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**The Health Insurance
System in Peru:
Towards a Universal
Health Insurance**

Janice Seinfeld
Vilma Montañez
Nicolás Besich
**Research Center of the
University of the Pacific (CIUP)**

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Glossary

AUS: Universal Assurance
DNI: National Identity Card
EAP: Economically Active Population
ECLAC: Economic Commission for Latin America and the Caribbean
ENAHO: National Household Survey
EPS: Entities Providers of Health Services
EsSalud: Social Health Insurance
GDP: Gross Domestic Product
IAFAS: Fund Management Institutions to Ensure Health
INEI: National Institute of Statics
IPRESS: Institutions Providing Health Services
MEF: Ministry of Economics and Finance
MINSA: Ministry of Health
PEAS: Essential Plan of Health Insurance
PEN: Peruvian Nuevo Sol
PNP: National Police of Peru
SIS: Integral Health Insurance
SISFOH: National Household Targeting
SUNASA: Superintendence of Insurance in Health

I. INTRODUCTION

The health sector in Peru is fragmented and segmented, consisting of a non-integrated set of subsystems aimed at different sections of the population (PAHO 2007). In relation to insurance, the Ministry of Health, through the Integral Health Insurance (SIS), targets the poor and the extremely poor groups; the Social Security (EsSalud), provides formal insurance to employees and their beneficiaries; the Armed Forces and the National Police Medical Services both provide insurance to their workers' direct family: children and spouse. The private sector institutions provide insurance to those who can pay their premiums.

In the year 2009, the Peruvian Congress approved the Universal Assurance Framework Law (AUS) which aims to guarantee the right to health security to all. The Act specifies the three existing insurance schemes – contributory, semi-contributory and subsidized – currently covering 63.5 percent of the population. The contributory scheme is characterized by the mandatory contributions of the dependent workers and voluntary contributions of the self-employed through the payment of premiums, and covers 27 percent of the population. The semi-contributory system comprises 0.2 percent of the population and finances its operations through the voluntary contributions of people out of poverty and micro-enterprises that are incorporated into the formal as well as public funding. The subsidized regimen for the poorest groups insures 36 percent of the population through the SIS.

Among the most neglected segments in relation to health insurance are the lower-middle and low income groups, between PEN 1,500 and 3,000 (US$ 558 and US$ 1,115) per household per month. This population group is not poor, and thus, cannot access insurance through SIS; they are mostly non-dependent workers working in formally constituted firms; thus, with no access to EsSalud. Most of them are self-employed. As people with limited income, they have no access to private insurers, whose schemes are beyond their reach.

The strategies proposed by the state in terms of healthcare for this population – such as SIS semi-contributory promotion and affiliation of independent EsSalud – have not been adequate. Our policy goal in this document is to come up with strategies to move forward with the universal health insurance coverage and quality of the services. First, some supply policies are proposed: the increase in the number of public health centers and public health staff. Nevertheless, these policies have proved not to be enough. Deeper reforms are discussed; for instance, the integration of the subsidized and the semi-contributory regime in just one system, providing health insurance to anyone who is in need and who is not accessing health insurance through EsSalud or any other institution.

The paper is organized as follows: Section II provides a diagnosis of the health insurance system in Peru. It includes a description of the current status of insurance in the country;

the behavior of the insurance regimes and the uninsured; the plans, the benefits and the premiums. Section III presents the theoretical framework vis a vis the determinants of health insurance. In Section IV an econometric measurement of the determinants of insurance in Peru is presented. This section also includes simulations to project insurance levels from 2012 to 2020. Section V discusses the key elements of a successful reform, to reach the universal health insurance. Section VI is the concluding part of the paper.

II.   GENERAL DIAGNOSIS OF THE HEALTH INSURANCE SYSTEM

The approval of the Universal Assurance Framework Law (AUS), in 2009, established the full and progressive right of everyone to social security. Indeed, the goal of universal insurance proposes that all Peruvians should have a health insurance, while responding to their health needs both from the rights perspective and from the economic standpoint. From the perspective of the former, access to health is considered as a right, under Article 25 of the Charter of Human Rights which states: "Everyone has the right to an adequate standard of living, health and wellness, food, clothing, housing, medical care and necessary social services [...]." From the economic standpoint, the best way to cope with the cost of disease is through health insurance.[1]

The Economic Commission for Latin America and the Caribbean (ECLAC) suggests that public intervention in the health market should be aimed at universal coverage, at improving the coordination between public finance and social security to achieve high levels of solidarity, and to determine the cost of insurance premiums based on the risk of the population and not based on individual risks, to reduce incentives to select risks.[2]

The Peruvian government decided to intervene in the health market through the AUS law – among other measures – to address the difficulties inherent in health insurance and to seek to solve the problems of inefficiency and inequity. The law provides for a mandatory health insurance scheme, which should gradually and continuously be expanding its reach to bring every resident of the country under its cover.

In addition, the law determines the existence of three regimens – contributory, semi-contributory and subsidized – in the health insurance structure.
*   Contributory Regimen: includes persons who are associated with the insurance institution through a payment or contribution, either directly or through the employer.

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[1] Although market failures related to information problems – adverse selection and moral hazard – limit the efficiency and equity of the insurance market.

[2] Insurance solution to the problems of asymmetric information is the risk selection (skimming, which is to leave out of the insurance the less healthier people) The skimming involves inequality in access to health services because it promotes consumer segmentation, violates the principle of solidarity and is socially inefficient because it generates welfare losses that could be avoided.

- Semi-contributory Regimen: includes persons who are members of the insurance institution through a partial public financing and a contribution of their own or of their employer.
- Subsidized Regimen: includes persons who are members of the insurance institution, by means of total public funding.

Agents associated with universal health insurance and their respective roles are also established: stewardship (Ministry of Health – MINSA), financing (fund management institutions to insure health – IAFAS), provision of services (institutions providing health services – IPRESS), supervision (National Superintendence of Insurance in Health – SUNASA).

The MINSA began addressing the challenge of universal insurance through a plan of implementation in the pilot areas of Apurimac, Ayacucho and Huancavelica in order to determine the most suitable form for implementation nationwide. In 2010, the main objectives of the plan were to expand population coverage, manage AUS financing, as well as strengthen the national leadership, regional and local supply and the healthcare sector to implement the essential health plan benefits (PEAS).

The implementation plan incorporated new pilot areas into those enacted in 2009. Thus, the Lima Metropolitana and Callao regions, that are home to 30 percent of the Peruvian population, were also included.[3] The plan incorporated, for the first time, the use of the national identity card (DNI) to serve as a single document to obtain membership, and proposed the development of a single register for those insured under the SUNASA. This was essential because of the existing high levels of filtration in the Integral Health Insurance (SIS)[4] that provided health insurance to the poor.

The objective insurance to the pilot areas, including Lima and Callao, was raised on the participation of the poor in the geographical distribution and the availability of health services in each area. Thus, while in Lima and Callao insurance goals fell – primarily on quintiles one, two and three of revenue – in the rest of the country the insurance goal was rather focused on the one and two income quintile (40 percent population poor). Lima has a strong segmentation of the poor in districts located in different margins of the city; Lima East and Lima South are the margins composed by the poorer districts, followed by North Lima, Lima Center and Callao. Modern Lima is the part of the city with lower poverty levels.[5] In Figure 1 the socioeconomic levels of the population of Lima are shown on the left side. The right side shows the strategy for AUS implementation in the rest of the country.

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[3] Population Census 2007, INEI.
[4] SIS provides insurance cover to the poor and extremely poor groups. In 2009, SIS brought 68 percent of the poor and 75 percent of the extremely poor under the insurance cover.
[5] SETEC.MINSA.AUS Implementation Plan in Lima and Callao 2010. May, 2010.

Figure 1: Socioeconomic levels and implementation plan for the AUS, 2010
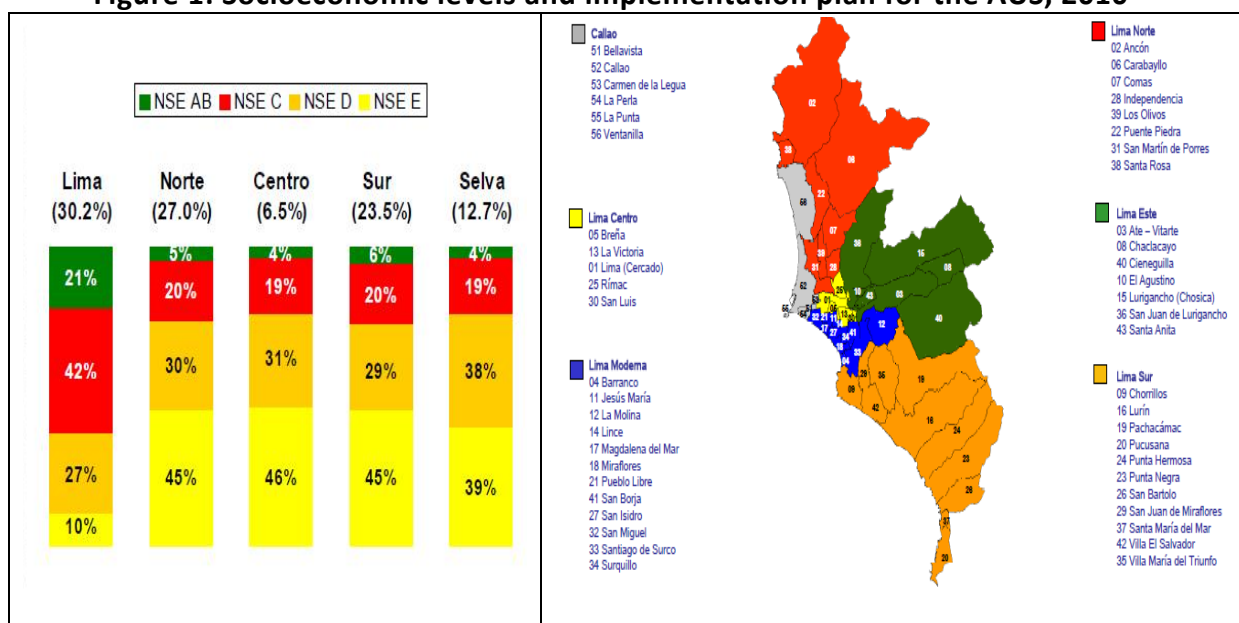
Source: Implementation Plan AUS, Lima and Callao. MINSA. May, 2010.

Meanwhile, the mechanism for joining the SIS is moving from the socioeconomic file to National Household Targeting (SISFOH), which determines the "eligibility" of those likely to be insured in the pilot areas. The traditional membership approach through the socioeconomic file lends itself to greater personal subjectivities of membership.

In the Essential Plan of Health Insurance (PEAS),[6] the basic plan required to be offered by all public and private insurers includes 140 health conditions, organized in interventions and services according to stages of life and the health status of the population. It also includes 44 explicit guarantees of timeliness and quality[7] for maternal and infant conditions.

The selection criteria for the 140 conditions were based on the Burden of Disease study (2008) prepared by MINSA, and a study of the economic impact on the poorest families – meeting the epidemiological and economic criteria, frequency and comprehensiveness of the care services. The PEAS estimates used official clinical guidelines for mother and infant services; for others services, as neoplasms, international treatment protocols were considered. The PEAS classification is organized in healthy population and the sick population, incorporating promotion, prevention, recovery and rehabilitation services, with emphasis on the preventive aspect (Table 1).

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[6] Approved by the DS 016-2009, November 28, 2009.
[7] According to DS 016-2009, opportunity guarantees are defined in terms of "the maximum time allowed for the user to receive the benefits established under the PEAS"; while quality guarantees are referred to as "the granting of health benefits contained in PEAS, related to the best clinical management based on scientific evidence, the use of better infrastructure, equipment and human resources."

However, SIS was created with a different health plan, before the PEAS was defined. Because of conception and administrative problems, the PEAS could not match the type of benefits that SIS had been offering. Therefore, it was forced to offer a complementary coverage plan, to at least match the previously offered benefits to the insured.[8] Additionally, affiliates to subsidize SIS access an extraordinary plan – a more complete list of benefits – to be covered in case of catastrophic illnesses. In fact, the universal insurance law states that the high-cost treatments not included in the PEAS will be funded through the Health Solidarity Intangible Fund (FISSAL) for the insured population in the subsidized regime. This fund helps to finance the treatment of diseases like cancer, kidney failure, birth defects, and transplants, among others, for poor and extremely poor people. However, up to this point, FISSAL does not have sufficient resources to assume the financing of treatments.[9]

Table 1: List of insurable conditions and warranties

	Insurable terms	Explicit guarantees	
		Opportunity	Quality
Healthy people	5	5	2
Obstetrics and Gynecology related Conditions	33		
Obstetric Conditions	28	12	6
Gynecological Conditions	5		
Pediatric conditions	23		
Conditions affecting the newborn	12	1	1
Conditions affecting children under 10 years	11	4	3
Neoplastic conditions	7		
Female genital tract tumors	3		
Other tumors	4		
Communicable conditions	31		
Respiratory tract infections	5		
Genitourinary tract infections and sexually transmitted diseases	5		
Other conditions	21		
Non-communicable conditions	41		
Mental conditions	4		
Chronic and degenerative conditions	15		
Acute Conditions	22		
Total	**275**	**22**	**12**

Source: MINSA, 2009

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[8] For instance, SIS tariffs were established on the basis of per completed service and procedure. PEAS, instead, has a diagnostic-related group approach. Thus, many differences exist between the SIS payment scheme and the PEAS proposal.
[9] Recently, FISSAL has moved to become an Executive Unit of SIS.

