

OFFICIAL

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**Comments on potential compensation for the economic
and social losses suffered by claimants before the
Wairarapa ki Tararua and Tūranganui a Kiwa Tribunals**

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Tararua (Wai 863) and the Tūranganui a Kiwa Remedies Inquiries
(Wai 814)

Contents

Introduction.....	3
Section 1. Issues to do with the way people, groups, and societies value monetary payments and non-monetary events taking place at times different to the present.....	5
1.1 Compounding, discounting and intergenerational transfers.....	6
1.2 How do/should individuals, groups, and society value money transfers or actions that take place at different times?.....	7
1.2.1 Investment valuation.....	9
1.2.2 Time-utility valuation.....	12
1.2.3 Lost consumption and the valuation of monetary losses.....	25
1.3 Monetary compensation for losses suffered by people in the past.....	28
1.3.1 Confiscated Land.....	28
1.3.2 Moral hazard and compensation for non-land losses.....	29
1.3.3 Compensation of corporations.....	30
1.4 Summary.....	30
Section 2. The appropriate benchmarks for comparing payments and implicit losses associated with events occurring in the past.....	33
2.1 The Maraetai Power scheme.....	33
2.2 The value of the lost production of Māhaki wrongfully killed in the 19 th century.....	40
Section 3. Compensation to provide an economic base.....	43
3.1 Estimates of the economic base necessary to offset the socio-economic status deficiency of the members of the Māhaki iwi.....	45
3.2 Estimates based on income deficiency.....	47
3.3 Estimates based on wealth deficiency.....	52
3.4 Summary.....	54
Section 4. Development strategies.....	55
Appendix – Commission.....	61

Introduction

I, Andrew Coleman of Wellington, economist, state as follows.

1. My full name is Andrew Michael Guy Coleman.
2. I am a senior lecturer in the Department of Economics, University of Otago, Dunedin, where I have had a half-time appointment since 2010, teaching courses in economic growth theory and public finance.
3. I hold the following qualifications: a Bachelors degree in economics and mathematics from the University of Canterbury; and a Ph.D. in economics from Princeton University. My thesis examined topics related to regional economic development and financial markets in nineteenth century North America.
4. My career has bridged academia and the public sector. During the last decade I held half-time contract positions at the New Zealand Treasury (working on housing, retirement income and taxation issues) and the New Zealand Productivity Commission (working on regional economic issues), while previously I have worked full time at the New Zealand Treasury, the Reserve Bank of New Zealand, and Motu Economic and Public Policy Research. I was an assistant professor in the Department of Economics at the University of Michigan from 2000 – 2005, where I taught economic development and international finance and researched topics in North American economic history.
5. This is the first time I have given evidence to the Waitangi Tribunal. Nor have I previously given evidence to a court of law.
6. I can confirm that I have read the Code of Conduct for Expert Witnesses contained in Schedule 4 of the High Court Rules and have prepared my evidence in accordance with the code.

Scope of the report

7. I have been asked to provide a critique of the economic evidence on compensation for prejudice suffered by the claimants before the Wairarapa ki Tararua and Tūranganui a Kiwa Tribunals in the current remedies phases.
8. The report is to address but is not limited to the following matters:
 - (a) the theoretical and methodological approaches employed by the authors;

- (b) the use of the evidence advanced in support of the authors' conclusions; and
 - (c) the cogency of the analysis and of the conclusions reached.
9. Given the size of these reports, the areas of my expertise, and the amount of time I have had to write the report, I have chosen to focus on the following matters.
- a. The way people, groups, and societies value monetary payments and non-monetary events taking place at times different to the present.
 - b. The appropriate benchmarks for comparing payments and implicit losses associated with events occurring in the past.
 - c. The appropriateness of the different ways of calculating an economic base for a group or society looking to improve its social and economic outcomes in the future.
 - d. The effectiveness of different strategies choices for a group or society looking to improve its social and economic outcomes in the future.
10. I am conscious that many other issues were contained in these reports. As I have no legal expertise, I have tried to refrain from commenting on legal issues that determine how any compensation or redress will be made. Rather, I have tried to outline how economists typically think about the above issues. In many cases, I wish to point out that there is considerable diversity in the way economists approach these issues, and on some issues the positions presented in the evidence did not reflect the range of opinions that can legitimately be held. In some cases, legal decisions already made will have directed the choice of redress options to a much narrower set than those economists would normally consider. In these cases, my comments are not to be construed as recommending alternative course of actions, but are merely observations as to the way economists might consider the merits of these alternative options.

Section 1. Issues to do with the way people, groups, and societies value monetary payments and non-monetary events taking place at times different to the present.

11. These comments apply to a large body of the material concerning the value of losses and wrongful events occurring in the past, and to the way compensation for these losses and wrongful events can be appropriately calculated. The material includes but is not limited to the following.

- a. Losses associated with Te Aitanga a Māhaki.
 - i. WAI 814, #P6; WAI 1489, #A7, ‘Second Brief of Evidence of Richard Brent Meade concerning Te Aitanga a Māhaki Losses’, pp 48–71 “Approaches for determining compensation”, and part IV pp 250–289 “Compensation for Non-land Losses inside the GID but not confined to the Mangatu CFL”.
 - ii. WAI 814, #P36; WAI 1489, #A37, ‘Brief of Evidence of John Yeabsley’, pp3–12 relating to compounding.
 - iii. WAI 814, #P42; WAI 1489, #A43, ‘Evidence of Richard Brent Meade in reply’, pp 3–9 “Issues relating to Intergenerational Claims”.
- b. Losses associated with the Wairarapa Moana Ki Pouākani Incorporation.
 - i. WAI 863, #J51, ‘Brief of Evidence of Dr John Yeabsley’, p11 “Compounding”.
 - ii. WAI 863, #J55, ‘Affidavit in reply of Dr Richard Brent Meade’, p11, p 22–27, pp33–34 “Compounding Historic Losses”.
- c. Losses associated with Ngāi Tūmapūhia-ā-Rangi.
 - i. WAI 863, #J34(c), ‘Amended Brief of Evidence of James Mellsop’, pp4–22 “Compounding”.
 - ii. WAI 863, #J41, ‘Brief of Evidence of John Yeabsley’, pp 1–12 related to compounding.
 - iii. WAI 863, #J46, ‘Brief of Evidence of James Mellsop in reply’, pp1–3 “Interest rate used for compounding”.
 - iv. WAI 863, #J45(a), ‘Amended Brief of Evidence of Dr Richard Brent Meade’, pp 22–27 “Compounding approach and rate”.

1.1 Compounding, discounting and intergenerational transfers

12. At various places in these reports, the current value of monetary and non-monetary losses that take place at different times than the present are calculated. These issues are vital to understand the size of the losses that were suffered and in many cases are pertinent to statements that are made about the appropriate compensation for these losses. In the evidence presented, the way some of these calculations were made was hotly debated. In reading the briefs, I was struck by the certainty with which some of the positions were held, particularly since the economics profession has not given a lot of thought to the way that losses occurring in the past should be treated. Moreover, at some places there appeared to be some confusion about the way economists normally think about the value of monetary payments and the value of non-monetary losses that take place at times other than the present.
13. I am not certain which way the Tribunal should value past monetary and non-monetary losses, as this depends on a large number of factors including the preferences of individuals, tribal groups, and corporations and their owners or claimants, and the legal way these entities should be treated. However, I think it is possible to clarify some of the issues under discussion. In general, people value events in different ways and it is legitimate for analysts to generate different valuations of these events depending on the perspectives and counterfactual assumptions that they make.
14. To echo Dr Meade, there is not a lot of literature about the way events of the past should be valued. He noted that the problem of calculating the present value of historic values is unusual, and notes that one of the experts he consulted, Professor Gollier, said the problem was novel and required further research (WAI 814, #P6, p57:154.2). For reasons that are discussed below, economists typically try to calculate the value of events and payments in the future, not the past. This is one of the reasons why the appropriate valuation metric is uncertain.
15. In the following discussion I shall primarily referring to examples concerning the losses suffered by Te Aitanga a Māhaki (WAI 814) and the losses suffered by Ngāi Tūmapūhia-a-Rangi (WAI 863).

1.2 How do/should individuals, groups, and society value money transfers or actions that take place at different times?

16. Both Dr Meade and Mr Mellsop use compounding interest rates to calculate the current value of historic losses. The method that Dr Meade and Mr Mellsop use means that losses occurring due to past events are not only valued very highly, but are valued at increasingly high rates the more distantly they occurred. I do not believe that there is widespread agreement in the economics profession that the approach adopted by Dr Meade and Mr Mellsop is the only way to approach this problem, or is necessarily the correct way to approach the problem. There is not widespread agreement, because the problem of valuing historic losses is not often discussed or considered. These authors are not necessarily wrong, but there are other ways of conducting these calculations that would lead to radically different results.
17. Consider the question of how much a member of the Māhaki iwi might value the wrongful imprisonment of an ancestor 150 years ago, for example. Wrongful imprisonment causes non-monetary losses such as loss of liberty, the loss of enjoyment of consumption, the loss of enjoyment of time spent with friends and family. Dr Meade notes that if the wrongful imprisonment of someone occurred this year the person would be entitled to \$100,000 monetary compensation in 1998 dollar terms, or \$150,000 in 2018 dollar terms, because of the non-monetary losses experienced (WAI 814, #P6 p280-283). He further calculates that the contemporaneous purchasing power value of \$150,000 150 years ago was £1276 (equivalent to \$2552¹), because of inflation.² He notes that if you invested \$1 for 150 years, it would be worth approximately 30 times as much in inflation adjusted terms, and then calculates that because the wrongful imprisonment occurred 150 years ago, the loss should currently be valued at \$5 million (in 2018 terms).³ An unstated corollary of his argument is that if a wrongful imprisonment occurred to a descendent in 2168, 150 years in the future, even though the monetary value of the non-monetary losses to the future person would be \$150,000 (in inflation adjusted terms), compounding interest means the value *today* of these future losses is only 1/30 as much, or \$5000.

¹ When New Zealand switched from pounds to dollars in 1967, £1 = \$2. The 2-1 ratio is used throughout this brief.

² Since average wages were so much lower in 1868, the \$150,000 could be deflated by the amount that wages have changed since 1868 to produce an alternative number of \$697. Dr Meade calculates the sum both ways.

³ In Table 13.1, p 284, this is equivalent of \$864 million divided by 172 years of wrongful imprisonment.

To summarise, three implications of his argument are:

- if a person is wrongfully imprisoned in 2018, a reasonable monetary value *today* for non-monetary losses suffered is \$150,000;
- if one of their ancestors were wrongfully imprisoned in 1868, a reasonable monetary value to place *today* for non-monetary losses suffered then is \$5,000,000, even though these losses to the person were only valued in real (inflation-adjusted) terms at \$150,000;
- if a person were to be wrongfully imprisoned in 2168, a reasonable monetary value to place *today* for non-monetary losses that occurred then is \$5,000, even though these losses to the person were only values in real (inflation-adjusted) terms at \$150,000.

18. To many people this way of valuing non-monetary losses is valuation appears strange. Why should a person value the non-monetary losses occurring to ancestor 150 years ago at \$5,000,000 when the same losses occurring to himself or herself this year would only be valued at \$150,000? Why should a person value the non-monetary losses of an ancestor 150 years ago at \$5,000,000 value when the same losses occurring to a descendent 150 years in the future would only be valued at \$5000? If the events were to occur 900 years in the past (shortly after the first settlement of New Zealand, and shortly after the Norman conquest of England) or 900 years in the future, the monetary value of these losses using this methodology would be \$100,000,000,000,000 and \$0.0002 respectively, numbers which make little sense. To many people it would be possible to value these non-monetary losses occurring at different times quite differently. One valuation metric would be to value them the same, independently of when they occurred: that is, the value today of a year of wrongful imprisonment occurring in 1868, 2018, or 2168 is \$150,000. (These are the values that would occur if people used a compounding or discounting rate of zero.) A second option is to value *today* non-monetary losses that occur in distant times, either in the past or the future, at lower rates than non-monetary losses occurring in the present, simply because they are occurring either a long way in the past or may occur a long way in the future. In this metric, the value today of a non-monetary loss occurring in 1868 would be the same as the value of a non-monetary loss occurring in 2168, \$5,000. Neither of these options is nonsensical – and I suspect that there are few people who believe that the non-monetary

losses associated with the wrongful imprisonment of someone 150 years ago should be considered thirty times worse than wrongful imprisonment occurring today.

19. Because this problem of valuing historic losses is unusual, and has been so little discussed in the economics literature, let alone settled, I am unsure as to the most appropriate answer myself. To clarify some of the issues, I will provide an overview of the way economists consider the value of events occurring at different times.
20. Economists use two basic valuation approaches: the investment approach and the time-utility approach. The investment approach is the most straightforward, and calculates the worth of a payment made at a different date than the current date. There is little controversy about this approach. In contrast, the time-utility approach asks how much an event (such as the consumption of a good, or wrongful imprisonment, or an injury) that occurs at a different date is valued, and offers answers that differ as to whether the event occurs to the same person, a different person, or a linked set of people. In most cases, the time-utility approach has been used to value events that might occur in the future, rather than events that happened in the past.

1.2.1 Investment valuation

21. The investment approach calculates the value today of a sum of money paid at another time.

(i) If \$1 is paid in the future date $t+N$ (where t is today's date, and N is the number of years in the future), the present value is the amount needed today, if invested at a compound rate of return r , to give \$1 in N years' time:

$$PV = \frac{1}{(1+r)^N}$$

For example, if the nominal interest rate was 5 percent, \$1000 paid in 20 years' time is worth \$377, while \$1000 in 150 years' time is worth \$0.66.

