CARIBBEAN ACTUARIAL ASSOCIATION

The Smart Tables

(Phase II)

Development of Actuarial Loss of Earnings Tables for the Caribbean

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Presenters

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- The Honourable Madame **Justice Nadia Kangaloo**, High Court Judge, Supreme Court of Judicature of Trinidad and Tobago.

- **Mr. Kyle Rudden**, Consulting Actuary and Managing Director of KR Services Limited, Immediate Past President of The Caribbean Actuarial Association

Background

In most developing countries, judicial awards for loss of earnings are **NOT** based on actuarial principles

- => arbitrary and imprecise awards
- => increased litigation costs, time and uncertainty

Background

The "**Smart Tables**" provide a framework to bring consistency to these awards

- Actuarial principles from the UK's Ogden Tables
- Applied in a Caribbean Nation context
- Applicable particularly to UK common law jurisdictions
- Trinidad & Tobago, Jamaica and Barbados as test cases

Caribbean Countries' Challenges

Lack of reliable national demographic data

- Including basic mortality information

Challenges in the investment markets

- Limited long term investment opportunities
- Illiquid equity markets
- No inflation linked securities

Caribbean Countries' Challenges

Volatile economies subject to external shocks

Significant internal socio-economic disparity

- Possibly wide mortality / earning capacity differences by class

Principles from The UK Ogden Tables

First published in 1984, used to provide actuarial values for multipliers for loss of earnings calculations

- Developed by a committee of attorneys, actuaries, economists, doctors, etc.
- Updated regularly – now at 8th Edition
- Key inputs include UK mortality / real interest rates
- Consider claimant's age, gender, education, type of injury, etc.

Principles from The UK Ogden Tables

The Smart Tables are based on the 7th Edition

- Tables were reverse engineered
- Excel models allowing input of local mortality and interest rates

Typical Settlement Characteristics

Judicially determined lump sum payments

- Annuity options found in developed markets uncommon
- **Multiplier** (should be actuarial!) * **Multiplicand** (costs, lost earnings)
- Based on future life expectancy or future working lifetime

Typical Settlement Characteristics

Supposed to be invested

- To compensate for future costs / loss of earnings
- => Real (inflation adjusted) risk-free long-term investment returns
- Some theoretical variation e.g. price inflation, salary inflation

Discount Rates for Trinidad and Tobago

Central Bank publishes an indicative par yield curve out to 30 years for Trinidad and Tobago

- In practice, few bonds in issue have durations > 15 years
- Market only active out to about 10 years
- Took simple average of par yields for durations 5-15
- Approximating a bond portfolio

Discount Rates for Jamaica and Barbados

The yield rate for Jamaica and Barbados was calculated by taking the average of the yields for durations 5,10 and 20 and then for durations 5, 8, 23 and 27 respectively.

- Jamaican yields were taken directly from the public bond auction slips for bonds issued during the past year.
- Barbados infrequently has government bond issues. The theoretical yield curve from the last government debt restructuring period in 2018 was used.

No inflation adjusted government bonds available

- The UK uses index linked gilts, the US uses TIPS.

Adjustments to Discount Rate

Default risk

- Ignored in the case of T&T. T&T's Government Debt is investment grade rated
- Jamaica and Barbados Government Debt are not investment grade rated
- Unclear what adjustments appropriate if sovereign debt has material default risk. Sovereign debt generally treated as risk-free within a jurisdiction.

Adjustments to Discount Rate

Inflation

- Used long term inflation expectation from IMF
- Subjective, introducing uncertainty

Adjustments to Discount Rate

Real Wage Growth

- Determined by growth in labour productivity, which is measured by growth in real GDP per worker. In a stable population, growth in real GDP per capita can be used.

- Growth in real GDP per capita estimated as projected growth in real GDP, less projected population growth.