To strengthen the supply side, AUS intensified the efforts of the health sector to bridge the gap between supply and demand, delegating the task of achieving the target to each sub-sector, be it public, social security, military or private. Each sub-sector was in charge of defining the strategies for improving the uptake of health personnel, particularly medical specialists in the public sector, as well as training them through technological means in remote areas. Also, the sub-sectors faced the challenge of developing a Multi-Year Investment Plan (PMI), including a plan for investment in hardware and software to implement the AUS in health services. In addition, AUS emphasized the need to develop mechanisms to facilitate the organization of healthcare networks,[10] their categorization, accreditation, and standardization of the PEAS clinical practice guidelines.

Box 1: Milestones in the insurance system in Peru (1920 -2011)

The first experience in implementing public health insurance dates back to 1936. It was enacted under Law No. 8433, creating the National Social Security Workers and marking the start of Social Security in Peru. This insurance was paid with a percentage of the workers' salaries and covered their health and maternity expenses. In 1948, Law No. 10902 created the temporary status of Employee Social Security aimed at providing health cover, including expenditure during pregnancy, to employees and to public servants; this was consolidated in the years 1961-1962. In 1973, with the merging of the Labor Social Security and Social Security, Employee Social Security was created in Peru. However, this unification process excluded the Armed Forces, which were served in the Medical Service of the Police Force – created in 1924 and ratified in 1969 by the Revolutionary Government of the Armed Forces (Verdera 1997).

Under Law No. 20808, enacted in 1974, the Payment System of Social Insurance Contributions in Peru was established. The creation of the Health Benefits Scheme in 1979 expanded the coverage of benefits to spouses and children up to 18 years. In the following year (1980), the Peruvian Social Security Institute (IPSS) was created in order to give financial autonomy, budgetary and accounting, that in practice was not consolidated. Later, in 1999, during the Fujimori government the ESSALUD was created under Law No. 27056, on the basis of IPSS (Verdera 1997).

In 2001, the SIS came into force, following the merger of the Free Student Insurance (1997) and Maternal and Child Insurance (1998), whose membership was four million people. The SIS is a Public Executor of the MINSA, which administers the grant funds for the health benefits of all the uninsured Peruvians, regardless of their age. It does this through two mechanisms: the subsidized scheme (for the poor and extremely poor) and the semi-subsidized scheme for people with limited ability to pay (Wilson, Velasquez, & Ponce, 2009).

The National Accord, signed by the representatives of the political, religious, civil society and government, declared the Universal Assurance as a national priority from 2002. In 2005, they consolidated this priority in the Agreement of Political Parties in Health, and in 2007, it was prioritized in the National Consultation Plan of the MINSA. Finally, on April 8, 2009, it was promulgated the Framework Law on Universal Health Insurance (Law No. 29 344) (MINSA 2010).
The Universal Health Insurance aims to ensure the right of everyone to health security and thus,

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[10] In a network, a higher resolution capacity establishment works closely with several other smaller facilities that are able to reach a geographically defined population and make more efficient use of the infrastructure and resources

ensure its financing. Therefore, in the first stage of the implementation of universal insurance, Apurimac, Ayacucho and Huancavelica were selected as pilot regions (MINSA 2010).

Milestones in Health Insurance

Year	Denomination	Objective
1924	The Police Health Service is part of the Security Corps.	To cover healthcare staff of the Police Forces and their families.
1936	Workers Social Security Building.	Provide pension cover and protect the health of the workers.
1948	Provisional Statute of the Employee Social Security.	Maternal health protection of employees and public servants.
1961	Consolidation of the Employees' Social Security (Part One).	Covers employees' and public servants' pensions.
1962	Consolidation of the Employees' Social Security (Part Two).	Covers employees' and public servants' pensions.
1973	Creation of the Social Security in Peru.	Merger of Worker Social Security and Employee Social Security.
1974	Establishment of the Contributions Payment System of Social Insurance in Peru.	System funded by the contribution of 9% of total compensation received by the worker.
1979	Creation of the Health Services System.	Unify Health benefit schemes at the national level.
1980	Creation of the Peruvian Social Security Institute (IPSS).	Empowering the IPSS in the economic, financial, budgetary and accounting aspects.
1991	Creation of Private Health System.	The complementary health system is created by the health services organizations to eliminate the monopoly of the IPSS.
1997	Free Student Insurance.	To serve children between 3–17 years of age, enrolled in public schools.
1998	Maternal and Child Insurance.	Address the needs of the uninsured women during pregnancy, childbirth and the postpartum period.
1999	Creation of the Social Health Insurance (EsSalud).	Provide comprehensive health services, economic subsidies and social benefits.
2001	Creation of Comprehensive Health Insurance (SIS).	Manage grant funds for health benefits.
2002	Insurance is declared as a priority in the National Agreement.	Give priority to health insurance.
2005	Consolidation of the priority of insurance in the Agreement of Political Parties.	Consolidate health insurance as a priority.
2007	National Plan of Health Consensus, MINSA.	Prioritize universal health insurance.

| 2009 | Framework Law on Universal Health Insurance. | Guarantee the right to health security for all and ensure funding. |

As the insurance system has been evolving in Peru, the number of its members has been increasing. Thus, on September 30, 2010, EsSalud had a total of 8,529,712 insured members while SIS had 12,554,388. The coverage by the Peruvian Armed Forces Medical Services and the health system of the National Police of Peru had a total of 1,126,033 insured. In the private insurance system, the number of members added up to 1,161,564 (SUNASA 2010).

The evolution of health insurance affiliates in Peru, from 2004 to 2010, is presented below.

Evolution of Insurance in Peru (%)

	2005	2006	2007	2008	2009	2010
With insurance	36.2	38.3	42.1	53.7	60.5	63.5
EsSalud	17.3	18.6	19.6	20.1	21.2	21.6
SIS	14.1	15.4	17.0	28.1	33.8	36.3
Other	4.8	4.4	5.5	5.5	5.6	5.5
Without insurance	63.8	61.7	57.9	46.3	39.5	36.5

Source: INEI

Currently, the health system in Peru is composed of five sub-systems that provide health services and insurance: MINSA, which includes SIS as a public insurer with administrative autonomy; the Social Health Insurance; the Armed Forces Medical Services (Navy, Air Force and Army); the Health system of the Peruvian National Police; and private sector institutions. Each one of these five sub-systems will be explained in detail in Section II.IV.

II.I CURRENT STATUS OF INSURANCE IN PERU

The health system in Peru, as in most Latin American countries, is based on Western models of social protection. However, unlike the Western models, the Peruvian system is geared towards specific population, grouped by social class, income, occupation, entry into the formal labor market, and their ethnic or rural status. Hence, the organizational structure of the health system consists of an array of subsystems aimed at specific population strata, leading to significant fragmentation of the health system (PAHO, 2007).

In the health insurance system, there is the coexistence of the MINSA, through the SIS, with administrative public insurer whose target population is the poor and extremely poor groups; the Social Security Health Insurance, EsSalud, who provide formal insurance to employees and their beneficiaries; the Armed Forces Medical Services (Navy, Air Force and Army) under the Ministry of Defense, and the Health System of the National Police of Peru (PNP) under the Ministry of Interior – both provide insurance to their workers' direct family: children and spouse. The private sector institutions provide insurance to those who can pay their premiums.

These segmented systems are markedly different in terms of guaranteeing the rights secured, the per capita spending levels and the degree of access to services by different strata of the population (Figure 2 shows the organization of the system).

According to INEI, 65 percent of the population in Peru has health insurance in any one of the three existing systems of insurance: contributory, semi-contributory and subsidized. The contributory scheme has 27 percent of the insured population. It is characterized by the voluntary contributions of individuals with private insurance (2.1 percent of the population), by mandatory contributions made by the employers to social security (EsSalud) (20.3 percent of the population), and by the voluntary contributions of the self-employed (1.3 percent of the population). In all these cases, workers can opt for the membership of an Entities Providers of Health Services (EPS), which act in a complementary manner to cover EsSalud (for more detailed information, see Section II.IV).

When workers choose to join an EPS, a quarter of the 9 percent contribution to EsSalud from the dependent workers is paid directly to the EPS. With the enactment of the universal assurance framework law, EPS´s have to offer – and in many cases should create – additional plans using the PEAS as platform. There are also regular insured pensioners, who contribute 4 percent of their pensions to healthcare.

Graphic 1: Evolution of insurance in Peru, 2004-2010
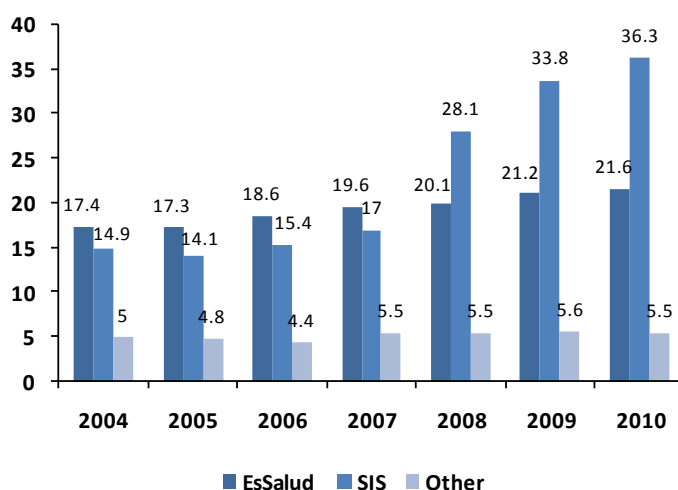
Source: INEI

The semi-contributory system comprises 0.2 percent of the population – very low, and constantly decreasing – and has a mix of voluntary contributions made by individuals or families that are out of poverty, and micro-enterprises incorporated into the formal sector, as well as public funding. With universal insurance law, this regime covers the PEAS.

The subsidized regime is for the poorest groups and insures 36 percent of the population through the SIS. This regime is financed through public funds, and covers healthcare in the public-network services. With the introduction of the law, this scheme is on SISFOH assessment, the household targeting system. This criterion of eligibility has been extended to the semi-contributory scheme as well.

II.II BEHAVIOR OF THE REGIMES AND THE UNINSURED

- **Subsidized**

In recent years, especially from 2008 onwards, there has been growth in insurance with the incorporation of poor adults into the subsidized regime, and also because of the inclusion of insurance status within the Program JUNTOS – conditional transfer program for those living in poverty – which has led to this expansion in coverage, moving from 17 percent insured in 2007 to 28 percent in 2008, and 36 percent in 2010.

However, the SIS faces funding problems that threaten the viability of insurance for this population group.[11] Its annual budget is predetermined by historical spending – a fact that

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[11] The premium for affiliation to SIS is one Peruvian Nuevo Sol per year. In the case of people who come from districts with more than 65 percent poor population, affiliation is free.

has not changed since its inception – although its target population has changed from maternal population groups, children and adolescents to the poor and extremely poor population. The budget per beneficiary has declined between the years 2002 and 2010, expressed in December 2009 US$ real value: in 2002 and 2003, it was 16 dollars per beneficiary; in 2009 and 2010, it was 15 and 14 respectively (Agenda 2011). Thus, the budget allocation has not kept pace with the insurance goal, a situation that has led to a higher out-of-pocket spending by the people. Therefore, the goal of Universal Insurance should also consider the coverage plan received to reduce the expenses incurred by people. Moreover, SIS is not a real health insurance entity from a financial-economic perspective. SIS does not have protected funding that is associated with a defined plan for the population, nor has it had an insurance fund.

Besides, as a result of poverty reduction and targeting of the existing problems, it has been observed that there are more insured in the SIS than the poor in the country. Currently, it is recorded that 31 percent of the population is in poverty, while the SIS already has 36 percent of the insured; indeed, the fact remains that 29 percent of the poor in the country are not yet insured.

