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Technical Note

Financial analysis of the extension of health insurance coverage to all children 0-18 years of age 2007-2016

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Contents

Abbreviations and acronyms

GDP	Gross Domestic Product
ILO	International Labour Organization
MDG	Millennium Development Goal
NHIC	National Health Insurance Council
NHIF	National Health Insurance Fund
NHIS	National Health Insurance System
SIDA	Swedish International Development Cooperation Agency
UNDP	United Nations Development Programme
US$	United States dollar
WHO	World Health Organization

Acknowledgements

The simulations for the task were undertaken on the version of the health budget which was developed by the ILO, and then enhanced and updated by Mr. Florian Léger (SEC/SOC) and Mr. Ben Asumang and Mr. Ben Yankah actuaries from the Social Security and National Insurance Trust (SSNIT) in the first trimester of 2007 in the framework of a SIDA financed technical cooperation project. The authors would like to acknowledge the work done by the actuaries.

Executive summary

The present technical report shows that an extension of free coverage to all children under the age of six decoupled from the registration of the parents, under the assumptions adopted for the study, is financially feasible and builds on the existing commitment of the Government of Ghana, to extend health insurance coverage to all its population.

The extension of the coverage to all children under the age of 18 while financially feasible in the short-term due to the high level of reserves currently available in the National Health Insurance System (NHIS), will bring the NHIS to a deficit around 2015.

Therefore, it is recommended that the extension of coverage proceed in stages beginning with the universal coverage of children under the age of 6 in the immediate and then following a review of the financial system of the NHIS an extension to other age groups of children.

1. Introduction

The National Health Insurance System (NHIS) in Ghana which began implementation in 2005 is still very much in the phase of extension of coverage. While coverage in the system has been increasing over the last two years from a level of 17.2 per cent in 2005 [1] to a level of 47 [2] per cent by June 2007, the ultimate objective of the system is to attain universal coverage.

During the same two year period the National Health Insurance Fund (NHIF) had accumulated a reserve in excess of 280 million US$ [3] as income of the NHIF, from the contribution transfer from SSNIT members, the health insurance levy and investments, has exceeded expenditure of the NHIF. In 2006, the funding ratio of the NHIF was 1.92, in other words the Fund had enough reserves to cover approximately two years of expenditure. Even though it is clear that expenditure levels over the next years will increase as the scheme matures and coverage increases, the high level of current reserves gives the National Health Insurance Council (NHIC) the possibility to propose policy options to use these reserves for example to boost population coverage by providing premium subsidies for registration of specific vulnerable categories of the population. The NHIC has a clear mandate to "…make proposals to the Minister for the formulation of policies on health insurance…" (see National Health Insurance Act 650 Article 2 §2(e)). Furthermore, the National Health Insurance Act 650 Article 27 paragraph 2(d) states that the monies from the Fund shall be expended as follows "…to provide support to facilitate provision of or access to health service…".

It is in this context that the NHIC is considering to propose the automatic registration in the NHIS of all children under the age of 18 in their own right and exempt them from payment of contributions. However, prior to proposing such a policy measure, the medium to long-term financial implications on the budget of the NHIS need to be ascertained to ensure that its financial viability is not compromised by this policy proposal.

The ILO, more specifically the ILO team on mission in Accra, headed by Mr. Cichon and composed of Ms. Pal and Mr. Tumwesigwe (ILO consultant), was requested by the Executive Secretary of the NHIC for technical advice concerning the financial analysis of this policy proposal in form of a technical note. The aim is that the findings of the technical note will serve as a basis for the discussions of the Executive Secretary with the President, the Minister of Health and national stakeholders.

The present technical note thus provides a financial analysis of the policy proposal through the development of projections for two alternative scenarios which assess the implications of modifications to the coverage rate of children (Scenario I coverage of all children under the age of 18; and Scenario II coverage of all children under the age of 6). It should be noted that this technical support comes in the framework of on-going support which the ILO has been providing to the Government of Ghana since 2002 and subsequently from 2003 in the context of the NHIS.

[1] See ILO (2006): *Financial assessment of the national health insurance fund. Technical note* (Geneva).

[2] According to data provided by NHIC in August 2007. However, for projection purposes in the model we have taken the more prudent estimate of national coverage rate of 26.4 per cent of the population in 2006.

[3] According to data provided by NHIC in August 2007. On 31 December 2006, the financial accounts of the NHIC showed an accumulated fund of approximately US$ 254 million.

