



中華人民共和國香港特別行政區政府總部食物及衛生局
Food and Health Bureau, Government Secretariat
The Government of the Hong Kong Special Administrative Region
The People's Republic of China

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1 December 2014

Ms Maisie LAM
Chief Council Secretary
Legislative Council Secretariat
Legislative Council Complex
1, Legislative Council Road
Central

Dear Ms LAM,

**Panel on Health Services
Subcommittee on Health Protection Scheme**

Follow-up to the meeting on 12 September 2014

I refer to your letter of 23 October 2014. The requested supplementary information is provided at **Annex**.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Sheung-yuen LEE', written in a cursive style.

(Sheung-yuen LEE)
for Secretary for Food and Health

Encl.

**Supplementary information requested by the Meeting of
Subcommittee on Health Protection Scheme
of the Panel on Health Services on 12 September 2014**

Item (a)(i) -

in respect of the average standard premium of the Standard Plan of the Health Protection Scheme (“HPS”) which was estimated by the Consultant to be around \$3,600 in 2012 constant prices and subject to a potential range of variation between -8% and +45%,

- (i) *the whole set of assumptions and the actuarial model upon which the calculation for the estimated standard premium was based; and*

Administration’s response

The estimated average standard premium of the Standard Plan of the Health Protection Scheme (HPS) is derived through a sophisticated actuarial pricing model developed by an independent consulting firm appointed by Food and Health Bureau viz. PricewaterhouseCoopers Advisory Services Limited (the Consultant). The consulting team consists of internationally renowned experts in healthcare and insurance business, qualified actuaries with solid knowledge in insurance market operation, and other professional consultants in market analysis and financial projection. The technical details of the actuarial model are summarised in Appendix A to LC Paper No. CB(2)1264/13-14(01). The forthcoming illustration serves as further elaboration on the assumptions and methodology of the actuarial pricing model.

2. The estimation process for the average standard premium of the HPS Standard Plan starts with construction of a **Baseline Scenario** as the first set-up to visualize the situation of individual indemnity hospital insurance market without the implementation of the HPS. This is necessary to enable meaningful comparison with the scenario under which HPS is in place, i.e. the **HPS Scenario**. Based on local market study and actuarial modelling, the Consultant estimates the average standard premium of existing individual indemnity hospital insurance products providing coverage for ward-level hospitalisation (but without some of the essential features which are lacking in the market but are made mandatory under the HPS). This estimate would be used as the base premium for comparison

with the estimated average standard premium of the HPS Standard Plan. The estimation of the base premium is based upon an integrative actuarial pricing model with assumptions made with reference to local market situation. Firstly, assumptions on population and market uptake are used to estimate the number of policyholders. Major references include the population projections based on estimates of 2011 Population Census and the profile of population with health insurance coverage by age, gender, health condition and income level which is revealed by the latest Thematic Household Survey conducted by Census and Statistics Department available when conducting the consultancy. Secondly, claims frequency, average billed size and claims-to-bill ratio are adopted to estimate the insured cost per person. Reference is drawn from the claims data provided by the Hong Kong Federation of Insurers (HKFI) and the bills data provided by some private hospitals upon enquiry by the Consultant. Thirdly, multiplying the number of policyholders by the estimated insured cost per person provides an estimate of total claims cost of the indemnity hospital insurance market. Fourthly, the total claims cost are adjusted for expense loading rate (assumed to be 43%¹) and a conversion factor due to premium loading (assumed to be 3%²) to arrive at total standard premium revenue. Lastly, the estimated total standard premium revenue is adjusted for the estimated size and demographic profile of market uptake to estimate the average standard premium of existing ward-level hospital insurance products. The average standard premium of ward-level hospital insurance products is estimated to be \$3,300 per person per annum in 2012 constant prices.

3. For the sake of consistency, the same actuarial model structure is applied to estimate the average standard premium of HPS Standard Plan under the HPS Scenario. Certain assumptions under the Baseline Scenario continue to apply as they are not significantly affected by the difference in product design between existing ward-level hospital insurance products and the proposed HPS Standard Plan, including the demographic and uptake assumptions, the assumption on the expense loading rate and the assumption on the conversion factor due to premium loading. Yet the assumed value of some input parameters including claims frequency, average billed size, and claims-to-bill ratio under the HPS Scenario has to differ from the Baseline Scenario in order to reflect the impacts of a

¹ This assumption was made with reference to the industry statistics available when the consultancy study was conducted.