Graphic 2: Trends in insurance and poverty. Peru, 2004-10
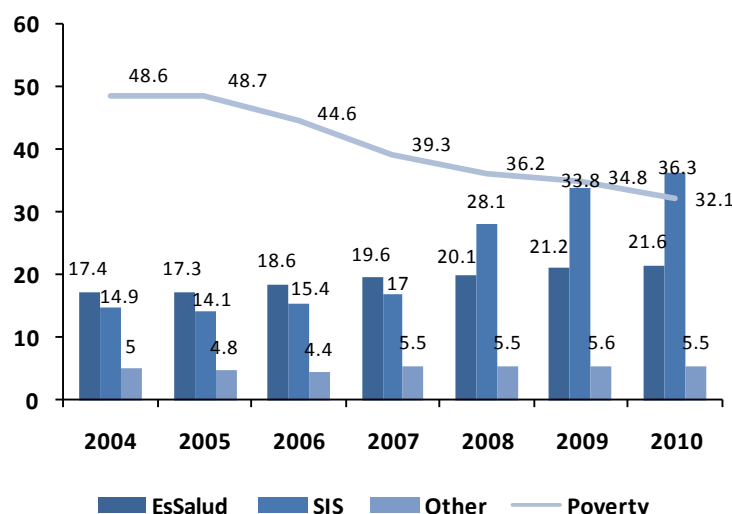
Source: ENAHO 2010, Statistical Bulletin.

Thus, the subsidized regime experiences at least two phenomena simultaneously: sub-coverage of the risk groups and the poor without access, and filtration – especially in the cities. The SIS undercoverage has declined from 70 percent in 2002 to 34 percent in 2009, while filtration has grown from 24 percent in 2002 to 42 percent in 2009 (ENAHO-INEI).

Graphic 3: SIS Targeting Errors
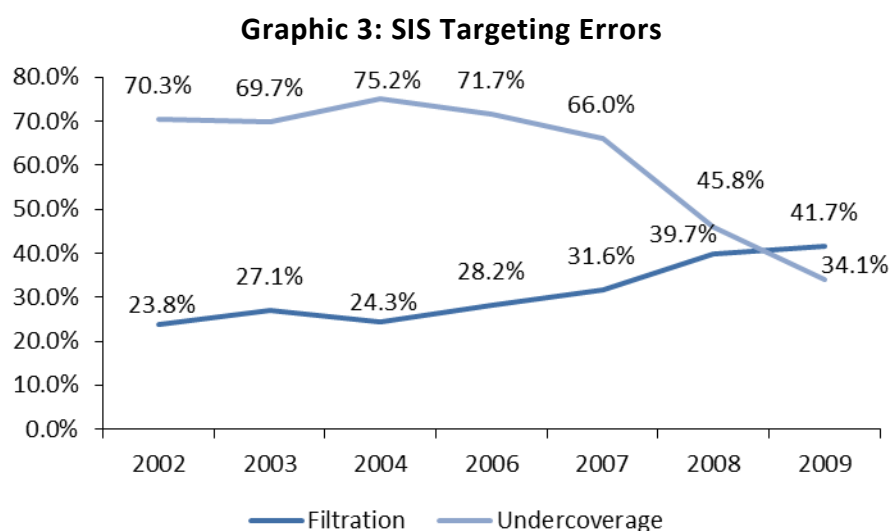
Source: ENAHO-INEI.

It is expected that the implementation of SISFOH will bring the poorest of the country under greater focus in terms of allocation of public resources.[12] Currently, the SISFOH is being implemented nationally, and progressively. At the same time, it is incorporating new ideas to further refine the eligibility criteria for the beneficiaries, whereby certain groups must necessarily leave the subsidized regime in order to aid the poverty reduction process.

In the coming years the state will have to continue to live with filtration problems in the subsidized system, the largest of all the insurance systems.[13] (See Box 2 – SISFOH.) At the same time, changes are occurring in the demand for health services as well as in the levels of claims of the insured population, in turn creating greater demand for public resources.

- **Semi-contributory**

The semi-contributory regime, unlike the subsidized regime, has experienced a progressive decline in the number of insured, going from 61,609 secured in 2008 to 47,174 in 2010; this, despite the fact that 3.3 million people have escaped poverty during the period 2006 to 2010.

This system has two types of membership: i) individuals and their families; ii) micro-enterprises. The first is voluntary and is used by low-income self-employed workers and their families. For the second membership scheme, the law established that the workers of micro-enterprises – registered in the Register of Micro and Small Enterprises (REMYPE) – could enroll voluntarily: workers need to pay PEN 15 (US$ 5.6) and the State subsidize

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[12] However, SISFOH has severe limitations. For effective and efficient implementation of the program it is necessary that its objectives, structure, and functions are redefined.

[13] It must also consider those population groups that legally, and by decree, have access to SIS without being poor, such as soup kitchen leaders, shoeshine boys, Wawa Wasi, among others.

each worker with PEN 15 (US$ 5.6), paid directly to the SIS. In practice, however, neither of the two membership categories have attracted a significant number of policyholders. Instead the regime is being used as an easy way for other employers – not necessarily micro-enterprises – to avoid labor costs by making it conditional on their staff to have insurance prior to their appointment, which actually represents a perverse interpretation of labor laws and insurance due to inconsistencies in policies. These cases, as well as the lack of incentives for the population to get semi-contributory regime insurance, warrant a reassessment and evaluation of the scheme with the involvement of the stakeholders: the Ministry of Labor, Ministry of Economy and Finance (MEF), SIS, firms, among others.

For instance, the subsidized SIS has better coverage than does the semi-contributory regime. Similarly, people expect to receive better attention, given that they are paying at least part of the insurance. However, the service is getting place in the same old sub-standard establishments: medical centers are not well preserved, the installations of water and drainage networks are deficient, the medical residues don't receive the right treatment, among other glaring facts. Besides, the equipment is old and is not sufficient.

Moreover, the self-employed and those enrolled in their own simplified single system (RUS by its acronym in Spanish)[14] business, cannot give valid receipts for ad valorem tax deductions and have no incentive to request valid proof of payment for ad valorem tax deductions for the purchases, because they cannot deduct their payments for acquisitions. The inability to use the existing tax deduction system encourages a lower level in sales, resulting in low productivity, low income and of course low capacity to generate surpluses. In this context, the decision to hire independent insurance involves making an additional payment that could impact the ability of the people to consume other essential goods and services.

Unlike the subsidized system, which has mainly focused its membership in rural areas, 77 percent of memberships to the semi-contributory scheme have been concentrated in cities like Lima (53%), Arequipa (10%), Callao (7%), La Libertad (4%), and Saint Martin (4%). The remaining 23 percent is also located in the urban areas, but in smaller towns.

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[14]The Single Simplified Regime (RUS) is the voluntary registration of persons or companies with RUC that do not want long, full tax statements, and in return should make a preset monthly payment for all taxes (mainly ad valorem and income). The incorporation into this regime depends on the level of income of the persons or companies (it is focused on low-income agents).

Graphic 4: Trends in a semi-subsidized scheme and population out of poverty. Peru, 2007-10
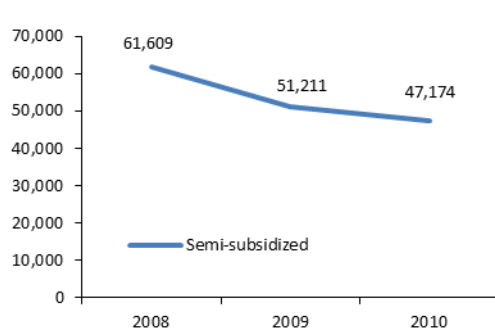
Source: ENAHO - INEI.
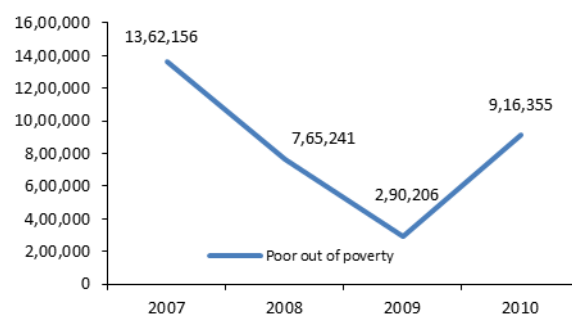
Source: ENAHO - INEI.

According to Pichihua,[15] the target population to be insured under this regime are the non-poor but low-income groups, with average household expenditure between PEN 1,500 and 3,000 (US$ 558 and US$ 1,115) per month. According to ENAHO, in the year 2010 the target population – between 18 and 65 years of age within the expenditure range – was six million people; of these, 3.1 million already have insurance, either in EsSalud, SIS (through filtration), or others. There are 2.8 million people without insurance; 1.1 million in SIS through filtration (Table 2).

Table 2: Target Population[1/] by Insurer

Target Population	EsSalud	Others	SIS	Without insurance
	1,718,345	350,677	1,080,284	2,862,170

[1/] People between 18 and 65 years of age, with average household income between PEN 1,500 and 3,000.
Source: ENAHO, 2010.

In the year 2010, of the total number of cases that were reported ill, only 86 percent considered medical consultation necessary. From this figure, only 35 percent managed an institutional appointment; 30 percent were limited to a non-institutional consult and the rest (35 percent) did not make any consult at all. From these, 47 percent preferred to use homemade remedies, to self-medicate, or to repeat previous prescriptions; 28 percent did not have enough time for consultation, and 9 percent did not have enough money nor health insurance.

- **Compulsory Contributory**

The growth of insurance through the social security system has been slow compared to the rapid growth of the insured in the subsidized scheme, and in relation to the country's economic growth in the recent decades. This growth has led to an increase in employment of 96 percent of the Economically Active Population (EAP) (2009); although it should be

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[15]Interviews with Juan Pichihua. Chief, SISFOH – MEF (2010).

noted that 44 percent are underemployed. Therefore, only 5.4 million employed people could actually join the social security in 2009.

Table 3: EAP levels of employment (in %). Peru, 2009

	Unemployment	Underemployment			Properly occupied [3/]	Relative Total	Total EAP
		Total	By hour [1/]	By income [2/]			
Peru	4.0	44.4	9.4	35.0	51.6	100.0	15,950,983

[1/] Underemployment by hours: works less than 35 hours a week and wants to work additional hours.
[2/] Underemployed by income: works 35 hours or more per week, but with income below the value of the minimum basket of household consumption by earner.
3/ Those working 35 hours or more a week with income above the minimum basket of household consumption, and who work less than 35 hours per week and want to work additional hours.
Source: ENAHO, 2009.

However, according to EsSalud, the number of insured in the same year was more than 8 million, a figure that includes the insured EPS (483,428 in 2009). According to INEI-ENAHO, EsSalud´s insured were rather 6.2 million in 2009, a figure that best fits the properly occupied EAP growth. These differences in EsSalud insurance rate are just an example of the existing information-related problems.

Graphic 5: Trends in EAP and in insurance through social security. Peru, 2006-10
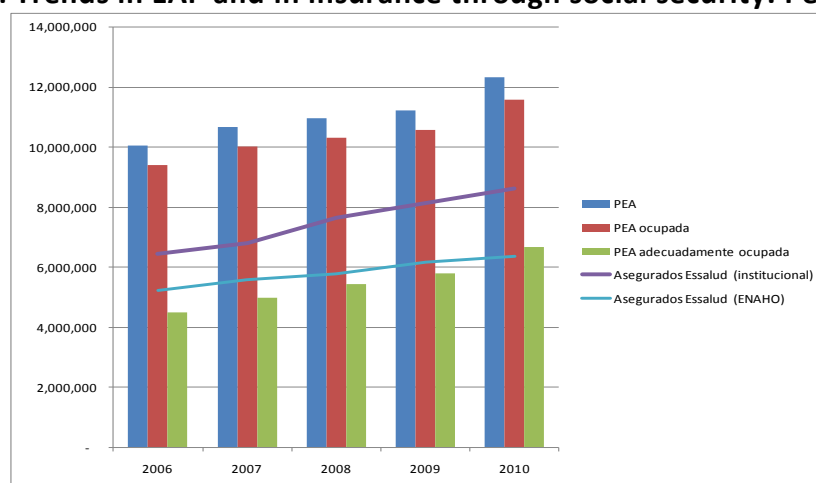
Source: MTPE – PEEL.

- **Voluntary Contributory**

The growth in the number of insured in the private sector has been moderate, responding primarily to the insurance needs of the high-income groups. Insurance in this regime has been characterized by the application of co-payments and deductibles that are increasingly high, maintaining the relatively low accident rate. Therefore, since 2008, private insurers and clinics – prepaid – have not had any major change in their claims.

Policyholders in insurance companies and clinics under this prepaid regime were 800,790 in number in 2009. The prepaid network affiliates had their own care facilities, with lower rates than private insurers, but still with co-payments and deductibles. The share of the scheme, however, remains relatively low, at around 4 percent since 2006; this is small compared to its penetration in the region and the world. Premiums as a percentage of Gross Domestic Product (GDP) of private insurance in Peru in 2006 accounted for 1.3 percent; again, a relatively small amount compared to the 7 percent and 3 percent in the world and in Latin America and the Caribbean, respectively (Swiss Re 2010).

Box 2: Household Targeting System - SISFOH

The SISFOH was created in 2004 by RM No. 399-2004-PCM. Its aim was to improve the mechanisms to identify the potential beneficiary households meeting the eligibility criteria for social programs. Its methodology was based on the creation of a general household eligibility register. Law No. 29626, the law of public sector budget for the fiscal year 2011, places the SISFOH in the MEF and is responsible for issuing technical standards, methods and procedures governing the household targeting of social programs and grants financed by the state.

