

A Research Note on using Mortality Statistics in Tort Claims

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Abstract

Personal injury insurers constantly need to model the future mortality experience in the process of handling tort claims. Various stochastic mortality modelling techniques are deployed so that lawyers and actuaries specialised in this field of civil litigation can effectively perform the procedures related to dispute resolution and assessment of compensation. In this project, how lump sum awards are judicially determined in Hong Kong is examined. The impact of future mortality rates is discussed in the context of future medical expenses and loss of future earning as a result of discounting the future pecuniary values into a single present-day amount. The time value of money affected by inflation and the claimant's mortality are among the key factors to be calibrated in the present study. The work described in this paper was fully supported by a grant from the Research Grants Council of the Hong Kong Special Administrative Region, China (Project No. HKU 17636316).

Keywords: Tort law; personal injury claims; mortality statistics; compensation.

Background

This present research informed the introduction and on-going judicial recognition of actuarial assessment of personal injury compensation based on Hong Kong's mortality experience and economic conditions. The research produced new insights and had significant impact on how Hong Kong judges apply the century-old English common law principle of *restitutio in integrum* in a modern and global financial hub. The research directly led to an increase in the actual quantum of compensation awarded to the victims of personal injury accidents and clinical negligence, and the surviving dependants of the deceased victims.

Objectives

When an innocent party is injured in a tort-based system of law as the result of the wrong of another party, the innocent party should be awarded adequate and proper compensation. Lady Hale of the Privy Council stated this principle simply and clearly: “The only principle of law is that the claimant should receive full compensation for the loss which he has suffered as a result of the defendant’s tort, not a penny more but not a penny less.” [*Simon v Helmot* [2012] UKPC 5] The basic principle underlying the assessment of the quantum of damages is *restitutio in integrum*. This principle has been defined in various *dicta* of the courts. For example, during the Victorian era of England, Lord Blackburn stated:

“Where any injury is to be compensated by damages, in settling the sum of money to be given ... you should as nearly as possible get at that sum of money which will put the person who has been injured ... in the same position as he would have been in if he had not sustained the wrong.” [*Livingstone v Rawyards Coal Co* (1880) 5 App Cas 25]

As previously articulated by the present authors, the award of adequate and proper compensation to victims of personal injury accidents is a matter of both private and public importance. It is of private importance that the victims receive sufficient compensation to recompense them for the wrongs they have suffered. The purpose of such compensation is not only to ensure that they receive all proper and necessary damages so that they may live as fulfilling lives as possible after injuries. It is also of public importance to instill confidence in the judicial system which provides such compensation. This requires that the system of compensation be based on rational and justifiable economic criteria which can be objectively measured. The system of calculating such awards should be simple to operate using such criteria which are easy to understand, such as life expectancy figures and tables that reflect the proper and true value of money. (*Personal Injury Tables Hong Kong 2016* by W.S. Chan, F. Chan, J. Li and N. Sarony, Sweet and Maxwell).

Until very recently, judges in Hong Kong selected the appropriate multiplier “intuitively” without making any reference to the evidence regarding life expectancies, mortality rates, inflation rates and investment return rates. In 1971, Lord Person of the UK House of Lords said in *Taylor v O’Connor* [1971] AC 115:

“I do not think that actuarial tables or actuarial evidence should be used as the primary basis of assessment. There are too many variables, and there are too many conjectural decisions to be made before selecting the tables to be used. There would be a false appearance of accuracy and precision in a sphere where conjectural estimates have to play a large part. The experience of practitioners and judges in applying the normal method is the best primary basis for making assessments.”

In so doing, Lord Pearson set the scene for what was known as the “intuitive” selection of the appropriate multiplier. Judges used their “knowledge” and “wisdom” yet all too often neglected a large group of factors that actuaries, economists and demographers took into account when compiling the life tables and actuarial tables. It was almost 30 years before formal judicial recognition was accorded to the use of actuarial tables in determining the appropriate multiplier. Lord Lloyd stated in *Wells v Wells* [1999] 1 AC 345:

“The [actuarial] tables should now be regarded as a starting point, rather than a check. A judge should be slow to depart from the relevant actuarial multiplier on impressionistic grounds, or by reference to ‘a spread of multipliers in comparable cases’ especially when the multipliers were fixed before actuarial tables were widely used.”