2. The methodology used

The health budget model, which forms part of a set of quantitative social protection governance tools developed by the ILO assists policy makers in evaluating the financial status of the health system and to ascertain the fiscal consequences and feasibility of specific policy measures. The health budget model calculates the income and expenditure of the health system by taking into account demographic developments, economic developments and assumptions (such as population growth, GDP growth, inflation, etc) and scheme specific parameters and assumptions (such as legal parameters, type of benefits offered, etc).

In the context of the support provided by the ILO, in 2004 a health budget model was developed to map out the financial status of the new NHIS in Ghana. In 2006 [4] and in the first trimester of 2007, [5] the model was enhanced and updated. The present financial assessment is based on the status quo version of the 2007 update.

[4] See ILO, 2006.

[5] See Yankah, B. et al., 2007. Forthcoming: *Revision of the national health budget model for Ghana.*

3. The policy proposal

The NHIC is considering to propose the automatic registration in the NHIS of all children under the age of 18 in their own right and exempt them from payment of contributions. This would involve decoupling the requirement of linking registration of children to that of their parents as the National Health Insurance Regulations, 2004 (L.I. 1809) article 56§(a) lays down that children "….under eighteen years of age and both of whose parents or guardians are contributors…." are exempted from contribution payment. Such a proposal if accepted would require the amendment of the National Health Insurance Act 650 or a Presidential Decree to enable its implementation. The present technical note does not attempt to address these legal requirements to enable the implementation of the policy proposal.

The NHIC is proposing to subsidize the contribution payment of all children covered by the scheme and would transfer this amount to the district mutual health insurance scheme for each child registered.

While the proposal to cover all children up to the age of 18 would be the most desirable from the social perspective it may not be financially sustainable. Therefore, it may be more prudent to gradually build-up over the next few years this group of children. In the base case it has thus been proposed that the group target all children under 6 years of age. In a second stage this group could be extended to cover all children under 10 years of age and so forth if this can be sustained financially by the NHIS. In the end it will however be a matter of national social priorities which will define what can and should be provided by making available the required resources.

4. General assumptions used in the model

4.1. Demographic development for the group

In 2006, according to the population projections used in the model, the population of Ghana was 22.1 million. Table 1 provides the share of specific age-groups in the population. The proportion of children (0-5) in the total population decreases from a level of 16.7 per cent in 2006 to 14.1 per cent in 2016 whereas the group of 0-17 represents in 2006 approximately 45 per cent and in 2016 approximately 41 per cent of the total population.

Table 1. Proportion of population and of insured in selected age groups, Ghana, 2006-2016
(in per cent of the total population)

Age group	Proportion of population (in per cent)		
	2006	2010	2016
0-5	16.7	15.9	14.1
0-10	29.0	28.1	25.7
0-17	45.2	43.5	40.7

In 2006, approximately 30.4 per cent of the children up to the age of 18 were insured in the NHIS.

4.2. Demographic and economic assumptions for the projections

Table 2 provides a summary of some of the main assumptions used in the model to project income and expenditure of the NHIS.

The economic parameters were maintained the same for the Status Quo projections as well as the two alternative scenario projections. The demographic parameters apart from coverage rate were also maintained for the all three projection cases.

Table 2. Main economic and demographic assumptions 2006-2016, Ghana

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Health insurance contribution rate	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Average salary increase per annum	16.4	15.8	15.0	14.3	14.3	13.5	13.5	12.8	12.8	12.8	12.8
Rate of Increase of SSNIT membership	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
Compliance level (formal sector)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
Medical inflation	13.6	13.1	12.5	11.9	11.9	11.3	11.3	10.6	10.6	10.6	10.6
GDP growth (nominal)	15.8	22.5	16.0	16.0	15.8	14.7	14.1	13.5	12.9	12.9	12.9
Ave inflation (CPI)	10.9	10.5	10.0	9.5	9.5	9.0	9.0	8.5	8.5	8.5	8.5

The above assumptions were based on data and information from various sources which include the Health Insurance Law, SSNIT, Ghana Statistical Service, National Health Insurance Council, Ministry of Health and the National Budget (several years).

Coverage rate (Base Assumption)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
SSNIT contributors	78.9	87.0	87.0	88.0	88.0	89.0	89.0	90.0	90.0	90.0	90.0
SSNIT Pensioners	93.2	94.0	94.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
Children Under 18 years	30.4	32.0	32.0	34.0	39.0	44.0	49.0	54.0	59.0	68.1	73.1
Elderly aged 70 and above (exclude SSNIT pensioners)	67.5	70.0	71.0	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0
Indigents	6.3	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
Informal sector	18.8	26.0	27.0	28.0	33.0	38.0	43.0	48.0	53.0	58.0	63.0
National	26.4	30.3	30.8	32.3	36.6	40.9	45.2	49.5	53.7	59.6	63.8

On the income side of the NHIF, the transfer from SSNIT members has been projected taking into account a 2.5 per cent contribution on the wage bill, contributions from persons from the informal sector registering in the scheme and paying in 2007 the contribution of cedis 72,000 per annum per adult insured. The contribution rate has been increased annually in line with medical inflation.