SISFOH is based on the formation of a General Household Census that is composed of three sources: wage income of workers in the formal public, private expenditure in the financial system (loans or credit card purchases), and the socio-economic files of homes. Additionally, the SISFOH uses census data on population and housing (2007) to identify areas of high insecurity and poverty: indicators are related to the electricity supply, home drinking water availability and household consumption.

The assessment of "eligibility" is done by consulting the register, beginning with the records of income of the household members that qualify as poor and then verifying whether the expenses in the financial system are compatible with their income. Whenever no records of income or expenses of any member are found, household data is obtained from the socio-economic file. Possible answers to this procedure are: eligible, ineligible or socio-economic unrated (socio-economic unqualified).

When the person sought is "socio-economic unqualified," then complementary sources are explored to identify the location of housing, to establish a temporary exceptional eligibility.

The implementation of SISFOH, however, faces difficulties: the basis of household data is outdated; not all the records of the sources of information have identity as a means to identify potential beneficiaries online; and not all operators are connected to the internet, especially in rural areas. It is hoped that the measures taken both in AUS and in the 2011 Budget Law, coupled with adequate funding, will allow SISFOH to integrate other initiatives (such as the incentive plan for the improvement of municipal management, involving municipalities in the registry beneficiaries with DNI and updating on the Register of Household) to achieve national coverage and updated information.

From: DGAES-MEF. SISFOH strategy to improve the quality of social spending. Aide Memoire. In June 2011

- **Uninsured people**

Although the number of people without coverage has declined in the recent years, still, 36.5 percent of the population has no health insurance. This uninsured population is classified as follows:

1. Uninsured poor
2. Population no longer poor
3. Non-poor

There are 3.4 million uninsured poor in Peru, according to SIS under-coverage estimated by the MEF in 2009. The SIS must move forward with its efforts to bridge the gap in the enrollment of the poor by overcoming the problems affecting the efficient utilization of its resources.

Between the years 2006 and 2009, 2.4 million people had ceased to be poor. In 2010, there were another 3.3 million people who are no longer poor. Even though, in theory, this group of people can be absorbed by the SIS semi-contributory regime, independent social security, or opt for a voluntary contributory plan, the evidence presents a different situation. Coverage for the non-poor and low-income groups is not happening in Peru, or in other countries with similar characteristics and problems. On the contrary, the evidence suggests that these types of regimes find it extremely hard to succeed. The group of people who rose from poverty to non-poverty levels is now part of the 8.4 million non-poor people who do not access health insurance.

Table 4: Insured and uninsured, according to poverty levels. Peru, 2009-10

	2009	2010
SIS insured poor	8,564,812	9,457,280
Other insured	8,623,076	8,838,580
Total insured	17,187,88 8	**18,295,860**
Non-poor uninsured	8,487,088	
Uninsured poor	3,457,038	
Total Uninsured	11,944,12 5	**11,166,073**
Population	29,132,01 3	**29,461,933**

Source: ENAHO 2009, 2010 - INEI

II.III LATEST TRENDS IN THE PLANS, BENEFITS AND PREMIUMS

Premiums in the voluntary contributory scheme vary according to the age group of the insured. Premiums increase as the benefit plan incorporates greater coverage and the insured get older. Even though the coverage of the care plans of different insurers is

diverse, the enactment of the AUS has introduced a minimum benefit plan, PEAS, for the entire system, which should be placed on the market progressively by all insurers.

However, the implementation of the PEAS has not been easy. In the first place, and as already explained in Section II, the PEAS benefits did not match the type of benefits offered by SIS to its beneficiaries, forcing the former to offer an extraordinary coverage plan. Problems related to the availability of public resources are also very relevant, as access to infrastructure, equipment, human resources, and drugs is limited.

With regard to social security, regular policyholders are not affected because they have very wide coverage, but those who operate through the EPS – within the same system – are affected, since their EPS previously covered a basic care plan. The PEAS plan offers higher benefits; thus, the Entities Providers of Health Services (EPS) demand a higher percentage of the contribution – and not only the 2.25 percent. If this situation is not addressed, either by establishing limits for the attention of the PEAS in the EPS, or by increasing the 2.25 percent payment, the insured will be affected. On the other hand, independent policyholders, who voluntarily join social security plans, are covered under the PEAS.

Finally, private insurance plans offer coverage for higher PEAS benefits; therefore, they are not affected. However, the PEAS market price is very similar to that of their other products.

In terms of premiums, in the case of the insured regular social security contributions, the average contribution is PEN 1,275 per year (US$ 474) – 9 percent of the average monthly wage equal to 1,181 in 2010 (US$ 439) – a figure that will be taken as reference for the payment of the premium. Independent insurers voluntarily contributing to this scheme pay an individual average annual premium of PEN 780 (US$ 290), although they are only covered under the PEAS.

The SIS semi-contributory regime, by contrast, has an annual premium – for the PEAS – of PEN 180 (US$ 67) per insured. The subsidized system funds its insured through the government budget; there is no reference at a premium, but the average total estimated expenditure per insured is approximately PEN 218 (US$ 81) a year.[16]

The clinics offer prepaid plans with annual premiums from individual PEAS from PEN 576 (US$ 214) for the group between 36 and 40 years of age, to PEN 5616 (US$ 2,088) for a person over 66 years. Private insurers offer premiums PEAS from PEN 1260 (US$ 468) for the group between 36 to 40 years, to PEN 5760 (US$ 2,141) for those above 70 years of age.

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[16] Montañez, V. and E. Chon (2011). Financiamiento en Salud, Proyecciones al 2021. BIRF.

Graphic 6: Premiums by insurance types. Peru, 2010
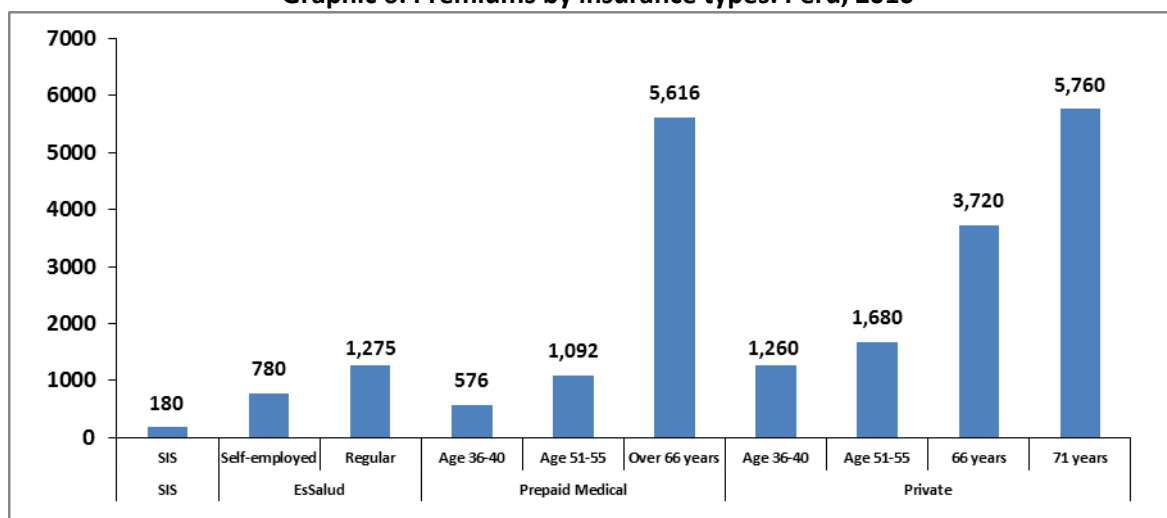
Source: SBS

The sector has a number of pending tasks. One key task is to estimate the cost of the PEAS to establish the premiums accordingly. Currently, this calls to attention the price dispersion of the same PEAS to SIS, EsSalud and private insurers, ranging from PEN 180 to PEN 1680 (US$ 67- US$ 625) for the average worker age range. The SIS is not covering what it should, and private insurers are skimming the market, selling PEAS at a high price, affordable only to high-income individuals.

II.IV INSURERS IN PERU

In Peru, there are diverse systems that offer insurance in each of the three regimes – subsidized, semi-contributory and contributory – as well as health services. These systems are managed either by the State, the social security, or the private market.

The State offers health services subject to a tariff system, through the MINSA establishment network and the regions. Health social security – EsSalud, considered as part of the public sector – complements its services through the EPS in the private sector. In addition, the private market offers health insurance to a small percentage of the population through insurance companies and clinics. The Armed Forces and the National Police offer insurance and health services to their members. Each one of these systems is oriented towards attending to a predetermined segment of the population.

Table 5: Health Services in Peru

	Actors	Target Population	Scope of service coverage
Health services under social security regime	-EsSalud, through their own health facilities and through private ones with which it has agreements. -EPS and related entities.	-Dependent workers in formal firms, pensioners and their rightful claimants. -Independent workers with the ability to pay.	-EsSalud: all illnesses -EPS: single layer and complete plans
Health services subsidized by the State	Ministry of Health and its health facilities; SIS; Regions.	-Poor population -Uninsured low-income population or at an age incapable of generating revenues.	All illnesses. Some facilities specialize in handling complex diseases.
	Ministries of War and of the Interior and their health facilities.	Active and retired officers and their rightful claimants.	
Health services provided by the private market	-Insurance companies -Private health facilities	Those not affiliated to an EPS or willing to expand their coverage; are able to afford private insurance or medical care in private facilities.	According to the acquired plan or purchasing power.

Source: Apoyo Consultoría.

- **The Integral Health Insurance (SIS)**

According to information from ENAHO (2010), SIS secured 32 percent of the insured population. This group of insured people is attended to in the public network of services, which consists of 7,804 establishments located throughout the country. Of these, 7,367 are first-level facilities and 437 are hospitals. With the approval of the AUS, SIS has become an Institution Manager of Health Funds. However, in practice it still does not behave as such, since it does not fund a package of benefits to its beneficiaries. In addition, it receives the public budget, which is assigned on a historical basis rather than in accordance with the value of a premium.

Indeed, SIS beneficiaries do not have an annual premium as backing. Funding for the insured is fragmented, because part of the financing goes directly to the regions while the other part is financed through SIS. According to SIS their budget is insufficient to cover the costs related to their responsibilities. This fact has been exacerbated since 2007 by the

expansion of SIS healthcare coverage,[17] ordered by the MINSA. The SIS payment mechanism is for services and is applied uniformly to all types of establishments. In addition, SIS faces the challenge of improving its levels of filtration and undercoverage in the subsidized regime.

- **Social Security – EsSalud**

EsSalud has 26 percent of the insured population in Peru (ENAHO 2010), which is attended to by its own network of services: 326 health facilities, 48 of which are located in Lima and Callao and the rest in the regions, mainly in the capitals. EsSalud is financed through the workers' and employers' contributions (9 percent of the wages).

EsSalud's insured population faces a restricted supply of services, even when it has been growing in the recent years through agreements and contracts. Operating expenses too have gone up in these years and it has not been possible to separate the provision and financing aspects, which has led to problems in containing the costs and in efficiently managing the resources.

Despite the changes in the social security rules – Law 26790 for the modernization of social security – EsSalud has been unable to modernize at the expected rate and it still continues with many of the problems that characterized it during the 1990s. These include the limited participation of workers from the informal sector: the working population excluded by EsSalud is mainly self-employed and is part of the informal economy or is employed by small establishments. In this sense, 87 percent of the insured contributing population belongs to regular insurance and represents around 97 percent of the income from contributions (EsSalud 2005).

In addition, EsSalud bears the greatest proportion of the burden of high-cost chronic diseases, mainly because of poor selection: people with serious health problems join EsSalud through voluntary plans, affecting its financial balance.[18]

A major problem are the barriers to social security created by long waiting lines, delayed appointments, complaints on the quality of treatment and incomplete drug delivery. This discourages the potential affiliates, generates public distrust, and undermines the effectiveness of the system and its financial sustainability. According to APOYO (2005), only 39 percent of Lima's population trusts EsSalud. As a result of barriers to entry, there is a percentage of insured population by EsSalud receiving attention in MINSA facilities (9 percent), in private institutions (12 percent), as well as in pharmacies and drug stores (27 percent).

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[17] In 2007, SIS coverage went from maternal and child groups, children and adolescents to total coverage for the poor, which led to adult population with diverse demands of attention joining the system. Catering to this new population was more costly and included attention to chronic diseases.

[18] It is estimated that, of the total number of patients on dialysis, 95 percent are attended to under EsSalud. The same goes for 65 percent of the AIDS patients under treatment and all the cases of transplants of heart, liver and bone marrow (EsSalud 2005). Furthermore, the model of care is still predominantly curative and is concentrated in large hospitals, despite internal efforts to reverse this situation.

On the other hand, there is a continuous debate about the level of autonomy that social security should have. EsSalud has absolute autonomy, which was approved by the Act No. 28006. Even though this autonomy was praised at first, it was later criticized because the management of the contributions of the policyholders was not clear. Hence, in 2010, Act N° 29626 mandated that EsSalud be under the regulation of the National Fund for Financing State Enterprise Activity (FONAFE). Till 2003 EsSalud was under this regime. This measure sought to ensure public accountability and transparency, despite criticism from EsSalud. However, the measure did not consider the regulation of the management of insurance funds. Consequently EsSalud was not under the financial supervision of the Superintendence of Banking and Insurance (SBS). Similarly, the measure did not improve the technical supervision of SUNASA in the health services delivery system.