(ii) If \$1 was paid in the past at date $t-N$ (where t is today's date, and N is the number of years in the past), the present value is the amount that dollar would be worth today if it had been compounded for N years at a rate of return r :

$$PV = 1 \times (1+r)^N$$

If the nominal interest rate was 5 percent, \$1000 paid 20 years ago and compounded would be worth \$2650, while \$1000 paid 150 years ago and compounded would be worth \$1,508,000.

Note that the investment value of payments made in the past assume that the money would be untouched and so the person making the investment would not spend any of it.

22. The figures used above do not take into account differences in the spending power of a dollar at different times. The purchasing power of a dollar or a pound has varied substantially: between 1865 and 2018, for instance, average prices in New Zealand as estimated by the consumer price index increased by a factor 59.⁴
23. The choice of the discount rate matters a lot. Oftentimes people use the interest rate on government bonds because governments normally (but not always) honour their debt payments and so the payment in money terms is nearly certain. (However, the value of the money is much less certain: many governments will have allowed a bout of inflation during the intervening period, which reduces the spending power of money.) The after-tax government interest rate is often used a proxy for a risk-free rate, even though it is not risk free in the sense the purchasing power of a dollar at different times in the future is unknown.
24. Other times people use the return to other assets to calculate possible investment returns e.g. bonds issued by private banks or corporations for which there is some chance of default, or the returns to share-market investments, which are unknown in advance but which historically are higher than the returns to government bonds. These higher investment rates reduce the present value of future payments and increase the current value of past payments.
25. Dr Meade uses a strange hybrid, the ‘discount GDP’ series, which is based on the average growth rate of nominal GDP (WAI 814, #P6 p55). The average value of this hybrid is higher than the average post-tax government interest rate, 5.6% versus 5.1%

⁴ Statistics New Zealand Long Term Data Series. Prior to 1919 the estimates of the CPI are not official estimates.

so it means the present value of a dollar is much higher when it is calculated using this methodology.⁵ There are two reasons to motivate the use of the discount GDP series.

- a. In a so called dynamically efficient economy, rates of investment returns exceed the growth rate of GDP. This statement is often written as the condition

$$r_K > g$$

where r_K represents the return to capital investments and g is the average growth rate of GDP. Most developed economies are considered to be dynamically efficient, so the growth rate of GDP provides a lower bound estimate to the returns that could have been obtained from a diversified portfolio of capital investments.

- b. Instead of making investments, families or governments or social groups can construct an alternative arrangement for shifting purchasing power through time. Suppose, for instance, a person wished to save for her retirement. She could put 1 percent of her income aside, invest it at a return r , and have the proceeds available in N years' time. Alternatively, she could enter an arrangement to give 1 percent of her income to her parents (or to the government), and in N years' time she could be given 1 percent of the income produced by her children (or the government) that year. While nothing has been invested from this arrangement, the woman would have had an increase in the resources available that depended on the growth rate of the economy – which, in turn depends on the population growth rate and the amount each person has increased their individual earnings. These schemes are very useful in dynamically inefficient economies where the return to capital is lower than the growth rate of the economy (where $r_K < g$).

Note that these transfer-based schemes may not exist – they require implicit agreements by family or tribal members, or explicit arrangements by governments – and it is not clear that a scheme generating a return equal to the nationwide growth rate would always have been available to the Māhaki iwi. Consequently, while a return based on the growth rate of GDP is motivated by a transfer scheme rather than an investment

⁵ \$1 invested at 5.1% for 150 years is worth \$1739; \$1 invested at 5.6% is worth \$3549, more than twice as much.

scheme, when an economy is dynamically efficient the hybrid measure can be considered a proxy for the rate of return available from diversified capital investments.

26. Two further comments can be made about investment valuations. First, even though it is possible for the rate of return to investment, r_K , to exceed the growth rate of the economy indefinitely, over long periods it is only possible if the returns to investment are consumed and not reinvested. It is possible for the real return to investments to be 5 percent for 1000 years, but £1 invested at 5 percent 1000 years ago is worth more than £1,000,000,000,000,000,000,000,000 or 500 million times the current size of the United Kingdom economy measured by GDP and more than 100 million times the current size of the capital stock in the United Kingdom including the value of land.⁶ The United Kingdom economy is not that big because the proceeds from investment are typically spent on consumption goods, meaning the amount of capital does not grow without bound.
27. Secondly, the return to capital depends on how much capital is accumulated, and so even if historic rates are known, counterfactuals that assume capital returns are accumulated should make adjustments for the way returns would have been different if capital assets had been accumulated at different rates. These issues are not material over short 150-year spans, but are one of the justifications for the different Weitzman-Gollier discount rates that are sometimes used to calculate present values of future events. Indeed, Weitzman demonstrates that when returns are uncertain and time periods are long, the lowest possible discount rates should be used.⁷

1.2.2 Time-utility valuation

28. The second valuation metric asks a very different question: how do people value non-monetary events such as consumption, leisure, injury, or the psychological elation or depression that occur at different times. There is no easy answer as it depends on whether events occur in the future or the past, whether the events are expected to happen to themselves or to other people, and, if other people, whether these people are

⁶ The British reference is made as Britain has a history of using currency for more than 1000 years, and historical records on interest rates exist for much of this time. The British economy is more than ten times as large as the New Zealand economy.

⁷ Weitzman, M. L. (1998). Why the far-distant future should be discounted at its lowest possible rate. *Journal of environmental economics and management*, 36(3), 201-208.

members of the same family or tribe or country. Until relatively recently, that is, since when it has been possible to measure how the brain responds to different stimuli including the recall of past events or the contemplation of future events, most of the literature has considered events in the future. This is because economists can study how people take actions that can change future outcomes, but it is impossible to study how people take actions to change the past. For this reason, and with the exception of recent neurological and psychological studies that analyse how people respond to past events, economists have little direct evidence about how people value events in the past and rely on analogies based on how they appear to value contemporaneous and future events.

1.2.2.1 *A single person*

29. Most of the economics literature concerns how people value events that could happen to themselves in the future.⁸ The standard theory, which both Dr Meade and Mr Mellsop refer to, assumes
- i. people value future events less than current events - for example, most people prefer to have a holiday immediately rather than wait 10 years for the same holiday (time preference); and
 - ii. the additional or marginal value of consumption diminishes as the amount of consumption increases (diminishing marginal utility).

This means the current value of a hypothetical unit of consumption in 10 years' time relative to a unit of consumption now will be (i) less because of time preference and less because of diminishing marginal utility if consumption is expected to be higher in the future than it is now or (ii) less because of time preference and greater because of diminishing marginal utility if consumption is expected to be higher in the future than now. Note that these ways of valuing the future have nothing to do with interest rates or the investment value of monetary payments.

30. It is possible to study these valuations and how people respond to these valuations because by saving or borrowing (or, more generally, by saving or selling existing assets) people can alter current and future consumption patterns. If they reduce consumption now by spending a dollar less, they will have a dollar plus the

⁸ While economists rarely study how people *value* past events, other social scientists including psychologists, anthropologists, sociologists, neuroscientists, have studied how people respond to past events.

compounded returns available to spend in the future. They will save if they think the value of future consumption (measured in terms of time preference and diminishing marginal utility) is greater than the return they could get. Since the time preference component is negative, because the consumption occurs at a time distant from the present, by this theory they will save only if the diminishing marginal utility component is positive, that is, if they believe they will have very low consumption in the future if they do not save, meaning the marginal value of additional consumption would be very high. Alternatively, if they believe the value of consumption in the future is low, either because of time preference or because they think their consumption will be much higher in the future than it is in the present, they may borrow or dissave. Borrowing a dollar and spending it immediately may be warranted even though future consumption will be reduced by a larger amount (\$1 plus compound interest) because from today's perspective the higher consumption in the future is not considered to be particularly valuable.

31. Traditionally this valuation is represented by an equation Dr Meade frequently alludes to that values how much less a unit of consumption is worth in the future. The Ramsey equation says the current value of consumption in the future should be discounted (or reduced) by the time-utility discount value:

$$\text{time-utility discount value} = \rho + \sigma g$$

where ρ is the time preference factor

g is the rate at which consumption increases each year

σ is the rate at which the marginal utility of consumption decreases as consumption increases (“the elasticity of marginal utility with respect to consumption”)

For example, if $\rho = 2$ percent, $\sigma = 1.5$ and $g = 2$ percent, the rate used to discount future consumption per year would be 5 percent. Of this five percent, two percent occurs because the consumption occurs at a time distant from now, and three percent occurs because consumption will be higher than its current level and the marginal utility from this consumption will correspondingly be lower.

32. This time-utility discount value (or discount rate) has nothing to do with interest rates or the return to capital. However, we can use interest rates to estimate the value of the discount rate. If we assume that individuals are rational and forward looking, they could

borrow or save until the discount rate is equal to the interest rate. This is because if they borrow or save they will adjust the rate at which consumption increases over time. Dr Meade calls this the arbitrage relationship:

$$\begin{aligned} r &= \text{time} - \text{utility discount value} \\ &= \rho + \sigma g \end{aligned}$$

Mathematically this means that rational forward-looking people who can borrow or save should have a growth rate of consumption that obeys the following equation:⁹

$$g = \frac{r - \rho}{\sigma}$$

If interest rates are very high they should reduce consumption now by saving and increase it later by spending the invested money when the investment matures; if interest rates are low they should increase consumption now, and reduce it in the future. By changing their saving in the present, they change how they value their consumption in the future by changing the amount of consumption and the diminishing marginal utility value of this consumption. However, these changes in consumption are not usually considered to alter their time-preference rates.

33. Even if people rationally save or borrow, the current value of consumption in the future is not directly related to interest rates. The interest rate is merely a proxy for measuring how much the value of *future* consumption should be if the person was rational and could borrow and save.
34. If this is how economists think people value future consumption, how do they think they value past consumption? This is more difficult because there is no way of observing how people value past consumption based on the way they alter their current saving and consumption decisions as it is impossible for people to alter the past. But by analogy it seems to reasonable to expect them to adjust their valuation of past consumption because of diminishing marginal utility and adjust their valuation of past consumption because it is occurring at a time that is distant from the present. The first bit of this valuation process is straightforward. If it were possible to transfer extra

⁹ This is a bit different than the statements Dr Meade makes in WAI 863 #J45a, p26 and WAI 863 #J55, p24, where he argues that the growth rate of consumption should equal the return to capital. Strictly speaking his statements are not correct, although he is correct that consumption growth should increase as interest rates increase.

consumption to a person's past, it is reasonable to assume it would be more valuable if that person's past consumption levels were low.

35. The second component of utility valuation, concerning time preferences, is not straightforward. Is the present psychological value of past consumption low because it took place a long time ago, just as the immediate psychological value of future consumption is low because it occurs a long time in the future? This is not an unreasonable assumption – for example, it would be consistent with the sentiment that a person wishes to be on holiday immediately rather than in the future or in the past, because that person experiences the pleasure of the holiday immediately. Alternately, do people value consumption in the past at much higher rates than consumption now or consumption in the future, simply because it occurred a long time ago. This is possible as well, particularly if people treasure memories more than they savour anticipation. I don't know the answer, and there is little or no evidence based on the way people save their income as this cannot change the past.
36. If it is the case that people value events at lower rates the more distant they are from the present, we would expect an event in the *distant* past to be valued less than the same event in the *near* past or the same event when it occurs now, just as events in the *distant* future are valued less than events in the *near* future or current events. To me, this seems eminently sensible – I value past pain much less than current pain, and I value certain types of pleasures when they occur in the present more than pleasures of the past. Studies by economic psychologists such as the Nobel-prize winning Daniel Kahneman indicate that many people do value events in the past less than current events, although the process is not exponential.¹⁰ However, other people may have different valuation metrics. It would be nice if we could use interest rates to provide evidence about the way we value past consumption, pleasure or pain. Unfortunately, this is not possible as adjustments to current saving and consumption cannot change the past.
37. This issue is important. It is reasonable to believe people value non-monetary events in the future less than they value the same events taking place currently, because of time preference. If people value non-monetary events in the past in terms of how distant they are from the present, then we should also value these events *less* than same events

¹⁰ There is a large literature on this topic. See, for example, Daniel Kahneman (2011) *Thinking Fast and Slow* chapter 35 and the associated references.

taking place currently. Dr Meade and Mr Mellor both appear to argue that non-monetary events in the past should be valued more than events taking place now or events taking place in the future. They further argue that the evidence for this is that interest rates and returns to capital are positive. Positive interest rates may be evidence that we value events in the future less than current events, but they are not evidence that we value past events more than current events as we cannot change the past.

