insurers to charge a loading for their administrative expenses. Conversely, there will be little demand for insurance if the loss variance is small or if the administrative expense loading is high.

Pauly et al. (2008) also found that in most emerging countries this risk premium (expressed as a percentage of expected benefits for full coverage insurance) would be sufficient to cover average administrative expense ratios of private health insurers. This is particularly true for comprehensive insurance that covers hospital, physician and drug expenses, whereas risk premiums for stand-alone covers are lower. Therefore, even an unsubsidised PVHI market appears feasible.

For insurers to tap into this potential it will be important to segment the PVHI market so that those with lower incomes are able to pay premiums based on their below-average health spending, rather than charging (prohibitively high) premiums based on average expenditure across all income groups.

PVHI is an important tool to achieve sustainable access to health services, financial protection against the risk of impoverishment as a result of catastrophic OOPS and health coverage for those underprivileged segments of the population that are often excluded from access to publicly funded healthcare. Therefore, many countries are now in favour of multi-pillar health funding systems, including PVHI and moderate premium subsidies, to make such programmes affordable to the poor. In addition, tax incentives are increasingly being used as a public policy instrument in order to develop this specific pillar of the health system.

Such policy shifts partially reflect insurers' increasing ability to harness technology in order to improve the quality of health services (e.g. through network management) and contain cost (not just through deductibles and copayments but also technology-based incentive programmes, such as the Vitality programme developed by South African life insurer Discovery). In addition, governments are motivated by rising concerns about fiscal sustainability, surging medical cost inflation, a greater prevalence of chronic non-communicable diseases and higher service quality expectations from growing middle classes.

In summary, from a purely economic point of view and disregarding limits to measurability, we can identify three conditions for the emergence of PVHI markets in low- and middle-income countries: (1) expected OOPS is high and volatile relative to households' income or wealth; (2) insurance firms can effectively segment customers and offer premiums that are close to the different households' expected value of OOPS; and (3) loadings for administrative costs and profits remain below the risk premium that risk-averse individuals are willing to pay.

Having said all this, PVHI currently plays a minor role in emerging countries, generally covering less than 10% of individuals (Wouters/McKee 2017). With respect to low- and middle-income countries, proponents of PVHI argue that it is the best possible starting point for risk pooling, in light of huge informal economies, underdeveloped and inefficient taxation mechanisms as well as high and frequently catastrophic OOPS. Publicly financed systems should be established at a later stage, they argue, following the historical development pattern in many Western European countries. Furthermore, there seems to be a consensus that when compulsory schemes are under-developed, PVHI as a form of prepayment and limited pooling is preferable to OOPS because it expands financial protection and access to additional services (Pettigrew/Mathauer 2016). The two authors conclude that PVHI should be fostered and regulated in such a way that it contributes to equitable progress towards universal healthcare, which is arguably more likely with complementary or supplementary PVHI than with primary and substitutive forms—with a potentially destabilising

opt-out mechanism from public health insurance (see Preker et al. 2010 for the respective taxonomy). PVHI can also be harnessed to implement public health policy priorities in a cost-efficient way (see box 3).

Box 3: Addressing protection gaps through compulsory critical illness cover

Lifestyle related diseases among modern day populations are a rather novel phenomenon in human demographic history. Cardiovascular disorders, cancer, diabetes, and chronic respiratory illness are closely related to the increasing prosperity and longevity of most contemporary societies.

The future of global health is likely to be shaped mostly by emerging countries with structures of morbidity, such as Brazil, Russia, India, China and South Africa. Their increasing wealth is linked to changes in their populations' dietary and exercise habits—higher salt, fat and carbohydrate intakes and sedentary lifestyles. These factors are driving the growing burden of non-communicable diseases in emerging countries which, in combination with the ongoing challenge of communicable diseases, place significant stress on national healthcare systems.

Against this backdrop, compulsory private critical illness (CI) insurance could offer some welcome relief to existing social schemes while addressing the mounting challenge of morbidity, one of the most rapidly growing protection gaps in emerging markets.