The tables to which Lord Lloyd referred were the Ogden Tables, published by the UK Government Actuary in 1981 based on the work done by a committee chaired by Sir Michael Ogden QC, and used extensively by judges and practitioners in England and Wales to determine the appropriate multiplier. With General Research Funds awarded by the Hong Kong Research Grant Council, Felix W.H. Chan (as the Principal Investigator) collaborated with W.S. Chan (actuarial science and econometrics) in conducting the research. This project is distinctly interdisciplinary. Four editions of Personal Injury Tables Hong Kong were published by Sweet and Maxwell respectively in 2000, 2005, 2013 and 2016. The latest edition contains the updated tables taking into account the revised HK mortality projections by the Census and Statistics Department (HK Population Projections 2015-2064), under which there is an increase in life expectancy. Its comprehensive contents also cover the inflationary rates for adjusting PSLA (Pain, Suffering and Loss of Amenities), wage statistics and retail price indices.

Research Methods

As explained above, actuarial tables have been used extensively in England and Wales since 1981. Unfortunately, in *Chan Pui Ki v Leung On* [1996] HKCA 678, the Hong Kong Court of Appeal appeared to be ignorant of the tables that had been in use in England and Wales for the previous 14 years, preferring the “intuitive” approach. Justice Litton rejected the admission of economic evidence for determining the investment return on the lump-sum compensation against inflation, a retrograde step which locked the personal injury victims in HK into a time warp which bears very scant relevance to economic reality.

However, significant changes took place in response to the Personal Injury Tables Hong Kong. Recently in Hong Kong, two significant judgments

were rendered by Bharwaney J. in *Chan Pak Ting (No.1)* [2012] HKCFI 1584 and *Chan Pak Ting (No.2)* [2013] HKCFI 179. Chan Pak Ting, 31 years old at the date of trial, suffered catastrophic injuries after a car crash. Two clinical negligence cases were consolidated together with Chan Pak Ting on the same issues related to actuarial tables and discount rates. The plaintiffs are: 12-year old Li Ka Wai who suffered from deprivation of oxygen at birth and became paraplegic, and 12-year old Yuen Hiu Tung who suffered a cardio-respiratory seizure and became mentally retarded and paralysed due to clinical negligence.

The Personal Injury Tables Hong Kong gained judicial recognition in *Chan Pak Ting (No.1)*. Bharwaney J. stated: “[32] ... I agree that the [actuarial] tables should be accepted as the starting point in Hong Kong, just as the Ogden Tables are accepted as the starting point in the UK. In future, there should be less need to refer to previous case law of multiplier precedents, particularly if those cases were decided without reference to actuarial tables by way of a cross-check.” This new approach was subsequently endorsed by the Hong Kong Court of Appeal in *Chan Wai Ming v Leung Shing Wah* [2014] HKCA 318 and *Hussain Kamran v Khan Amar* [2016] HKCA 455.

We explored the methodology of setting the appropriate discount rate in Hong Kong based on Hong Kong’s economic conditions. The discount rate is fundamental to the actuarial determination of the multipliers. It is the rate of investment return the claimant can be expected to achieve on the lump-sum award before it is fully exhausted. The lower the discount rate, the larger the multiplier and also the higher the lump-sum award. In *Chan Pak Ting (No.2)*, Bharwaney J. departed from the conventional discount rate of 4.5% per annum (set by the House of Lords in *Cookson v Knowles* and endorsed by the Hong Kong Court of Appeal in *Chan Pui Ki*). Having examined Hong Kong’s economic evidence, he set 3 different discount rates, reflecting the investment choices of each class of investors as driven by their specific needs and goals. For needs exceeding 10 years, he set a discount rate of 2.5% per annum by taking an “average” portfolio of: (1) 10% in time deposits; (2) 70% in high quality bonds; and (3) 20% in high quality blue-chips which qualify as “widows and orphans” stock. It should be noted that 2.5% is also the current discount rate in the UK. For needs extending beyond 5 years but not exceeding 10 years, the court set a discount rate of 1% per annum. For needs not exceeding 5 years, a negative discount rate of -0.5% per annum was set, following the Privy Council’s decision in *Simon v Helmut* that there was nothing wrong in principle to set a negative discount rate.