- Based on IMF data

Adjustments to Discount Rate

Taxation

- Typically uses an effective average tax rate on investment income
- These were assumed to be 0% for T&T and Barbados and 25% for Jamaica

Fund Management / Investment Fees

- Expenses incurred in managing the lump sum investment, typically around 0.1 - 0.25%.
- These were assumed to be 0% for T&T, Barbados and Jamaica since at this phase we have not modelled them.

Adjustments to Discount Rate

Inflation Uncertainty

- Subtract a margin for uncertainty in future inflation
- These were assumed to be 0% for T&T, Barbados and Jamaica since at this phase we have not modelled them

The Smart Tables Net Discount Rate

Caribbean Country	T&T	J'ca	B'dos
Average nominal Govt Bond yield x (1-Tax, fees and margin for inflation uncertainty)	5.5% [5.5%x1]	6.9% [9.2%x0.75]	6.3% [6.3%x1]
Expected Long Term Inflation	3.0%	5.0%	2.7%
Real Wage Growth Estimate	1.5%	1.6%	2.5%
Net discount rate	**1.0%**	**0.3%**	**1.1%**

Sources for Local Mortality Assumptions

Base mortality

- National social security system data to construct local working population mortality curves
- Use available population census data

Future Mortality Improvements

- Population projections by IMF / World Bank / SOA etc.
- 1% future improvement assumed for these calculations

Social Differences

- Implicitly assumed UK differentials apply

Alternatives to Local Mortality

Alternative Approach

- Use Trinidadian, Jamaican or UK mortality table with an age offset
- Equivalent to difference in Trinidadian /Jamaican / UK life expectancy to other Caribbean nations' population life expectancy
- Implicitly assumes similar shapes of mortality curve
- Care to be taken in choosing improvement assumptions.

Caribbean Legal Background

Regional practice has improved over the years:

- *1973 "English courts have as a rule looked with disfavour on actuarial calculations as a basis for assessing damages in personal injury cases."*
- *1999 "I see no reason why this Court should engage in any mathematical or actuarial calculation in order to fairly compensate this Plaintiff for pecuniary loss."*
- *2021 "Generally, evidence as to the actuarial method of calculating the multiplier can be relevant … However, the evidence must be relevant to the local context …"*

Trinidad & Tobago Case Study

- Awards can still be lengthy and complex processes.

- For our T&T test case, a loss of earnings claim arose from an employment injury in 2006:
  - 2012 Claim Made
  - **2014 equivalent of US$31K awarded by High Court**
  - **2020 equivalent of US$105K awarded by Appeal Court**, with extensive separate arguments by each of the 3 Judges

  [Paul v Wells Services Co Ltd, 2023 equivalent figures]

Jamaica Case Study

- For our Jamaica test case, a loss of earnings claim arose from an injury in a motor vehicular accident in 1993:
  - **1994 Claim Made**
  - **1997 equivalent of US$253K awarded by High Court**
  - **1999 equivalent of US$148K awarded by Appeal Court**, with discussion on the multiplier / multiplicand approach to calculate the award

[Campbell & Ors v. Wylie, 2023 equivalent figures]