The health insurance levy of 2.5 per cent has been projected to increase in line with GDP growth. An assumption is made that the health insurance levy which by law has been earmarked for the purpose of financing the health insurance system and which should be transferred by the Ministry of Finance to the NHIF as of 2008 will be fully transferred to the NHIF. Especially in the case of the implementation of the proposed increase of coverage of children, the sums due to the NHIF should be forthcoming. Should this not be the case then the financial viability of the NHIF is not guaranteed. Investment income on the reserves of the NHIF are also calculated.

On the expenditure side, the average cost of contact indexed in line with medical inflation and the average utilization rate of the insured was taken into account to calculate the cost of health care provided. Administrative costs for the NHIS indexed in-line with inflation were also calculated. The amount covered by the NHIF for financially distressed DMHIS and the support provided to providers has also been calculated.

It has to be noted that the level of the annual balance is extremely sensitive to the level and structure of the population coverage. If the population coverage were to be increased by 10 per centage points until 2016 compared to the baseline projection, by increasing the number of indigents and the number of children i.e. two groups that would not generate further contribution income while leading to higher expenditure, then the balance would turn negative after about 10 years.

5. Results of the projections

5.1. Status quo projections

As a central point of reference, the financial development of the health insurance system was modeled on the basis of the above assumptions and the existing law and practice . The status quo projections as documented in Table 3 show that the system will continue to achieve positive annual balances through the projection period of 2007 to 2016. It needs to be stressed that this can only materialize if:

- the national population coverage is 63.8 per cent as projected,

- the national average level of utilization of the insured population will not exceed the rate of 1.6 to 1.7 contacts with the health system per capita per year (which is equivalent to 3.6 times the average number of contacts in 2006).

The latter may require the change of the provider payment systems away from the presently used fee-for-service method in the medium-term future. More aggregated payment systems, such as capitation stem from out patient care and global hospital budgets, might have to be used to contain the negative financial effects of unchecked utilization. Without such safeguards the first structural annual deficits of the system could be expected around 2020 and the reserve could be exhausted by 2025. In order to avoid that situation a structural upward shift in contribution rates in the formal and informal sector by about 20 per cent (i.e. from 2.5 per cent to 3 per cent of the insurable earnings) would be necessary around 2015.

Table 3. Development of NHIS income and expenditure 2006-2016, Ghana (in millions of new Ghana cedis)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Income	203	278	326	385	460	543	637	740	854	982	1,124
	-	-	-	-	-	-	-	-	-	-	-
SSNIT (Health Insurance Contribution)	41	44	53	63	75	88	104	122	142	166	194
Membership	0	0	0	0	0	0	0	0	0	0	0
Average salary	0	0	0	0	0	0	0	0	0	0	0
	-	-	-	-	-	-	-	-	-	-	-
Health Insurance levy	152	186	216	250	290	333	379	431	486	549	619
	-	-	-	-	-	-	-	-	-	-	-
MHO's (Premium income)	8	16	20	23	32	42	54	69	86	107	132
	-	-	-	-	-	-	-	-	-	-	-
Investment Income	-	29	35	45	60	77	95	114	135	155	174
	-	-	-	-	-	-	-	-	-	-	-
Donor support	2	2	3	3	3	3	4	4	5	5	6
	-	-	-	-	-	-	-	-	-	-	-
Expenditure	57	199	196	222	278	342	421	513	624	779	938
	-	-	-	-	-	-	-	-	-	-	-
Subsidies	26	37	62	75	94	118	144	173	205	247	289
Indigent	1	1	2	3	3	4	5	6	7	8	9
Children (under 18)	18	26	44	53	68	86	108	131	157	194	229
Elderly (70 & above)	2	2	4	5	6	7	8	9	10	11	12
SSNIT contributors	4	6	11	13	16	18	21	24	27	30	34
SSNIT pensioners	0	1	1	1	2	2	3	3	4	4	5
	-	-	-	-	-	-	-	-	-	-	-
Benefits paid by MHO	18	92	108	129	167	213	268	332	407	511	619
Number of insured	0	0	0	0	0	0	0	0	0	0	0
Number of contacts	0	0	0	0	0	0	0	0	0	0	0
Average cost	0	0	0	0	0	0	0	0	0	0	0
Utilisation rate	0.45	1.60	1.60	1.61	1.61	1.62	1.63	1.63	1.64	1.65	1.66
Service providers support	25	28	32	36	40	44	49	55	60	67	74
	-	-	-	-	-	-	-	-	-	-	-
Financially distressed schemes	1	49	32	37	48	61	78	99	126	168	210
	-	-	-	-	-	-	-	-	-	-	-
Total administration	13	30	25	21	23	24	26	28	30	33	35
Council secretariat	8	9	10	11	12	13	14	16	17	18	20
Aministration & logistics (MHO's)	5	10	6	6	7	8	8	9	10	11	12
Secretariat building	-	2	1	-	-	-	-	-	-	-	-
MIS & ICT	-	9	8	3	3	3	3	3	3	3	4
	-	-	-	-	-	-	-	-	-	-	-
Balance (surplus/deficit)	146	79	130	163	182	201	216	226	229	203	186
As % of income	72	28	40	42	40	37	34	31	27	21	17
Reserves at the end of the year	294	372	502	665	847	1,048	1,264	1,490	1,719	1,923	2,109
Rate of return on investment (%) (Average 91-day treasury bill rate)	10.2	9.8	9.4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Fund ratio	1.47	1.90	2.26	2.39	2.47	2.49	2.46	2.39	2.21	2.05	1.86