All these problems, along with EsSalud's limited capacity to react, made it difficult to expect significant growth in the number of insured, especially the independent ones.

- **Entities Providers of Health Services – EPS**

The EPS act as a complement to EsSalud coverage. Workers may opt for affiliation to an EPS for single coat coverage. The number of people affiliated to the EPS system added up to a total of 1,216,229 up to December 2010, and they are recognized within the EsSalud insured population. The EPS system has five companies, with a top limit of insured population by region, according to the capacity of care that health facilities have registered for each EPS. The EPS operate through 491 private health facilities, with which they have agreements for the implementation of health plans. Of these facilities, 269 are located in Lima and Callao and 222 are in other regions. They operate 115 hospitals and one institute.

Companies whose workers perform high risk activities are in addition required to hire a Supplemental Risk Work Insurance (SCTR) and they do so with EPS. The EPS concentrated 583,156 regular affiliates and 651,088 affiliates with SCTR (SUNASA 2011). EPS also insure the independents from EsSalud.

Since PEAS approval, EPS face a broader package of services compared to the ones offered earlier.

- **The Armed Forces and the National Police**

According to information given by SUNASA, 1.1 million people were insured by the Armed Forces and the National Police (December, 2010), including beneficiaries and their rightful claimants. The Armed Forces are divided into three groups, attending to their insured directly and independently. The Air Force has 14 health facilities, 5 of which are hospitals and 9 first-level odontological facilities. The Navy has 137 health facilities, 83 of which are in Lima and Callao and 54 are in the other Peruvian regions, with 3 hospitals and 134 attention facilities. The Army has 199 health facilities, 46 of which are located in Lima and Callao, with 5 hospitals and 194 attention facilities. Finally, the National Police has 155

health facilities, 30 of which are located in Lima and Callao. They have 5 hospitals and the rest are first-level attention facilities.

The insured by the Armed Forces and the National Police face the same problems as SIS insurers for accessing quality services. These institutions do not receive a premium for each insured as part of their institutional budget; they do not separate their functions of delivery and financing in their institutions; accurate payment mechanisms are not applied nor are they aligned to the costs of bringing quality services. Furthermore, their services are segmented according to the type of military force.

- **Private Insurers and Prepaid Services**

There are 14 insurance companies in Peru; five of them are also EPS. In addition, there are 13 entities which provide prepaid health services to 506,384 insured. Within these prepaid providers, Oncosalud is especially important. It serves 445,524 insured for prevention and treatment of oncological diseases. Each prepaid provider, except for Oncosalud, insures and attends in their own facility or network of health facilities. Oncosalud, however, has contracts with third parties besides its own infrastructure.

Private insurers manage hedge funds with SBS supervision. They are also subject to SUNASA supervision because of their role as insurers and service providers. However, in practice, they are slightly regulated by the State, which allows "cream skimming" and the fixing of discretion plans. Prepaid services – even when their scale is small – have a dual role: financing and provision. They are developed within ambiguous rules, since they are supervised by SUNASA only because of their role as a service provider. However, even when they manage hedge funds because of their insurance function, they are not supervised by SBS.

Figure 2: Organization of the Peruvian Health Sector
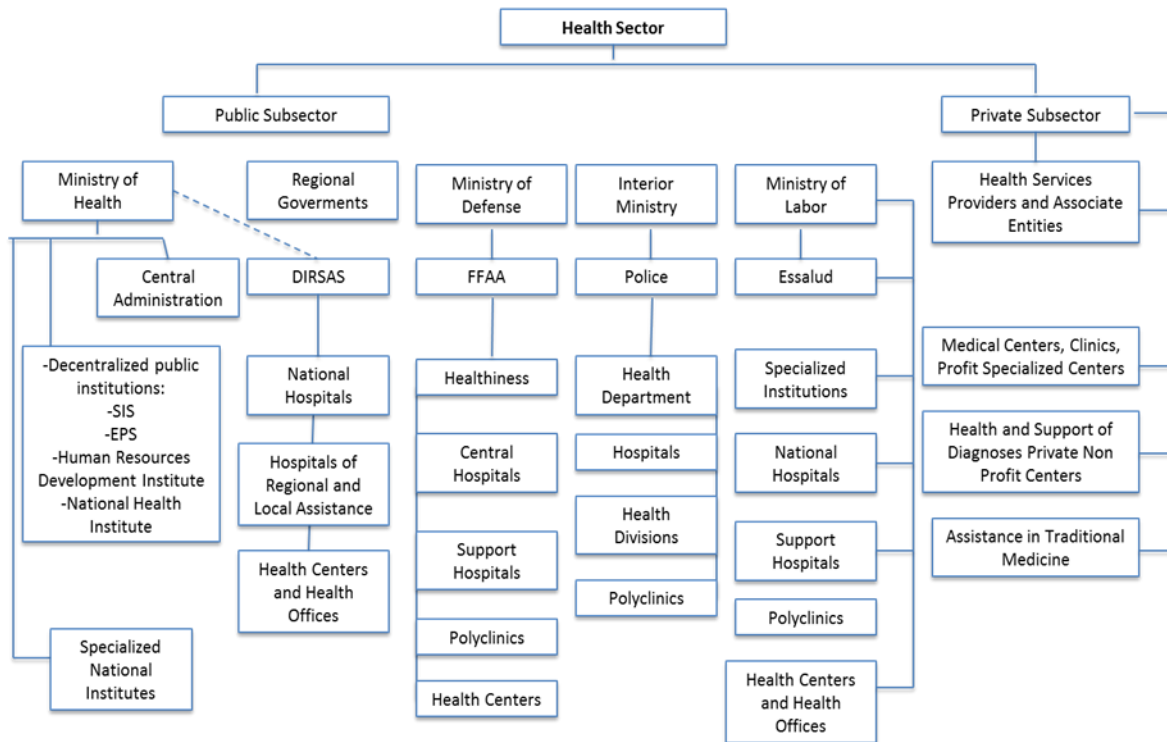
Source: MINSA. Own elaboration.

Universal insurance faces several challenges concerning insurers. In general, there is great fragmentation of the system which results in wastage of the scarce resources for healthcare. While in theory the AUS enables the service providers to develop purchasing and exchange mechanisms between them, this exchange is unlikely to be realized in reality. Hence it is necessary to articulate the operating mechanisms of the networks in order to allow better use of the scarce resources, which would ultimately benefit the population.

III.   MAIN DETERMINANTS OF INSURANCE

Continued economic growth in the last 15 years has resulted in better quality of life for Peruvian residents. In this section, the factors influencing a person's decision on whether or not to buy health insurance are analyzed. Special attention is given to income and employment because of the significant changes in these factors in the previous decades and the noteworthy influence of these on the non-poor, low-income groups. In this sense, the document by Blumberg and Nichols (2002) describes the salient points to design public policies focused on reducing the number of uninsured people.

The authors linked the health insurance demand of an individual to the price of insurance, besides other variables such as employment, income, health status, among others. The price of an insurance plan does not only reflect its monetary cost but also the cost in terms of time and any loss in income resulting from the registration process generally perceived as a burden. Indeed, the authors consider the price as one of the most important determinants vis a vis the decision to purchase health insurance.

Similarly, Blumberg and Nichols, as well as others, such as the Kaiser Family Foundation (KFF) (2008), emphasize that the premium is a key factor in the acquisition of insurance, especially among low-income families. They also indicate that a large number of people remain without health insurance because they do not receive health coverage at work – a fact that surprises many, given the financial and health risks to the people and their families. The KFF study puts emphasis on the analysis of people who have no health coverage at work, nor access to public insurance. In Peru, this is a key issue, given that 70 percent of the economically active population (EAP) remains informal (OIT 2010). Regarding independent employees, the study shows that they are more likely to purchase health insurance directly, to the extent that family income allows. Taking into account the tax deductibility[19] of premiums for the self-employed, the purchase of maximum insurance is logical. However, despite this tax advantage, most freelancers do not buy coverage and opt for the alternative of not having insurance. That is, despite having more health coverage, this group of people, across all income levels, chooses to remain uninsured. On the other hand, the study shows that the purchase decision depends not only on household income, but also on the size and structure of the family.

According to Torres and Knaul (2003), the inequity in health funding in Mexico is mainly due to the lack of a prepayment scheme for more than half of the informal or unemployed population, who as a result do not have formal health insurance. The authors analyze the demand for health insurance and the determinants of health spending of households; the major factors considered are the income level, employment, socioeconomic and demographic factors (age, sex, household composition and size, education and place of residence), information, preferences, and presence of diseases. A distinguished feature of the demand for health services is uncertainty, because nobody knows when he/she will fall ill.

The income level, one of the major determinants of health spending has grown significantly in Peru. This is reflected in the increase in the per capita expenditure. According to ENAHO, between the years 2004 and 2010, the per capita expenditure grew by approximately 40 percent in real terms. This growth was higher in the poorest quintiles (Table 6).

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[19] The U.S. Federal Law allows the self-employed to deduct health insurance costs from their labor income. This deduction is allowed as long as the business owners or the self-employed had a net profit for the year and the amount deducted does not exceed the benefit.

Table 6: Per capita expenditure. Peru, 2004-10
(Real PEN, 2004=100)

Quintile	2004	2010	Var. % 2010 – 2004
1	38.40	65.35	70.19
2	97.32	155.11	59.39
3	162.61	242.94	49.40
4	241.41	356.45	47.65
5	530.11	713.64	34.62
Total	**208.00**	**294.13**	**41.41**

Source: Enaho

Among the low priority segments for insurance, since the creation of SIS, are the people with lower-middle income and low income – between PEN 1,500 and 3,000 (US$ 558 and 1,115) per household per month. Even though this is a low income level group, formally it is a non-poor population group, with no access to insurance through the SIS. On the other hand, they are primarily a self-employed dependent or informal group, with no access to social security.

In Peru, income and employment has grown significantly, reaching 96 percent of the economically active population (EAP) in 2010. However, underemployment includes more than 44 percent of the EAP.[20] The monthly income of 37 percent of the EAP is less than PEN 500 (US$ 186), although the minimum living wage (RMV) in the same period is PEN 600. While higher employment levels involve the incorporation of an increasing number of people out of poverty into the workforce, much of this EAP is incorporated into the informal sector of the economy.

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[20] According to the Ministry of Labor and Employment Promotion, "Statistics and Studies Business Partner" and ECLAC, "Statistical Yearbook for Latin America and the Caribbean, 2010"

Table 7: Occupied EAP by market structure. Peru, 2009

	Distribution (in percent)	Average monthly income (soles)	Average monthly income (dollars)
Public sector	7.9	S/.1,684	US$626
Private sector	6.7	S/.1,183	US$440
From 2 to 9 employees	9.6	S/.812	US$302
From 10 to 49 employees	7.4	S/.1,222	US$454
From 50 to more workers	9.6	S/.1,948	US$724
Independents	36.5	S/.628	US$233
Unpaid family workers	15.0	-	-
Rest	4.0	S/.482	US$179
Total	100.0	S/.910	US$338

Source: INEI

The independently occupied group represents 36 percent of the occupied EAP, out of which 58 percent of the population is secured. This is explained by the fact that this group's integration into the insurance market is voluntary, except in the case of the poor population. Thus, their level of health protection and access to pensions is low, although health insurance for the independents exists in the market. Other promotional measures focus on the micro and small enterprises (MSE) – which represent 60 percent of the EAP – but again have low insurance penetration. In the case of the semi-contributory SIS, only 0.02 percent of the insured belong to MSE. It is in this segment that measures to ensure the informality reduction are concentrated, such as having special working arrangements with lower work charges than for other companies, preference in government procurement, access to state training programs, among others. However, despite these efforts, the problems of informality and low income remain among the employees of small businesses. While the objectives of implementing a policy to address the health needs of these people are widely shared by technicians and politicians in the country, the strategies to achieve the same have not been defined appropriately, as these have not given any significant results.

In an attempt to understand the reasons for the low penetration of insurance among the self-employed, relevant information is related to tax revenue in Peru. In this regard, the self-employed and those enrolled in the business of their own simplified single system (RUS, already explained in footnote No.14) income represent over 88 percent of the registered taxpayers, but their significance in the amount raised is just over 1 percent. While it is true that this low level of revenue can be attributed to tax evasion – encouraged by the low level control of the authority – there are appropriate incentives to encourage fiscal expansion at the base. Among the weaknesses in this system, we can mention the following:

- They cannot give valid receipts for ad valorem tax deductions. With this, the only way to encourage the sale of their products is by reducing the price at the cost of taxes.
- They do not have an incentive to request valid proof of payment for ad valorem tax deductions for purchases, because they cannot deduct their payments for acquisitions. This promotes tax evasion.

