

Overall Report on Actuarial Study
Commissioned by the Social Welfare Department
on Financial Condition of
a Non-governmental Organisation



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1. Executive Summary

After some ten years from the introduction of the Lump Sum Grant Subvention System ("LSGSS"), Deloitte Consulting (Hong Kong) Limited has been engaged to conduct an actuarial study, in accordance with Recommendation Two of the Lump Sum Grant Independent Review Committee ("LSGIRC"), to assess non-governmental organisations' financial ability to meet their contractual salary commitment to their Snapshot Staff. This pilot actuarial study involved one non-governmental organisation (NGO) which provided valuable experiences to be shared among other NGOs in the social welfare sector in Hong Kong.

The NGO which participated in this pilot actuarial study was Chung Shak Hei (Cheung Chau) Home for the Aged Limited ("CSHCC"). It provides community care and support services as well as residential care, meals, personal care, and nursing care for the elderly, most of whom, along with the majority of the NGO's staff, are residents of Cheung Chau Island. We analysed its current and historical data, including staff structure, payroll, turnover rates, income, funding, expenses, and reserves. We also conducted individual interviews on-site to collect qualitative comments from the participating NGO's management and staff.

Specifically, based on data provided by the NGO, we constructed an actuarial model to measure the NGO's liability in respect of its Snapshot Staff commitment and its ability to meet its projected payroll costs. The model is designed to project future finances for the NGO, based on a set of tailor-made assumptions which relate both to the economic environment and the composition and pay levels of, and changes in, the workforce. Some of these assumptions "simplify reality", for example by assuming all new hires have the same job profile as the leavers they replace, and have been subject to sensitivity testing. Nevertheless, the result is a uniquely scientific view of future cashflows for many years.

Although the profile of this NGO is quite different to many other NGOs, we believe that the principles of our study, and the general nature of our conclusions, are relevant to all NGOs that come under the LSGSS.

The study has shed substantial new light on the NGO's future finances. In particular, it has examined its ability to maintain its current human resource management practices over the medium term, and illustrated what demographic and other changes, should they arise, would indicate the need for modifying these practices. By using actuarial modelling we are able to, as it were, "look further into the future" on a scientific basis, allowing the NGO more advanced planning for potential changes, facilitating smooth transition and communications with all stakeholders concerned.

Based on the findings of this study, we recommend that:

1. Actuarial valuation services be offered to NGOs that are interested in better understanding the level of reserves required to honour their Snapshot Staff salary commitments;
2. As part of point 1 above, NGOs participating in actuarial valuations to work with actuaries to develop a set of consistent assumptions for such valuations, so they can have "ownership" of their own figures and also understand the sensitivity of assumption changes;
3. At the same time as the valuation in point 1 above, actuarial assessment services of the NGO's current pay policy be offered to NGOs that are interested in measuring its longer-term affordability;
4. Each NGO to develop a strategy for the use of its reserves, once they become surplus to the actuarial liability (i.e. the liability in respect of the Snapshot Staff commitment);
5. Each NGO to develop a policy around the impact on actuarial liabilities of any future changes to the NGO's human resources management practices;
6. NGOs with a different range of service and human resources characteristics from the CSHCC be included in future actuarial studies.

A total of two reports have been produced during this actuarial study – an Individual Report that includes details on CSHCC-specific findings and recommendations, and this Overall Report that provides an overview of this study, our key findings and recommendations, as well as key lessons learnt to guide our way forward. The Individual Report has been delivered to the CSHCC by the time of publication of this Overall Report.

Deloitte Consulting (Hong Kong) Limited

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2. Introduction

NGOs provide about 80% of Government-funded social welfare services in Hong Kong through 171 subvented NGOs (data as at October 2010). In order to utilise public funds more effectively and flexibly, the Lump Sum Grant Subvention System ("LSGSS") was introduced in January 2001 as a major revamp of the public funding and management of NGOs in the social welfare sector in Hong Kong. The introduction of the LSGSS aimed to give NGOs flexibility in their staffing structure, salary structure and individual items of expenditure thereby allowing them greater autonomy to deploy resources and re-engineer services to meet the dynamic nature of social needs.

