

**Speech**  
**Speech by SFST at Annual Dinner of Actuarial Society of Hong Kong**  
**(English only)**

Monday, November 6, 2017

Following is the speech by the Secretary for Financial Services and the Treasury, Mr James Lau, at the Annual Dinner of the Actuarial Society of Hong Kong (ASHK) today (November 6):

Kevin (President of Actuarial Society of Hong Kong, Mr Kevin Lee), ladies and gentlemen,

Good evening. I am very delighted to join you this evening. I feel like we are speaking almost the same language. By that, I am not referring to English, but mathematics. I studied computer science and statistics at the University of Waterloo. In our Faculty of Mathematics, I brushed shoulders with actuarial courses, but I did not pick any actuarial course as an elective because the actuarial course Mathematics 235 was known to be a very tough course, dealing with the mundane subject of mortality, and I needed to maintain my focus on computer science and statistics. Well, I ended up working as a systems engineer with IBM in Hong Kong and then joined the Government as an Administrative Officer, and the rest is history.

Some of my contemporaries at the University of Waterloo went on to become successful actuaries in major insurance companies. Out of curiosity, I did a quick internet search and came across a book titled "Actuaries' Survival Guide: How to Succeed in one of the most Desirable Professions". In Chapter 1, the author wrote, "Actuarial science is an exciting, always changing profession, based on fields such as mathematics, probability and statistics, economics, finance, law and business. Most actuaries require knowledge and understanding of all of these fields and more." With this breadth of knowledge under their belts, no wonder actuaries were considered to have the best job by Forbes magazine in 2013.

Actuaries work mainly in insurance related work. When I was the Chief Executive Officer of the Hong Kong Mortgage Corporation (HKMC) during 2004 and 2012, my actuary colleagues there helped me develop the first and so far only reverse mortgage product in Hong Kong, which is still very popular

nowadays. The HKMC also runs a very successful Mortgage Insurance Programme to help reduce the down-payment burden for homebuyers. So, I can say I have a very pleasant association with actuaries. Let me turn now to your profession in general.

In Hong Kong, under Section 53E of the Insurance Ordinance, the appointed actuary of a life insurance company can report straight to the Insurance Authority about the situation of insufficient assets to meet liabilities of the life insurance company. In other words, actuaries are in a very unique position in life insurance companies. On the one hand, they have to do analysis for product design and pricing to make insurance products commercially viable. On the other hand, they protect insurance policyholders by ensuring that there is enough asset buffer against liabilities, even if this means that they may be at odds with the top management. History tells us that, in fact, actuaries help prevent insurance companies and pension plans from insolvency.

But unlike other professionals such as lawyers, accountants, architects and engineers, actuaries are relatively invisible in the community. I am glad that ASHK has been organising high profile regional seminars, topical workshops and school outreach programmes to deepen public understanding of your profession. It is also encouraging that your Society is making good progress in developing the first Hong Kong Practical Education Examination as the standard test for future admittance of fellowship to the Society. The examination will help ensure that practising actuaries in Hong Kong have sufficient local knowledge. The Insurance Authority and colleagues in my Bureau will continue to work with ASHK to promote the development of the actuarial profession in Hong Kong. I wish to take this opportunity to share with you a few observations on changes that will bring opportunities and challenges to your profession.

First, technological development will make actuarial analysis increasingly dynamic. When Edmund Halley constructed the life table in the late 17th century, he dealt with only three static variables, i.e. births, deaths and the ages of people when they died. Since then, the actuarial process is largely based on static models. Time has changed. New technologies collect new sources of real and dynamic data which are made available through telematics, wearables and social media. This means actuarial analysis will be increasingly more dynamic and realtime for product innovation, pricing, and customer

servicing. And big data will be reshaping traditional insurance business. Let me use the business solution offered by a new Insurtech startup in Israel called Atidot to illustrate this possible trend of development and the impact on actuarial analysis.

