

Core Matters

International health insurance demand and future evolution

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- The economics of health is different, and complicated by adverse selection and moral hazard issues.
- At the global level, total health expenditure (HE) is growing faster than GDP, and increasing more rapidly in low and middle income countries (close to 6% annual growth on average) than in high-income countries (4%).
- In Europe the stability in the HE growth rate reflects a rising coverage gap, only partially offset by private insurance (now €140 billions); high heterogeneity among countries reflects differences in public vs. private coverage.
- There is a statistically stable long-term link between national income and private health insurance. The average income elasticity of private health insurance is significantly higher than one. So, on average and net of other factors, the importance of private health insurance is bound to grow along with economic development.
- Empirical evidence for Italy shows that Voluntary Health insurance (VHI) is driven by income, households size, sex, age and education. The subscription to term life insurance on the household head is strongly and positively correlated to that of health insurance.

Introduction: Health is different

Everyone prefers being healthy than sick. Individual Health insurance demand derives from the financial risk emanating from illness and the consequent cost of the care needed to return healthy. One thing makes health care different from most other goods and services: it is also an investment; money spent on being healthy today will also have benefits in the future (impact on mortality rates).

There is also the **economic aspect of being healthy**: it means **you can work and earn wages and therefore contribute actively to the labor market and economic growth**. One of the costs of poor health is lost working days. This is a cost not only to the individual but also to society as a whole (in term of lost output).

In the economic theory, the standard approach to demand is based on the idea that each individual will consume a good or a service up to the point where the marginal utility from one more unit equals the price of that additional unit. In some cases health treatment is a matter of life and death: priceless at the individual level. In any case, the health-care consumer often has very little idea of the value - let alone the marginal valuation - of the particular treatment received. Indeed, the **consumer is very often not paying the full price for that treatment** because the cost is frequently covered by National Health-care Service and, at least in part, by insurance. The government has a significant influence on prices since governments, in some countries, set **prices for pharmaceutical products or prices may be determined by bargaining between hospitals and drug companies rather than by supply and demand**. Furthermore,

in selected cases the demand for health-care services is likely to be very inelastic (the quantity demanded does not respond much to price changes). In sum, this means that our **traditional economic approach to demand does not work very well for health-care services**.

In any case, it would be wrong to consider health care as something homogeneous that is bought and sold in a single market. "Health-care services" encompasses many different areas:

- **Labor time** of various trained professionals, such as General Practitioners, specialists, nurses, medical technicians, pharmacists, and many others.
- **Procedures and testing**, such as magnetic resonance imaging (MRI) scans and laboratory analyses of blood samples.
- **Hospital and nursing care services**.
- **Emergency services** such as ambulances.
- **Pharmaceutical products** (a sector which itself covers a huge range, from bandages to chemotherapy drugs).

Health insurance demand is also influenced by adverse selection, where low-risk individuals do not insure themselves: consumers usually know more about their own risk of illness than the insurance firms do.

If insured, individuals may demand too much healthcare, generating a welfare loss to society. This so-called **moral hazard** effect arises because the owner of a health insurance policy is more inclined to undergo physician visits and

request clinical examinations as the costs are borne by the insurer. **For that reason, modern health insurance plans include demand-side cost-sharing instruments like deductibles and co-payments.**

1. National health systems vs. private health insurance: substitutes or complements?

European countries generally provide universal or near-universal entitlement to publicly financed health coverage on a compulsory basis, as part of a wider system of social protection. As a result, private markets for **Voluntary Health Insurance (VHI) are usually residual**, although there are some exceptions: **people rely on private solutions to cover gaps** in publicly financed health coverage, to obtain **faster access to treatment and to enhance the choice of health-care providers.**