CI policies can be structured very simply, depending on local conditions and needs. They are flexible in terms of the number of illnesses covered. Just including one medical condition would minimise the premium. CI is relatively easy to underwrite because it is less impacted by fraud, changing policyholder behaviour or the risk of overconsumption of services once the cover is in place. In addition, critical illnesses, such as cancer and heart disease, are relatively non-contentious and reasonably straightforward to diagnose. Therefore, government-mandated, simple and need-based CI products with fixed cash benefits are a private-sector alternative to more complex, onerous and abuse-prone full reimbursement schemes—a potential 'quick win' in addressing rapidly growing protection needs in the face of relentlessly increasing morbidity rates in emerging countries.

Source: Based on an interview conducted by the author with Karl Gray, Global Head of Motor and Personal Lines, Zurich Insurance Company

The bottom line

Our discussion shows that maximising the role of PVHI cannot be an end in itself (as already noted by Swiss Re 2015). Certain customer segments (e.g. those with existing health conditions) will remain commercially uninsurable and therefore dependent on schemes based on public solidarity. However, if properly regulated in order to address potential market failures such as adverse selection and moral hazard, PVHI can make an important and beneficial contribution to the sustainability, quality, availability and cost-efficiency of health services in a multi-pillar system. Policymakers in emerging markets should harness PVHI as a catalyst for a socially beneficial and economically efficient transition to pooled pre-

funding of healthcare expenses, including public, private and public-private schemes. This contribution will become even more attractive to society as the role of private health insurers continues to evolve from payers of claims and benefits and underwriting data collectors to providers of comprehensive healthcare advice and solutions with a positive effect on health outcomes.

While certainly not a panacea for policymakers, the structural challenges facing emerging markets' healthcare systems suggest that PVHI (both stand-alone and as administrators of public schemes) as a meaningful component of future-proof healthcare systems can no longer be ignored.



5. The digital revolution— New healthcare propositions in emerging markets

In underpenetrated lower-income countries in particular, healthcare stakeholders are looking at technology to help address some of their biggest challenges as identified in previous chapters, such as prohibitive cost, poor quality of data and services, insufficient access and low awareness.

5.1. E-health

Against this backdrop, we first explore the role of 'E-health'—the use of information and communications technologies to support healthcare services—in emerging markets. E-health has the potential to greatly improve health service efficiency, expand or scale up treatment delivery to millions of low-income patients in emerging countries and improve ultimate patient outcomes, for example by supporting health workers in performing clinician duties where there are no doctors.

GSMA (2017) believe that digital health initiatives in emerging markets should focus on three objectives: (1) expanding coverage and access; (2) enhancing services quality; and (3) reducing and optimising cost.

In terms of access, digital health enables a wider reach of healthcare delivery because some services (such as patient monitoring and diagnostics) can be delivered and managed remotely. Digital health technologies also enable greater and faster patient access to their health information via mobile.

As far as quality is concerned, digital health facilitates faster and more effective coordination of care services and health professionals as well as more effective data sharing, allowing for earlier detection of risks and targeted provision of health information services.

Cost efficiency also improves, as the transition from paper to digital ensures that available health resources are used where and when needed. This includes the digitization of drug inventory, supply chain and patient records.

One prominent application of e-health is 'telemedicine' (see Combi et al. 2016), defined as "the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities".

The relevance of telemedicine is obvious; whenever distance impairs the proper delivery of care to a patient (in terms of time and quality), telemedicine can be highly beneficial. But telemedicine is not only about remotely monitoring or diagnosing patients. It also includes e-learning techniques (to remotely deliver education both to healthcare workers and patients). In general, given the deficiencies in physical infrastructure, such as transportation networks, and the associated cost and burden of travel, emerging countries would benefit in particular from telemedicine. Its applications could be leveraged to provide people with basic healthcare services and to close the distance (and potentially the quality gap) between rural areas and specialised hospitals located in the bigger and relatively wealthy cities. However, as Combi et al. (2016) show, respective efforts in emerging countries have been scant so far, which they attribute “to the much smaller return of investment, a limited budget available, and the greater difficulties expected or encountered also due to the lack of technological infrastructures”.