The facts of *Chan Pui Ki* can be used to illustrate the impact. As explained above, Justice Litton in *Chan Pui Ki* rejected the admission of actuarial evidence and awarded:

- HK\$108,000 (multiplicand) x 15 (multiplier) = HK\$1,620,000 (lump-sum award for loss of future earnings, about US\$208,660)
- Had actuarial tables (Table 9) been used at a discount rate of 2.5%, the compensation awarded would have increased significantly:
- HK\$108,000 (multiplicand) x 28.10 (multiplier) = HK\$3,034,800 (about US\$390,891, a sharp increase by 1.87 times)

Analysis

(1) On what basis are personal injury damages awards assessed in Hong Kong?

The multiplicand-multiplier approach is adopted in ascertaining the lump-sum awards. Periodical payments are not available in Hong Kong. Hong Kong applies the English common law principles laid down by the House of Lords (now known as the UK Supreme Court) in *Wells v Wells* [1999] 1 AC 345. In awarding damages in the form of a lump sum, the court had to calculate as best it could the sum that would be adequate, by drawing down both capital and income, to provide periodical sums equal to the claimant's estimated loss over the period during which that loss was likely to continue. Hong Kong does not have the equivalent of the UK Damages Act 1996. Assessment of personal injury damages in Hong Kong is governed purely by common law principles.

Hong Kong has its own set of actuarial tables (the latest edition is *Personal Injury Tables Hong Kong 2016: Tables for the Calculation of Damages*, Sweet and Maxwell 2016). The 2016 edition is based on the revised Hong Kong mortality projections by the Hong Kong Census and Statistics Department (Hong Kong Population Projections 2015-2064), under which there is an increase in life expectancy. Whether a new edition is needed in the future will depend on the next mortality projections to be issued by the Hong Kong Government. It is estimated that on average, a new edition is needed in every 5 or 6 years.

The actuarial tables are judicially accepted as the starting point in Hong Kong, just as the Ogden Tables are accepted as the starting point in the UK. (Bharwaney J. in *Chan Pak Ting (No.1)* [2012] HKCFI 1584 and *Chan Pak Ting (No.2)* [2013] HKCFI 179; confirmed by the HK Court of Appeal in *Chan Wai Ming v Leung Shing Wah* [2014] HKCA 318 and *Hussain Kamran v Khan Amar* [2016] HKCA 455).

(2) Periodical payments and discount rate

Periodical payments are not available in Hong Kong. The Law Reform Commission of Hong Kong has recently set up a committee to explore the possibility of introducing periodical payments in the future. Lump sum

awards are adjusted to take account of accelerated receipt. Hong Kong does not have the equivalent of the Damages Act 1996 in the UK. Assessment of personal injury damages in Hong Kong, including the determination of the discount rate, is governed purely by common law principles.

In England and Wales, the discount rate of 4 - 5% was set in *Cookson v Knowles* [1979] A.C. 556. The same discount rate of 4 - 5% was followed in Hong Kong until 2013. In *Chan Pak Ting (No.2)* [2013] HKCFI 179, Bharwaney J. departed from the conventional discount rate of 4.5% per annum (set by the House of Lords in *Cookson v Knowles* and endorsed by the Hong Kong Court of Appeal in *Chan Pui Ki v Leung On* [1996] HKCA 678; [1996] 2 HKC 565). Having examined Hong Kong's economic conditions, he set 3 different discount rates, reflecting the investment choices of each class of investors as driven by their specific needs and goals. The discount rate is the annual net rate of investment return in excess of inflation that a claimant is assumed to achieve on the lump-sum award. To calculate the real rate of return, net of price inflation, the Hong Kong Court employed the changes in the Composite Consumer Price Index ("CPI") as the proxy for price inflation, as it covers approximately 90% of all households in Hong Kong.