Market role	Driver of market development	Nature of VHI coverage
Supplementary	Perceptions about the quality and timeliness of publicly financed health services	Faster access to services, greater choice of health care provider or enhanced amenities
Complementary (services)	Scope of the publicly financed benefits package	Services excluded from the publicly financed benefits package
Complementary (user charges)	Existence of user charges for publicly financed health services	User charges for goods and services in the publicly financed benefits package
Substitutive	Share of the population entitled to publicly financed health services	People excluded from or allowed to opt out of publicly financed coverage

Source: Voluntary Health Insurance in Europe: role and regulation, 2018

VHI can therefore assume different roles:

- **Supplementary:** this kind of coverage enhance the medical supply that is normally provided by public systems. It offers policyholders a wider choice of providers and a higher level of standards, sometimes allowing them to cut waiting lists for services financed with public funds. It is often purchased by employers on behalf of employees.
- **Complementary:** VHI covers the services excluded or only partially covered by the public system.
- **Substitutive:** VHI replaces public coverage, for those who are excluded from public health systems or for those who can opt out, stopping to contribute to public expenditure and, at the same time, relying exclusively on private health providers.

		AT	DE	CH	BE	FR	SE	DK	NL	IT	SI
Population Coverage rate	Private	36%	11% ⁽¹⁾	70%	60%	90%	<5%	38%	84%	10%	84% ⁽²⁾
	VHI Role	Primary	S/C	S/C	S	MC	C	S	C	S	C
	Secondary	Sub	Sub	C	VS	S		S		C	S
Health expenditure mix	Public spending	78	77	66	77.9	79	85	84.8	88.8	77	72
	OOP	16.5	14	26.7	17.8	14	14.5	13.4	5.2	22	15
	VHI	5.5	9	7.3	4.1	7	0.5	1.8	6	1	13

⁽¹⁾ percentage referred to Substitutive; 27% the rate referred to Complementary

⁽²⁾ percentage referred to the adult population

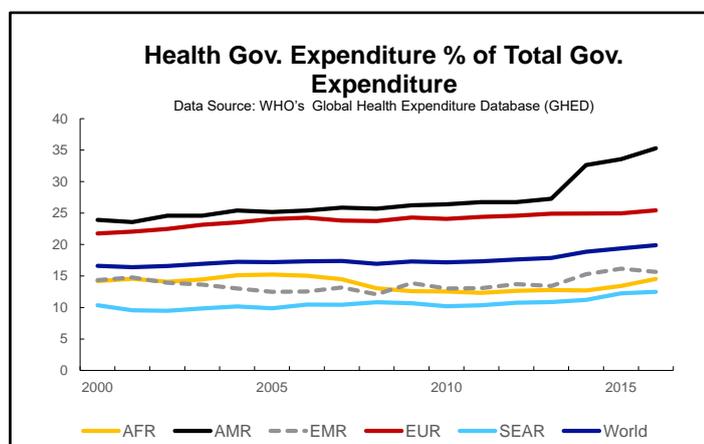
C = Complementary; MC = Mandatory complementary; S= Supplementary; VS = Voluntary supplementary; Sub = Substitutive

¹ The high-income group has the highest income in the world with a GNI per capita of at least \$12,476. The upper-middle-income group has per capita incomes between \$4,038 and \$12,475. The lower-middle-income

2. Who is financing the health system: issues and trends

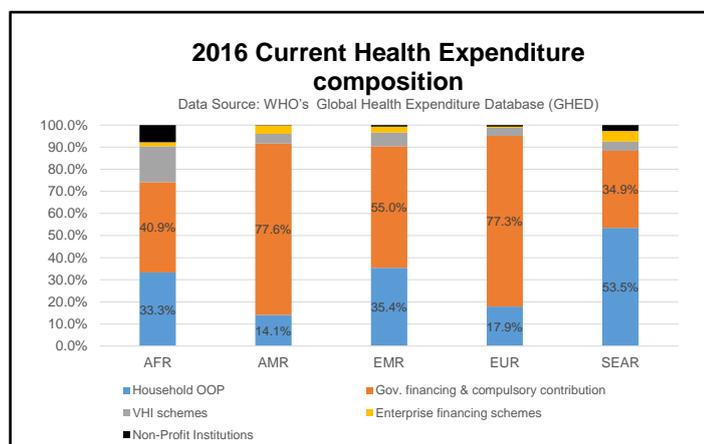
The recent publication of the World Health Organization [“Public Spending on Health: A Closer Look at Global Trends”](#) (Xu K., Soucat A. & Kutzin J. et al., 2018) leverages on the latest data (2016) to identify globally relevant issues:

- **Total health spending is growing faster than gross domestic product**, increasing more rapidly in low¹ and middle income countries (close to 6% annual growth on average) than in high-income countries (4% growth).



AFR=African Region AMR=American Region SEAR=South-East Asia Region

- **Health system resources are coming less from households paying out-of-pocket (OOP) and more through domestic government sources.** The former (OOP) is the most regressive and inequitable way to fund the health system because health costs are directly related to the severity of the underlying health condition but treatment is provided only if payments are made, with payments depending exclusively on a household's capacity to spend.



- Globally, **public spending on health has depended on a country's income growth**, but low-income countries have lagged behind. The 2017 [“Global Monitoring Report on tracking universal health coverage”](#) by WHO established that at least half of the world's population cannot obtain essential health services and that 800 million people spend at least 10% of their household budgets on health care for themselves, a sick child or other family

nations have a GNI per capita of \$1,026 to \$4,035. Finally, the low-income countries have a GNI per capital of \$1,025 or less.

members. For almost 100 million people these expenses are high enough to push them into extreme poverty, forcing them to survive on US\$1.90 or less a day.

- In **middle-income countries** (devoting more than half of health spending to primary health care²), **average per capita public spending on health has doubled since 2000**, as these countries transition from external funding toward domestically-funded health systems.

- Governments in **high-income countries have increased their allocations to health in the last 15 years, even during the Great Financial Crisis of 2008–2009**. In Europe the allocation remained mostly stable (as a share of GDP) while the sharp increase in the USA was related to the introduction of the “Obamacare” reform. According to data released by the Organization for Economic Co-operation and Development (OECD) in 2018, the United States currently ranked highest in healthcare spending among the developed nations of the world: \$10,000 per capita.³ However, U.S. health outcomes and quality of care is not often ranked highest: Norway still remains one of the healthiest nations despite spending much less than the U.S. (\$6,351 per capita)⁴. Considering:

- the growing care needs of elderly populations (life expectancy continues to grow and it is projected to increase from 73.5 years in 2018 to 74.4 in 2022 - bringing the number of people aged over 65 globally to more than 668 million, or 11.6% of the total population)⁵

- the advances in treatments and health technologies and rising health-care labor costs,

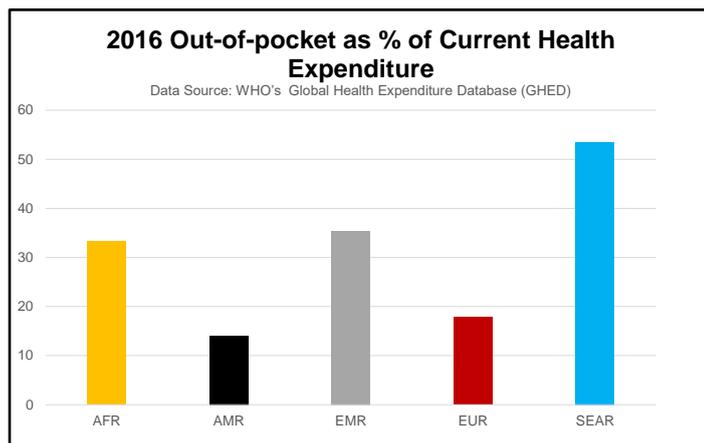
An increase of total health expenditure in the years to come is expected. This implies, considering the flat dynamic in public health expenditure, a likely increase of the coverage gap. The excess of health-care demand can be covered by Out-of-Pocket expenditure or by private insurance, the first being a form of self-insurance. The two options are complementary.