Iyawa et al. (2017) present the results of a very recent review aimed at identifying the scope and range of digital health, innovation and digital ecosystems literature in developed and emerging countries. While there is evidence of digital health in emerging countries (e.g. mobile or M-health applications in Southern Africa), references to self-management and self-tracking apps, gamification, health and wellness apps, wireless sensors and health data exchange were significantly more prevalent in developed countries. However, M-health is a very prominent area of study in emerging countries, given the relatively high mobile phone penetration.

Progress in the area of digital health in emerging markets does not require high-tech solutions at this stage. Most B2C digital health solutions (e.g. health consultation) are accessible via 2G mobile networks and basic phones, resulting in greater population coverage and ease of use. B2B solutions for healthcare professionals and centres leverage 3G networks, smart applications and cloud computing to remotely connect professionals and make medical data available to them (GSMA 2017).

Figure 16: Use of digitization in emerging market healthcare systems

	Network	Connectivity	Mobile devices	Other
Digitization of:	Healthcare systems	Mobile and fixed	Data	Smartphones, tablets, laptops
	Healthcare centres			
	Healthcare professionals	Mostly mobile (3G+)	Voice, SMS, and data	Basic phones, smartphones, tablets
	Healthcare patients	Mostly mobile (2G+)	Mostly voice and SMS	Any mobile phone

Source: GSMA (2017)

Box 4: Case study: Philips and Telkom Indonesia—Mobile Obstetrics Monitoring (MOM)

Maternal mortality in Indonesia was 126 per 100,000 live births in 2015, considerably above the UN SDG (Sustainable Development Goals) target of less than 70 by 2030. Most deaths occur in rural areas where there is a shortage of medical professionals and infrastructure.

Indonesia has a mobile phone penetration of 79% of the population and the fourth-largest smartphone user base in the world. Therefore, MOM was designed as an app-based software solution delivered via smartphone for community healthcare workers. It comprises two apps. The first app is for midwives, allowing them to collect pregnancy and vital measurement data (weight, blood pressure, temperature) and upload it to the server (MOM web portal) via USB or SMS. The second app is for doctors and allows them to view patient data and information remotely, as well as review reports anytime and anywhere.

General practitioners at regional primary care centres can also access the data via a MOM web portal to monitor women's conditions and identify high-risk pregnancies. In addition, MOM offers training and education services for healthcare workers and a protocol of antenatal care to guide caregivers. It also includes a Clinical Decision System to guide the risk assessment of the pregnancy.

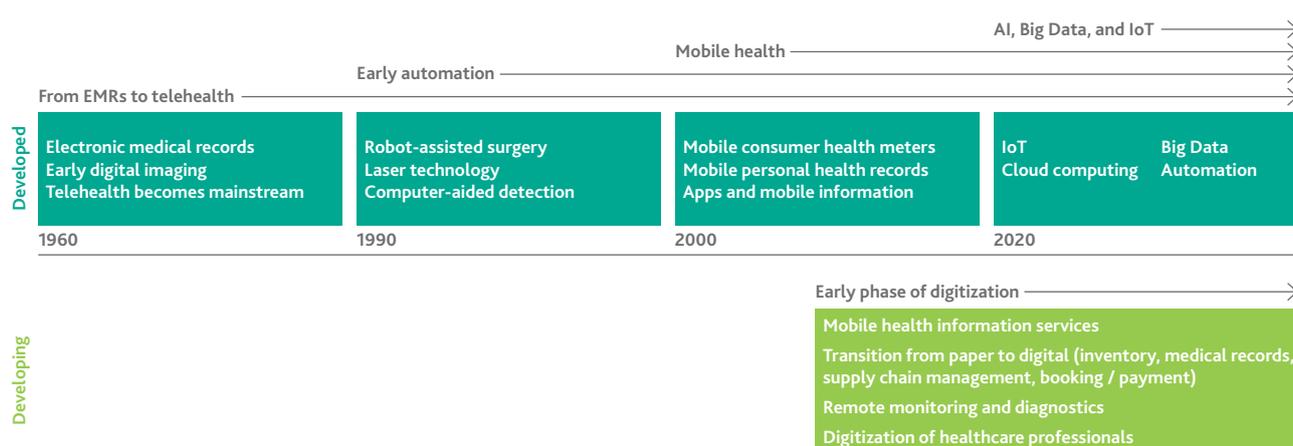
In a year-long pilot project in collaboration with the Bunda Medical Center in Padang, Indonesia, MOM increased the early detection of high-risk pregnancies threefold. More than 650 pregnancies were covered by the programme. No women died from preventable causes related to pregnancy and childbirth thanks to early monitoring.