Since the introduction of the LSGSS, staff occupying subvented posts and working at NGOs' subvented service (on Model System and/or Modified Standard Cost System) as at 1 April 2000 (defined as "Snapshot Staff") have been given certain protections in respect of their salary increments as they progress along the original pay scale provided that they remain employed by the same NGO without being re-graded or promoted, and Provident Fund ("PF") benefits. In this report we refer to the salaries resulting from these protections, which are given to Snapshot Staff in respect of their salary increments unless they leave the NGO, or are regraded or promoted, as Snapshot Staff Commitments.

Although the number of Snapshot Staff has reduced significantly over the years, NGOs have expressed concern over their ability to meet the related contractual commitments. Reserves are being held by NGOs specifically to help meet these commitments in future.

A review of the LSGSS was undertaken in 2008 by the Lump Sum Grant Independent Review Committee ("LSGIRC"), which identified areas of improvement and made 36 recommendations, one of which was to *"make available an actuarial service for NGOs to assess their ability to meet Snapshot Staff commitments. If the result of the actuarial study affirms that the NGO is capable of meeting Snapshot Staff commitments, the NGO will have a sound basis for considering more progressive human resource policies such as enhancing the remuneration package for staff, introducing performance related pay, etc. Spare resources may also be deployed for staff development purposes."*

It should be stressed that the LSGIRC strongly endorsed the LSGSS in general. The actuarial services are therefore intended to provide NGOs an independent and scientific assessment on their financial viability arising from their Snapshot Staff commitments. In fact, this is an endeavour to seek improvement in the LSGSS while honouring a legacy of the prior system, rather than looking for major changes under the LSGSS.

In the next chapter, we will provide an overview of our actuarial methodology and assumptions, as well as our findings on reserve measurement and overall affordability. Chapter 4 will cover our recommendations to NGOs based on the findings of this actuarial study, while Chapter 5 will outline our views on the way forward for other NGOs that are interested in participating in future actuarial studies.

3. Actuarial Analysis and Findings

We have undertaken an actuarial analysis of the participating NGO's payroll requirements, to determine the adequacy of related reserves and also the financial viability of its pay strategy. During this study, we have also conducted interviews with the NGO's management and staff to better understand this organisation's unique characteristics and challenges. From the analysis we have drawn conclusions and made recommendations on potential changes to human resource management strategy.

3.1 Measurement of the Reserve

We have been asked to measure the adequacy of the reserve to meet the participating NGO's salary commitment to Snapshot Staff. Since the introduction of the LSGSS, staff working at NGOs' subvented service units under Model System and/or Modified Standard Cost System as at 1 April 2000 (defined as "Snapshot Staff") have been given certain protections in respect of their salary increments as they progress along the NGO's original pay scale provided that they remain employed by the same NGO without being re-graded or promoted, and Provident Fund ("PF") benefits. In this report we refer to the salaries resulting from these protections, which are given to Snapshot Staff in respect of their salary increments unless they leave the NGO, or are regraded or promoted, as Snapshot Staff Commitments. In the absence of the commitment, we call the salaries the NGO would otherwise choose to pay, "Non-Commitment Pay".