38. Personally, I think it is unlikely that we value non-monetary events happening to ourselves in the past more than the present, and that we value these events in the distant past a lot more than in the near past. Rather, I think there is a good case for valuing non-monetary events in the past less than the same events in the present. My views are of course irrelevant to the considerations of the Tribunal. Nonetheless, irrespective of my views as to the value of the rate of time preference, there is not a good case for using interest rates to calculate the value of non-monetary events in the past. According to standard economic theory, interest rates are not directly related to the way people value non-monetary events in the future, even if economists do use interest rates to estimate how large time-utility discount values may be.
39. There are two other issues concerning the way people value future non-monetary events, and the way they *may* value non-monetary events that occurred in the past. First, the above discussion has been predicated on the assumption that people value non-monetary events separated by time in an exponential or compounding fashion. That is, if the time-utility discount value for an event one year ahead is 5 percent (so that we multiply the value of an event by 0.95), then the value of an event in 10 years' time is 40 percent (because we multiply the value by 0.95 raised to the power of 10), just as interest rates are compounded. If this is correct, events in the distant future are valued at very, very low rates. However, this is not the case. Most studies indicate that our time preferences are hyperbolic, not exponential, which means events in the distant future, while discounted more than events in near future, are not discounted by nearly as much as the compounding formula suggests.¹¹ These differences can be considerable over

¹¹ See, for instance, Groom, Ben, Cameron Hepburn, Phoebe Koundouri and David Pearce (2005) "Declining discount rates: the long and the short of it," *Environmental and Resource Economics* 32, 445–493. Hepburn, Cameron (2007) "Valuing the far-off future: discounting and its alternatives," pp 109–124 in Giles Atkinson, Simon Dietz, and Eric Neumayer (ed) *Handbook of Sustainable Development* (Cheltenham, UK: Edward Elgar Publishing) Laibson, D. (1997). Golden eggs and hyperbolic discounting. *The Quarterly Journal of Economics*, 112(2), 443–478.

long periods of time. This means that people do not value events in the distant future as little as a compounding formula may suggest. It also means that an exponential compounding approach that values non-monetary events in the past at rates that increase exponentially with the time since the events occurred is unlikely to be correct either.

40. Secondly, people may change their minds over the course of their lives about the value of non-monetary events. A young person may choose to borrow a lot and consume heavily when they are young, because they value immediate consumption over delayed consumption, only for the same person when older to think that the value of young-life consumption was not that great after all. A person can look back and ascribe quite different values to an earlier experience than they placed on the same experience when young. Many famous economists believe that dealing with time-inconsistent valuations is one of the biggest difficulties people face.¹² Even if you could make inferences from people's saving behaviour in the past about their relative valuation of the present and the future then, it does not mean that the same person will have the same valuation now. Needless to say, this increases economists' uncertainty about how people value the past.

1.2.2.2 Groups of people

41. The above section analyses how economists think about the way that people value non-monetary events in their own lives. Economists also think about the way people value non-monetary events in other people's lives. Unfortunately, the answers depend on a large number of considerations. Most of these considerations suggest the simple compounding of interest rates is unlikely to be an appropriate way to value non-monetary events occurring to different people at different times. I will first discuss family and non-family relationships and then groups that have strong intergenerational links such as tribes or nations.

¹² For example, Strotz, R. H. (1955). Myopia and inconsistency in dynamic utility maximization. *The Review of Economic Studies*, 23(3), 165-180.

Schelling, T. C. (1984). Self-command in practice, in policy, and in a theory of rational choice. *The American Economic Review*, 74(2), 1-11.

Laibson, D. (1997). Golden eggs and hyperbolic discounting. *The Quarterly Journal of Economics*, 112(2), 443-478.

42. Typically, people are believed to value non-monetary events occurring to non-family members less than the same events happening to themselves. There is a lot of evidence for this principle: people don't give much money away to starving strangers thousands of miles away, for instance, or directly pay for surgery for people they don't know.¹³ The amount we value a non-monetary event happening to a non-related person in fifty years' time will reflect not only our time preference (events in the future are valued less than events in the present), their consumption levels (diminishing marginal utility) but also how much we value events occurring to strangers. Similarly, events occurring to strangers in the past are likely to be valued less than events occurring to ourselves in the past, or to ourselves now.
43. The value placed on non-monetary events happening to family members is different: this can be higher than the value of events happening to ourselves for close family members, but it usually lower for distant family members. It is probably less for family members yet to be born: very few people place \$10 in a trust with instructions that the money be allowed to compound for 500 years and then be given to family members alive at the time, for example, even though the value of the trust would be \$800,000.¹⁴ This question is directly relevant to the question of how much people today value the wrongful imprisonment of people 150 years ago. The calculations presented in paragraph 17 above indicate that if the monetary value of the wrongful imprisonment of a person or their immediate family that occurs today is \$150,000, and the time-utility discount rate was 5%, equivalent to a factor of 30 when compounded over 150 years, then the current value of the wrongful imprisonment of a descendent we can never meet would only be \$5000. It would be less than this if we inherently value the misfortune happening to strangers less than the misfortune happening to ourselves. The same calculation when reversed says that we would value the imprisonment of an ancestor we can never meet at \$5,000,000, or thirty times as much as we would value our own wrongful imprisonment. It would also be less if we inherently value the misfortune happening to strangers less than the misfortune happening to ourselves.

¹³ See, for example, Schelling, T. C. (1995). Intergenerational discounting. *Energy policy*, 23(4-5), 395–401. p396

¹⁴ This assumes a 2.3 percent real interest rate, which if compounded for 150 years would return \$30. This is close to the number Dr Meade uses when considering the value of wrongful imprisonment. The numbers are illustrative, the principle is general. If the return were 5 percent real, the trust fund would be valued at \$400 billion after 500 years.

44. Is there a reason why we should value a non-monetary misfortune happening in the distant past so much more one in the present? The argument forwarded by Dr Meade and Mr Mellsope is that the wrongfully imprisoned person should have been given the real value equivalent of \$150,000 (or £1276) and if this money had been invested at a compound *interest rate* (not a time-utility discount rate) it would have compounded to \$5,000,000. If the wrongful imprisonment had occurred to an ancestor 100 years ago they would only value the loss at \$1,500,000 – not because the non-monetary value of the wrongful imprisonment was different, but because it occurred more recently. The Nobel prize winning economist Thomas Schelling wrote when he considered the value of the consumption of future generations:

Introspectively I can find no impatience about an increment of consumption that may accrue to people whom I shall never know and who do not now exist, in the year 2150, compared to an increment closer in time, accruing to people who I shall never know and who do not now exist, who might enjoy it instead in the year 2100 or closer still to the people in the year 2050.¹⁵

45. Similarly, it seems difficult to believe that the non-monetary value of losses caused by wrongful imprisonment at different points in time should depend so much on when they happened. Personally, I do not distinguish between the misfortunes occurring to one of my ancestors 500 years ago and another occurring 100 years, let alone consider the earlier one more than 8,000 times worse simply because the value of dollar compounded for 400 years is \$8,000.¹⁶ Indeed, I am much more concerned about misfortunes that occurred to my relatives last century and even more to the misfortunes occurring to my relatives in the present.¹⁷
46. If the non-monetary value of events occurring to different people at different times does not depend exponentially on interest rates, how should they be valued? One of the most interesting answers to this question was developed by Graciela Chichilnisky in the context of how a group of people should evaluate sustainable development.¹⁸ She

¹⁵ Schelling, T. C. (1995). Intergenerational discounting. *Energy policy*, 23(4-5), 395–401. p396

¹⁶ Assuming a real rate of return of 2.3 percent; see footnote 14.

¹⁷ Obviously my preferences are of no consequence to the Tribunal. However, I suspect my way of valuing the misfortunes of ancestors living in different centuries in the past are widely shared.

¹⁸ Chichilnisky, Graciela (1996) “An axiomatic approach to sustainable development,” *Social Choice and Welfare* 13, 231–257

observed that there are two common approaches to valuing non-monetary events that can occur now and at different times in the future.¹⁹

- a. Exponential discounting.
 - b. Long run average utility, equivalent to using a time preference rate of zero.
47. The difficulty of using exponential discounting to value welfare is that benefits and losses occurring in the distant future have very little current value and so are largely ignored. This causes what she calls “the dictatorship of the future by the present” as the current members of the group are much more concerned about their own welfare than the welfare of time-distant members, and take insufficient account of the welfare of the latter when making decisions. Ever since exponential discounting was first introduced, many economists have decried it as an unrealistic description of the way groups should value the future.²⁰
48. The second method is to calculate the average level of the welfare of group members, measured in contemporaneous terms. This is equivalent to using a time preference rate of zero. In the wrongful imprisonment example it would mean valuing the loss from wrongful imprisonment at \$150,000 in 2018 dollar terms, irrespective of when the loss occurred in the future, rather than valuing losses in the future at very low amounts because they occur in the future. When a group is indefinitely lived, the average is equal to the contemporaneous value of non-monetary events in the distant future, as these people dominate in terms of numbers.
49. The difficulty of using the ‘average welfare’ or zero time-preference rate to value welfare is that it leads to “the dictatorship of the present by the future” because it means that if current generations can do anything to raise the long run prospects of future generations they should do so.²¹ In practice this means current generations should save most of their income, invest it, and allow the interest to be paid to each subsequent

¹⁹ As Dr Meade noted, few economists have considered how to value non-monetary events in the past. This is largely because there is no way to change the past, and so no way of testing these theories.

²⁰ Exponential discounting was introduced into the profession in its modern form by Ramsey in 1928, but in the same paper he denounced it as an unethical description of the way social planners should behave. (Ramsey, F. P. (1928). A mathematical theory of saving. *The Economic Journal*, 38(152), 543–559). Arrow (1999) provides a list of damning comments by many famous economists who find it strange that we think a social planner should value the utility of people differently simply because of the date of their birth. Arrow, Kenneth J. (1999) “Discounting, morality and gaming,” pp13–22 in Portney, Paul K. and John P. Weyant, ed (1999) *Discounting and Intergenerational Equity*, (Washington: Resources for the Future).

²¹ As saving and investing can raise the consumption of all future generations, a zero time preference rate means people should sacrifice themselves for the future.

generation. As Kenneth Arrow noted, this does not seem to be consistent with the way most groups think.²²

50. In her paper, Chichilnisky argued that any acceptable intergenerational valuation metric should obey two axioms: it should require neither the dictatorship of the future by the present, nor the dictatorship of the present by the future. She further argued that an approach that meets this criteria is one that calculates a weighted average of the discounting approach and the long-run average approach, for then the interests of the present and the future would always be taken into account. Groups that place a high weight on the welfare of future generations would place a high weight on the long-run average (or zero discount rate) approach, while groups less concerned about the future would place a lower weight on this component.
51. This approach has echoes in the concept of stewardship.²³ A group may perceive value in bequeathing to subsequent generations what it received from previous generations, and obtain value not from maximising its current consumption but by passing on to subsequent generations a set of natural and cultural ‘resources’. This type of view has many adherents, from families who value the family line, to tribal groups, to many modern environmentalists. From Chichilnisky’s perspective, people with such views place a lot of weight on the long run welfare of group members and much less weight on discounting; their approach to the intergenerational valuation of welfare tries to avoid the dictatorship of the present over the future rather than avoid the dictatorship of the future over the present. This type of stewardship approach to land management is often used to describe the preferences of indigenous people colonised by the British in New Zealand, Australia, and North America.²⁴
52. If the members of a group or tribe have preferences that place large amounts of weight on the long term welfare of the group, or, equivalently, on concepts of stewardship, it is inappropriate to use exponential discounting techniques to describe the way they value non-monetary events in the future, or the welfare of the group in the future. In these circumstances, exponential discounting – a concept used to model how finite-lived

²² Arrow, Kenneth J. 1999. “Discounting, morality and gaming,” pp13–22 in Portney, Paul K. and John P. Weyant, ed (1999) *Discounting and Intergenerational Equity*, (Washington: Resources for the Future)

²³ Helm, Dieter. 2019. “Natural capital: assets, systems, and policies.” *Oxford Review of Economic Policy* 35 (1), 1–13.

²⁴ See, for example, Cornell, S. E. (2006). *Indigenous peoples, poverty and self-determination in Australia, New Zealand, Canada and the United States*. Native Nations Institute for Leadership, Management, and Policy.

individuals make choices in response to the way they value their own lives – is not a good way to model how the group values non-monetary events affecting group members (most of whom are not alive) in the future. Quite simply, the group makes decisions using a different system of values.

53. As far as I know, there is little academic work concerning the way groups with what I shall call ‘forward-looking stewardship’ principles value non-monetary events in the past. Most economists who have published on these issues focus on the way people make decisions concerning the future, as decisions made today can change the future whereas the past cannot be changed. Nonetheless, Chichilnisky’s axiomatic approach to social welfare suggests that such groups may value the past very differently than an approach that uses exponential compounding based on interest rates. Rather, they may use a zero time-preference rate to value events in the past in the same way they would value current events or events in the future. With zero time-preferences, the real value of wrongful imprisonment in the past is \$150,000, the same as wrongful imprisonment in the present or wrongful imprisonment in the future.
54. Table 1 shows a sample of different values that a group may place on events that occur at different times in the past and future, such as the wrongful imprisonment of one of its members. In all cases the exponential discounting entries use a 2.3 percent real discount rate, equivalent to the rate that changes valuations by a factor of 30 over a 150-year period.
 - a. Column 1 uses exponential compounding and discounting. This generates valuations for the past similar to those used by Dr Meade, and extends them forward to the future.
 - b. Column 2 uses discounting based on the length of time between an event and the present. This means events in the distant past and the distant future are both valued less than events in the present.
 - c. Column 3 uses a zero rate of time preference. This assigns values for losses that are independent of the date at which the loss occurs.
 - d. Column 4 uses a Chichilnisky axiomatic approach with equal weights on Column 2 and Column 3.²⁵

²⁵ The Chichilnisky Axiomatic Social Welfare methodology is only normally used to calculate the value of current and future events. In the table, the valuations of the past are calculated under the assumption that the

55. My own preferences for calculating the valuations of a tribal group whose values reflect stewardship principles are columns 3, which assigns values for losses that are independent of the date at which the loss occurs, and column 4, that assigns gradually declining values for losses that depend on the length of time between the event and the present. The values in column 1 do not resonate with me, although they may resonate with other people. The key point, however, is that economists have approached the valuation of non-monetary events using many different ways than the single way suggested by Dr Meade and Mr Mellsop.