Source: <http://www.gbchealth.org/wp-content/uploads/2017/07/2016-BAoH-Awards-Case-Study-Philips-MOM.pdf>

Generally speaking, the adoption of electronic health records (EHR) remains low in emerging markets as paper-based solutions and outdated IT equipment are still prevalent. So far, progress has been slowed by very high operating costs from major EHR vendors. Digitizing health information and leveraging machine learning (as, for example, in China) is a prerequisite to establishing any digital health model. For best patient outcomes, other

innovations—such as telemedicine, M-health applications and e-prescriptions—can be built around the digitized health information (PwC 2016). In developed economies it took decades, rather than months or years, to implement digital healthcare models and EHR (as illustrated by figure 17). Lower-income emerging markets are still focused on addressing basic access and quality issues as well as cost inefficiencies.

Figure 17: Stages of digitization of the healthcare industry



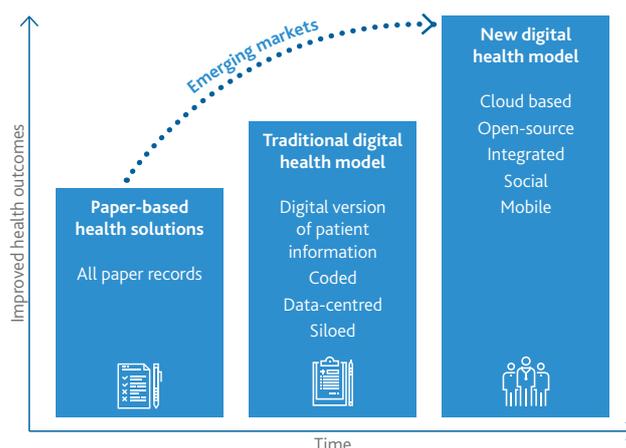
Source: GSMA (2017)

5.2. Leapfrogging developed markets in digital health model adoption

Encouragingly, obstacles to the digital health model in emerging markets are set to lose their relevance in the next few years. The growth in the Internet and smartphone penetration and the rise of cloud-based technology services offer the opportunity to develop more innovative

and cost-effective solutions to delivering healthcare services, possibly allowing these markets to leapfrog the developed markets and greatly improve healthcare access, affordability, quality and safety (figure 18). Mature markets, too, are now moving to a new digital health model with increasing adoption of cloud and mobile-based technology, but integration and interoperability issues are set to slow this progress.

Figure 18: Emerging markets set to leapfrog developed markets in digital health model adoption



Source: PwC (2016)

Figure 19 summarises the substantial potential benefits of digital healthcare solutions for patients, providers and payers. Patients could enjoy both better access to and quality of services as well as more convenience. Providers are set to benefit primarily from efficiency and

productivity gains. Payers can expect lower administrative and claims expenses. Emerging markets may profit disproportionately given the absence of legacies and other factors, enabling a 'leapfrog' scenario.