In Hebrew, Atidot means fortune telling. In technical terms, Atidot transforms the traditional actuarial process based on linear, static modelling into a predictive dynamic analytical process. Put in layman terms, Atidot believes that the traditional linear model of fitting the data of age, sex, job, smoking or not, drinking or not, into a statistical table to determine the mortality rate for a life insurance product is obsolete. In data science, a multiple approach instead of linear approach is used to process a much larger set of data. With the help of artificial intelligence and machine learning, Atidot provides a service of profile grouping of policyholders to insurance companies. By analysing both the old data of age and sex, etc, and new data such as driving behaviour, activity level, and even frequency of ATM withdrawals, the profiling enables more precise prediction of the behaviour of policyholders, creating value for insurance companies by optimising pricing, underwriting costs, distribution channels and marketing strategies.

The Atidot story prompts me to ponder on two issues. First, if predictive analytics enable more precise profiling, will insurers refuse to underwrite policies for high risk groups, such that those who need insurance cover the most will be denied access to insurance cover? Second, will data analysts gradually take over the function of actuaries in future? I am more interested in the first question because it has regulatory implications. You are probably more interested in the second one because it is about your job prospects. Don't worry! Out of the three co-founders of Atidot, one is a data scientist, another is a software developer and the third is an actuary. So you are not replaceable, yet! But I think the actuarial profession will see much of its work affected by advances in InsurTech.

I come now to my second observation, which is more upbeat than my first observation on technological developments. This is to do with the demand for actuarial input in the regulation of insurance with the implementation of the risk-based capital (RBC) framework in Hong Kong. ASHK has been actively participating in the process of developing the RBC framework. Many of you have participated in the industry forums for developing the Quantitative Impact

Study (QIS) and helped prepare the data for the first round of QIS. We envisage that we need at least one more round of QIS before we can finalise the proposed parameters for the framework. I appreciate the valuable advice from ASHK and your individual members working in insurance companies. In parallel, we will consult the industry on the proposed legislative framework and the necessary amendments to regulatory guidelines very soon. Our target is to put forward a legislative proposal for the implementation of the RBC Framework to the Legislative Council in late 2018. I will continue to count on ASHK's support to the Government and Insurance Authority for successful implementation of this important regulatory change in the insurance sector.

Lastly, the implementation of IFRS 17 Insurance Contracts will also increase demand for actuarial input in insurance accounting. I am sure many of you know the background and implications of IFRS 17. IFRS 17 introduces fundamental changes to accounting for insurance contracts. It provides useful and standardised information about the current and future profitability of insurance contracts. Although the implementation date is January 1, 2021, just over three years from now, the timeline is actually very tight, given the complexities of the changes involved in accounting practice, enhanced IT system requirements and new actuarial models for assessing Contractual Service Margin 1. The Government and Insurance Authority do not take the transition to IFRS17 lightly. My colleagues in the Bureau have raised with the Insurance Authority the importance of early planning for transition and monitoring of insurers' capacity to comply with IFRS 17. Depending on the advice of the Insurance Authority, the Bureau will be ready to work with the Hong Kong Institute of Certified Public Accountants, the Insurance Authority, the Hong Kong Federation of Insurers and perhaps ASHK as well to ensure smooth transition to the IFRS 17. There is no room for complacency.

Ladies and gentlemen, I have briefly mentioned some developments in InsurTech, changes in the regulatory framework with RBC, and changes in accounting practice brought by IFRS 17. All three areas create opportunities and challenges to the actuarial profession. At the policy level, the Government is grappling with the implications of these changes as well. There is a common thread linking these three areas of development. InsurTech, RBC and IFRS 17 all generate and use a massive amount of data. They enable more precise prediction to reduce uncertainties - be it uncertainty of policyholder behaviour, uncertainty of asset-liability matching, or uncertainty of profitability of

insurance contracts. This data-driven evolution, if not revolution, is exciting and promising. However, will our overconfidence in relying on data to reduce uncertainties breed complacency? This question is my offer of food for thought for this evening.

Thank you.

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