Table 1. Different methods of calculating the present value of non-monetary events occurring at different times.

	Date-based discounting	Time-elapse discounting	Zero time preference	Chichilnisky equal weights
Past: -150 years	\$4,500,000	\$5,000	\$150,000	\$77,500
Past: -100 years	\$1,448,234	\$15,536	\$150,000	\$82,768
Past: -50 years	\$466,085	\$48,274	\$150,000	\$99,137
Past: -10 years	\$188,177	\$119,568	\$150,000	\$134,784
Present	\$150,000	\$150,000	\$150,000	\$150,000
Future: 10 years	\$119,568	\$119,568	\$150,000	\$134,784
Future: 50 years	\$48,274	\$48,274	\$150,000	\$99,137
Future: 100 years	\$15,536	\$15,536	\$150,000	\$82,768
Future: 150 years	\$5,000	\$5,000	\$150,000	\$77,500

1.2.2.3 Corporations

56. The corporate finance literature largely discusses how the monetary value of investments and actual and potential cash flows are valued, not the way non-monetary events are valued. This is possibly because corporations are not emotional people but are indefinitely lived legal entities.

57. The indefinite life span of corporations raises other complications. If a corporation should have been paid an amount of money a certain number of years in the past it

group values events according to their distance from the present. This means they value events in the past less than events in the present.

seems reasonable to calculate the current value of the payment using a compounding investment approach, because it is the same legal entity. An indefinitely lived corporation owed £1276 150 years ago might well value that payment at \$5.1 million today. This money, when paid, would be a bonus to the current owners of the corporation.

58. Payments to corporations based on the compounding value of investment returns are likely to be unrelated to the way the current owners of the corporation value the non-monetary losses of the earlier owners of the corporation. The non-monetary losses of the earlier owners of the corporation are related to their reduced consumption as they did not receive the monetary payments to which they were entitled.

1.2.3 Lost consumption and the valuation of monetary losses

59. The way people value non-monetary losses occurring at different times affects the way *monetary* losses occurring at different times are valued. The example to date has focussed on the suffering associated with wrongful imprisonment, which society currently values at \$150,000 per year. If someone is given the \$150,000, it is assumed that the non-monetary benefits from spending the money (higher consumption), or the non-monetary benefits from taking additional leisure instead of working offset some of this suffering.
60. More generally, if someone suffers a monetary loss, economists typically value this loss in terms of the non-monetary utility loss they suffer because they have lower consumption or less leisure. If someone (person B) was not paid £1 150 years ago, a person currently alive (person A) should value person B's loss in terms of the reduction in consumption that person B would have experienced at different stages of their lives, adjusted by factors that measure how much person A cares about the consumption of person B and how much they value non-monetary events at different dates. Conceptually, person A is valuing the loss caused by the reduced consumption levels experienced by person B. There is no inherent reason why this value should be the same value as the investment value of the monetary payment.
61. This point was debated by Dr Meade, Dr Yeabsley, and Mr Mellsope. Essentially Dr Yeabsley argued that if person B had been given £1 extra at some point in the past, that

money would have most likely been spent during that person's lifetime. The value of the pound in the past is thus the consumption value to person B of the amount that a pound could have purchased. The pound might have been spent immediately, or it might have been saved and spent later in person B's life. Some could have been spent on the person's children or left as an inheritance. It is unlikely much would have been placed in a trust fund and allowed to accumulate untouched until 2018. Consequently, in order to calculate the amount person B valued a pound, person A would need to make some sort of counterfactual as to how that money would have been spent or saved.

62. The position of Dr Meade and Mr Mellisop is that these counterfactuals are largely unnecessary because whether person B would have spent the money immediately or invested it and spent it at a later point, or left it as an inheritance to be spent by their children, the utility value of these options to person B are similar. This is because if person B had received the money they will have adjusted their saving to ensure the time-discounted marginal utilities of their consumption at different stages of their life were equalised. A little of the money may have been spent immediately with the rest spent in dribs and drabs at subsequent dates; in general, the discounted value of their own spending at a future time should be assumed to be at least as large as if they had spent the money immediately. The marginal value of the pound is therefore at least as large as the marginal non-monetary utility obtained from spending it when the money was first received. Conversely, if person B did not receive a pound, the non-monetary value of their reduced consumption spending is valued at a least a pound.
63. Dr Meade and Mr Mellisop are correct that this is the way economists impute the non-monetary value of a pound that person B should have received in the past. The pertinent question, however, is how person A in 2018 values the utility of person B's loss. As explained above, there are a variety of ways person A could make this valuation, which depend on how much person A cares about person B, and how much person A values non-monetary events happening at different points in time. The latter depend on rates of time preference and diminishing marginal utility theory, not interest rates. As explained above, there is no good reason to think people value consumption losses occurring in the past to other people at exponentially higher rates than consumption losses that might occur to them in the present, or the consumption losses that may occur in the future. They might want to increase their valuation of a loss occurring to someone in

the past because consumption levels were generally much lower in the past than they are currently (the diminishing marginal utility effect). But there is no reason they must value these losses at increasingly high rates simply because they occurred in the past. For example, it is completely valid for a person whose values reflect stewardship principles to value the past using a time preference rate equal to zero. In this case they would value the non-monetary losses of an ancestor occurring in the past (person B) in the same way that they would value their own losses or the losses of future descendants: that is, at the full contemporaneous value, but not more.

64. The 'consumption opportunity cost' approach to valuing past monetary losses means that counterfactuals matter. If person A believes it is reasonable to believe that neither person B nor anyone else would have spent the money person B should have received in the past, then person A might equate the value the losses to the investment value of the money. However, this counterfactual has little plausibility. Otherwise, it seems more reasonable to estimate the marginal value of the lost consumption and value it using a valuation metric similar to those presented in Table 1. To me, it seems more plausible to value past consumption losses using discount rates that decline with the amount of elapsed time, so that losses in the distant past are valued less than losses in the near past. Again, I do not wish to impose my personal preferences on other people, and recognize that they have no relevance to the Tribunal. Moreover, some people may value past non-monetary losses using exponential compounding techniques. Nonetheless, there is no inherent reason why the non-monetary losses suffered by people in the past because they were deprived of money *must* be valued at the investment value of money.
65. The above discussion has been predicated on the assumption that person A and person B are different people. As Dr Meade notes, some people currently alive have been deprived of money in the relatively recent past. How should they value their own losses? In this case there is a much stronger case for saying the non-monetary value of their losses can be proxied by the current investment value of the money. If a person had spent the money when they should have received it, it would suggest that they valued immediate consumption much more highly than the delayed consumption associated with a much larger sum. They will have been deprived of this opportunity. Against this position, however, it is possible that the way a person currently values the lost spending opportunities occurring at earlier stages of their lives may not be the same

as the way they would have valued them in the past. Many people have valuation metrics that change through time.

66. These considerations have implications that apply to most of the loss calculations undertaken by Dr Meade and Mr Mellsop. Both of these authors have argued that monetary losses experienced in the past should be valued at the current investment value of the past monetary payment (or, more particularly, the past monetary non-payment). In some cases these losses occurred because people or tribes were paid very low sums for their land; in other cases these losses occurred because they were deprived of the ability to earn a livelihood; in others because they were killed or because they weren't financially compensated for their sufferings at the hands of the Crown. The compounding factors they use are very large, and this is the main reason why both authors produce estimates of the current value of these losses that are very large. As previously noted, they use compounding rate that mean that a loss valued in real terms at \$150,000 that occurred 150 years ago is valued at \$5,000,000 now. Like Dr Yeabsley, I do not believe that it is necessary to value these losses at such high rates. The sufferings of the past are large and repugnant. But this does not mean that current people who value the sufferings of their ancestors should calculate these values using exponentially compounding rates based on available investment returns. There are many alternative ways to make these calculations, and in many cases losses in the past will be values at equal or much lower rates than current losses.

1.3 Monetary compensation for losses suffered by people in the past.

67. I am not an expert on the way economists think about legal compensation, and it is not clear that the way economists think about legal compensation is relevant to the Tribunal. For this reason, I have relatively little to say about the central compensation issues facing the tribunal.

1.3.1 Confiscated Land

68. Around the world, many indigenous groups value land for non-financial reasons and they place a premium upon preserving access to the land.²⁶ The cultural damage that

²⁶ Evidence on this point is enormous, but I am not an expert. See the discussion and some of the references in Jeremy Waldron (2002) "Redressing historic injustice", *The University of Toronto Law Review* 52(1), 135–160;

occurs when land is confiscated or illegally appropriated is immense and ongoing. In these cases, the valuation metrics are close to those inherent in the concept of stewardship rather than consumption. It is difficult to understand why valuation metrics based on financial concepts would be relevant. Indeed, it is difficult to see how the losses suffered by these tribal groups can be fully redressed unless the land is returned.

69. This said, it is also clear that returning land to tribal groups from whom it has been earlier taken will cause immense economic dislocation to others, including those who currently own the land, or those who may be asked to buy the land from current owners so that it can be returned.²⁷ This raises immense moral and political issues about which I have no expertise. There is clearly no political, moral or economic imperative that says because people value something in a particular way they should be compensated by an amount equal to this value if it is taken from them.

1.3.2 Moral hazard and compensation for non-land losses

70. Compensation for non-land losses not only depends on the way people value losses. A person or group of people may place a low current value on a loss that took place a long time ago, but they still may wish to punish the protagonist because of ‘moral hazard’ issues. They may wish to impose a large cost on a government, for example, to ensure it is more responsible in the future. They may wish to ensure a protagonist has an incentive to pay compensation immediately rather than delay payment until the memory of the pain is reduced and the valuation of the event is lower. They may wish to avoid the situation where the protagonist has an incentive to kill the claimant so that payment can be avoided or lessened. Dr Meade refers to some of these arguments. All of these arguments have some merit. They are largely unrelated to the issue of the way people value losses, however, and I have no particular expertise to discuss them.

Eric Posner and Adrian Vermeule (2003) *Reparations for slavery and other historical injustices*, *Columbia Law Review* 103, 689–748; Roy Brooks (2004) “Getting reparations for slavery right – a response to Posner and Vermeule,” *Notre Dame Law Review* 80, 251–288; William Bradford (2005) *Beyond Reparations: an American Indian Theory of Justice*” *Ohio State law Journal* 66 (1), 1–104; or Cornell, S. E. (2006). *Indigenous peoples, poverty and self-determination in Australia, New Zealand, Canada and the United States*. Native Nations Institute for Leadership, Management, and Policy.

²⁷ Eric Posner and Adrian Vermeule (2003) *Reparations for slavery and other historical injustices*, *Columbia Law Review* 103, 689–748

1.3.3 Compensation of corporations

71. The compensation of corporations raises different legal issues than the compensation of individuals or tribal groups, as they are indefinitely lived legal entities rather than people. It is not clear that corporations can make valuations about non-monetary events. Since the value of a corporation is related to the value of its assets and the monetary payments it expects to receive, it is likely to be appropriate to use investment valuation metrics to calculate the value of losses. These legal considerations are clearly relevant to the claims by the proprietors of Mangatū Blocks Incorporated and the proprietors of the Wairarapa Moana ki Pouākani Incorporation. In both of these cases, *for legal reasons*, it may be appropriate to value past losses using compounding interest rates or compounding investment returns.
72. If a corporation is compensated for past returns using a methodology based on compound investment returns, the current owners or claimants will receive a return that is not necessarily related to the way they value the non-monetary losses associated with the people who owned the corporation at the time the loss was first suffered. How the compensation is split between the original owners and the current owners will depend on the date that future compensation was first anticipated, and the extent that the value of the anticipated compensation was capitalised into the prices at which the claims of the original shareholders were subsequently sold. In a situation where ownership claims on the corporation are not sold but are otherwise transferred from one party to another through time, it is unlikely that the original owners of the corporation will have received any compensation for their losses via a change in the valuation of these claims. In these circumstances, the compensation of the current owners or claimants is unlikely to be related to the way they value the non-monetary losses associated with the owners of the corporation at the time the loss occurred.

1.4 Summary

73. Underpinning many of the estimates of historical losses calculated by Dr Meade and Mr Mellsoop is the assumption that the current value of the losses caused by wrongful events occurring in the past should be calculated by multiplying the contemporaneous monetary value of the losses by a factor equal to the value of compound investment returns. These compounding factors become very large over long periods of time, and are the primary reason why the current values of the losses they estimate are so large.

74. It may be appropriate to use these compounding investment rates in some circumstances to calculate an appropriate estimate of the present value of losses. In many other circumstances, however, many economists are unlikely to consider this valuation technique to be appropriate. Economists typically focus on the non-monetary or utility value of losses, and when calculating the present value of losses occurring at times other than the present they discuss these valuations in terms of time preferences and the diminishing value of marginal utility, not investment returns.
75. Economists do recognize that there is a relationship between investment rates and the way people value non-monetary events in the future. Because people can borrow and save to alter their consumption paths, interest rates can be used to estimate the way people value consumption in the future. This technique cannot be used to gather information about the way people value past events, however, as the past cannot be changed.
76. Economists have not often tried to work out the values people place on non-monetary events that occurred in the past. However, from analogies with the variety of ways people value the future, it is possible that different people have different valuation methodologies. It is unlikely that there is a single method. It is plausible that valuations could be higher, lower, or the same as the same events occurring in the present. Many people are likely to find it very strange to attach valuations to non-monetary events occurring in the distant past that are much higher than valuations placed on similar events occurring in the near past or the present. It is also unnecessary. Economic principles do not mean that people have valuations of past events that are much higher than similar events in the present simply because a dollar invested years ago and never spent would generate a large sum of money available to be spent today.
77. In recent years, economists have examined the way some groups such as families, indigenous tribes, or environmentalists value the past and the future. This has led to a renewed focus on concepts such as sustainability and stewardship. Such groups appear to value the future – and perhaps the past – in a manner similar to having a zero rate of time preference. When people have a zero rate of time preference, they value non-monetary events in the same way, independently of when the events occur.
78. Modern economic theory has analysed valuation techniques consistent with stewardship principles, in particular Chichilnisky's axiomatic social welfare theory. This theory is

consistent with a group attributing the non-monetary events in the past similar values as if the events were to occur today. Compensating a group with such values for past wrongs suffered may require the return of land, or payments sufficient to enable the group to purchase land in alternative places.