Barbados Case Study

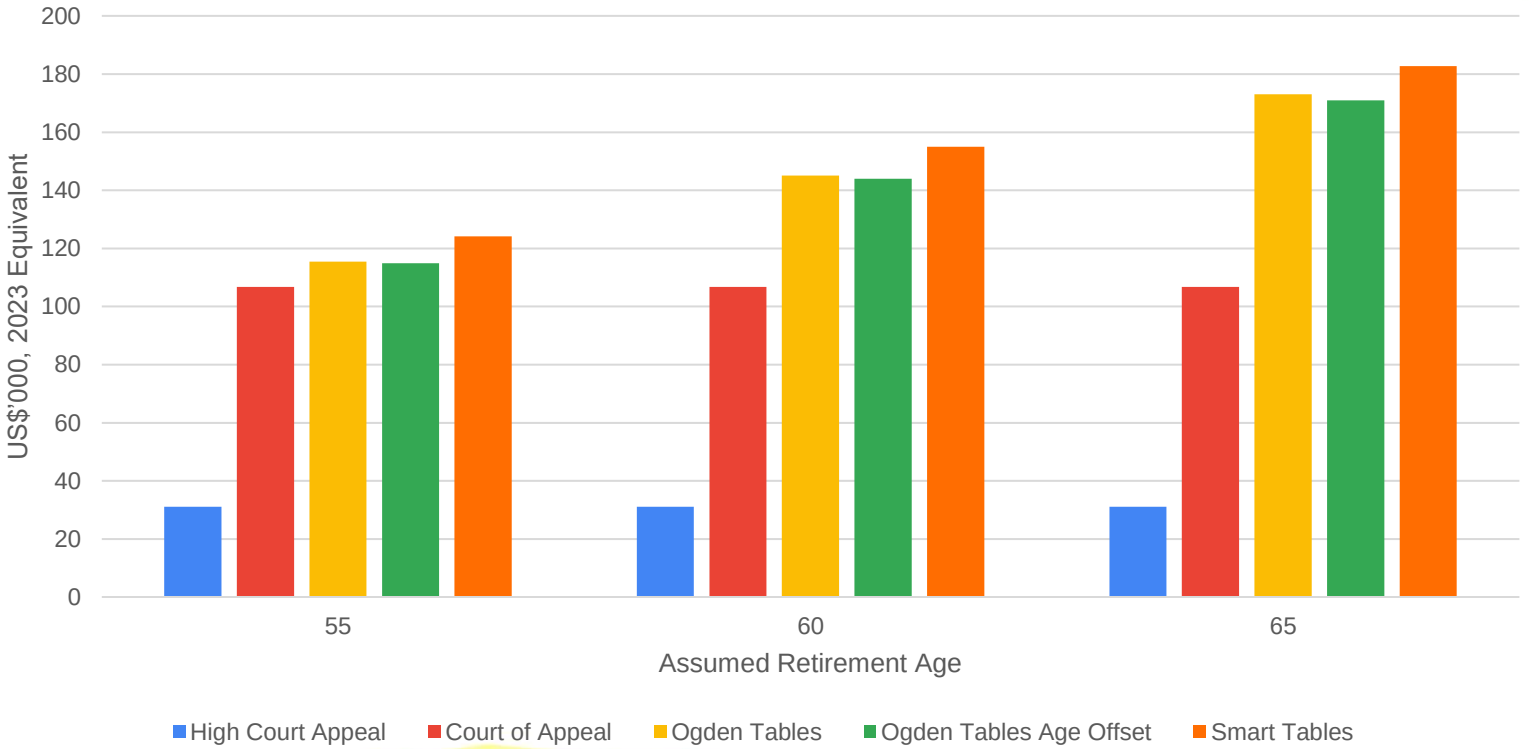
- For our Barbados test case, a loss of earnings claim arose from an injury sustained in a motor vehicular accident in 1984:
  - **Equivalent of US$96K awarded by High Court**
  - **1991 loss of earnings award completely disallowed by Appeal Court**, due to omission of evidence of Claimant's pre- and post accident earnings.

[Corbin v Beckles, 2023 equivalent figures]