As explained in the earlier part of this paper, for needs exceeding 10 years, he set a discount rate of 2.5% per annum by taking an "average" portfolio of: (1) 10% in time deposits; (2) 70% in high quality bonds; and (3) 20% in high quality blue-chips which qualify as "widows and orphans" stock. For needs extending beyond 5 years but not exceeding 10 years, the court set a discount rate of 1% per annum, by taking a portfolio of: (1) about 15% in time deposits; (2) 85% in HK Government Exchange Fund Notes and high quality bonds. For needs that do not exceed 5 years, a negative discount rate of -0.5% per annum was set, following the Privy Council's decision in *Simon v Helmot* [2012] UKPC 5 (an appeal from Guernsey Court of Appeal) that there was nothing wrong in principle to set a negative discount rate. The portfolio is: (1) about 20% in time deposits; and (2) 80% in Hong Kong Government Exchange Fund Notes.

Conclusion

The Personal Injury Tables Hong Kong have been cited more than 60 times in the Hong Kong courts after *Chan Pak Ting*. Example of recent citations can be found in the Annex of this paper. Choosing multipliers "intuitively" on impressionistic grounds has been eschewed. The breadth of factors which actuaries took into account when producing the actuarial tables is now fully appreciated. Judges, lawyers and mediators welcome the move to a standard method of assessing compensation that facilitates sensible resolution of personal injury disputes, keeping with the spirit of the Civil

Justice Reforms in HK. Concerning the discount rate, Mr. Neville Sarony QC argued:

“Taking as a starting point the necessity to take financial information into account, the judge was faced with the critical distinction that Hong Kong had no financial instrument equivalent to UK gilts but he still had to devise a model portfolio that met the criteria for being relative risk free, inflation sensitive and accessible to be drawn down on during its life.” (*Hong Kong Lawyer*, June 2017, pp.32-35)

It is hoped that a working party consisting of judges, lawyers, actuaries and economists will be established in the future. The working party should regularly review the relevant issues for the purpose of setting the most appropriate discount rate(s) for the assessment of personal injury compensation.

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ANNEX

Case name	Judicial reference number	Citation of the Personal Injury Tables
(1) CHAN PAK TING v. CHAN CHI KUEN AND ANOTHER	[2012] HKCFI 1584; [2013] 1 HKLRD 634; [2013] 2 HKC 182; HCPI 235/2011 (16 October 2012)	[16][21][22][30][31][32]
(2) LI KA WAI AND ANOTHER v. HOSPITAL AUTHORITY	[2012] HKCFI 1585; [2013] 1 HKLRD 634; [2013] 2 HKC 182; HCPI 671/2007 (16 October 2012)	[16][21][22][30][31][32]
(3) YUEN HIU TUNG v. HOSPITAL AUTHORITY	[2012] HKCFI 1586; [2013] 1 HKLRD 634; [2013] 2 HKC 182; HCPI 228/2010 (16 October 2012)	[16][21][22][30][31][32]
(4) CHAN PAK TING v. CHAN CHI KUEN AND ANOTHER	[2013] HKCFI 179; [2013] 2 HKLRD 1; [2013] 2 HKC 365; HCPI 235/2011 (7 February 2013)	[9][137]
(5) LI KA WAI v. HOSPITAL AUTHORITY	[2013] HKCFI 180; [2013] 2 HKLRD 1; [2013] 2 HKC 365; HCPI 671/2007 (7 February 2013)	[9][137]
(6) YUEN HIU TUNG v. HOSPITAL AUTHORITY	[2013] HKCFI 181; [2013] 2 HKLRD 1; [2013] 2 HKC 365; HCPI 228/2010 (7 February 2013)	[9][137]
(7) LAM CHAN HUNG v. HANG YUE ENGINEERING LTD	[2013] HKCFI 392; [2013] 3 HKLRD 420; HCPI 121/2011 (12 March 2013)	[62]
(8) FANG HANBIAO v. CHEN DEWEI AND ANOTHER	[2013] HKCFI 449; HCPI 808/2008 (22 March 2013)	[108]
(9) LEUNG KWUN CHUEN v. LI SHING KONG	[2013] HKCFI 463; HCPI 749/2011 (22 March 2013)	[75][88][89]
(10) SO YUK KAM v. LAU KAM YUEN	[2013] HKCFI 841; HCPI 5/2011 (24 May 2013)	[15]
(11) EPIFANIO CANDEL RBASTO v. CHAN KING YUN JAMES	[2013] HKCFI 1834; HCPI 42/2012 (31 October 2013)	[50]