² This refers to the proportion of premium loading revenue in total premium revenue, which depends on the proportion of insured population charged premium loading and the profile of loading rates applied in the market. The assumed value of conversion factor at 3% is based on the Consultant's assessment about morbidity risk and the proportion of less healthy insured people in the insured population.

different product design. These adjustments would lead to premium impacts by different contributory factors that add up and translate into the estimated average standard premium of HPS Standard Plan at \$3,600 per person per annum in 2012 constant prices (9% more than the base premium of \$3,300 under the Baseline Scenario). Since some premium impacts may vary considerably depending on market reaction, the estimated figure of \$3,600 is subject to a range of variation from -8% to +45%. More specifically, the premium impacts of major contributory factors are explained below.

4. The factor of new benefit structure relates to the fact that the benefit limit of HPS Standard Plan is set at a level slightly lower than the corresponding average of existing ward-level indemnity hospital insurance products, so as to encourage migration of currently insured persons and product innovation in the future. The assumed value of out-of-pocket ratio (i.e. 100% - claims-to-bill ratio³) is adjusted to an average of 33% under the HPS Scenario, from 27% that the Consultant estimates to reflect the comparative market level at present.

5. The factor of coverage of pre-existing conditions stems from enrollment of migrants who have pre-existing conditions excluded in their existing insurance policies. Under the proposed migration arrangement, the migrants may opt to either keep or remove such case-based exclusions, but re-underwriting by insurers may be required under the latter scenario. To the extent that some migrants opt to keep the case-based exclusions and some insurers impose premium loading on those migrants who opt to remove the case-based exclusions, no impact on the standard premium would be generated. Yet for prudence sake, the Consultant assumes in the actuarial calculation that all migrants with case-based exclusions opt to remove the exclusions, and that all insurers concerned opt to waive re-underwriting and instead raise the standard premium to cover the extra claims costs upon removal of the exclusions. In other words, the extra claims costs would be shared by all insured persons through increase in standard premium. In this connection, the Consultant assumes that the overall claim frequency would increase on average by about 5%, leading to a broadly similar magnitude of increase in standard premium.

6. Regarding coverage of chemotherapy/radiotherapy, the Consultant takes this as a new feature for actuarial pricing purpose. We note that

³ Total bill cost comprises out-of-pocket cost and claims cost. Hence, the sum of out-of-pocket ratio (out-of-pocket cost as a proportion of total bill cost) and claims-to-bill ratio (claims cost as a proportion of total bill cost) equals 100%.

some existing ward-level indemnity hospital insurance products offer this coverage with a modest benefit level. The impact on the average standard premium of the HPS is estimated to be +8%. The Consultant also conducted sensitivity test with regard to the key assumption on the proportion of insured population requiring cancer treatment who make use of this benefit coverage of HPS. This proportion is assumed to range from 35% to 70% after making reference to the relevant data from Hospital Authority and overseas experience.

7. The Consultant makes reference to both local and overseas experience in assessing the premium impact of the coverage of advanced diagnostic imaging tests as a new feature. The effect of the 30% co-insurance requirement for this benefit item is also incorporated. As most indemnity hospital insurance products do not set out this benefit as a standalone claimable item, the Consultant has conducted sensitivity test with regard to utilisation rate and average cost with reference to international experience, including that of the Organisation for Economic Co-operation and Development (OECD), the United States and Australia. The estimated premium impact (+17% in the mid-scenario adopted by the Consultant) is subject to a range of variation of +5% (based on a lower claims frequency as indicated by Australia's experience) to +42% (based on a higher claims frequency as indicated by the United States' experience).

8. The premium impact of coverage of endoscopy and colonoscopy in ambulatory setting with packaged pricing is assessed under the assumption that the cost of treatment would be lower than those conducted in in-patient setting. The cost of treatment of endoscopy and colonoscopy in ambulatory setting with packaged pricing is assumed to be, on average, 30% of that of inpatient setting. It is assumed that the percentage of these procedures conducted in ambulatory setting would increase from the current 30% to 85% under the HPS. Such cost savings would outweigh the cost increase due to a higher claims frequency (since greater demand would be generated by coverage of ambulatory procedures under the HPS) and the cost increase due to a higher claims-to-bill ratio (it is assumed that the full cost of ambulatory procedures would be covered under the HPS). It is assumed in the model that the claims frequency would increase by 35%, and the claims-to-bill ratio would rise from the current 89% to 100% under the HPS. The impact on the average standard premium of the HPS is estimated to be -12%.