5.2. Alternative coverage scenarios

As requested by the NHIC the above assumptions were modified, so as to reflect two different alternative coverage scenarios:

Scenario I: all children under age 18 are to be covered regardless of the insurance status of their parents

Scenario II: all children under age 6 are to be covered regardless of the insurance status of their parents

Under both assumptions it was assumed that the new measure would be introduced as of 1 January 2009 and that during the first year an average coverage level of about 66 per cent of the respective groups of children would be reached. In the second year a coverage level of 100 per cent of the respective groups would be reached. The following figure 1 describes the expected development of the overall level of population coverage. Table 4 provides more details on the coverage assumptions by population group.

Figure 1. Development of overall population coverage under alternative population coverage scenarios 2006-2016, Ghana

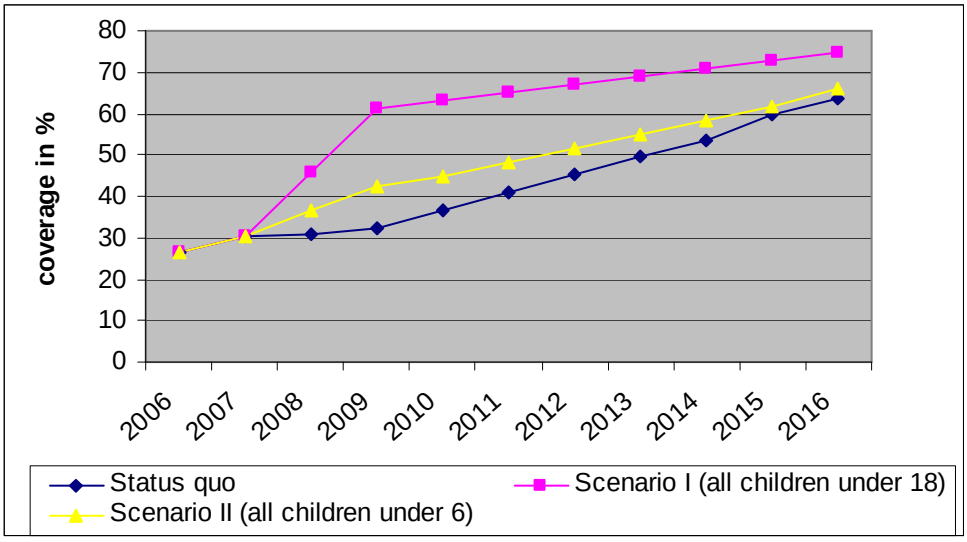

Table 4. Coverage assumptions under alternative scenarios 2005-2016, Ghana (in percentage)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Base scenario												
Coverage rate												
– SSNIT contributors	42.3	78.9	87.0	87.0	88.0	88.0	89.0	89.0	90.0	90.0	90.0	90.0
– SSNIT pensioners	94.9	93.2	94.0	94.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
– Children under 18 years	15.4	30.4	32.0	32.0	34.0	39.0	44.0	49.0	54.0	59.0	68.1	73.1
– Elderly aged 70 and above (exclude SSNIT pensioners)	69.1	67.5	70.0	71.0	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0
– Indigents	3.2	6.3	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
– Informal sector	9.7	18.8	26.0	27.0	28.0	33.0	38.0	43.0	48.0	53.0	58.0	63.0
Total (National)	14.3	26.4	30.3	30.8	32.3	36.6	40.9	45.2	49.5	53.7	59.6	63.8
Scenario I												
Coverage rate												
– SSNIT contributors	42.3	78.9	87.0	87.0	88.0	88.0	89.0	89.0	90.0	90.0	90.0	90.0
– SSNIT pensioners	94.9	93.2	94.0	94.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
– Children under 18 years	15.4	30.4	32.0	66.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
– Elderly aged 70 and above (exclude SSNIT pensioners)	69.1	67.5	70.0	71.0	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0
– Indigents	3.2	6.3	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
– Informal sector	9.7	18.8	26.0	27.0	28.0	33.0	38.0	43.0	48.0	53.0	58.0	63.0
Total (National)	14.3	26.4	30.3	46.0	61.4	63.2	65.1	67.0	68.9	70.8	72.8	74.8
Scenario II												
Coverage rate:												
– SSNIT contributors	42.3	78.9	87.0	87.0	88.0	88.0	89.0	89.0	90.0	90.0	90.0	90.0
– SSNIT pensioners	94.9	93.2	94.0	94.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
– Children under 6-18 years	15.4	30.4	32.0	32.0	32.0	34.0	39.0	44.0	49.0	54.0	59.0	68.1
– Children under 6			32.0	66.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
– Elderly aged 70 and above (exclude SSNIT pensioners)	69.1	67.5	70.0	71.0	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0
– Indigents	3.2	6.3	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
– Informal sector	9.7	18.8	26.0	27.0	28.0	33.0	38.0	43.0	48.0	53.0	58.0	63.0
Total (National)	14.3	26.4	30.3	36.4	42.4	44.9	48.3	51.6	55.0	58.4	61.7	66.2