Table 8: Self-employed, small taxpayers and tax revenues. Peru, 2006-11

	2006	2007	2008	2009	2010	2011 *
Self-employed workers with RUC [21] (thousands)	2,588	2,923	3,238	3,544	3,892	4,127.5
Collection of independent workers with RUC (Millions of S/.).	445.3	407.8	437.1	473.0	521.1	305.8
Average monthly revenue per independent worker with RUC (S/.).	14.34	11.63	11.25	11.12	11.16	12.35
Taxpayers enrolled in RUS (thousands)	379.6	447.3	513.2	580.1	638.6	671.1
Collection of taxpayers registered with RUS (Millions of S /.).	79.5	81.9	91.5	98.1	107.8	57.1
Average monthly revenue per independent employee enrolled in RUS (S /.).	17.46	15.26	14.86	14.10	14.06	14.18
Collection of independent workers with RUC and taxpayers registered with RUS in relation to the total taxes collected.	*1.4%*	*1.1%*	*1.1%*	*1.3%*	*1.2%*	*1.1%*
Independent workers with RUC and taxpayers registered with RUS in relation to the total number of taxpayers	*85.2%*	*86.5%*	*87.0%*	*87.9%*	*88.6%*	*88.7%*

*To June
Source: Nota Tributaria (SUNAT)

Several studies (Seinfeld 2007; Madueño et al. 2003) that estimate the willingness of people to pay for health insurance have found that this payment is approximately PEN 31 monthly – considering inflation, it works out to PEN 35 (in 2012) – an amount equivalent to that charged by the SIS semi-contributory scheme but less than the amount offered by EsSalud for freelancers' insurance (PEN 65). These results give an idea of the willingness of the people to pay, especially those who currently do not have any insurance and should be affiliated to some plan to comply with the universal insurance law. Moreover, the

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[21] The Registry of Taxpayers (RUC) is the code that identifies the person or company to the tax authority.

failure to use the existing tax deduction structure encourages a lower level in sales, resulting in low productivity, low income and of course low capacity to generate surpluses. Thus, the decision to hire independent insurance involves making an additional payment by the people. Therefore, the optional insurance offered by the SIS and EsSalud has less than 50,000 and 36,000 members respectively, when the potential market size is over 10 million people.

Low coverage rates may also depend on other factors associated with low-income families, such as lower levels of financial education or less information. The need to navigate through a wide range of products and factors that shape the policies of financial protection, such as deductibles and co-payments, can act as barriers to access. The government has to provide the necessary information and insurance-related education to the population.

Other socio-demographic factors, such as gender, age, number of children, presence of diseases, likelihood of hospitalization (uncertainty about the health status), are also important determinants. In addition, supply factors related to accessibility to health facilities, doctors and health specialists, among others, are fundamental.

IV. DETERMINANTS OF HEALTH INSURANCE IN PERU: AN ECONOMETRIC MEASUREMENT

In order to prioritize the determinants of insurance in Peru, especially for low-income people, we estimate the demand function for insurance. The explanatory variables include the demand and supply factors of health services. The ENAHO information for the period 2007 to 2010 has been used because it is one of the most reliable sources of information in the country. Published quarterly and annually since 1997 it provides information on housing characteristics, household member characteristics, their health, employment status and income level. The sample size is of 49 231 observations, from people between 18 to 65 years of age, and income between PEN 1500 and 3000 per household per month. The supply variables were obtained from the Office of Statistics and Informatics from MINSA. To calculate the premium, information from the study "Moving toward universal insurance: How can people protect the health of low and middle income?" have been used. Premiums were extrapolated according to the main characteristics of the individual: gender, age, educational level and income level. The analysis is based on a probabilistic model, where the dependent variable is a binomial variable that takes the value of 1 if the person is insured to a health institution – whether EsSalud, SIS, private entities, or others – and 0 otherwise.[22]

The explanatory variables related to the demand factors are the location, level of education, employment condition, age, gender, marital status, number of children, and premium. For variables related to the health of an individual, we consider whether the

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[22] Variables are detailed in Appendix 2

person has been hospitalized and the place where he/she received treatment when sick. On the other hand, the explanatory variables related to the supply factors are the number of public health centers, public health posts and number of health professionals per thousand inhabitants per department (Appendix 1).

The model assesses the likelihood of individuals opting for insurance on the basis of their demand and supply determinants:

$$\Pr(\ insured = 1\ ) = Demand\ Variables_i * \beta_i + Supply\ Variables_j * \alpha_j + \varepsilon_i (1)$$

The results of the econometric binomial probability model (Appendix 2) show that the higher the level of education, the higher the probability that the individual has health insurance. In this regard, Joshi and Lim (2010), suggested educational efforts to promote more widespread use of health insurance. Moreover, these efforts should be targeted at low-income groups with limited formal education.

The results indicate that when a person is well employed the chances of his/her being insured increase, according to KFF's paper (2008). People with low income and no health coverage at work – nor access to public insurance – should also be given priority, along with the poor. The national picture shows that to make the universal insurance viable, the government's efforts must be directed at the formalization of the economy. Underemployment – the main factor hampering the insurance of a large group of the population – is a product of both underpaid formal employment as well as people employed in informal activities; it contributes to the infiltration into the SIS and the limited membership of other insurance options.

Other demand variables influencing the likelihood of an individual being insured are the premium, level of education, family size, marital status, age, gender, and place of residence. According to the results, a higher premium decreases the likelihood of an individual joining a health system. Higher education too significantly influences a person's chances of joining a health insurance: an increase of 30 percentage points, when the base is 50 percent probability.

The results also suggest that if families have more children at home, their chances of purchasing health insurance increase. Also, if the residence is urban, the chances decrease, probably due to the significant efforts of the SIS to insure people in rural areas, where most poor and extremely poor are located. There is an inverse relationship between insurance and male healthcare needs, which are relatively lower throughout their lives. This also explains why older people are more likely to be insured. Furthermore, if individuals are married their likelihood of joining a health insurance increases.

An individuals´ health is an important determinant of insurance. If a person has been hospitalized, he/she is more likely to go in for insurance, possibly due to the high cost of healthcare. According to Torres and Knaul (2003), the presence of disease creates

incentives to make healthcare demands, as there is uncertainty as to when illness might strike. Also, if the person is attending a MINSA establishment, as opposed to EsSalud, it increases the likelihood of him/her having insurance.

On the supply side, the variables in terms of the supply of health professionals and the number of health centers have a positive effect on a person's chances of getting insurance. For each additional health center – per 1000 people in a region – the chances of a person getting insurance increased by 64 percentage points. However, even though health posts in Peru are the basis of the public health, they are not significant to increase the likelihood of individuals insuring. It is possible that people perceive the poor services at the posts as evidence of lack of attention in the whole service chain. Hence, it is imperative to have better services at the posts and convert them to higher capacity facilities.

Finally, in order to analyze insurance trends and forecast the situation of the uninsured, simulations have been developed to project the insurance levels from 2012 to 2020, considering the current low incentives to insure as well as assumptions to incorporate changes from the State to promote insurance. To this end, the following three scenarios are developed, whose variables are detailed in Appendix N° 3:
- Scenario 1 is a projection of health insurance for the target population maintaining the current conditions.
- Scenario 2 includes projection of the impact of increasing the number of public health centers for the insurance of the target population.
- Scenario 3 considers the impact of increasing human resources – doctors and nurses, in public hospitals and centers – on insurance of the target population.

The impact effects of both the variables, infrastructure as well as health professionals, were obtained from the respective coefficients in the regression equation (1). Assumptions based on the existing information on population growth and GDP were also used. Assumptions are detailed in Appendix 4

The results obtained in the first scenario show that the insurance structure will be the same if current conditions are maintained. Moreover, the projections show that the number of people not affiliated to any health insurance remains constant, at about 47 percent of the total target population. Another important result is that the projected population with insurance in the semi-contributory SIS or independent EsSalud will remain as insignificant (less than the 0.5 percent of the target population) as today. See Appendix 5 for details.

Graphic 7: Target population with health insurance, by type of insurance (2008–10 real data from Enaho, 2011–20 projection from Scenario 1)
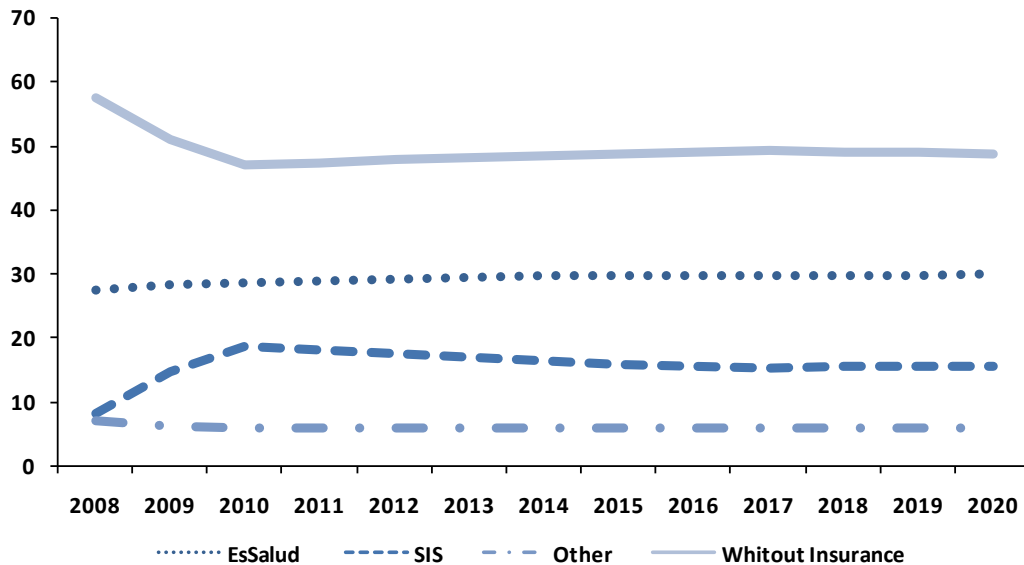
Source: Own elaboration

On the other hand, results from scenarios 2 and 3 suggest that increasing the number of public health centers or of doctors or nurses in order to increase the number of insurers are not cost-effective policies (Appendix 5). However, given that Peru still has a significant infrastructure gap in the health sector, the construction of health centers and the hiring of new health staff will not only increase the number of the insured but will also improve the condition of the public health facilities.

V. A MAJOR REFORM

Even though the approval of the AUS in 2009 established the full and progressive right of everyone to social security, more than a third of the population is still without health insurance. While SIS has increased its coverage, the number of affiliates to social security (EsSalud) has maintained a stable trend, around 20 percent. This is not surprising in a country like Peru, where 70 percent of the EAP belongs to the informal sector (OIT 2010)[23].

The inclusion of the informal sector workers in health insurance is widely recognized as one of the greatest challenges to achieving universal health coverage (Hsiao y Shaw 2007; ILO 2008; WHO 2010). In Peru, this difficulty is manifest in the lukewarm reception that the semi-contributory regime has had. The regime is precisely designed to insure the non-poor (independent and dependent) workers in the informal sector (see Section II).

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[23] See Section IV.

International experience – for example, in the case of Philippines and Thailand – shows that the ability of the semi-contributory regimes (or semi-subsidized, depending on the country) to insure the non-poor, independent or informal workers is limited, such as in the case of Peru. In addition, these regimes show a serious problem of adverse selection (Jowett and Hsiao 2007; Hanvoravongchai and Hsiao 2007).

In most cases the semi-subsidized regimes are voluntary, and because of adverse selection, their affiliates tend to be riskier. For instance, according to SIS statistics, the ratio of the number of visits over the number of uninsured is higher in the semi-subsidized than in the subsidized regime (2012). EsSalud's independent insurance faces the same problem.

We propose that the semi-contributory and subsidized regimes be merged under one system, as a means to accomplish universal insurance and to provide health insurance to anyone not currently insured, regardless of their income level.

This proposal is based on the experience of Thailand, which in 2002 reached universal insurance with the implementation of a health insurance that covers any person who does not have other health insurance. The Thai experience is recognized by various studies as a successful experiment (Tangcharoensathein et al. 2007; Hanvoravongchai and Hsiao 2007; Tangcharoensathein 2010; ILO 2008; WHO 2010) and as a possible model to follow in the developing countries (Hsiao and Shaw 2007; NHSO 2011).

We propose the creation of a public insurance scheme, funded by taxes, to replace the current subsidized and semi-contributory regimes. Hereafter, we provide some general guidelines and minimum requirements for the proper functioning of this new universal public insurance scheme.

Plan of insurance: The current insurance plan in Peru, PEAS, is very large. The authors consider it would be convenient to start with a more modest plan and progressively turn it into a more complete one.

Even though the idea initially was to have PEAS as a minimum plan, due to reconciliation issues between SIS previous plan and PEAS, it was largely overcome. Currently, what the subsidized regime is offering is close to universal attention, as in the case of EsSalud. The quality of service, however, is an important issue to consider, for effective coverage.