Item (a)(ii) -

- (ii) *information on the price impact brought about by each component of the proposed Minimum Requirements for the HPS Standard Plan, as provided in brief vide the Annex to LC Paper No. CB(2)412/13-14(01), on the estimated standard premium per insured member;*

Administration's response

9. In estimating the standard premium of the HPS Standard Plan, the Consultant has assessed the pricing implications of the proposed Minimum Requirements for the HPS Standard Plan. The assessment strictly follows actuarial professional standards of practice, with a view to ensuring that all the estimates generated by the actuarial model can achieve an acceptable degree of objectivity and precision. After professional assessment, the Consultant considers it necessary to confine the scope of estimation to those requirements which carry significant and quantifiable impacts on the standard premium of the HPS Standard Plan in accordance with basic actuarial principles, including materiality, reasonableness and significance. As regards the other requirements, the Consultant considers that their impacts are non-quantifiable and/or insignificant, and tend to offset each other in overall terms.

10. Among the 12 proposed Minimum Requirements, the Consultant considers that the coverage of pre-existing conditions, the coverage of hospitalisation and ambulatory procedures, the coverage of advanced diagnostic imaging tests and non-surgical cancer treatments, and the minimum benefit limits would carry significant and quantifiable impacts on the standard premium of the HPS Standard Plan. The information on the estimation of their respective impacts has been provided in Appendix A to LC Paper No. CB(2)1264/13-14(01). The remaining requirements are assessed to have impacts on the standard premium of the HPS Standard Plan but the impacts are considered non-quantifiable and/or insignificant. They include budget certainty, standardised policy terms and condition, premium transparency, guaranteed renewal, portability of insurance policy, prohibition of "lifetime benefit limit", guaranteed acceptance with premium loading cap, and cost-sharing restrictions.

11. In particular, the Consultant considered that guaranteed acceptance with premium loading cap would not carry significant impact on the standard premium as the price impact primarily translates into

premium loading. Insurers are allowed to charge premium loading on high-risk insured persons and transfer the high-risk policies to the High Risk Pool (HRP) if the assessed premium loading equals or exceeds 200%. As a result, the “normal risk pool” and hence the standard premium paid by insured persons with standard risk would not be affected. As regards the requirement of guaranteed renewal, the Consultant considers it acceptable not to include this requirement in the scope of quantification, since the price impact would occur only gradually and incrementally in the long term, when there could be offsetting factors through improved market dynamics (e.g. price competition in a more transparent environment or economies of scale). Besides, as guaranteed renewal has become an increasingly popular feature of individual indemnity hospital insurance products offered in recent years, it would be acceptable not to include this requirement in the scope of quantification of price impacts.

12. The Food and Health Bureau considers the premium estimation by the Consultant reasonable and acceptable. We have conducted a desktop research on current products being offered in the market, which shows that at least six ward-level indemnity hospital insurance products offered by six insurers are broadly comparable with the HPS Standard Plan in product design. Despite variation in details, the benefit structures of these products are broadly similar to that of the HPS Standard Plan, while the differences in benefit limits are mostly insignificant. Based on publicly available standard premium tables, the average standard premiums of these six products⁴ range from around \$2,800 to around \$3,500 per person per annum. This premium range is in keeping with the base premium of existing indemnity hospital products as estimated by the Consultant to be \$3,300. The finding also supports the Consultant’s view that the average standard premium of the HPS Standard Plan (estimated at \$3,600) would not represent an unacceptable adjustment from the current market level.

⁴ For the sake of like-with-like comparison, the standard premiums of these six comparative products are all averaged with weighting according to the age profile of insured persons adopted by the Consultant.

Item (b) -

examples (with illustrative figures) to demonstrate the different impacts of covering pre-existing conditions on the actuarial analyses in the estimation of standard premium of the HPS Standard Plan and the cost of a member of the High Risk Pool (“HRP”) as described under paragraphs 10 to 13 of the LC Paper No. CB(2)2260/13-14(01). According to the Administration, the price impact on the former was +5%, whereas that on the latter was six times that of other standard-risk people under HPS; and

Administration’s response

13. As mentioned in paragraphs 10 to 13 of LC Paper No. CB(2)2260/13-14(01), the effect of covering pre-existing conditions on the estimation of standard premium of the HPS Standard Plan versus that of the cost of a member of the HRP involve different contexts. An example with illustrative figures⁵ is provided below to provide a broad illustration of the difference.