79. There are legal issues in these cases that mean compensation for some losses that occurred in the past should involve compounding at rates linked to historic investment returns. In general, however, such an approach is not necessary although it remains one of a variety of ways the present value of monetary payments and events that took place in the past can be valued. Many economists, including myself, are unlikely to have the expertise to wander through legal minefields. Nonetheless, their approach does suggest that there is not single way of valuing the past. Many of their approaches suggest some people value past events much less than current events. Others suggest some groups use valuation metrics that value events independently of the time they occurred. Either approach would produce valuations much, much lower - lower perhaps by a factor of 30 or 1000 - than some of the valuations calculated by Dr Meade or Mr Mellsope.

Section 2. The appropriate benchmarks for comparing payments and implicit losses associated with events occurring in the past.

80. In this section I wish discuss several miscellaneous issues concerning some of the valuation issues not concerning intertemporal compounding and discounting rates that arise in the paper. A lack of time means that the issues I address are simply those that struck me most forcefully from a reading of the briefs. They include the following.
- a. The amount of compensation that is appropriate to pay the Wairarapa Moana ki Pouākani Incorporation because of the loss of their lands associated with the construction of the Maraetai power Scheme.
 - b. The amount of compensation linked to the earning potential of people from the Māhaki iwi in the nineteenth century.

2.1 The Maraetai Power scheme

81. In the following document, Dr Meade has made an estimate of the losses suffered by the Wairarapa Moana ki Pouākani Incorporation because of the Maraetai Power Scheme.

WAI 863, #J37

Affidavit of Dr Richard Brent Meade 9 November 2018 p16

82. Dr Meade noted (at page 16) that in Chapter 7 of the *Wairarapa ki Tararua* report, the Tribunal:

26.2. Recommended that the Crown, applying Treaty-compliant criteria, should provide compensation for:

26.2.1. The unique qualities and hydro potential of the [subject] land...; and

26.2.2. All betterment effected by the hydro works.

83. Dr Meade has made an estimate of the value of the Maraetai Power Scheme to the government, in terms of the cost saving relative to alternative electricity generating schemes. He further argued that some fraction of this alternative should have been offered to the Wairarapa Moana ki Pouākani Incorporation as compensation for the land.²⁸ His method has two main steps: first, he estimated the present value of the

²⁸ In 1947 the Crown conducted the negotiations with the Proprietors of Mangakino Township Incorporation, the forerunner of the current Wairarapa Moana ki Pouākani Incorporation. Throughout this document I have

benefits of the scheme in 1947 relative to alternatives that were considered at the time to be the most likely options; and secondly he estimated how this cost saving could have been split between the Crown and the Wairarapa Moana ki Pouākani Incorporation.

84. Dr Meade considered two main alternative options when calculating the cost-saving. The first is based on thermal-power generation and the second is based on changing the order in which hydro-electricity dams were developed. To calculate the cost of a thermal-power alternative, he considered three thermal-power alternatives and calculated a weighted average. The three options were an oil-fired generator, a coal-fired generator and a geothermal powered generator; and he argued (based on contemporary documents) that the Government considered the oil-fired generator, by far the most expensive of the three options, as the most likely of the three alternatives. Based on arbitrary (although considered) weights (oil-fired generator = 70%; coal-fired generator = 15%; geothermal generator = 15%), he estimated that if the government of the day had calculated the cost- saving, it would have calculated a sum of £52.2 million (p 77). The cost-saving associated with changing the order in which hydro-electricity dams were developed was estimated to be £38.5 million. The average is £45 million (p77).
85. In the second step, Dr Meade discusses various ways that the Crown may have decided to divide their estimate of the hypothetical cost-savings with the Wairarapa Moana ki Pouākani Incorporation. One of these is based on a fair sharing rule called the “Shapley Value,”; another based on the precedent of other occasions when the Crown has shared resources, either (i) when it has been compensated for resources it controls or (ii) when it has entered joint-ventures on other occasions; and a third is based on analogies from when the Crown has entered non-coerced joint ventures with Māori landowners on other occasions (p78). He obtains values ranging from 9 percent to 33 percent. The lowest estimate is based on the value of resources the Crown obtains when it is compensated for resources it controls, and the highest estimate is based on the Shapley value. His preferred estimate is 17.5 percent (p100).

used the name ‘Wairarapa Moana hapū’ rather than ‘the Proprietors of Mangakino Township Incorporation’ when referring to the Incorporation in the 1940s.

86. When these two steps are combined, the preferred estimate is that £8m compensation should have been paid in 1947 (p106). This does not include compensation that might have been paid to other parties who sold land to the government for the Maraetai scheme in 1947.
87. I would like to make some comments about this counterfactual estimate. I do not know how relevant these comments are to some of the legal issues surrounding the case, but they should provide some context for the way the Crown might have considered the issue of fairness when it negotiated with the Wairarapa Moana hapū in 1947. It may be that the context of the 1940s is irrelevant, and for legal reasons only the hypothetical scenarios posited by Dr Meade about the possible calculations and negotiations strategies are relevant.
88. In 1947, New Zealand was making a transition from the war-time economy.²⁹ During the war, and during the transition after the war, many economic decisions were made in the national interest. From July 1940, for example, there was a conscription system for men for service in the armed forces. There was manpower-planning that applied to men and women that allocated people into essential industries – in 1945, approximately 250,000 people were working in these essential industries, about half of whom had been directed there. After 1943 the “Servicemen’s Settlement and Land Sales Act (1943)” provided for the compulsory acquisition of land for ex-servicemen. This Act also placed restrictions on the prices at which land could be sold. The prices of all land sales were regulated, with the basic value of farm land fixed at its ‘productive value’ and the basic value of other land fixed at its value on 15 December 1942. According to section 53(3) of the Act

For the purposes of this Act the productive value of any farm land shall be deemed to be an amount equal to the net annual income (as ascertained in the manner provided by this section) that can be derived from the land by the average efficient farmer, capitalised at the rate of four and one-half per centum.³⁰

By March 1948, over 640,000 acres had been purchased for ex-servicemen under the scheme.

²⁹ The war time economy is described in J.V.T Baker (1965) *War Economy* (Wellington: Department of Internal Affairs). This numbers below are taken from chapter 19.

³⁰ Quoted in Baker (1965), p 513

89. This scheme partly explains why land prices in New Zealand were low in 1947, and why the Crown may have offered a low price to the Wairarapa Moana hapū. Perhaps they should have offered a price based on the unique characteristics of the land, as the Tribunal has recommended. Perhaps the Crown should have negotiated to pay the Wairarapa Moana hapū a very large fraction of the cost-saving they expected to make from building the Maraetai dam rather than some other power generator. However, at the time the Crown was making a lot of decisions in the national interest, it was buying a large amount of land on a formulaic basis that depended on the farm-value of land, and it was purchasing other land at December 15 1942 prices. Given the immense costs of the war in terms of death, injury, and material, I doubt that the Crown would have thought it fair to offer what would have been in the context of the times a *very* large sum to the Wairarapa Moana hapū for land which in their eyes would have little alternative value. I doubt whether such an offer would have even been in their mindset – and, indeed, they offered an incredibly low sum.
90. Incidentally, the price restrictions (which also were imposed in Australia as a war time measure) were very effective. Between 1942 and 1949 land prices were very low in New Zealand, and the average selling price for residential properties (a house plus land) increased from £820 to £1537 between 1949 and 1951 once the restrictions were relaxed.³¹
91. These low prices provide some context for the £52.2 million calculated by Dr Meade as the cost saving that should have been shared with the Wairarapa Moana hapū.
- a. In 1947, in the whole of New Zealand there were 32,840 sales of urban property, at a total sales price of £25.7 million, or an average sales price of £781. The cost saving of £52.2 million would therefore have been enough to purchase 65,000 urban properties, or approximately 10 percent of all urban properties in New Zealand.³²
 - b. In 1947, total Gross Domestic Product (GDP) was £429 million, or £235 each for the 1,823,000 people living in New Zealand.³³ The cost-saving of £52.5 million is

³¹ Data from the Department of Statistic's "Abstract of Statistics", 1949-1952, Table 45.

³² Data from the Department of Statistic's "Abstract of Statistics", 1947-1948, p 42, 45.

³³ Data from Statistics New Zealand Long Term Data Series E1.1

12 percent of GDP – or the annual per capita GDP of approximately 225,000 people.

92. As can be seen, £52.5 million is a very large sum. It is quite probable that the Crown would not have contemplated sharing 33 percent or even 9% of this sum with the owners of the land on which they wished to build a hydro-electric dam given the context of the 1940s when the country was in immediate aftermath of a long, deadly, and expensive war in which many decisions were made in the national interest. They may have thought one percent or two percent were more appropriate, or a sum enough to allow every shareholder of the Wairarapa Moana hapū to purchase a house or settle on other land. I simply do not know what would be considered a reasonable offer in 1947 for land that was strategically valuable for the production of electricity. However, we do know what the Crown considered to be reasonable offers for agricultural land that was compulsorily acquired for ex-servicemen, and these sums were not large.
93. My second comment concerns the use of the Shapley Value as a counterfactual for calculating the amount of the surplus that the Crown should have shared with the Wairarapa Moana hapū in 1947. It is simply to note that the Shapley value had not been discovered by Shapley in 1947 – the paper was published in 1953.³⁴ Moreover, it was a theoretical innovation, not an empirical result based on the way that people actually were negotiating in the 1940s. In 1947, the New Zealand Government may have unconsciously adopted a negotiating strategy with the Wairarapa Moana hapū that produced outcomes similar to those calculated by a Shapley Value, but they are unlikely to have done this consciously. Indeed, there is little evidence that the Crown was negotiating unconsciously or otherwise according to the precepts of Shapley principles in the 1940s. Rather, the Crown was making many decisions in the national interest. Given the legislation governing the compulsory acquisition of farm-land was not based upon Shapley principles, it is unlikely that the Government would have thought of negotiating in such a matter for land to be used as the site of a power station.
94. My third comment concerns the way the cost-savings were calculated, particularly the cost-savings based on alternative thermal-powered stations. Dr Meade argues for a weighting scheme based on the probabilities he thinks negotiators would have used in

³⁴ Other key papers in the literature were not much earlier; for example, Nash's paper "The bargaining problem" was published in 1950.

1947 if they entered into negotiations knowing that these probabilities would determine the price of land. He argues, based on contemporary documents, that the Crown would have placed a large (70 percent) weight on the most expensive oil-fired thermal option. However, it is by no means clear that the feasibility of different options was properly calculated by the Crown in 1947, because there is no evidence that they were expecting to negotiate according to Shapley principles. If they had been expecting to negotiate in this manner, they may have put a lot more effort into investigating the likely feasibility of different thermal power options than they actually did in 1947. Indeed, when it came time to actually calculate the costs and feasibility of different thermal-powered stations in the 1950s, the Crown came to different conclusions. In 1956, only two years after Maraetai was finished, they chose to build the Meremere coal-fired station and the Wairakei geothermal station.³⁵ An oil-fired station, Marsden, was not started until 1962.

95. If the Crown had seriously considered different options in 1947, knowing that they would have to pay a large fraction of the cost-savings to the Wairarapa Moana hapū perhaps they would have come up with different probabilities, just as they actually made different decisions within the decade. Who knows? – with counterfactual worlds many things could have happened. If they had come up with different weighting probabilities, because they spent more time considering the feasibility of different options because they knew the cost of the Maraetai scheme crucially depended on how accurately they assessed these probabilities, the cost-saving would likely to have been different. Using ‘back-of-the-envelope’ calculations based on the data provided by Dr Meade in appendix B of his submission, it is possible to calculate alternative cost-savings.
- a. If each of the three options was equally likely, the calculated cost saving would have been £33 million.
 - b. If the two least expensive options (coal and geothermal) were equally likely, the calculated cost saving would have been £12 million.
 - c. If only the coal-fired alternative were considered the calculated cost saving would have been £22 million.³⁶

³⁵ These stations were opened four years after Maraetai was opened, in 1958.

³⁶ These numbers must be considered approximate, for when I use Dr Meade’s (70,15,15) weights in my ‘back-of-the-envelope’ formula I get £57 million not £52 million for the cost of his preferred option.

The point is that the choice of weights matters a lot. Dr Meade notes this, and he suggests he is being conservative by not putting 100 percent weighting on the most expensive oil-fired option for at the time it was considered the easiest alternative scheme. Perhaps; but if the Crown knew the single largest component of the cost of the Maraetai scheme depended on how well it investigated alternative options, a cost larger than the actual costs of the earthworks and the dam equipment, it may have investigated alternative options much more thoroughly.