One of the main purposes of the LSGSS was to enable NGOs to make good use of the flexibility provided under the LSGSS so that they may operate more efficiently, in effect treating the LSG as an agreed subvention for services, for which the NGO would manage its own actual costs. If, instead of the Snapshot Staff Commitment, the NGO had been given an immediate free hand to choose salary levels then, after a period of years to allow gradual adjustment – and the period since 2000 would normally be viewed as sufficient for the adjustment – we would treat its pay to Snapshot Staff as Non-Commitment Pay. To the extent the NGO must adhere to the Snapshot Staff Commitment instead of paying Non-Commitment Pay, such a commitment is a legacy of a prior subvention system. Therefore, "Snapshot Staff Commitment less Non-Commitment Pay" is a payroll cost that is appropriately reserved for. The present value of all future "Snapshot Staff Commitment less Non-Commitment Pay" would be accumulated steadily from any surplus funding. We call the full reserve fund equal to the liability in respect of the Snapshot Staff Commitment the "Full Commitment Reserve". Once the Full Commitment Reserve is accumulated then, in following years:

- Non-Commitment Pay would be paid out of current payroll funding, and
- The rest of the Snapshot Staff salaries would be debited to the reserve (i.e. writing it down)

Our first objective is therefore to measure the Full Commitment Reserve. If the current reserve, i.e. Actual Commitment Reserve, is less than this figure, then the NGO has the following options:

- Continue to build up the reserve until it meets the Full Commitment Reserve,
- Consider reducing the commitment, or
- Determine if reserve shortfalls can be met out of future funding.

The calculation of the Full Commitment Reserve depends principally upon three assumptions:

1. How we define Non-Commitment Pay, i.e., what we assume the Snapshot Staff's pay would be in the absence of the commitment;
2. The discount rate, i.e. the interest rate at which the present value of future payments is calculated;
3. The average annual rate at which the NGO's original pay scale is assumed to increase in future, which we assume to be equal to the rate of consumer price inflation.

We have not assumed mortality of the Snapshot Staff. The impact of mortality is relatively light, and can be assumed as an element of conservatism in the calculations, to be taken into consideration when assessing the appropriateness of other assumptions.

3.2 Affordability

We now address whether the Snapshot Staff Commitment, combined with the NGO's current pay strategy, will remain affordable.

The Full Commitment Reserve represents a commitment to Snapshot Staff throughout their working lives, which extends in a projection of over twenty years. Though it is important from the point of view of long-term solvency, the reserve itself provides relatively little information about the cashflow resources and needs of the NGO in the medium term. For that purpose, we need to measure the NGO's total payroll requirements over a number of periods of years – we have taken five, ten, fifteen and twenty years – and compare those requirements with the sources of payroll funding. After twenty years, the Snapshot Staff Commitment has become quite small because most Snapshot Staff would have retired.

The reserve is available to make up shortfalls in available future funding in order to meet future payroll. Of course, if the reserve is used up before all Snapshot Staff retire, it can no longer fund their Commitment.

In order to measure the constraints upon future payroll, we need to make assumptions about the sources of future payroll funding. The most obvious assumptions would be:

1. Current sources of all NGO funding (excluding PF funding*) continue at the same level in real terms (i.e. adjusted for inflation);
2. Current non-payroll NGO expenses (excluding PF funding*) continue at the same level in real terms (i.e. adjusted for inflation).

** We understand that the NGO receives PF funding on an actual basis for its Snapshot Staff and at a standard rate of 6.8% of the mid-point salaries for its non-Snapshot Staff. Any surplus from PF-related cash-flows are required to be put into a separate reserve account for future PF commitments instead of being treated as a payroll funding item. PF-related cash-flows are therefore not included in our calculations.*

We should, of course, also factor in any scheduled funding changes. We also assume that the total sources of payroll funds, including current reserves, will be used solely for the purposes of payroll over a period of up to twenty years (i.e. by which time most Snapshot Staff would have retired).

If we assume that the NGO will maintain its Snapshot Staff Commitments, then we can determine the total funds available for Non-Snapshot Staff by subtracting the value of the Snapshot Staff Commitments. We call this amount the "Actual" Non-Snapshot Staff future payrolls.

At the same time, we can project the current Non-Snapshot Staff payroll into the future, using the pay scales currently adopted by the NGO. As Snapshot Staff retire, and as Non-Snapshot Staff turnover, we assume they are replaced by Non-Snapshot Staff new hires who are also subject to the same Non-Snapshot Staff pay scale. The result is "Projected" Non-Snapshot Staff future payrolls (i.e. implied future cost of Non-Snapshot Staff future payrolls, based on the NGO's existing pay policy.) New hires are all assumed to have the same "average" profile of the staff they replace.