Figure 19: How digital healthcare solutions can benefit stakeholders

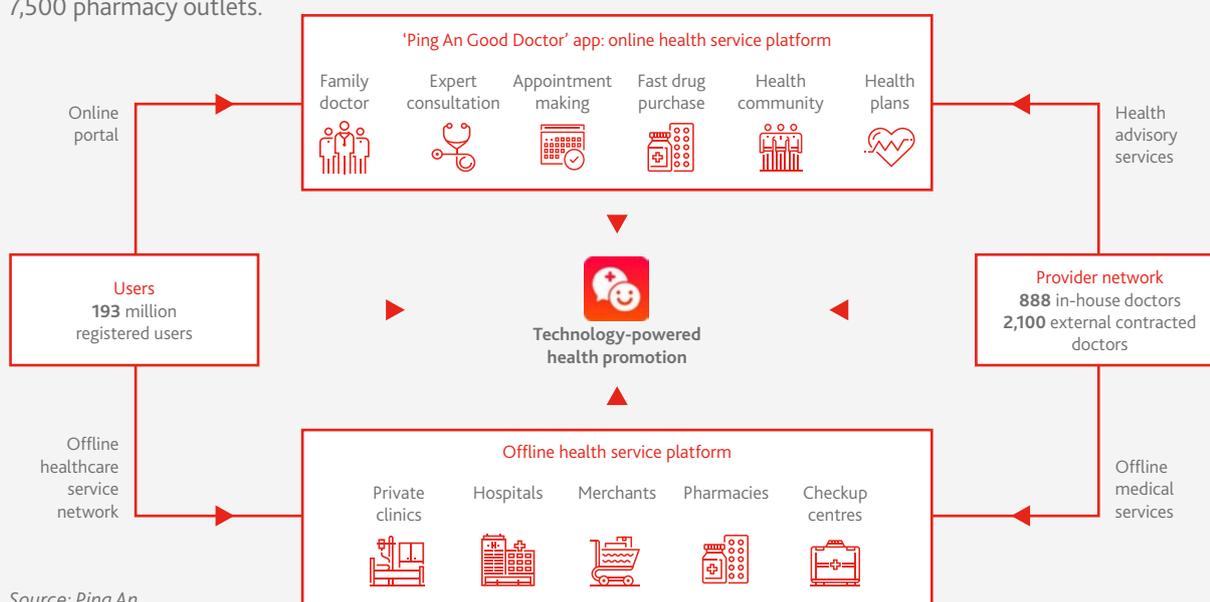
	Patients	Providers	Payers
EMR	Easier to read and understand	Easy storage and retrieval; improved efficiency and productivity	
EHR	Better diagnosis and treatment	Coordination and informed decision-making	Faster reimbursements
Personal Health Records	Personal wellness management	Consistency of information	Links to healthcare plans and lower claims
Remote Diagnostics	Reduces duplicated tests and referrals	Easy access	Lower cost
Remote Monitoring	Patient-centric integrated care	Reduce emergency and re-admissions	Lower cost
Telecare	Access to specialist care	Improves productivity and reduces burden of healthcare resources	Lower cost
mHealth Applications	Greater patient engagement and saves time	Proactive and targeted care	
Big Data / Analytics	Accurate diagnosis, better treatment	Improves diagnostics and accuracy of treatment	Lower cost

Source: PwC (2016). EMR = Electronic Medical Records; EHR = Electronic Health Records

Box 5: Case study: 'Ping An Good Doctor'—China's largest online healthcare platform

As mentioned before, lower-income emerging markets continue to harness digitization for rather basic access, quality and cost issues. China, on the other hand, is an example of the fertile ground offered by tech-savvy and legacy-free environments to leapfrog or even outstrip mature markets. One case in point is Ping An, a leading Chinese insurance and financial services company that operates 'Ping An Good Doctor'—China's largest online healthcare platform which delivers services such as online family doctors and health mall services through its mobile platform. It has a nationwide network of healthcare service providers covering 3,100 hospitals, 1,100 health check-up centres, 500 dental clinics and 7,500 pharmacy outlets.