It has to be noted that under all three scenario assumptions the level of coverage of the indigent population is rather low. A steep increase of the coverage of the indigent population by about 10 per centage points per annum starting from the presently low coverage of 7 per cent, so that a nearly complete population coverage were to be reached by 2016, would lead to a faster deterioration of the financial situation of the NHIS and would lead to the first annual deficit around 2017.

The above assumptions lead to the following key results shown in Table 5.

Table 5. Projection results of the NHIS under the two scenarios 2006-2016, Ghana
(in millions of new Ghana cedis)

Projected financial impact of alternative coverage scenarios						NHIS Ghana				
Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Annual Balance in million Ghana Cedis											
Base scenario	146	79	130	163	182	201	216	226	229	203	186
Scenario I	146	79	57	13	32	32	28	18	1	-25	-62
Scenario 2	146	79	103	111	136	148	159	165	164	155	120
Total reserves in million Ghana Cedis											
Base scenario	294	372	502	665	847	1048	1264	1490	1719	1923	2109
Scenario I	294	372	429	443	474	507	534	552	553	528	466
Scenario 2	294	372	475	587	722	871	1029	1194	1358	1512	1632
Total Reserves in % of annual expenditure											
Base scenario	1.5	1.9	2.3	2.4	2.5	2.5	2.5	2.4	2.2	2.0	1.9
Scenario I	1.5	1.4	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4
Scenario 2	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.8	1.7	1.6	1.4

The inclusion of all children under 18 would turn the annual balance negative in 2016. In order to maintain a contingency reserve of say 50 per cent of the annual expenditure an increase of the formal sector contribution rate from 2.5 per cent to 3.0 per cent would be needed around 2011 under the given set of assumptions.

6. Conclusions and recommendations

There is little doubt that the NHIS could afford the coverage of all children under age 18 for the next few years. This is largely due to the substantial level of reserves that have been accumulated. However, since it is expected that expenditure under the NHIS changes structurally faster than income, annual deficits are likely to appear around 2015 and the accumulated reserve might diminish fast.

One also has to bear in mind that the projections made here are subject to considerable uncertainty with respect to the development of the coverage of "non-paying" persons, the levels of medical inflation and the developments of utilizations levels.

It is thus recommend here to proceed with caution and to:

- begin with covering the children under age 6 (or including age 5) irrespective of the insurance status of their parents;

- monitor the development of the financial situation and increase the covered group of children in one or two more steps during the next decade depending on financial developments;

- stipulate by law a minimum level of reserves that the scheme (say for example 50 per cent during the maturing phase of steep coverage increase or 30 per cent of the annual benefit expenditure) has to hold over a certain projection period (say 10 years during the maturing phase),

- introduce provider payment systems that support the containment of per capita cost before a fee-for–service triggered "cost explosion" (as has been experienced by so many other schemes in the past) sets in.

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