96. Dr Meade has made various calculations as to the potential size of the payment the Crown should have paid to the Wairarapa Moana hapū in 1947. These calculations are designed to implement the Tribal recommendation that compensation should reflect the unique qualities and hydro potential of the land. His calculations generate a number (£8 million), a sum that would have been enormous in 1947, especially given the way other land was compulsorily acquired in the national interest in the aftermath of World War II.
97. I do not know whether the way that the Crown was compulsorily purchasing other land in the national interest in 1947 is a relevant consideration for the Tribunal. Nor do I know whether it is relevant that in 1947 there were laws in place that restricted the prices at which land was voluntarily exchanged between private parties, and which restricted the prices at which land was voluntarily exchanged between the Crown and private parties. However, it seems likely that the post-war context affected the way negotiations were conducted between the Crown and the Wairarapa Moana hapū. It is also likely that the post-war context would have affected the way they would have been conducted if they were conducted differently. It seems unlikely that in 1947 the Crown's concept of fairness was the same as the Shapley value concept of fairness. It is also likely that if the government knew that how much it paid for land would depend crucially on the ways it evaluated alternative electricity generating options, it would have considered the different options more rigorously. All of these considerations would potentially generate a much lower estimate of what the Crown may have considered fair recompense for the purchase of land from the Wairarapa Moana hapū than the estimate produced by Dr Meade.

2.2 The value of the lost production of Māhaki wrongfully killed in the 19th century.

98. This comment pertains to the calculation of the economic losses associated with the loss of life following the assault on Waerenga a Hika and its aftermath. It mainly refers to:

WAI 814, #P6; WAI 1489, #A7, ‘Second Brief of Evidence of Richard Brent Meade concerning Te Aitanga a Māhaki Losses’, pp 262–278.

99. Dr Meade calculates the losses associated with the death of a large number of males in the aftermath of the assault (section B.2.1). One of these estimates is based on the losses associated with a loss of wage income, assuming each person earned the contemporaneous wage of farm labourers (p265–266). Another is based on the loss of income they would have earned if they had owned their own farms (pp271–278). A third is based on the Value of a Statistical Life. In each case the contemporaneous value of the economic value of the deaths are calculated, and then compounded forward using either the risk-free after-tax rate or the discounted GDP rate.

100. As previously discussed, I do not believe that the use of compounding formula is the only way to calculate the current non-monetary value of these losses, and I do not believe that this is the best way to calculate the non-monetary value of these losses. In my view, these values should be calculated with reference to the lost consumption opportunities of the people. They are not necessarily the monetary value of an investment that would have occurred if the affected people would have saved every penny of their earnings and invested them in a manner that meant the proceeds would have been available for their descendants who were alive in 2018 and afterwards, but no-one earlier. However, my criticism of the calculations of the potential size of the wage earnings and the potential size of the farm earnings is not related to the compounding formula.

101. In section 767.1 (p265) Dr Meade says he uses as the wage rate the sum of \$448.46 per year at 1873, based on data from Greasley and Oxley (2004, p33 and 45).³⁷ This appears to be the wrong value. Greasley and Oxley record the wages of farm labourers in 1909 to be 47.17 shillings per week or £123 (\$245) per year, or half as much. This is

³⁷ Greasley, D., & Oxley, L. (2004). Globalization and real wages in New Zealand 1873–1913. *Explorations in Economic History*, 41(1), 26–47.

slightly lower than the wage of general laborers, 49.61 per week. Since the nominal wage index for farm labourers was 110.6 in 1873 and 120.8 in 1909, this suggests the annual salary in 1873 would have been £112 (\$224) per year. These figures can be compared with the data published in the 1893 Official Year Book, where farm labourers in the Hawkes Bay region were recorded as having an income of 20-25 shillings per week, plus board, shepherds had an income of £60 – 80 per year plus board, and general labourers had an income of 7-8 shillings per day without board (equal to £120 per year, assuming a 300 day working year). Alternately, estimates of GDP per capita (not per worker) for 1865 were between £63 and £81.³⁸ All of these numbers suggest a wage of \$448 per year is overstated by a factor of two. In turn the estimates of the compounded value of the lost wages in 2018 are overstated by a factor of two, even if Dr Meade's methodology for calculating these values is accepted.

102. Several of the subsequent comparisons of the contemporaneous value of losses such as the cost of wrongful imprisonment or the value of statistical life are also wrong when expressed in terms of the contemporaneous value of wages. In the latter cases, however, the calculations of the compounded (2018) value of wrongful imprisonment or the value of statistical life are unaffected.
103. The incorrect value for wages is part of the explanation for one of the mysteries Dr Meade notes later in the section: that his estimates of the value of lost farm output are lower than his estimates of the value of lost farm wages. Part of the issue is that his estimates of farm wages are too high, by a factor of two. However, there are bigger problems with the econometric estimates he has for the value of farm output. Dr Meade estimates a model of how much a person could have earned given contemporary technology, labour quantities, and quantities of capital equipment. The econometric estimates are perhaps interesting, but they cannot be taken seriously. One problem is that estimates for the quantity of capital equipment are calculated by estimating the number of horses people owned, and relating this to estimates of the national capital stock. The measure of the national capital stock, taken from Statistics New Zealand's Long Term Data Series, appears to be solely based on the value of road and port construction, which is unlikely to be a good proxy for total capital in the colony. Secondly, and more fundamentally, the regression omits a key variable in the

³⁸ According to the data from Statistics New Zealand, nominal GDP in 1865 was \$30 – 32 million and the population was estimated as 243,000, of whom 52,000 were Māori.

production function – the amount of farmed land. Since much of the New Zealand economy was agricultural, and the availability of cleared farm land was a key limiting factor (indeed, the factor at the centre of the Tribunal’s enquiries) this omission rather undermines the estimates. They cannot be considered reliable.

104. Even if incorrect, the values for lost wages and lost farm income are not central to the case Dr Meade is making about the current value of non-land based losses. His estimates of these losses are so large because of the way he compounds losses forward through time.

Section 3. Compensation to provide an economic base

105. This section refers to the part of the briefs that estimate the value of the economic base needed to restore iwi and hapū to a standard of living comparable to other New Zealanders. It includes

- a. Economic base associated with Te Aitanga a Māhaki.
 - i. WAI 814, #P6; WAI 1489, #A7, ‘Second Brief of Evidence of Richard Brent Meade concerning Te Aitanga a Māhaki Losses’, Part V pp 290–312 “Compensation to provide an economic base.”
 - ii. WAI 814, #P36; WAI 1489, #A37, ‘Brief of Evidence of John Yeabsley’, p6 relating to the compensation necessary to provide an economic base.
 - iii. WAI 814, #P42; WAI 1489, #A43, ‘Evidence of Richard Brent Meade in reply’, pp 10–14 “Economic base estimated using population data”.
- b. Economic base associated with Wairarapa Moana Ki Pouākani.
 - i. WAI 863, #J37, ‘Affidavit of Dr Richard Brent Meade’, p113–125 “Required Economic Base”.
 - ii. WAI 863, #J37(a), ‘Appendices to the Affidavit of Dr Richard Brent Meade’, pp24-29
 - iii. WAI 863, #J51, ‘Brief of Evidence of Dr John Yeabsley’, p11 “Compounding”.
- c. Economic base associated with Ngāi Tūmapūhia-ā-Rangi.
 - i. WAI 863, #J33, ‘Brief of Evidence of Dr Richard Brent Meade’, pp 42–54 “Economic base for Ngāi Tūmapūhia”.
 - ii. WAI 863, #J41, ‘Brief of Evidence of John Yeabsley’, pp 8–10 related to the economic base.
 - iii. WAI 863, #J45(a), ‘Amended Brief of Evidence of Dr Richard Brent Meade in reply’, pp 16–20, “Dr Yeabsley’s Critique of My Interpretation of the Tribunal’s Restorative Approach”

106. Most of my remarks concern the estimation methodology proposed by Dr Meade and debated by Dr Meade and Dr Yeabsley, which has its longest expression concerning the economic base associated with Te Aitanga a Māhaki (WAI 814, #P6). In this document

Dr Meade estimates the base using three methodologies. The other documents estimate the economic base for the other hapū using two of these methodologies.

107. Dr Meade estimates the value of assets that is needed as of June 30 2018 to enable members of Māhaki to have the same standard of living as other New Zealanders. He adopts three approaches.
- a. He notes members of Māhaki currently have incomes that are lower than the New Zealand average. He calculates the present value of the income deficiency members of Māhaki are likely to experience over the next 25 years or 50 years if their incomes were to remain lower than the New Zealand average by the current fraction.
 - b. He notes members of Māhaki currently have financial wealth that is lower than the New Zealand average. He calculates the sum necessary to pay members of Māhaki to increase their wealth to average New Zealand levels.
 - c. He notes members of Māhaki are currently estimated to have levels of social deprivation that are much worse than average New Zealanders. He uses sophisticated statistical techniques to estimate the amount of money necessary to be given to the members of Māhaki to restore their levels of socio-economic deprivation to average levels.
108. In my view, there are difficulties with all of these estimates, and the third approach is particularly flawed. The third approach happens to provide estimates which are much larger than the others – in the order of \$4 - \$6 million per person – and while Dr Meade claims this approach is the most rigorous of his economic base estimates (WAI 814, #P6, p312), the approach as it is implemented here is conceptually flawed.³⁹

³⁹ Dr Meade also defends the rigour of this method elsewhere eg WAI814, #P42; WAI 1489, #A43 ‘Evidence of Richard Brent Meade in Reply 13 August 2018’, p13–14.

3.1 Estimates of the economic base necessary to offset the socio-economic status deficiency of the members of the Māhaki iwi.

109. The third set of estimates are most problematic. This is unfortunate, for conceptually they get nearest to estimating one of the key issues concerning the appropriate size of an economic base: the amount of money that may be required to improve the living standards or well-being of the members of Māhaki to levels similar to those of other New Zealanders. The estimate is based on finding a monetary equivalent of the non-monetary aspects of a person's well-being or utility.⁴⁰
110. The basic methodological problem of the approach is as follows. Dr Meade uses statistical methods to estimate the relationship between a measure of well-being (the extent of socio-economic deprivation) and a variety of factors including ethnicity and the level of wealth. The estimates generate coefficients showing (i) how much a factor such as wealth is needed to increase well-being by one unit (or, in this case, to reduce socio-economic deprivation by one unit), and (ii) the difference in average well-being levels of different groups, in this case the individual members of Māhaki and European New Zealanders. By dividing the average well-being gap by the coefficient indicating how quickly well-being improves as wealth increases, the wealth needed to improve well-being is estimated.
111. I am not going to criticise the econometric and statistical methods used to estimate the differences in well-being or the coefficient linking wealth to well-being. The problem is more fundamental. This estimation procedure generates a measure of a particular type of intervention needed to improve well-being (in this case the level of wealth necessary to improve well-being) that is inversely proportional to the strength of the relationship between the factor and well-being. Dr Meade notes that there is only a “weakly negative, and statistically significant, relationship between wealth and deprivation” (p310:909.3). This means wealth is not a very important determinant of socio-economic deprivation, and because it is not important a rather large amount of it would be needed to overcome deprivation. Dr Meade estimates an average transfer of \$4 million to \$6 million per person. These estimates also suggest that using wealth transfers to offset

⁴⁰ For instance WAI 814 #P2(e); WAI 1489, #A3(e), ‘Supplementary brief of evidence of Richard Brent Meade in response to Tribunal questions arising from August hearings 1 October 2018’, p20.

deprivation is likely to be an inefficient means of offsetting deprivation, precisely because wealth is not a particularly important determinant of deprivation.

112. This is the basic difficulty with the methodological approach. In general, there can be many ways of overcoming a problem, in this case social deprivation. Some of these might cost a lot of money, time, or resources, while others might cost a great deal less. When most people approach a problem, they estimate different ways of overcoming the problem and then choose the most effective way of dealing with it. In this case, Dr Meade estimates one way of dealing with social deprivation – providing people with extra wealth. Because extra wealth is a poor way of dealing with social deprivation or well-being, it proves to be a very expensive way of dealing with it. In most cases people would look for an alternative way to fix the fundamental problem that does not cost so much. Dr Meade has not looked for an alternative method, but concluded that large amounts of money are needed to overcome social deprivation even though there may be alternative much less expensive and more effective ways to deal with the problems. All he has really shown is that large amounts of wealth would be needed to overcome social deprivation because transfers of wealth they are not a very effective solution to the problem of socio-economic deprivation.
113. There is a large amount of international literature that shows that there is only a weak relationship between wealth and happiness, or wealth and well-being at an individual level.⁴¹ It is unlikely that providing wealth transfers of the order of \$4 million per person is an efficient way of overcoming socio-economic deprivation or well-being gaps among Māhaki, even though it may be possible to overcome them through such large transfers, as Dr Meade's results suggest. It may be the case that there are much less expensive means of improving well-being that could be attempted. Dr Nana has suggested providing funds for education. Dr Yeabsley has suggested "A positive model for redress," more focussed on the power of a sincere apology, backed by the return of treasured assets and the provision of additional money to rebuild an economic base. (This type of arrangement is sometimes suggested in overseas jurisdictions as a means of redress for past ills against a people or a group.)⁴² There is now a large amount of

⁴¹ See for instance Tal Ben Shahar (2007) *Happier: learn the secrets to daily joy and lasting fulfilment* (New York: McGraw Hill) or Richard Layard (2011) *Happiness: lessons from a new science* (London: Penguin). The literature on this point is vast.