14. In this example, it is assumed that there are 100 new joiners and 100 migrants who purchase a HPS Standard Plan offered by an insurer. For simplicity sake, it is assumed that all these 200 customers are of the same age and pay the same standard premium (assumed to be \$3,000 per person per annum) if classified as standard risk.

15. To demonstrate the estimated 5% increase in standard premium arising from the proposed migration arrangement, we assume in this example that 10 migrants (10% of all 100 migrants) are subscribers with pre-existing conditions excluded in their existing policies, and that all of them opt for removal of these case-based exclusions when migrating to the HPS. If the insurer re-underwrites all these 10 migrants, we assume that the extra premium revenue required to offset the extra claims cost would equal \$30,000 or \$3,000 per migrant concerned. This means that the 10 migrants would be charged \$3,000 above the standard premium of \$3,000, equivalent to 100% premium loading. The standard premium can remain unaffected as the extra claims cost has been fully absorbed by the premium loading revenue of \$30,000. An alternative scenario is that the insurer opts to exempt re-underwriting of individual migrants and instead finance

⁵ The figures and assumptions adopted in the example are purely for illustrative purpose, and do not necessarily align with those in the actuarial pricing model developed by the Consultant. Due to complexity of the model, simplified figures and assumptions are adopted to make it easier to comprehend the model methodology and structure.

the extra claims cost through increase in standard premium. Both scenarios are likely and insurers would make business decisions having regard to all relevant factors, including consumer behaviour, their own portfolio risk and competition in the market. For the sake of prudence, the Consultant has adopted the latter scenario when estimating the standard premium of the HPS Standard Plan. The increase in standard premium would be \$150 (= \$30,000 / 200 customers), equivalent to 5% of \$3,000.

16. To demonstrate why the standard premium of HPS Standard Plan would be unaffected by the acceptance of high-risk subscribers whose policies would be transferred to the HRP, we may use the same example and assume that among the 100 new joiners, 30 are high-risk individuals with morbidity risk being six times standard risk. Due to the high morbidity risk, the premium loading assessed by the insurer would exceed the 200% premium loading cap in all cases and the relevant policies are transferred to the HRP. Due to the 200% premium loading cap, the 30 high-risk individuals would only need to pay three times standard premium, while the shortfall between the total premiums collected and the total claims cost would be met by public funding. Since the claims cost arising from the acceptance of high-risk subscribers can be met by their own premiums and Government funding for the HRP, the standard premium that the non-high risk subscribers pay (70 new joiners and 100 migrants) can remain unaffected.

Item (c) -

figures to explain the cost effectiveness of providing public funds to support HRP in order to enable the high-risk individuals to obtain health insurance coverage if they were willing and able to do so, instead of using the same amount of funds to subsidize these individuals to use the public healthcare services when needed.

Administration's response

17. In assessing the cost effectiveness of providing public funds to support the HRP, reference can be made to the analysis on the total cost of operation of the HRP and the cost to Government throughout the projection period from 2016 to 2040 as presented in Appendix B to LC Paper No. CB(2)1264/13-14(01). The analysis shows that, with the entry age limit for guaranteed acceptance (after the first year of implementation of the HPS) set at 40, the cost to Government for operating the HRP is

estimated to be \$4.3 billion (at 2012 constant prices) from 2016 to 2040. Since the total cost of operation of the HRP (a major part being the total claims cost) is estimated to be \$17.8 billion (at 2012 constant prices) over the same projection horizon, the public subsidy rate would be about 24% (\$4.3 billion / \$17.8 billion) of total healthcare expenditure through insurance coverage for these high-risk individuals. For the same treatment undertaken in the private sector because of the availability of the HRP, the same person would otherwise have to seek care through public healthcare services where the subsidy rate is significantly higher (about 97%). Everything being equal and putting aside issues of induced demand in the presence of insurance, the above analysis shows that the amount of public subsidy provided to high-risk subscribers through the HRP should be considerably less than the case where they choose to use healthcare services in the public sector.

**Food and Health Bureau
December 2014**