2.1 Out-of-Pocket expenditure: a proxy of private market under-penetration

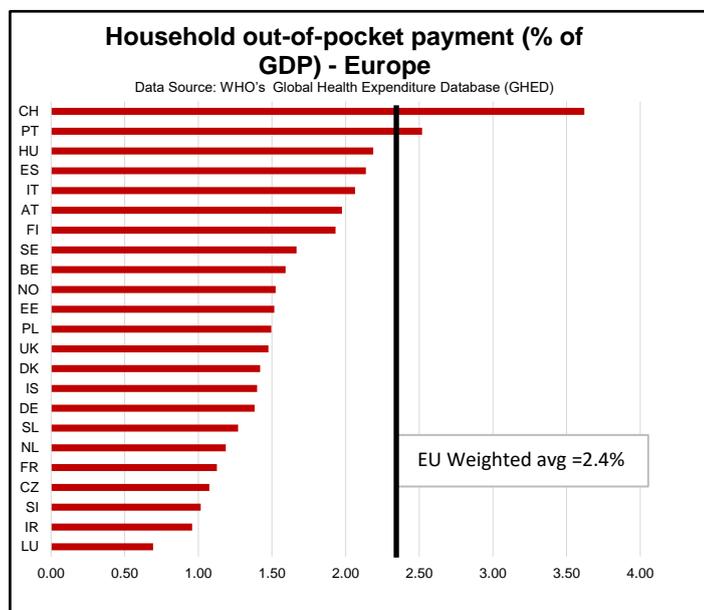
The **Out-of-Pocket Expenditure (OOP) is the health expenditure bore directly by individuals and households**: the higher the OOP, the bigger the gaps in public coverage, and, in turn, the higher the room for private insurance. In a sense OOP can be seen as the **propensity of individuals to take risk on their health needs**. Since in some countries the OOP values are non-negligible in size, we can argue that **gaps in publicly financed health coverage are a prerequisite for VHI; but they are not necessarily sufficient for a VHI market to develop and grow**. Hence, the need to further investigate the microeconomic determinants of private health coverage.

As shown in the following chart, the OOP expenditure reaches non-negligible levels in the South-Eastern Asia

(SEAR), Eastern Mediterranean (EMR) and Africa (AFR), and represents in general the preferred funding source where the public effort is limited.



Focusing on Europe, the OOP expenditure, as a share of GDP, varies from 0.7% to more than 3.5%, with the EU average standing at 2.4%.



² Primary health care covers the majority of a person’s health needs throughout their life including prevention, treatment, rehabilitation and palliative care. Source: WHO

³ Much of this cost is not publicly financed, but covered by personal expenditures and private health insurance.

⁴ The US healthcare system inefficiency can be explained largely by the fragmented network of health insurance in the U.S. Multiple payment types

and insurance companies exist, each offering different services. This lack of federal oversight contrasts with that of other nations, whose governments that set benchmarks for pricing and services, establishing a national standard of care.

⁵ For details see Core Matters The economic and financial impact of demographics available on <https://insite.generali.com/file/view-58623467>

0.7%. Again, public HE expenditure emerged as a necessity good.

Contrary to this development trend of public HE spending, total health-related needs have been developing more than proportionally to economic growth, calling for either out-of-pocket expenditure or for private health insurance to close the gap.