The platform, listed in Hong Kong with a market capitalisation of close to USD 1 billion, recently announced the expansion of its services to Southeast Asia to cater to the growing demand from the region and to Mainland Chinese travelling for medical tourism. It announced the formation of a 70:30 venture with Southeast Asian ride-hailing platform Grab, designed to give users in the region access to artificial intelligence-assisted online medical consultations, medicine delivery and appointment bookings.



Source: Ping An

5.3. Technology as an enabler of a globally converging healthcare paradigm

In light of these dynamics, the seven digital healthcare technologies as identified by Bain (2018) may soon become ubiquitous and commonplace in countries with highly differing income levels:

Advanced analytics

On the back of millions of processed claims, insurers generate enormous amounts of data; by drawing on this data advanced analytics can go a long way in tailoring service and product propositions and containing customer churn. Subject to privacy laws, insurers can also use their data to help doctors proactively deliver timely and cost-effective care to patients, while avoiding redundant tests, therapies and medications.

Machine learning

Insurers can leverage machine learning for the purposes of digital interactions and online transactions with their customers, claims handling and fraud detection—reducing much of the need for human interaction.

Internet of Things (IoT)

Wearables that measure physical fitness are constantly gaining in popularity. As these sensors become more sophisticated, they will enable home-based treatment and the prevention of illness, empowering consumers to detect early warning signs of health issues before they develop into dangerous and costly diseases.

Online sales technologies

With sophisticated digital marketing, including the use of social media, insurers can more effectively anticipate and respond to customer needs and offer bespoke services, ultimately reducing customer attrition.

Infrastructure and productivity

Digital technology enables a more powerful infrastructure, which basically acts as a clearinghouse for patients who require information on doctors and treatments. Based on this repository of electronic medical records, patients and their doctors can coordinate care more effectively and efficiently. Such a system can also simplify the process of purchasing prescription drugs.

Distributed ledgers

Healthcare systems are often characterised by multi-party transactions, which are required to treat a single illness. Using distributed ledger technology, all stakeholders—patients, doctors, pharmacists, therapists and insurers—can securely and efficiently access all relevant information. Processes such as payments can be triggered automatically. This technology enables insurers to accurately monitor and manage treatment costs.

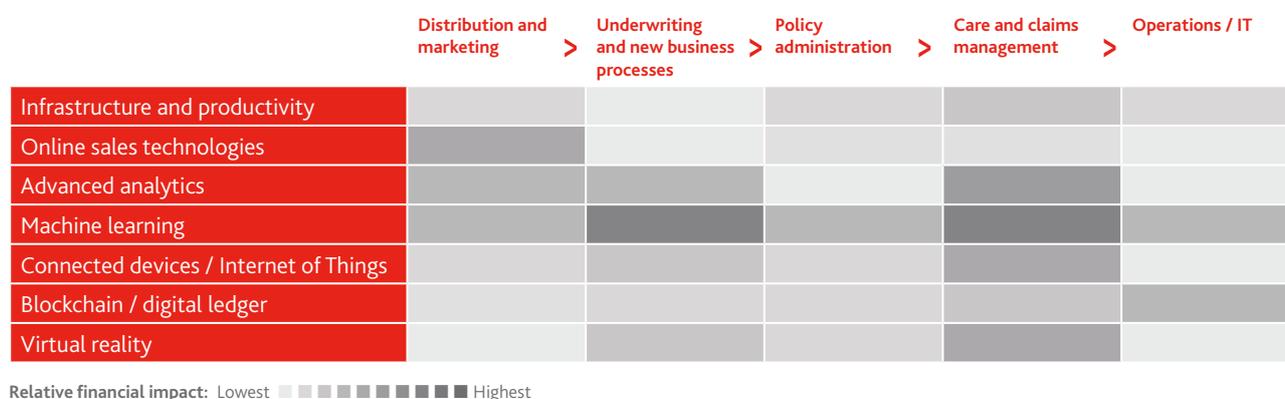
Virtual reality

Telemedicine practices, as well as the newest devices for remote diagnoses, still need to clear legal hurdles in many mature markets. However, in countries such as Switzerland, telemedicine has already become an established part of the medical landscape (Bain 2018). As shown by Combi et al. 2016, for example, this technology offers huge benefits in emerging markets, too, especially when it comes to reaching remote rural areas.