Moreover, it is necessary to have cost and premium value information – currently unavailable even for PEAS. Table 9 presents values of the benefit plans in countries of the region, and their coverage (some for diagnosis and for other services).

Table 9: Benefit Plans, by country

COUNTRIES	BENEFIT PLANS	COVERAGE	ESTIMATED PER CAPITA COST (USD)
Colombia	Plan Obligatorio de Salud – POS	Comprehensive package of care	POS –S: 103* POS – C: 183*
Mexico	Catálogo Universal de Servicios de Salud – CAUSES + Fondo para Gastos catastróficos FPGC	Services of medium and low complexity Catastrophic Events	CAUSES + FPGC: 126*
Argentina	Programa Médico Obligatorio - PMO	Comprehensive package	PMO: 231**
Chile	Plan Acceso Universal con Garantías Explícitas - AUGE	69 health problems	AUGE: 136***
Uruguay	Plan Integral de Atención a la Salud – PIAS	Wide service coverage	PIAS: 595***
Peru	Plan Esencial de Aseguramiento en Salud – PEAS	140 insurable conditions	PEAS: 179

*Source: CEPAL. Los planes de beneficios en Salud: los casos de Colombia y México. Gideon. U.

**Source: Bruni, José, M. Estudio para el Programa de Reconversión de Obras Sociales. (mimeo)

***Fuente: BID. Planes de beneficios en salud: Diseño, implementación y ajuste. (mimeo)

The case of Colombia should be a reference for Peru, since benefit plans for subsidized and contributory schemes were designed from the previous services they were offering.

There was a proposal from the Ministry of Health for more limited benefit plans but it was rejected by the National Council of Social Security in Health (Giedion, Panapoulou & Gómez-Fraga 2009).

Mexico, on the other hand, has a comprehensive package that grew over three decades. Approval of the various plans that coexisted in the system was sought in order to unify the scheme of social protection in health. This will be a major challenge for the country.

The reasons for adopting a benefit plan were not the same in both the countries. In Colombia, the two main reasons were: (i) functions were split into funding and insurance and (ii) the integration of the private sector into the insurance market was needed. In Mexico, they wanted to make evident the requirements of resources to insure the group of the population with no access to any health insurance and also to make the mobilization of resources easier.

Argentina has proposed improvements for Programa Médico Obligatorio (PMO), emphasizing the basic schemes of service provision based on primary attention, centered in prevention and promotion. Funding of PMO is affected by a very heterogenic tax collection by the system.

In Chile, a progressive increase of the plan has been happening, including explicit guarantees, and expenditure increases in health. However, to contain the increases in cost, Chile has prioritized the services and treatments, based on scientific considerations such as severity, incidence, national trends, vulnerability and costs.

In view of these experiences, Peru needs to redefine its insurance plan. This plan should be backed by an organizational framework to ensure that decisions are technically supported. It should have the financial commitment to increase the public expenditures in health, and the progressive compliance of the explicit guarantees. Hand in hand with this plan, it will be necessary to conduct studies to estimate the demand and the cost of the plan.

Creation of an insurance fund: Depending on the definition of the insurance plan, a fund must be created to guarantee access by every policyholder. The financing of the fund must be based on the number of policyholders and the estimated costs in the offered insurance plan. This means that the current practice of SIS – financing on a historical basis and without an insurance fund – must be abandoned (Agenda 2011).

We propose that this fund must be financed by taxes, as a result of a pragmatic decision based on the empirical evidence that universal insurance cannot be accomplished with a contributory regime. In addition, studies from the Thai case have shown that funding through taxes is an equitable measure, with a concentration index (CI)[24] greater than direct payment or the contributions to social security (O'Donnell et al. 2005). Also, Limwattananon et al. (2005) show that in the Thai case, those who most benefited by the public subsidy were the poorest. In Thailand, the use of universal insurance varies according to the income level: it seems that the richest quintiles use public insurance as an alternative (ILO 2008).

However, a co-payment for the two richest quintiles could be analyzed. If it is the case, the amount to pay at the moment of the attention must be defined in the insurance plan. It is crucial to be able to classify the affiliates according to rank of revenue in order to make the co-payment feasible. Therefore, it is necessary to substantially improve the current filtration in public insurance. It is unacceptable, for example, that 10 percent of the affiliates of SIS are in the two richest quintiles of wealth and that 50 percent of the affiliates are not poor (ENAHO 2011).

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[24] CI is an index of payment distribution. It ranges from (-1 to 1). A positive (negative) value indicates that the rich (poor) contributes a larger share than the poor (rich). A value of zero means that everyone pays the same.

The decision to implement an insurance fund for the new subsidized regime implies there are efforts by the government to guarantee its funding. Institutional reforms will be necessary for the efficient operation of the fund. The needs of the insurance fund of the subsidized regime will also be applied to the insurance fund of the contributory regime.

Regarding the contributory regime, rigorous studies are necessary to determine the contribution of its policyholders – independent workers – as part of the purpose to consolidate the insurance fund. On this matter, EsSalud has been emphasizing the need to increase this contribution but there are arguments based on both financial and service provision related issues; both these functions have not been clearly split.

Also, the incorporation of a solidary contribution from the insurance fund of the contributory regime to the subsidized regime is a formula that is being applied successfully in many countries. Colombia, for example, has established the contribution at 1.5 percent. In the case of Peru, the authors consider it key to establish the necessary funds correctly.

Separating the financing and provision functions: One of the fundamental functions of the institution in charge of insurance fund management should be the design of the scheme for the purchase of health services. This means separating the functions of the healthcare purchasers and healthcare providers. Hence, the manager of the fund should be in charge of the hiring of public and private healthcare providers. The separation of the functions is needed not only for the new scheme proposed here, but, as Chong and Montañez (2011) have mentioned, is also necessary for EsSalud: it needs to separate the funding function from the provision function.

Hence, two insurance funds (in addition to the Armed Forces and Police funds) are expected in the insurance system: the public universal fund and EsSalud fund. These funds should be authorized only to buy health services.

The application of the contract model with clear separate roles and responsibility of the Health Insurance Management Unit and healthcare provider network ensure accountability and responsiveness to the universal coverage beneficiaries (NHSO 2011).

As exclusive healthcare purchasers, the insurance funds must define the terms of contract with the healthcare providers. The system should determine who is going to assume more risk for the attention, the fund or the healthcare provider. This will determine the quality and the cost of the intervention. So, different payment and reimbursement systems can lead to diverse outcomes in terms of utilization of care, quality and cost of services offered within the health sector, and total healthcare expenditures (World Bank, s.f.).

In Thailand the payment methods designed for the universal coverage scheme are different: capitation[25] for out-patient and global budget[26] plus DRG[27] for in-patient. The reformists do not apply conventional DRG to empirical evidence of DRG creeping and false diagnosis. The global budget would prevent the cost escalation. A separate payment for in-patients does not send a wrong signal towards admitting patients as clinical indicated (Tangcharoensathein et al. 2007). While these combinations of systems seem to work well in Thailand, there is no guarantee that the same will work well in Peru. Every provider scheme has advantages and disadvantages. An optimally mixed provider payment system with regulatory commitment can be a powerful cost containment instrument but some tradeoffs will be inevitable (WHO 2007). The choice of the best provider payment scheme depends on a country´s framework, especially the competition. In the Peruvian case more research is needed to determine which scheme will be the best.

Ensuring access to health services: Having health insurance is not enough to ensure access to health services. If there is inadequate supply of health services the health insurance is useless. In Peru the lack of infrastructure in the health sector represents a serious limitation in terms of access to health services, especially in the rural sector and in the Jungle. According to Apoyo (2012), there are differences in the availability and access to health infrastructure among regions, which must be addressed. Rural areas need special attention because these are the zones with maximum needs. It is worrisome that in rural areas the average time it takes to access the nearest health establishment is 41.2 minutes. This time should not be more than 30 minutes (Apoyo Consultoría 2012).

In this regard, the Thailand experience is quite interesting. In the past two decades there were large-scale investments in the health sector. There were explicit government pro-poor, pro-rural policies to achieve full coverage of sub-district health centers and district hospitals in all the sub-districts and districts. Evidence indicates that during the period 1982 to 1987, capital budgets for urban provincial hospitals were frozen, and shifted to the development of lower-level rural district hospitals and health centers. With regard to medical personnel, public medical school graduates were required to perform compulsory service for three years, mostly in district hospitals (Tangcharoensathein et al. 2007).

Increasing the public expenditure in health: The implementation of the policy proposed in this document requires greater public expenditure in the health sector. In 2011, the public expenditure in health represented only 1.6 percent of the GDP. This amount is insufficient to reach the universal coverage level. However, as the NSHO (2012) said, it is not necessary to be a rich country to achieve universal coverage. Thailand did so in 2002

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[25] Payment on a per-person basis for a defined package of services during a fixed period of time – usually a month or year. Commonly, a per-person fixed rate is paid to a general practitioner based on the number of individuals enrolled in that practice for the specified time period, regardless of whether they use the services or the type of service rendered.

[26] A global budget at the hospital level is a payment fixed in advance to cover the aggregate expenditures of that hospital over a given time period to provide a set of services that have been broadly agreed upon.

[27] Each patient is classified in a specific "diagnostic" group according to his/her principal diagnosis and a corresponding, fixed reimbursement is given to the hospital for treating the patient. This payment system creates incentives to focus on "profitable" patients, to shorten lengths of hospitalization, to provide less care, and admit more patients.

with a GDP per capita of US$ 2,000. In 2011, the GDP per capita in Peru was US$ 5,900 (WEO 2011).

For the financial sustainability of the policy it is necessary to increase the market share of the social security (EsSalud). This is to fight informality in an efficient way. According to ENAHO (2011), 36 percent of the dependent workers do not have health insurance. Even according to our policy, these dependent workers without insurance should be affiliated to the subsidized universal health insurance; the idea, in the middle and long term, is that the workers be in the social security under a contributory regime.

As per the World Health Report (2010), a recent study by the Pricewaterhouse Cooper´s Health Research Institute estimated that more than half of the US$ two trillion-plus that the United States of America spends on health each year, is wasted. According to the same report, in Europe, a little less than 6 percent of the global health expenditure, or about US$ 300 billion, is lost to mistakes or corruption alone. Hence, while raising more money for health is crucial for lower-income countries striving to move closer to universal coverage, it is just as important to get the maximum out of the resources available. Peru must take note of the 10 leading causes of inefficiency in the health sector, mentioned by the World Health Report (See Appendix 6). For example, among the first two causes mentioned by the report is the improvement in the quality control for medicines; Peru is far behind in this respect. Some of the other relevant causes of inefficiency in Peru are the waste, corruption and fraud, besides the fragmentation of the system.

Leading with informality: Beyond the universal insurance claim by the mandatory decreed law (Law No. 29 344), the government should offer insurance that is attractive to the self-employed through the expansion of social insurance, and/or SIS, by including them as regular members. This measure assumes that, like in the case of the dependent workers, registration is performed only once and that the formalities are very simple inputs, such as:
   a) Self-employed who provide receipts for the fees charged must be regular members from the issuance of these bills. SUNAT, due to its tax collector role, becomes the way of registration for social security and in a similar way as is currently being done in the case of the so-called spreadsheet.
   b) The establishment of an increase in retention and income tax (the determination of the amount or percentage) should be done jointly by EsSalud, SIS, SUNAT and MEF. The retention would be done by the buyer of the goods or services as in the case of the fourth-rate tax. At a minimum, EsSalud, SIS or private insurance could offer a basic package of healthcare, based on a maximum annual coverage amount in co-payments and deductibles, and a limited number of attentions. Based on this package, there should be other additional benefits depending on the amount of contribution made by the independent worker.

Additionally, if the worker had contracted independent individual health insurance with an insurance company legally regulated by the SBS, the SUNAT should return the

maximum stipulated retention amount (after demonstrating the prior year payment). This strategy would be an incentive for the independent workers and members of the RUS: they should be incentivized to pay higher taxes than what they are paying – on an average. Moreover, they should be motivated enough to hire a health insurance, as they would automatically be insured under the regular social security. Thus, the state revenues would triple, from PEN 360 million a year to PEN 1,000 million. This money should go directly to social security and SIS.

VI. CONCLUSION

The strategies proposed by the state to achieve universal health insurance have not been adequate. Despite the Universal Assurance Framework Law (AUS) approved in 2009 more than 30 percent of the population is still without insurance. The high informality in the labor market, the fragmentation of the system, low responsiveness of the health services (especially the public ones), the bottlenecks that exist for the purchasing and exchange of health services, the absence of a risk pooling scheme and random distribution of human resources are all disincentives to acquiring health insurance. Additionally, the PEAS has not been adjusted to its cost or to the premium negotiated in the market, and SIS has a fragmented and inadequate funding. Meanwhile, EsSalud has not managed to reorganize and separate the provision function from the financing function.