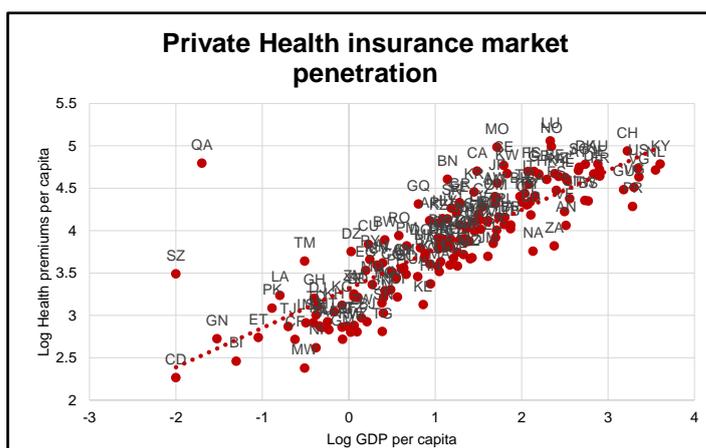
The very nature of health events, which are random and can have large economic consequences, calls for insurance protection. For example, Xu et al. (2003) assess the incidence of "catastrophic" health expenditure throughout the world, concluding that the occurrence of such events is not rare and calling for financial protection measures.

3.1 The income elasticity of health insurance worldwide: a long-term-forecasting oriented model

Is private health insurance growing only proportionally with income, or is its share bound to develop as it covers the needs left out from the public sector? Can we find a stable relationship?

We consider the long run relationship between private health insurance and income using a large international panel covering most of the world over about two decades. **The main research question is whether private health insurance can be best characterized as a necessity or a luxury, translating on whether it grows less (necessity) or more (luxury) than proportionally with income.**

We consider a dataset (by AXCO Insurance Services) of 147 countries from all continents in the world, observed over a maximum of 27 years until 2014. We discard all countries with less than 10 years of data: 23 of them are thus excluded.



The nature of basic healthcare funding (public or private) is an obvious source of heterogeneity. In the first case, private insurance provides funding for complementing public provisions; in the second it has to substitute for them. When **measuring the market penetration of private health insurance as premiums/GDP, some countries stand out as having very well developed private markets.** Institutional factors shape the distribution: e.g., the

⁸ We employ the heterogeneous version of the Common Correlated Effects estimator of Pesaran (2006). In a nutshell, omitted common factors might bias the results, especially if they are correlated with income. For example,

Netherlands have a health system completely based on private insurance; German citizens over an income of 40K have the possibility of opting out of the public system (no service, no fees). Obviously, these countries are characterized by well-developed private health insurance markets.

We try to measure the partial elasticities of premiums to income, net of individual heterogeneity and other (correlated) drivers, **controlling for common cross-sectional factors and individual trends.** To this end, we assess the income elasticity of private health insurance by characterizing the average behavior of insurance markets while allowing for individual heterogeneity.⁸

We find a statistically stable long-term bond between income and private health insurance (in econometric parlance, they are said to be **cointegrated**).

The average income elasticity of private health insurance is measured as 1.523 +/- 0.2, hence significantly higher than 1. We conclude that, on average and net of other factors, **the importance of private health insurance is bound to grow as the economies develop.** This result complements the fact that public health expenditure is instead growing less than proportionally with income, in the face of increasing needs.

4. Microeconomic determinants of health insurance: the case of Italy

In order to verify the importance of individual and household characteristics in determining the demand for private health insurance, we run regression models on data taken from the **Italian Survey of Household Income and Wealth** (Bank of Italy) on the last available wave, **2016**.

The dataset contains observations over **6.597 families** on a number of characteristics, among which we select: household income, share of the latter earned by the household head (as an indicator of financial risk), number of family members, and some characteristics of the household head: sex, age and education level.

We control both for **undiversifiable income risk** and for measures of **family-level risk management of diversifiable risk.** As for the first – undiversifiable – we control for **dependent vs. self-employed.** A self-employed job is typically more at risk versus a dependent one and such risk is not diversifiable through insurance. Then, we include the **share of income earned by the household head**, as a measure of the risk associated to the concentration of income on just one earner. This kind of risk is diversifiable by purchasing a term life policy which pays a lump sum of money in case of death of the main income earner: therefore, we add a dummy variable for having (or not) this kind of insurance. In view of the well-known regional heterogeneity of Italy, **we also control for macro-regions** (north-west, north-east, center, south or islands, which last is Sicily + Sardinia).

one obvious omitted common factor is medical technology, which becomes available simultaneously across the world.