Figure 20 illustrates the expected financial impact of these technologies across the health insurance value chain. Machine learning is forecast to be of the greatest relevance, followed by advanced analytics—both in the areas of underwriting and claims/care management in particular. The financial relevance of distributed ledger technology/blockchain, on the other hand, is expected to be relatively moderate.

The technology portfolio offered by Bain (2018) is, of course, not exhaustive. Other areas worth monitoring include advanced robotics (surgery and prosthetics), next generation genomics (predictive health analytics) and 3-D printing (organ bioprinting).

Figure 20: The medium-term impact of technology on a prototypical private health insurer's cost and revenue



Source: Bain (2018)

In summary, advanced analytics and digitalization have led to a dramatic increase in the amount of data, information and insight available to private health insurers, enabling them to achieve quantum leaps in patient care, especially in emerging markets. The rise of electronic healthcare data, in combination with unprecedented computing power and inexpensive data storage, greatly enhances the measurement of treatment outcomes and costs in a timely, accurate and cost-efficient manner. In addition, we are witnessing a surge in patient-generated clinical data, particularly from IoT devices. Digital connectivity is facilitating the sharing of this data between consumers and caregivers.

As a fully tech-enabled patient journey emerges, insurers will have to step up their game and offer a customer experience that is commensurate with what policyholders find elsewhere. For health insurers the prompt payment of claims and benefits will remain the necessary condition for staying relevant to customers. However, an equally important condition will be to move beyond being a funding channel towards becoming an attractive and flexible risk partner that can contribute to improved health outcomes. As well as risk cover, customers want

their loyalty rewarded, and they demand enhanced ease and transparency in their dealings with insurers. Having said this, the most important additional customer requirement is arguably prevention, with insurers offering ways to lessen the impact of calamities that adversely impact the lives of policyholders.

Ultimately, new digital technologies and more sophisticated analytics will enable private health insurers “to expand their role—rather than simply being the intermediary between consumers and providers, they should become orchestrators of the healthcare ecosystem on behalf of consumers”. (McKinsey 2016). In order to meet this ambitious objective, insurers must excel at deriving insights from both advanced analytics and digital connectivity. If this vision of a greatly expanded value proposition comes true, the perception of private health insurers will fundamentally change for the better, positioning them to make a meaningful contribution to narrowing today’s and tomorrow’s health protection gaps.



6. Concluding remarks

Healthcare expenditure is set to continue outpacing economic growth. In low-income countries cost dynamics are driven by the rapid growth of chronic diseases in addition to traditional communicable diseases, which remain a formidable challenge. At the same time, as the majority of populations live in (remote) rural areas, the expansion of healthcare coverage requires increased spending. In the wealthier emerging countries, a combination of spreading critical illnesses, increasing service expectations of middle-class patients, investments into new devices and technologies and the effects of accelerating ageing (e.g. in China) are pushing up expenditure.

In light of the significant differences in quality among emerging market health systems, protection gaps need to be approached from two fundamentally different angles. The first perspective focuses on financially stressful spending in the presence of relatively well-developed medical infrastructures. A second approach, relevant to the majority of emerging countries, is based on the lack of access to and quality of health services as the most important issues, with a more immediate link between protection gaps and health outcomes such as life expectancy at birth.

From a public policy point of view, private voluntary health insurance can help expedite progress towards governments' main objective—to mitigate their populations' vulnerability to (catastrophic) out-of-pocket spending. Given huge informal economies and underdeveloped and inefficient taxation mechanisms in many emerging markets, private voluntary health insurance may be the best possible starting point or backing for any public or semi-public prepayment and risk pooling scheme. As historical experience from Europe suggests, private voluntary health insurance can pave the way for the establishment of fully fledged publicly financed systems at a later stage.