Trinidad & Tobago Case Study Results

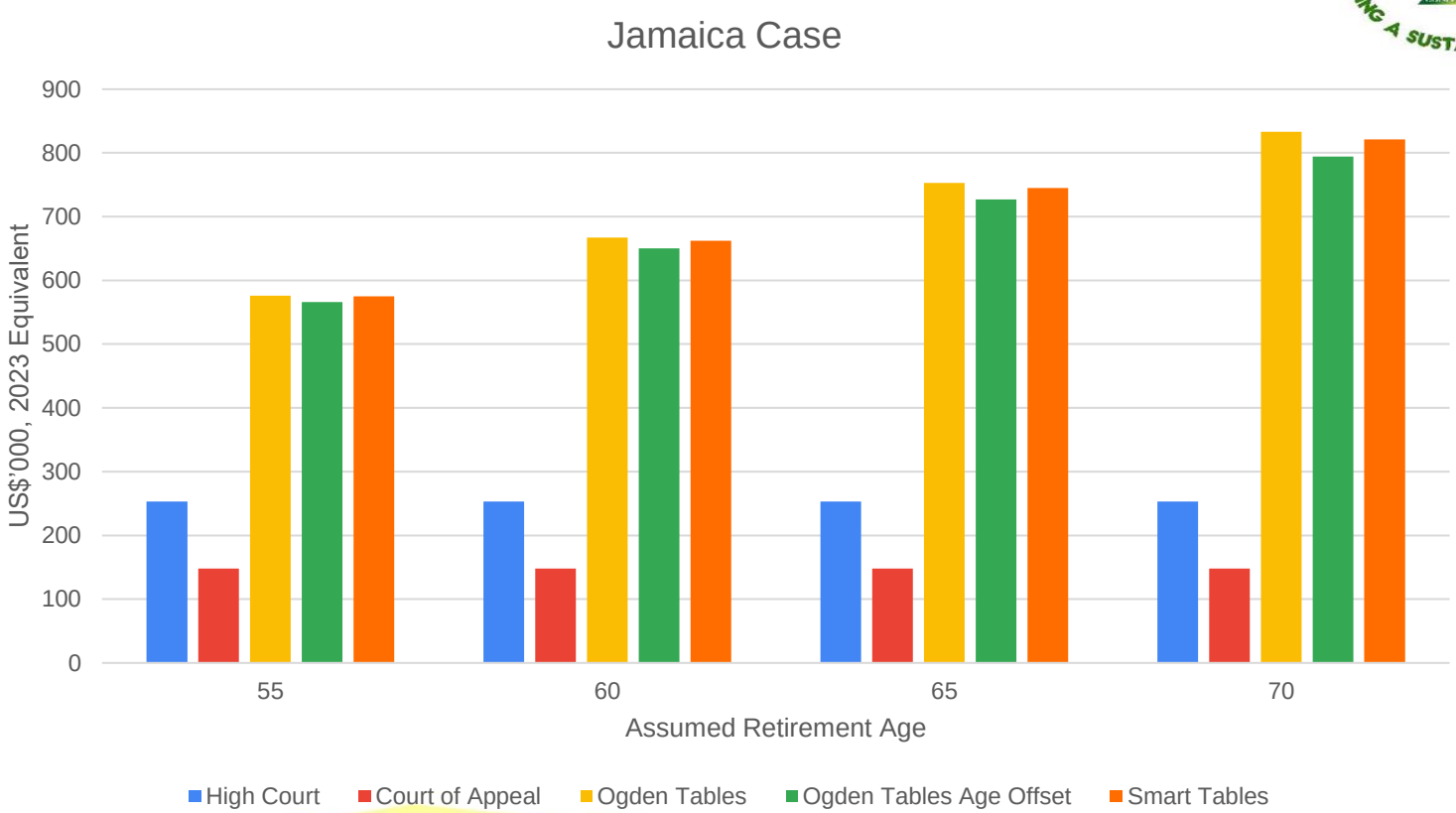
US$'000, 2023 Equivalent	Assumed Retirement Age		
	55	60	65
High Court	31		
Court of Appeal	107		
Ogden Tables	116	145	173
Ogden Tables Age Offset	115	144	171
Smart Tables	124	155	183