In the whole sample, **only 6% of households have some form of private health coverage**. Penetration for life products is actually only slightly higher (7%) and that of term life in particular is only 3.8%.

Family income averages 25K euros, with an interquartile range of 19K; household heads earn, on average, about 70% of the total. The average household head is 63 years old, with a median of 65 and an interquartile range of 24. 8% of household heads in the sample are self-employed; their median education level is third grade (corresponding to secondary school), while the average is closer to a BA degree. Most families have between 1 and 3 members, with a median value of 2 and an average of 2.1; 32% of families live in the South.

We resort to estimating the determinants of the probability of insuring, i.e. **we concentrate on the decision of entering the market altogether rather than on the amount spent**.

We estimate two kinds of models: a linear probability model and a probit model⁹. A priori, we expect **income** (representing purchasing power) **and number of family members** (related to protection needs) **to exert a positive effect on the probability of insuring**: in fact, our estimates are consistent with those expectations.

Determinants of holding Health insurance		
	Linear	Probit
(Intercept)	-8.39 (4.4)	-3.05 *** (-0.45)
family income	0.22 *** (0.02)	0.01 *** (0.00)
sex	-0.98 (0.59)	-0.26 *** (0.06)
age	0.03 (0.13)	0.04 * (0.01)
age ²	-0.52 (1.03)	-0.37 ** (0.12)
family size	0.81 * (0.31)	0.06 * (0.03)
income share of household head	5.23 *** (1.32)	0.02 (0.13)
self-employed	0.10 (1.05)	-0.02 (0.09)
education	1.36 *** (0.20)	0.17 *** (0.02)
has term life	19.66 *** (1.51)	0.77 *** (0.10)
lives in the South	-3.06 *** (0.61)	-0.49 *** (0.07)

Standard errors in brackets. Significance stars: * t-test is significant at the 5% level; ** 1%; *** 0.1%

Sex and age of the household head play a role too: there is some evidence that female household heads are less likely, ceteris paribus, to purchase health insurance, and that the tendency to insure increases with age but in a declining fashion. Importantly, the likelihood of holding health insurance policies increases with the **education** level of the

household head. Moreover, it is significantly lower, all other things being equal, for households **living in Southern Italy**.

As for the measures of risk, the **"income concentration" measure** (share of the household head in family income) is **positively and significantly related to health insurance**, although only in the linear probability model (not in the probit one). **The undiversifiable income risk from being self-employed instead shows no significance**: surprisingly, as being subject to non-diversifiable risk should increase the demand for alternative cover of the insurable risk. This result can probably be traced back to the nature of health insurance covers, which in Italy are often of supplementary nature (enhancing the public welfare rather than substituting it).

Lastly, and somewhat **surprisingly, holding term life insurance on the household head is positively - and very strongly - correlated to holding health insurance**. While one would expect negative correlation (because either one insures on the income side, or on the side of needs to be financed), in practice the opposite effect prevails.

In the light of the limited penetration of both kinds of coverage (life and health, see descriptive statistics above), we read this as the effect of an unobservable variable, say **"risk awareness and insurance culture"**, which is only partly captured by the general level of education, and positively correlated with both the purchase of term life and of private health insurance.

5. Final remarks and conclusions

Europe's top health-care concern is to find ways to balance budgets and restrain spending. Public expenditure on healthcare in the EU is expected to rise because of the **ageing trend** of the population, the **rise in chronic disease and the increasing cost of medical technologies**¹⁰.

On the other hand, the **prospects for vanquishing many diseases are improving rapidly** with the mapping of the **genetic make-up** of people who develop cancer, diabetes and heart disease – but this will only mitigate the rise in public expenditures.

Governments will continue to play a leading and proactive role in promoting social welfare and social justice aspects. A privatization of the health-care systems within the EU is unlikely: the role of the National Health Services is to provide health-care services to all (particularly to those unable to access alternative coverage) and to increase the efficiency of the health-care system.