This glance at the structural problems in the health insurance system restricts the possibilities to reach the universal coverage level. Thus, a deeper reform is proposed. To begin with, the creation of a new regime combining the subsidized and the semi-contributory regimes is proposed. Moreover, the implementation of this regime implies that some general guidelines be followed, such as the definition of a new insurance plan; the creation of an insurance fund based on the insurance plan; the separation between healthcare purchasers and healthcare providers; an increase in access to health services, especially in rural areas; increase in public expenditure in health, and the prevention of waste of resources.

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Appendix 1: Probabilistic model variables

Variable dependiente		
Nombre	**Descripción**	**Fuente**
Insured	Binomial variable. Takes two possible values: (i) 1, if the individual is insured in an institution, (ii) 0, if the individual does not have health insurance	ENAHO 2008-2010

Variables dependientes			
Clase	**Nombre**	**Descripción**	**Fuente**
Socio-demographic factors	**Age 31 -50**	Dummy variable that indicates if the individual's age is between 31 and 50.	ENAHO 2008-2010
	Age 51 -65	Dummy variable that indicates if the individual's age is between 51 and 65.	ENAHO 2008-2010
	Married	Dummy variable that indicates whether the individual is married.	ENAHO 2008-2010
	N° of children 1 -3	Dummy variable that indicates whether the person has between 1 and 3 children.	ENAHO 2008-2010
	N° of children 4 – 6	Dummy variable that indicates whether the person has between 4 and 6 children.	ENAHO 2008-2010
	N° of children more than 6	Dummy variable that indicates whether the person has more than 6 children.	ENAHO 2008-2010
	Man	Dummy variable that indicates gender. It takes one of the two possible values: (i) 1, if the individual is male, and (ii) 0, if the individual is female.	ENAHO 2008-2010

	Urban area	Indicates the geographical area. It takes one of two possible values: (i) 1, if the area in which the individual is living is urban, and (ii) 0, otherwise.	ENAHO 2008-2010
	Properly occupied	Dummy variable that indicates whether the individual is properly occupied.	ENAHO 2008-2010
	Primary education	Dummy variable that indicates whether the individual completed primary education.	ENAHO 2008-2010
	Secondary education	Dummy variable that indicates whether the individual graduated from high school.	ENAHO 2008-2010
	Higher Educaction	Dummy variable that indicates whether the individual has fully completed higher education.	ENAHO 2008-2010
Willingness to pay	**Premium**	Discrete Variable indicating the amount of the premium payable by individuals.	Investigación 2007
Health Features	**Hospitalized**	Dummy variable that indicates whether the individual was hospitalized.	ENAHO 2008-2010
	MINSA establishment	Dummy variable that indicates whether the individual was being attended in a MINSA establishment.	ENAHO 2008-2010
Supply Factors	**Professional health staff per hospital and health center**	Indicates the number of professional health staff (doctors, nurses, psychologists, nutritionists, pharmacists, etc.) per public hospital and health center	MINSA 2008-2010
	Health centers	Indicates the number of health centers per 1,000 people by departments.	MINSA 2008-2010
	Health posts	Indicates the number of health posts per 1,000 people by departments.	MINSA 2008-2010

Determining the likelihood of insuring

Variables	Coefficient	Significance
Demand		
Premium	-0.0040331	0.049**
Properly occupied	0.226354	0.000**
Hospitalization	0.3260644	0.000**
MINSA Establishment	0.1273346	0.000**
Primary education	0.1189974	0.000*
Secondary education	0.347273	0.000**
Higher education	0.7838193	0.000**
N° of Children 1 -3	.1318396	0.000**
N° of Children 4 -6	.1428563	0.000**
N° of Children more than 6	.2793815	0.018**
Age 31–50	0.1280078	0.000**
Age 50 – 65	0.2639422	0.000**
Married	0.2979896	0.000**
Urban Area	-0.1134869	0.000**
Man	-0.1943046	0.000**
Supply		
Professional health staff per hospital and health center	0.0104573	0.000**
Number of centers	1.612922	0.000**
Number of posts	-0.1320522	0.001**
R-squared	**0.1223**	

** Significant variables to 5%

* Significant variables to 10%

Appendix 3: Variables for the simulations

Scenario 1:

Variables for simulation		
Name	**Description**	**Source**
Insured	Displays the total number of insured by each institution	ENAHO 2008-2010
Uninsured	Shows the total number of uninsured.	ENAHO 2008-2010
Alpha **ratio**	Historical relationship between GDP growth and growth of the EAP. It measures how much EAP increases with an increase in GDP.	INEI and MMM (2012-2014)
EAP growth	Shows the projected growth rate of the EAP (2010-2015).	INEI
Economic growth	Shows the projections of economic growth (2011-2020).	Seminario (2011)
Population growth	Shows the projections of population growth (2010-2020).	INEI
Decreased undercoverage	Decrease in the rate of undercoverage, by calculating the average reduction in undercoverage excluding outliers.	SIS
Decreased filtration	Decreased rate of filtration, by calculating the average filtration reduction without considering the extreme values, which should not be less than 20% which corresponds to the legal filtration.	SIS
Poverty reduction	Ratio that shows how poverty decreases with an increase in GDP.	MEF
Inflation rate	Shows the projections of inflation rate (2011-2014).	BCR

Scenario 2:

Variables for simulation		
Name	**Description**	**Source**
Impact effect	Shows the likelihood of an increase in health insurance, in percentage points, as a result of increasing the number of health centers.	ENAHO 2008-2010
Cost to build health center	Cost of converting a health post to health center PEN 299 574 (US$ 111 781).	SIAF
Increase in the number of insured	Measurement of benefit obtained by multiplying the number of insured by the impact effect of the health centers	-.-

Scenario 3:

Variables for the simulations		
Name	**Description**	**Source**
Impact effect	Shows the likelihood of an increase in health insurance, in percentage points, as a result of increasing the number professional health staff.	ENAHO 2008-2010
Cost of hiring new doctor	Amount it costs to hire new doctor: PEN 48 293 (US$ 18 020) per year.	MINSA
Cost of hiring a new nurse	Amount it costs to hire new nurse: PEN 22 013 (US$ 8 214) per year.	MINSA
Increase in the number of insured	Measurement of benefit obtained by multiplying the number of insured by the impact effect of health staff.	-.-

APPENDIX 4: ASSUMPTIONS FOR THE SIMULATIONS

General Assumptions:
All the projections are made based on the data from the Enaho, 2010. Growth of the total population is equal to the growth of the target population. For every percentage point GDP growth, EAP increased 0.28 percentage points. For every percentage point of GDP growth, poverty decreased by 0.8125 percentage points.
Scenario 1:
The number of people insured to dependent EsSalud is a function of: Population growth EAP growth 50% Poverty reduction 12.5%
The number of people insured to independent EsSalud is a function of: Population growth EAP growth 25% Poverty reduction 12.5%
The number of people insured to the subsidized SIS is a function of: Population growth Poverty reduction 50% (negative impact) Reduction in undercoverage (1.10% per year) Reduction in filtration (3% per year)
The number of people insured to the semi-subsidized SIS is a function of: Population growth EAP growth 25%
The number of people insured to the private sector is a function of: Population growth
The total number of uninsured people is obtained by calculating the difference between the total population and the population with some kind of health insurance.
Scenario 2:
Assumptions and results of scenario 1 remain. The number of people insured, among the target population increases each year by 0.32 percentage points as a result of the construction of one public health center per 200,000 people. The cost of building a new public health center is US$ 111 781

Scenario 3

Assumptions and results of scenario 1 remain.
 	
    Policy 3A
Hiring one doctor and one nurse per public hospital and health center increases, by 0.83 percentage point, the probability of a person being insured.
 	
    Policy 3B
 	
Hiring one doctor and two nurses per public hospital and health center increases, by 1.25 percentage point, the probability of a person being insured.

OIT (2010). Panorama Laboral 2010. Lima.

Appendix 5: Simulations results

Scenario 2

MODERATE SCENARIO PROJECTIONS:

	2011	2012	2013	2014	2015
Δ Insured	15,849	16,061	16,272	16,482	16,690
Δ Costs (US$)	1,747,828	1,824,268	1,903,696	1,986,123	2,071,550
Cost-Benefit ratio	110.28	113.59	116.99	120.50	124.12

	2016	2017	2018	2019	2020
Δ Insured	16,897	17,104	17,308	17,510	17,709
Δ Costs (US$)	2,160,168	2,252,160	2,347,499	2,446,148	2,548,053
Cost-Benefit ratio	127.84	131.68	135.63	139.70	143.89

Scenario 3

MODERATE SCENARIO (POLICY 3A):

	2011	2012	2013	2014	2015
Δ Insured	41,109	41,657	42,205	42,750	43,290
Δ Costs (US$)	78,467,859	80,821,895	83,246,552	85,743,948	88,316,267
Cost-Benefit ratio	1,908.77	1,940.16	1,972.43	2,005.71	2,040.11

	2016	2017	2018	2019	2020
Δ Insured	43,827	44,363	44,894	45,418	45,932
Δ Costs	90,965,755	93,694,727	96,505,569	99,400,736	102,382,758
Cost-Benefit ratio	2,075.56	2,112.02	2,149.65	2,188.59	2,229.02

MODERATE SCENARIO (POLICY 3B):

	2011	2012	2013	2014	2015
Δ Insured	61,911	62,737	63,562	64,382	65,196
Δ Costs (US$)	103,036,070	106,127,153	109,310,967	112,590,296	115,968,005
Cost-Benefit ratio	1,664.25	1,691.62	1,719.76	1,748.78	1,778.77

	2016	2017	2018	2019	2020
Δ Insured	66,005	66,811	67,611	68,400	69,174
Δ Costs (US$)	119,447,045	123,030,457	126,721,370	130,523,011	134,438,702
Cost-Benefit ratio	1,809.68	1,841.47	1,874.27	1,908.23	1,943.47

Source of inefficiency	Common reasons for inefficiency	Ways to address inefficiency
1. Medicines: underuse of generics and higher than necessary prices for medicines	Inadequate controls on supply-chain agents, prescribers, and dispensers; lower perceived efficacy/safety of generic medicines; old, set prescribing patterns and inefficient procurement/distribution systems; taxes and duties on medicines; excessive mark-ups.	Improve prescribing guidance, information, training and practice. Permit or offer incentives for generic substitution. Develop active purchasing based on assessment of costs and benefits of alternatives. Ensure transparency in purchasing and tenders. Remove taxes and duties. Control excesive mark-ups. Monitor and publicize medicine prices.
2. Medicines: use of substandard and counterfeit medicines	Inadequate pharmaceutical regulatory structures/mechanisms; weak procurement systems.	Strengthen enforcement of quality standards in the manufacture of medicines; carry out product testing; enhance procurement systems with pre-qualification of suppliers.
3. Medicines: inappropriate and ineffective use	Inappropriate prescriber incentives and unethical promotion practices; consumer demand/expectations; limited knowledge about therapeutic effects; inadequate regulatory frameworks.	Separate prescribing and dispensing functions; regulate promotional activities; improve prescribing guidance, information, training and practice; disseminate public information.
4. Healthcare products and services: overuse or supply of equipment, investigations and procedures	Supplier-induced demand; fee-for-service payment mechanisms; fear of litigation (defensive medicine).	Reform incentive and payment structures (e.g. capitation or diagnosis-related group); develop and implement clinical guidelines.
5. Health workers: inappropriate or costly staff mix, unmotivated workers	Conformity with pre-determined human resource policies and procedures; resistance by medical professions; fixed/inflexible contracts; inadequate salaries; recruitment based on favoritism	Undertake need-based assessment and training; revise remuneration policies; introduce flexible contracts and/or performance-related pay; implement task-

		shifting and other ways of matching skills to needs.
6. Healthcare services: inappropriate hospital admissions and length of stay	Lack of alternative care arrangements; insufficient incentives for discharging patients; limited knowledge of best practices.	Provide alternative care (e.g. day care); alter incentives to hospital providers; raise knowledge about efficient admission practice.
7. Healthcare services: inappropriate hospital size (low use of infrastructure)	Inappropriate level of managerial resources for coordination and control; too many hospitals and in-patient beds in some areas, not enough in others. Often this reflects lack of planning for health services infrastructure development.	Incorporate input and output estimation into hospital planning; match managerial capacity to size; reduce excess capacity to raise occupancy rate to 80-90% (while controlling length of stay).
8. Healthcare services: medical errors and suboptimal quality of care	Insufficient knowledge or application of clinical care standards and protocols; lack of guidelines; inadequate supervision.	Improve hygiene standards in hospitals; provide more continuity of care; undertake more clinical audits; monitor hospital performance.
9. Health system leakages: waste, corruption and fraud	Unclear resource allocation guidance; lack of transparency; poor accountability and governance mechanisms; low salaries.	Improve regulation/governance, including strong sanction mechanisms, assess transparency/vulnerability to corruption; undertake public spending tracking survey; promote codes of conduct.
10. Health interventions:	Funding high-cost, low-effect interventions when low-cost, high-impact options are unfunded. Inappropriate balance between levels of care, and/or between prevention, promotion and treatment.	Regularly evaluate and incorporate into policy evidence on the costs and impact of interventions, technologies, medicines, and policy options.

Source: WHO, 2010