Trinidad and Tobago Case



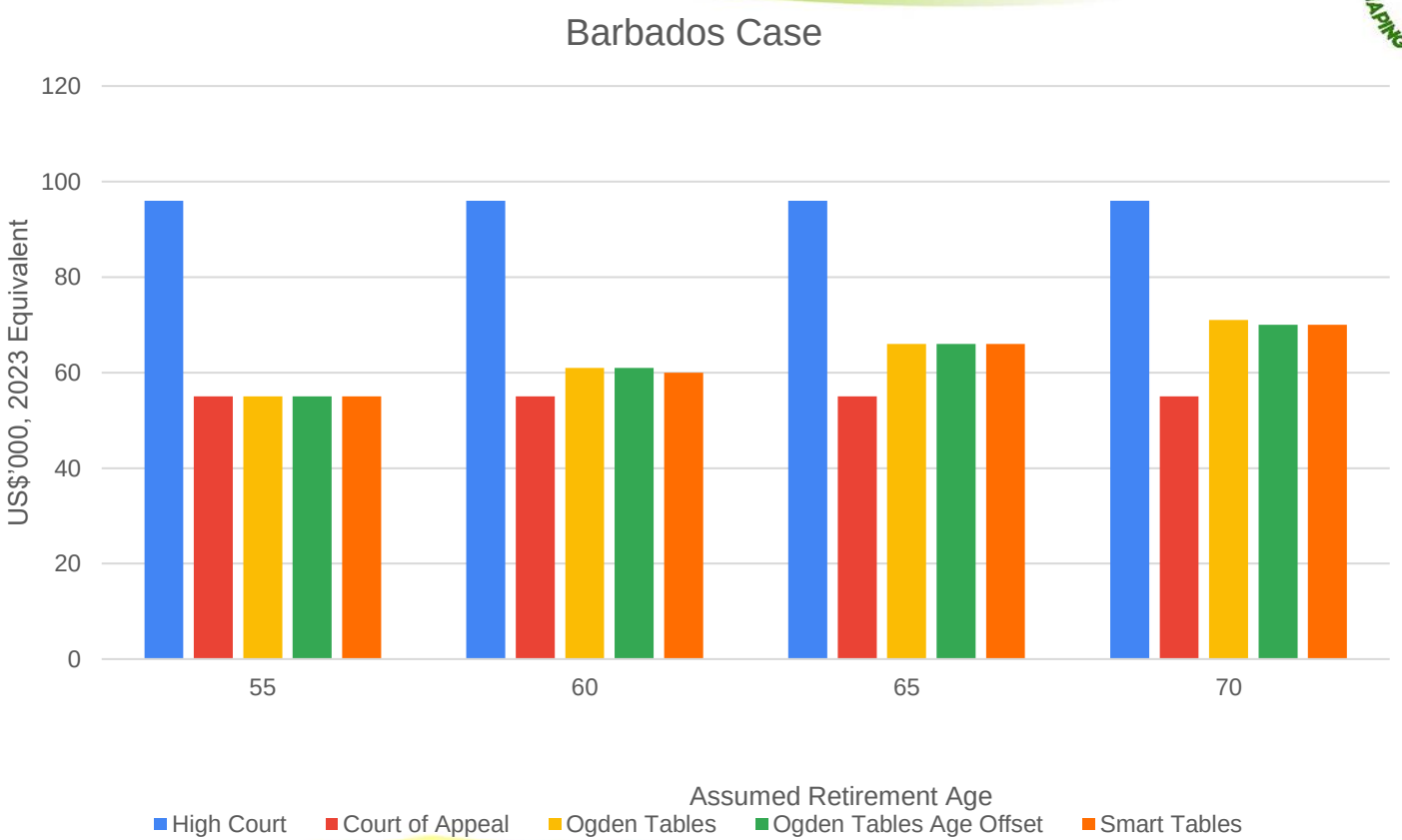
Jamaica Case Study Results

US$'000, 2023 Equivalent	Assumed Retirement Age			
	55	60	65	70
High Court	253			
Court of Appeal	148			
Ogden Tables	576	667	753	833
Ogden Tables Age Offset	566	650	727	794
Smart Tables	575	662	745	821