In order to reach this dual target, the European Commission through the **European Social Fund Plus Programme (ESF+)** is financing health policies and projects promoting equal opportunities, social protection and inclusion; the main objectives are:

- Support and consolidate functioning, improve accessibility and outreach, strengthen research; synergies

⁹ A probit model is a type of regression where the dependent variable can take only two values (0,1). It is used to estimate how a set of observed characteristics influence the probability for the dependent variable to switch from 0 to 1.

¹⁰ Bartosz Przywar, Economic Paper 417 (July 2010): Projecting future healthcare expenditure at European level: drivers, methodology and main results.

- Strengthen cooperation and support innovation;
- Develop digital infrastructure for health services; cross-border access and exchange of patients' data;
- Foster data-based pharmaceutical breakthroughs and pandemic prevention;
- Facilitate advanced telemedicine and development or uptake of new care models
- Support policy implementation of best practices.

As far as the **voluntary health insurance** is concerned, note the **growing interest of the corporate sectors** to ensure that healthcare is made available to the workforce: many public and private companies often pay for the treatment of their employees and their immediate family members (group VHI). A healthy workforce supports an increase in productivity.

Notwithstanding this, health spending channeled through VHI is very low: in 2016 it accounted for only 5.3% (vs. 5.4% in 2014); people usually buy VHI to cover gaps in National Health Services or to benefit from faster access to treatment and enhanced choice of health-care provider (supplementary role).

Gaps in publicly financed health coverage are a prerequisite for VHI, but are not sufficient for a market to develop and grow.

On the demand side, according to our empirical analysis **private health insurance seems to be perceived as a luxury good: the average elasticity of private health insurance over income is significantly higher than one.** On average and net of other factors, **the importance of private health insurance is bound to grow along with economic development.**

The **microeconomic analysis on Italy** points out, as factors driving the individual/household propensity to buy private health coverage:

- the level of income (+);
- the number of family members (+);
- sex: female households heads are less likely, *ceteris paribus*, to purchase health insurance;
- age (+): the tendency to buy health insurance increases non-linearly with age (sharply for the young and more mildly for the old);
- the education level (+)

Surprisingly, holding term life insurance on the household head is positively - and very strongly - correlated to holding health insurance. We read this as the effect of an unobservable variable, say "risk awareness and insurance culture", which is only partly captured by the general level of education, and positively correlated with both the purchase of term life and of private health insurance.

On the supply side, health insurers need to develop their business model: insurance products will not just focus on protecting people against the cost of health care. Clients do not want to waste time for appointments; they want to know their physician before their visit, book appointments and pay online and go through patient-centric health-care experiences. With Millennials or Gen Z generations entering the labor market, these changes in demand will accelerate;

reaching the younger sections of the population will become essential for risk pooling purposes.

Private health insurance **should no longer be considered as a short term contractual relationship but a long-term one**; in order to become a **life-time partner** insurers should offer a consortium of partners that include:

- **Provider network** (e.g. hospital chain and M-health technologies suppliers) playing an active role in prevention programs (chronic disease);
- **Patient organization** (e.g. disease foundation) in order to increase the insured trust;
- **Data consolidator** (elaborating and analyzing all the information on customer/insured coming from provider network in order to better understand and properly underwrite the risk);
- **Technology provider** (data storage and management services);
- **Other service and product providers** (e.g. device and app manufacturers, gyms or fitness centers and supermarket chains).

The partners of the consortium should influence behaviors and provide behavioral feedback giving a complete picture of the customer's health to the insurer (behavior, tests, genetic information, medication and a continuous stream of real time information).

The enlargement of the base of the insured population, the attraction of the young (low-risk) cohorts, the cultural change in insured behaviors (thus reducing moral hazard effects) and a more efficient care delivery (which should positively influence the insurer claims experience) will be key factors in reaching the huge market potential while preserving the profitability of the industry.

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