⁴² See, for example, Jeremy Waldron (1992) "Superseding Historic Injustice" *Ethics* 103(1) 4-28; Jeremy Waldron (2002) "Redressing historic injustice", *The University of Toronto Law Review* 52(1) 135-160; Eric

evidence accumulated over a thirty year period about what has and has not worked to raise economic and social living standards amongst American Indians.⁴³ Consequently, there does not seem to be a good reason to only estimate the cost of one method to eliminate social-economic well-being gaps and conclude that this is the amount that a country *should* pay, if indeed the method chosen is a very inefficient means of countering those gaps.

3.2 Estimates based on income deficiency

114. The calculation of an income deficiency is conceptually straightforward. In each of his three reports Dr Meade calculates the average income of the members of the iwi or hapū, and the average income of another group such as all New Zealanders. He then calculates the present discounted value of this gap if it were to continue into the future, making adjustments for average income growth.

115. Using the 2013 Census, he reports the following medians

Median income Māhaki	\$23,800
Median Income Wairarapa	\$23,542
Median income all New Zealand	\$28,500
Median Income European New Zealand	\$30,900

The median incomes of the Wairarapa and Ngāi Tūmapūhia-a-Rangi Māori are calculated from census data using a weighted average of the data pertaining to Ngāti Kahungunu ki Wairarapa and Rangitāne.

116. The income gaps discount rates are calculated by adding up the discounted annual income gap over 25, 50, or 75-year periods using a range of discount rates and both mean and median incomes. The smallest gaps per person, calculated using a 5% discount rate over 25 years and median income gaps are (in 2018 dollars):

25-year income gap Māhaki	\$83,000
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Posner and Adrian Vermeule (2003) Reparations for slavery and other historical injustices, *Columbia Law Review* 103, 689–748; and Roy Brooks (2004) “Getting reparations for slavery right – a response to Posner and Vermeule,” *Notre Dame Law Review* 80 251–288.

⁴³ See, for example, the literature and case studies produced by the Harvard Project on American Indian Economic Development since its inception in the 1980s. <https://hpaied.org>. This is discussed further in Section 4.

25-year income gap Wairarapa	\$61,000. ⁴⁴
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Multiplying by the population size, these correspond to total income shortfalls of

Total 25-year income gap Māhaki	\$389 million
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Total 25-year income gap Wairarapa Moana hapū	\$218 million
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Accumulated income gap Ngāi Tūmapūhia	\$55 million
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The calculations using mean income gaps, 50-year periods, and lower discount rates of 2.6% rather than 5% are considerably larger – for example, the total gap for Wairarapa Moana hapū increases from \$218 million to \$2082 million.

117. In practice, the results of this type of exercise have two problems. First, a calculation the size of the gap does not help explain why the gap occurs. The gap could be a result of age or where people choose to live, for example, for there is significant regional variation in average incomes in different regions, and the iwi and hapū Dr Meade has analysed are disproportionately concentrated in particular regions. As Maani (2002) observed age, education, rural/urban locality, hours of work, and occupation are all significant determinants of the income that people earn.⁴⁵
118. Secondly, the calculations are predicated on the assumptions that the transfers of large sums of money to the iwi or hapū will not help to reduce the income gaps. His assumptions about the future income growth in the two groups do not incorporate an allowance for the way it is hoped the transfers will raise the ability of the iwi and hapū to increase their earning potential. Either this means there is no expectation that the transfers will improve the earning ability of the groups, other than from the interest earnings on the capital sum transferred, which is available for consumption purpose; or it means the size of the necessary transfer is overstated, because the gaps will close much faster than the calculations assume. In short, the methodology does not allow for a dynamic response to the monetary transfers.

⁴⁴ The Māhaki gap is reported on WAI 814, #P6 p300. The gaps for Wairarapa Māori are calculated in WAI 863 #J33(a) Appendix F and WAI 863 #J37(a) Appendix G. In the latter case I divide Dr Meade's numbers for the whole population gap by the number of people in each population to get estimates of \$63,000 and \$59,000, which have an average of \$61,000.

⁴⁵ Maani, Sholeh. 2002. "Education and Māori relative income levels over time: The mediating effect of occupation, industry, hours of work and locality." Working Paper 2002/17, The Treasury, Wellington.

119. The latter issue is possible to modify, by modelling how quickly the gap might close. For example, if the gap had a half-life of 25 years (meaning that half the gap was offset after a 25 year period, and a further quarter offset after another 25 years) the size of the necessary transfer would be approximately 20 percent less if calculated over a 25-year period or 30 percent less if calculated over a 50 year period.⁴⁶
120. The calculated gaps are large. Yet it is not clear what they are really measuring, and it is not clear that they are a good measure of the amount of money needed to improve economic outcomes. As many studies of Māori incomes have shown, the average income of a group depends on a lot of factors including age, family structure, workforce participation rates, occupation, and the area where people live.⁴⁷ Part of these measured gaps will reflect these factors, many of which are choice variables. Some of these gaps reflects the large number of Māori in these groups living in solo parent households, as average incomes in solo parent households are much lower than incomes in dual parent households.⁴⁸ Others occur because the members of these iwi and hapū disproportionately live outside large urban areas, and average incomes are typically larger in big urban areas than small urban area. This is a global phenomenon: around the world, people who live in large cities earn more than people who live in small cities or people who live in rural districts. I doubt if you could find a consensus amongst economists or other people that people should be compensated for living in regions that have low incomes.
121. Consider the Māhaki calculations. A disproportionately large fraction of Māhaki people live in the Gisborne district and relatively few live in Auckland or Wellington: Dr Meade notes 40.8% of Māhaki live in the Gisborne region, but only 23.4 percent live in

⁴⁶ If the gap had a half life of 25 years and the interest rate were 5%, the necessary transfer calculated over a 25 year or 50 year horizon would be reduced by 22 percent and 31 percent respectively. The size of the reduction is larger if the interest rate is smaller.

⁴⁷ For example: Maani, Sholeh. 2002. *“Education and Māori relative income levels over time: The mediating effect of occupation, industry, hours of work and locality.”* Working Paper 2002/17, The Treasury, Wellington; Dixon, Sylvia and Dave Maré. 2012. *“Understanding Changes in Māori Incomes and Income Inequality 1997-2003.”* Motu Economics and Public Policy Research WP 04-12;

Marriott, Lisa and Dalice Sim. 2014. *“Indicators of Inequality for Māori and Pacific People.”* Victoria University of Wellington Working papers in Public Finance 09/2014.

⁴⁸ For example, see Perry, Bryan 2015. *Household Incomes in New Zealand: Trends in indicators of inequality and hardship 1982 – 2014.* Ministry of Social Development.

Auckland or Wellington.⁴⁹ According to the 2013 census, Gisborne has a much lower median income than many other parts of New Zealand.⁵⁰

Median income Gisborne region	\$24,400
Median income Auckland region	\$29,600
Median income New Zealand	\$28,500
Median income Gisborne Māori	\$19,900
Median income New Zealand Māori	\$22,500

By this metric, the average member of Māhaki has a shortfall of \$600 income relative to all people living in Gisborne, and is better off in terms of income than other Māori in New Zealand. If the goal was to make members of Māhaki as well off as average people in the regions they live, it is likely that the discounted shortfall per person would be considerably lower than the \$82,828 figure calculated with respect to the rest of New Zealand.

122. This argument could be pushed further. New Zealanders have lower average incomes than Australians, and New Zealanders living in New Zealand have lower average incomes than New Zealanders living in Australia.⁵¹ New Zealand workers in New Zealand are less productive than New Zealand workers in Australia because they work in less productive firms. The reasons for the low productivity of New Zealand firms relative to firms in Australia and in most of the rest of the world are not properly understood, although some may be related to the small size of New Zealand urban areas as it is well established internationally that people are more productive and earn higher incomes in large rather than small urban areas. Calculating the income gap with respect to Australia is interesting but it does not indicate how the gap can be closed, which is the key issue. Nor does it explain why there is a gap now whereas average incomes in the two countries were nearly equal in 1966. Many New Zealanders would like to find

⁴⁹ WAI814, #P42; WAI 1489, #A43 ‘Evidence of Richard Brent Meade in Reply 13 August 2018’, p11.

⁵⁰ Statistics New Zealand website: 2013 Census QuickStats about a place: Gisborne Region. http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13991&tabname=Income . Note that other regional areas without large cities also have low median income. The median income in Northland as \$23,400, in Tasman \$25700, and in the West Coast \$26,900. These and other data in this section are taken from the “Quickstats” site.

⁵¹ In 2011 the median Australian income was \$A46,571 and in 2013 the median New Zealand income was \$NZ 28,500. See footnote 52 for the source of the Australian data.

out out how they could earn the incomes enjoyed by Australians, short of moving to Australia. Nonetheless, I doubt many New Zealanders believe that being granted a large sum of money equal to the accumulated forward-looking income gap is the key to raising productivity.

123. The comparison of average incomes in New Zealand and Australia also indicates that income gaps can be closed by migration. New Zealanders in Australia have average incomes that are not only higher than New Zealanders in New Zealand but are slightly higher than Australians in Australia.⁵² Moreover, New Zealand born Māori also have incomes in Australia close to average Australian incomes, although lower than other New Zealanders living in Australia.⁵³ The latter difference reflects occupation choice: Māori living in Australia are more likely to be in lower skilled occupations than other New Zealander or Australians, although they earn more in these occupations than other Australians. The difference in average incomes of Māori New Zealanders and non-Māori New Zealanders occurs because fewer Māori work in high skilled occupations and they earn less in these occupations when they do. As Kukutai and Pawar (2013, pp67-68) say

In three of the top five Māori occupations, Māori migrants earned higher incomes than the average Australian worker and similar incomes to NZ-born non-Māori. For Māori migrants employed as machine and stationary plant operators, incomes were also significantly higher than the overall Australian median income (\$46,571, the dotted line), although somewhat lower than for non-Māori migrants. By comparison, Māori migrants employed as specialist managers, business, human resources or marketing professionals earned substantially less than the average Australian or NZ-born non-Māori worker; in the case of specialist managers it was about \$20,000 less.

124. Kukutai and Pawars' work shows that migration can be an effective choice for significantly reducing income gaps, but it does not explain how income gaps can be closed without migration. A different perspective on the reasons for income gaps can be obtained from recent international work examining the reasons for increasing wage

⁵² Kukutai, T and Pawar, S. (2013). *A Socio-demographic Profile of Māori in Australia*, NIDEA Working Papers No.3, University of Waikato, National Institute of Demographic and Economic Analysis. See pp 66–70

⁵³ In 2011, median annual incomes by gender in Australia were (in Australian dollars): All Australia, \$57,301 (m) and \$36,802 (f); Māori in Australia \$ 54,304 (m) and \$35,903 (f); non-Māori New Zealanders \$63,148 (m) and \$40,397 (f). Source: Kukutai, T and Pawar, S. (2013) *A Socio-demographic Profile of Māori in Australia*. NIDEA Working Papers No.3, University of Waikato, National Institute of Demographic and Economic Analysis. See pp 66, based on Australian Statistics Bureau data.

inequality. This work has focussed on two issues: the relative decline in wages for males with relatively low education levels, particularly in large cities; and the increasing role played by ‘between-firm’ wage inequality.⁵⁴ In the United States, Barth et al (2016) argue that more than two thirds of the recent increase in wage inequality is due to an increase in the dispersion of the average wages paid by firms, rather than the distribution of wages within firms. In Germany, Card et al (2013) estimated that the increase in the dispersion of firm earnings accounted for over half of the increase in wage dispersion between 1985 and 2010. Both of these studies indicate that the wages people earn do not just depend on their skills, but also the firms where they work. The last three decades have been marked by a rising income premium for working in the best firms, particularly for talented workers. This raises the importance of mobility, for if the best firms do not work in a person’s region that person will have to migrate to where these firms are located to obtain high wages in their industry. If people live in small towns and are not mobile, and if the best firms do not locate in small towns, it will be difficult for people earn high incomes. (Similarly, it will be difficult for New Zealanders to earn high incomes in New Zealand if the best firms do not choose to operate here.)

125. The wider issue is that Dr Meade’s calculations tell us very little as to why the average incomes of Māhaki, Wairarapa Moana hapū, and Ngāi Tūmapūhia are lower than the average incomes of other New Zealanders. One part of the reason is that a disproportionate number choose to live in places where average incomes are low. Another may have to do with historical education patterns, or occupational choices that no longer earn high wages. Without knowing why incomes are low, there is little reason to suspect that large monetary transfers will lead to improvements in income, even if they allow an increase in consumption.

3.3 Estimates based on wealth deficiency

126. A similar difficulty occurs concerning the estimates of the difference in wealth between Māhaki, Wairarapa Moana, and Ngāi Tūmapūhia and other New Zealanders – it ignores

⁵⁴ Autor, D. (2019) “Work of the past, work of the future.” *AER Presidential address 2019*.

Barth, E., Bryson, A., Davis, J. C., & Freeman, R. (2016). It’s where you work: Increases in the dispersion of earnings across establishments and individuals in the United States. *Journal of Labor Economics*, 34(S2), S67-S97.