We are then able to compare, for Non-Snapshot Staff future payrolls, if Actual is smaller, then (if our assumptions are borne out) the pay scales underlying the projected payrolls cannot be afforded, or else the number of staff needs to be reduced. On the other hand, if Actual payrolls are greater, the NGO has the scope to increase the pay scales, and/or hire additional staff after fulfilling its Snapshot Staff Commitments.

Results Using Different Assumptions

It is important to review results not just on a single chosen set of assumptions, but with some significant variations for each assumption. This is typically referred to as a "sensitivity analysis", i.e. showing the sensitivity of the results to assumption changes. It is important for two reasons:

- For some assumptions, such as inflation rate or staff turnover rate, there is a range of potential choices which can be supported by scientific argument. A single, chosen value or "best estimate" is typically based upon a personal perspective of which argument appears strongest. However, if a range of educated opinions were sought, then an equivalent range of values around the "best estimate" is likely to result. The sensitivity analysis shows the financial significance of such a range.

- Though some scenarios' assumptions are viewed as less likely, many remain significantly possible. In the event that alternative assumptions appear increasingly likely, the sensitivity analysis shows the financial consequences of a change in outlook, indicating that attention should be paid to monitor emerging experience related to the assumptions.

Results may be prepared for variations in:

1. Inflation and discount rate assumptions;
2. Turnover rates of staff (and possibly mortality rates);
3. Number of new hires to replace leavers;
4. Salary and job-type profiles of new hires;
5. Discontinuance or addition of different funding items;
6. General growth or decline in funding levels.

3.3 Conclusions

The pilot study on the participating NGO was able to show, using a variety of scenarios:

- The timeframe during which the reserve requirement was expected to be fully met to achieve financial viability for the Snapshot Staff Commitment, and around what time the reserve could start to be used for payroll and other purposes;
- The short, medium and long-term affordability of current pay policy, and how changes in human resources management practices would alter that affordability.

An example of the scenario ranges chosen was the NGO's level of turnover in future years. By modeling the impact of such turnover, we were able to show its effect upon the relationship between funding, payroll expense and existing reserves. Depending upon turnover levels, the reserves were used in varying degrees and for various lengths of time to cover differences between income and outgo.

Given the sensitivity of our results to different scenarios tested, we conclude that it is important for NGOs not only to study the results of such scenarios, but also to actively monitor ongoing financial and demographic experience so that the likelihood of each scenario can be regularly updated. By such a practice, the actuarial model becomes a type of "early warning system", allowing the NGO to make advance plans for future financial constraints. This approach permits the NGO to make smoother transitions to new human resources management practices, both in terms of developing policy and in communicating it with stakeholders. Of course, the model can be instrumental in guiding such new practices, by measuring affordability based upon timing, changes in hiring practices, etc.

4. Recommendations

In this chapter, we will discuss the observations and recommendations that we have developed for the NGOs based on our actuarial findings.