Jamaica Case
900
800
700
600
500
400
300
200
100
0
US$'000, 2023 Equivalent
55
60
65
70
Assumed Retirement Age
High Court
Court of Appeal
Ogden Tables
Ogden Tables Age Offset
Smart Tables

Barbados Case Study Results

US$'000, 2023 Equivalent	Assumed Retirement Age			
	55	60	65	70
High Court	96			
Court of Appeal	55			
Ogden Tables	55	61	66	71
Ogden Tables Age Offset	55	61	66	70
Trinidad Smart Tables Age Offset	55	60	66	70


Barbados Case
120
100
80
60
40
20
0
US$'000, 2023 Equivalent
55
60
65
70
Assumed Retirement Age
High Court
Court of Appeal
Ogden Tables
Ogden Tables Age Offset
Smart Tables

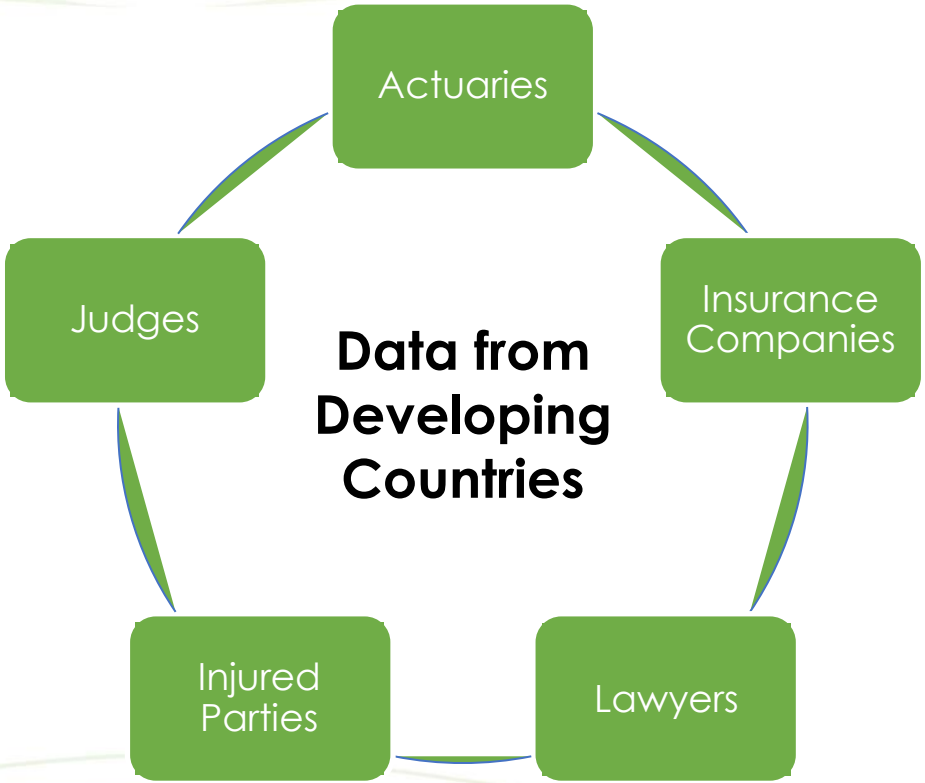
Observations & Conclusions

- The use of actuarially sound principles, with suitable local inputs, can provide a robust basis for fair, transparent and predictable judicial awards.

- The reduction in uncertainty and time to arrive at a final award would represent a significant step forward in developing common law jurisprudence.

- We look forward to introducing the Smart Tables in actual practice in the near future.

WE NEED CONTEXT!



Areas for Further Review

- Adjustments for sovereign debt instruments with significant credit risk?

- Additional research into the alternative approach for regional mortality i.e. creation of additional mortality tables for the Caribbean by converting abridged mortality tables to individual aged tables.

- Formalizing the use of the "Smart Tables" framework in regional jurisprudence.

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THANK YOU!

Q&A