The diversity of health protection gap-related challenges in emerging markets requires flexible and creative responses from the private health insurance industry, based on a broad definition of 'inclusivity'. This concept encompasses many different approaches to reaching the unserved, underserved, vulnerable or low-income populations with suitable and affordable insurance products.

For customers at the base of the economic pyramid, the small incomes from which premiums must be paid require insurers to come up with highly cost-efficient solutions. In addition, insurers need to cater to remote locations, low levels of education and a general lack of experience with formal institutions. Strategies for effectively overcoming these challenges include a radical simplification of products (including enrolment and claims submission), unconventional distribution channels such as telcos or farmer cooperatives, leveraging digital channels and entering into private-public partnerships such as the joint management of (compulsory) insurance schemes.

As in mature economies, the case for private health insurance in emerging markets is set to become even more compelling as the industry's role evolves from being a pure payer to a value-adding partner and provider of proactive comprehensive healthcare advice and solutions that have a positive effect on health outcomes.

Annex: Emerging markets covered by this report

World Bank country classification by income level¹¹

Low-income economies (USD 995 or less)

Afghanistan	Guinea-Bissau	Sierra Leone
Benin	Haiti	Somalia
Burkina Faso	Korea, Dem. People's Rep.	South Sudan
Burundi	Liberia	Syrian Arab Republic
Central African Republic	Madagascar	Tajikistan
Chad	Malawi	Tanzania
Comoros	Mali	Togo
Congo, Dem. Rep.	Mozambique	Uganda
Eritrea	Nepal	Yemen, Rep.
Ethiopia	Niger	Zimbabwe
Gambia, The	Rwanda	
Guinea	Senegal	

Lower middle-income economies (USD 996 to USD 3,895)

Angola	Indonesia	Papua New Guinea
Bangladesh	Kenya	Philippines
Bhutan	Kiribati	São Tomé and Príncipe
Bolivia	Kosovo	Solomon Islands
Cabo Verde	Kyrgyz Republic	Sri Lanka
Cambodia	Lao PDR	Sudan
Cameroon	Lesotho	Swaziland
Congo, Rep.	Mauritania	Timor-Leste
Côte d'Ivoire	Micronesia, Fed. Sts.	Tunisia
Djibouti	Moldova	Ukraine
Egypt, Arab Rep.	Mongolia	Uzbekistan
El Salvador	Morocco	Vanuatu
Georgia	Myanmar	Vietnam
Ghana	Nicaragua	West Bank and Gaza
Honduras	Nigeria	Zambia
India	Pakistan	

¹¹ Source: World Bank; World Bank list of economies (June 2018)

Upper middle-income economies (USD 3,896 to USD 12,055)

Albania	Fiji	Namibia
Algeria	Gabon	Nauru
American Samoa	Grenada	Paraguay
Armenia	Guatemala	Peru
Azerbaijan	Guyana	Romania
Belarus	Iran, Islamic Rep.	Russian Federation
Belize	Iraq	Samoa
Bosnia and Herzegovina	Jamaica	Serbia
Botswana	Jordan	South Africa
Brazil	Kazakhstan	St. Lucia
Bulgaria	Lebanon	St. Vincent and the Grenadines
China	Libya	Suriname
Colombia	Macedonia, FYR	Thailand
Costa Rica	Malaysia	Tonga
Cuba	Maldives	Turkey
Dominica	Marshall Islands	Turkmenistan
Dominican Republic	Mauritius	Tuvalu
Equatorial Guinea	Mexico	Venezuela, RB
Ecuador	Montenegro	

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This research paper offers a comprehensive overview of the various current sources of healthcare funding in emerging markets. It further attempts to quantify health protection gaps and discusses the potential for private voluntary health insurance to make a more meaningful contribution to addressing the financial and non-financial facets of health protection gaps.