1. In order to ensure that reserve funds are managed efficiently, and are both adequate and not excessive, we recommend that periodic actuarial valuation services be provided to all NGOs that are interested in better understanding the level of reserves required, as well as NGOs that are interested in receiving actuarial assistance in monitoring assumptions used in existing or historical forecasts.
 - a. It is likely that some NGOs' reserves are currently needed for payroll. We believe such NGOs should have a priority in terms of measuring the affordability of their Snapshot Staff Commitment.
 - b. For other NGOs, it is possible that reserves continue to grow and meet the Full Commitment Reserve requirement in the next few years. Any reserve that is surplus to the Commitment can then be identified and used for other more pressing human resources management needs.
2. The NGOs, based on discussions with actuaries, should develop more knowledge about the actuarial methodology and the capacity to choose appropriate sets of assumptions for the purposes of the actuarial valuations, and also to understand the results' sensitivity to different assumptions. Analysis of historical data is an important feature of this process.
 - a. Choices of discount rate, inflation, employee turnover and non-commitment pay levels (as defined earlier) are critical to the results. The assumptions chosen are applied over a period of twenty or more years. Study of historical data is important for the choice of assumptions, but it also should reflect current trends and expected or potential changes in the future.
 - b. It is important that a set of assumptions shows consistency, i.e. the economic or demographic justifications for different assumptions are consistent with each other. For example, low interest rates are typically accompanied, over the longer term, by low inflation. Some education on choosing assumptions is therefore beneficial to the NGO, which should have responsibility for final selection of assumptions.
3. A policy should be developed by each NGO for the use of excess reserves for other human resources management purposes, once the Full Commitment Reserve is fully funded.
 - a. The purpose of the reserve is to pay for the cost of the Commitment over and above non-commitment pay. Soon, the total value of that commitment will reduce as more Snapshot Staff retire, freeing more funds for payroll purposes.

- b. The timing and amounts of freed reserves can be measured by the actuarial valuation. This will allow advanced preparation of the policy, potentially to fund human resources management needs that have been identified but not yet financed.
4. As described in Section 3, in addition to the actuarial valuation of the participating NGO's Snapshot Staff Commitment, the analysis was extended to provide a measure of their overall pay policy's affordability. In other words, all payroll costs were projected in accordance with current policy and compared with funding resources. As part of each NGO's actuarial analysis, we believe this is a valuable tool to determine the potential need, and appropriate timing, of changes to human resources management practices. As described in our Conclusions to Section 3, such a tool is an "early warning system", making adaptation to future financial constraints more manageable through advanced planning. Assumptions and future experience would then be carefully monitored, and the projection of affordability would be regularly updated as necessary.
5. In the event that an NGO revises or is considering revision of its human resources management practices, this may be reflected in a recalculation of its full commitment reserve and its payroll-policy affordability projection, as described in point 4 above. We calculate an NGO's Full Commitment Reserve (i.e. the actuarial liability of the Snapshot Staff commitment) based upon not only its Snapshot Staff pay, but also upon its current pay policy for non-Snapshot Staff. If that policy for non-Snapshot Staff should change, this may raise or lower the surplus funding and therefore the reserve level. A decision as to whether or not to adjust the level of surplus funding being put in the reserve will depend at least partly upon the consequences for human-resources management practices.

5. The Way Forward

In this chapter, we will discuss the major considerations in carrying this actuarial study forward and making this actuarial valuation service available to other NGOs that are interested in more closely monitoring their financial viability in meeting salary commitments.

5.1 Data Requirement

Briefly, the data items needed for the study would be:

- Census data of current staff (i.e. Date of birth, date of hire, salary, position, etc.);
- Historical data on salaries and employee turnover (5-10 years);
- Details of pay policy, including grade structure, increases [increments] and caps [maximum point] for seniority;
- Historical financials, and their budgeted projections as far as known.

We are aware that sophistication of such record-keeping will vary substantially between different NGOs, particularly of different sizes, and the actuaries involved in such work can be flexible in meeting NGOs' needs. We suggest the first project stage to be a meeting where two topics are explored:

- The NGO's priorities with respect to the information they may be expecting or hoping to learn from the study, and any special concerns they have about the process;
- The nature of the NGO's financial and staff records, available manpower to collect them, and what limitations this may impose on the analysis.

As an example, an NGO may have limited information on its historical turnover. This will not prevent a useful study, but may require stronger assumptions (i.e. ones that are made with less supporting data) which will need to be taken into account when evaluating the results. Going forward, turnover can be measured more precisely and – as described above – results can be updated in the light of new data.

Indeed, the process of actuarial valuation may encourage the NGO to make projections differently, in order to facilitate further studies.

In summary, we do not think there is much advance preparation for the study needed. The actuary's initial meeting will clarify a detailed process for data collection. Thereafter, the NGO will develop understanding of the methodology, and assumption-setting procedure, through further consultation with the actuary.

5.2 Relevant Parameters and Assumptions

In addition to the data described above, critical to our results are the assumptions about human resources management and related policies, for which we would want significant input from the NGO, for example:

- Expected future rates of turnover, and how the NGO proposes to manage it;
- Flexibility of human resources management practices, and the likely responses of staff;
- Potential future changes in staff structure, both qualitatively and quantitatively;
- The impact of the labour market as it relates to the NGO, and the NGO's pay strategy for new hires;
- Potential changes to the business model of the NGO, and its impact upon both funding and staffing.

We emphasize that the ultimate choice of which factors to be reflected, and how strongly, is a matter for the NGO to decide. The role of the actuary is to explain the consequences of certain choices, expressing an opinion as to their relative likelihood and financial relevance.

5.3 Future Actuarial Service Provision

The participating NGO of this pilot study, CSHCC, has some unique characteristics and challenges that might not be shared by other NGOs in Hong Kong. In order to validate the findings from this study and to further refine the actuarial model, we recommend that a second wave of actuarial study be conducted among a larger selection of NGOs with a different range of service and human resource characteristics. After two rounds of actuarial studies, a standardised "ready-to-market" actuarial package might be developed for the NGOs that are interested in better understanding their reserve requirement.

It is worthwhile to mention that CSHCC has contributed substantive and comprehensive data for our actuarial analysis. As well, their Board and staff members have also given candid responses during individual interviews. The overall readiness of NGOs to provide relevant and complete data as well as reliable and candid comments will be instrumental in achieving an objective actuarial study. We recommend the NGOs shall continue to participate on voluntary basis.

As mentioned in our first recommendation, in the process of selecting NGOs for the second wave of actuarial study, priority should be given by those NGOs who are currently budgeting, sometime in the next few years, a draw-down of their reserves in order to help finance upcoming payroll needs. These NGOs should raise two important questions more urgently than the others:

- Is their pay policy sustainable, in the short, medium and longer term?
- Will the reserves be put to their most appropriate use at the current time? For example, is it better to start reviewing human resources management practices at this time, limiting the draw-down of their reserve, or is their reserve acting as a vital source of temporary liquidity for a policy which is ultimately quite affordable?

In summary, and as mentioned elsewhere in this report, if an NGO has its own concerns about the viability of future financing with respect to its current pay practices, the actuarial analysis provides the most potent tool for measuring the likelihood of future financial constraints, and also permits the modelling of alternative human resource management practices to plan a viable way forward.

Appendix – Glossary

Terms	Definition
Snapshot Staff	Staff occupying subvented positions and working at NGOs' subvented service (on Model System and/or Modified Standard Cost System) as at 1 st April 2000 upon the introduction of the LSGSS
Snapshot Staff Commitments	Salaries resulting from certain protections in respect of salary increments given to Snapshot Staff
Non-Commitment Pay	In the absence of Snapshot Staff Commitments, the (hypothetical) salaries that an NGO would choose to pay its staff
Actual Non-Snapshot Staff Future Payrolls	Projected NGO funding, less projected non-payroll expenses, less projected Snapshot Staff Commitments (assuming no Snapshot Staff leaving prior to retirement)
Projected Non-Snapshot Staff Future Payrolls	Projected future cost of Non-Snapshot staff future payrolls based on the NGO's existing pay policy towards its Non-Snapshot Staff, and with stated assumptions about turnover and hiring
Actual Commitment Reserve	Current LSG reserve held by the NGO, up to a maximum value of the Full Commitment Reserve
Full Commitment Reserve	The present value of the extra cost for the NGO to fulfil the Snapshot Staff Commitments. The adopted methodology sets this value equal to the present value of all future Snapshot Staff Commitments less Non-Commitment Pay