Card, D., Heining, J., & Kline, P. (2013). Workplace heterogeneity and the rise of West German wage inequality. *The Quarterly Journal of Economics*, 128(3), 967–1015.

factors such as location and age that affect wealth. These factors can be very large, because a very large fraction of household wealth in New Zealand comprises the value of houses, and the value of houses varies substantially by region.⁵⁵ Dr Meade offers the following statistics for the average wealth of Māori in New Zealand (WAI 814, #P6, p32; the same figures are used for Wairarapa Māori)

	Mean	Median
Māori	\$175,000	\$23,000
All New Zealand	\$297,000	\$87,000
European New Zealand	\$337,000	\$114,000

127. The mean and median gaps between Māori and all New Zealand are therefore \$122,000 and \$64,000, and the total gaps for Māhaki (when multiplied by an adult population of 4168) are \$508 million and \$267 million. However, a large part of this difference could simply reflect location choices. Consider the following data for median house prices in March 2015:⁵⁶

All New Zealand	\$475,000
Gisborne region	\$224,000
Hawke's Bay region	\$285,000. ⁵⁷

128. Since the ratio of private dwellings to people in the Gisborne region and New Zealand is 0.37, the per capita wealth difference (not the per adult wealth difference) of people living in Gisborne and people living in New Zealand due to the differences in the median house prices is \$92,000.⁵⁸ As can be seen, this exceeds the difference in median wealth between Māori and all New Zealand, and is a very large fraction of the difference in the mean wealth. Of course, as noted above, not all members of Māhaki live in the Gisborne region, although a disproportionate number do so. The point is that the differences in wealth are hugely affected by location and other factors, and if these

⁵⁵ According to Reserve Bank of New Zealand household balance sheet data HC21 and HC22, in 2016 the value of real estate in New Zealand was \$905 billion, 69 percent of the value of net household wealth, \$1309. In 2017 the ratio had increased to 73%.

⁵⁶ The median house price data are from the New Zealand Real Estate Institute.

⁵⁷ Data for the Wairarapa are not available. The number is purely indicative.

⁵⁸ The calculation is $92,000 = 0.37 * (475,000 - 224,000)$. If the number of people over 15 were used instead of the number of all people, the difference would be \$110,000. The number of people and the number of private dwellings is taken from the 2013 census, using the Statistics New Zealand QuickStat site.

differences are ignored misleading estimates of the wealth needed to enable one group to have similar living standards as another group will be generated.

3.4 Summary

129. This section has attempted to provide arguments questioning the size of the estimates Dr Meade has provided as to the size of the economic base needed to overcome the low income, wealth, and socio-economic well-being of the members of Māhaki. It has questioned what the estimates of the income and wealth gaps between Māhaki and the rest of New Zealand are actually measuring, particularly as they do not take into account some of the factors such as regional location that determine income and wealth. It has provided data that suggests that where people live may have be a crucial determinant of the incomes they earn, without attempting to accurately provide alternative measures. It has questioned whether the size of these gaps helps understand why these gaps are occurring, or is fundamental to helping ameliorate them. By drawing an analogy with the income gap between Australia and New Zealand, for both Māori and non-Māori, it suggests that the size of the gap probably does not help why Māori incomes are so low in New Zealand, particularly as the income gaps of Māori in Australia with other Australians are not very large.
130. The section also questions whether an estimate of the cost of using any particular method of overcoming a well-being gap should mean the people of Māhaki, Wairarapa Moana, and Ngāi Tūmapūhia should be offered that sum of money as reparation for past wrongs, as that particular method may not be an efficient means of redress. In particular, it cautions against Dr Meade's estimate based on the detailed information available from socio-economic surveys, for while he has provided a statistically sophisticated estimate of particular methods of overcoming well-being gaps, his statistical procedures does not provide guidance as to which methods of improving welfare are most effective. Moreover, this methodology is problematic because it provides estimates of the compensation needed to close socio-economic deficiency gaps that are largest for the methods that are least effective.

Section 4. Development strategies.

131. It was noted in paragraph 113 that the transfer of lump sums may not be the most efficient way of improving the incomes and living standards of a low-income group of people. As mentioned, other alternatives exist. Dr Nana has suggested providing funds for education. Dr Yeabsley has suggested “A positive model for redress,” more focussed on the power of a sincere apology, backed by the return of some assets and the provision of additional money to rebuild an economic base.
132. There are a large number of development economists and local community development specialists around the world who spend their time investigating how different strategies work. The experiences of the last half century mean that while there is considerable uncertainty, much has been learned. (If their knowledge was more certain, it is plausible that there would be fewer poor people in the world!) Much of what has been learnt has been gained from researching why economic outcomes in different countries vary so much. But there has also been a lot of work investigating why incomes within developed economies vary. A subset of this work has investigated the economies of indigenous people in countries colonised since 1500.
133. Most studies investigating the incomes generated by firms or other organisations point to the overwhelming importance of six direct factors.
 - a. The health and education of a firm’s workforce.
 - b. The scientific technologies used by a firm.
 - c. The management routines used a firm.
 - d. The quantity of land and capital equipment used by a firm.
 - e. The energy resources used by a firm.
 - f. The access to markets enjoyed by a firm.

Firms and organisations that have healthy and educated workforces, that employ appropriate scientific and management technologies, that have appropriately large amounts of capital, that have access to energy resources, and that have good access to markets in which they can sell their output tend to generate high incomes for their owners and their employees. In turn, people with the right sets of skills will be able to

generate high incomes if they can find productive firms at which to work. People who own the resources that firms need will also do well.

134. While these and other factors explain the performance of firms, the living standards of the people who own the firms, and the living standards of people who supply labour and inputs to the firms, they do not explain why the efficiency of firms varies so much across countries and within countries, they do not explain why the ownership of productive assets varies so much across people, and they do not explain why some groups of people have so much less “human capital” than others. (“Human capital” is a broad term encompassing the health, education, talents, experience and attitudes of people that raise their productivity).
135. Since the 1980s, and epitomised by the work of the Nobel-prize winning economists Herbert Simon, Douglas North, Elinor Ostrom, and Oliver Williamson, economists have answered this question by focussing on the political and economic institutions adopted by societies and countries. These institutions, the rules, habits, and enforcement mechanisms that dictate how a society operates, provide the incentives for people to accumulate and use human capital and productive assets, and the incentives for firms to adopt efficient and profitable operating principles. Institutions vary substantially across countries. They also vary within a country, particularly if groups within a country have different cultures and habits. Not all institutions are equally conducive to good economic performance, and countries or groups with institutions that do not favour well-performing economies will tend to do badly.
136. There is reasonably widespread agreement among economists that good institutions are a necessary condition for a high performing economy. Of course, they are not sufficient. Individuals can do badly if they get sick, suffer a debilitating loss of confidence, lose their assets, or find that their local economy collapses.⁵⁹ Groups of people can suffer military defeat, illness, or have their assets appropriated. Countries can adopt regulations that discriminate against certain groups, or have habits that prevent large groups of people from participating in society.⁶⁰ There are many factors

⁵⁹ In their series of books investigating poverty around the world, Narayan, Pritchett and Kapoor (2009) observe that three of the biggest causes of poverty are ill health, the loss of self-confidence, and the lack of easy access to markets. See Narayan, Deepa, Pritchett, Lant, and Kapoor, Soumya (2009) *Moving out of poverty: success from the bottom up*. (Palgrave MacMillan and the World Bank), chapter 1.

⁶⁰ It is not that long ago that women in New Zealand were restricted by law and by habit as to the occupations they could choose, for example. This is the main reason why New Zealand did not have a female judge until Dame Wallace was appointed to the District Court in 1976.

that by themselves can prevent favourable economic outcomes, but good outcomes require a lot of things to be done right.

137. Internationally, economic transformations usually occur after there is a significant and positive change in the economic institutions governing the country. Many of these changes are associated with extensive political changes. Famous examples include the Meiji Restoration of 1868 in Japan, the political and economic transformation of South Korea (but not North Korea) after the Korean War, and the integration of the East German economy into the West German economy beginning in 1989.
138. This “institutional economics” framework is increasingly being used to analyse the oftentimes poor performance of indigenous groups within countries that have been colonised since 1500A.D.⁶¹ Clearly some of the poor performance can be attributed to the loss of assets, to ill health, or to poor education outcomes. Equally clearly, however, these factors are not the only reasons, for many migrants to these countries arrived with nothing yet they or their descendants managed to thrive. Increasingly people have looked to institutional factors and have focussed on the interaction between the informal and formal institutions of different groups within a country – or, if you like, between culture and law – as well as such intangible matters as a group’s attitudes and their level of confidence. It is often argued that for some groups the law is culturally inappropriate, and the combination of law and culture can generate a set of incentives and responses that are not conducive to good economic performance.
139. A leading proponent of this view is the Harvard Project on American Indian Economic Development, which was begun in the 1980s.⁶² This group has analysed the performance of many successful and unsuccessful attempts at economic development by American Indian tribes or nations, and studied the performance of hundreds of Indian businesses. It argues from this evidence that economic success is possible, but that it requires the adoption of cultural norms that, in conjunction with formal legal institutions, generate incentive structures that generate well performing economies. In the United States context, they argued that economic improvement most often starts with legal and political self-determination – that the legal and political institutions need

⁶¹ For a comparison of the experiences of indigenous people in Australia, Canada, New Zealand and the United States see Cornell, S. E. (2006). *Indigenous peoples, poverty and self-determination in Australia, New Zealand, Canada and the United States*. Native Nations Institute for Leadership, Management, and Policy.

⁶² See <https://hpaied.org>

to bend to match traditional and evolving cultural norms, not that indigenous culture should bend to match externally imposed political and legal norms.⁶³ Once political self-determination occurs, and culturally appropriate institutions are developed, it is observed that the social and economic performance of many American Indian groups significantly improves. Some of the authors of this work argue that one of the most important changes needed to encourage the effective functioning of American Indian economies is the separation of firm management from the political intervention of tribal leaders, even when the firms are owned by the community.⁶⁴ In all cases, however, they have argued that change must be internally generated, not externally imposed.

140. Theories of reparations and redress can also be understood within this framework.⁶⁵ A wronged indigenous group may have no respect for the formal institutions and enforcement mechanisms of the dominant group, or for their informal culture and habits. Without this respect, or trust that the wrongs of the past will not be repeated, it may be difficult to encourage participation in the economy or society, or the accumulation of human or physical capital. Without an apology for past wrongs or a serious sign of a government's determination to wrong no more, there may be no confidence in the fairness of the system.
141. According to these scholars, full compensation for past wrongs may be neither possible or necessary. In many cases full compensation is impossible because the evil was so terrible. In other cases, it is impossible because the amounts of money or land involved require such large economic transfers from the descendants of the original perpetrators (or the descendants of more recent immigrants) to the descendants of the original

⁶³ See for example Begay, M., Cornell, S., & Kalt, J. P. (1998). Making research count in Indian country: The Harvard project on American Indian economic development. *Journal of Higher Education Outreach and Engagement*, 3(1), 42–51, or

Cornell, S., & Kalt, J. P. (2007). "Two approaches to the development of Native nations: One works, the other doesn't" in Jorgensen, Miriam (ed) (2007) *Rebuilding Native nations: strategies for governance and development*. (Phoenix, AZ: University of Arizona press)

⁶⁴ Jorgensen, M., & Taylor, J. B. (2000). *What Determines Indian Economic Success?: Evidence from Tribal and Individual Indian Enterprises*. Cambridge: Harvard University.

⁶⁵ See, for example, Jeremy Waldron (1992) "Superseding Historic Injustice" *Ethics* 103(1), 4–28; Newton, N. J. (1993). Compensation, Reparations, and Restitution: Indian Property Claims in the United States. *Georgia Law Review* (28) 453–480; Thompson, Janna. (2001) Historical injustice and reparation: Justifying Claims of Descendants. *Ethics* 112(1), 114–135; Jeremy Waldron (2002) "Redressing historic injustice", *The University of Toronto Law Review* 52(1), 135–160; Eric Posner and Adrian Vermeule (2003) Reparations for slavery and other historical injustices, *Columbia Law Review* 103 689–748; Roy Brooks (2004) "Getting reparations for slavery right – a response to Posner and Vermeule," *Notre Dame Law Review* 80, 251–288; Bradford, W. (2005). Beyond reparations: an American Indian theory of justice. *Ohio State Law Journal*, 66, 1–104; Brophy, Alfred (2006) Reconsidering Reparations *Indiana Law Journal* 81(3), 810–849.

wronged parties that the process would be politically infeasible. Either way, however, it may not be necessary if the wronged party accepts the apology and this is used to rebuild trust and a system of functioning and culturally relevant institutions that promote future growth.

142. These theories have not been fully tested, and I cannot claim to be an expert on many of their subtleties. They do seem to be coherent, however, and the experience of the United States provides some hope that they work in some circumstances.
143. None of these theories are inconsistent with the payment of sizeable compensation to members of New Zealand iwi and hapū for past wrongs. They do suggest that payments by themselves are insufficient, particularly if they do not lead to a subsequent improvement in the opportunities available to members of the iwi. A sizeable monetary payment does not make it inevitable that people will be able to be employed by well functioning firms, even if it does give them ownership of resources and businesses. This is particularly the case in areas that are remote from major population concentrations or areas that have had access to these concentrations. Large payments may also improve education and health outcomes, although, again, this does not inevitably lead to better job opportunities in relatively remote locations. Large payments could improve housing - but again, this does not guarantee improved economic performance.
144. Parenthetically, I am not convinced about Dr Meade's interpretation of Thomas Picketty's economic theories.⁶⁶ Transfers of wealth are not necessary to improve economic outcomes or to reduce inequality, as the development experiences of very poor countries have proven. Nor is it inevitable that inequality will increase even if the economy is dynamically efficient and the return to capital exceeds the growth rate of the economy – this depends on how much of the returns to capital are saved and how much are spent. Moreover, as the work of many historians including Picketty indicates, in many countries the huge increases in real wages earned by all workers, the availability of low cost or free universal education, and the additional premiums paid for educated workers have significantly raised living standards over the last two centuries.

⁶⁶ Picketty, Thomas (2014) *Capital in the Twenty-First Century* Cambridge, MA: Harvard University Press.

145. If large compensation transfers *can* be useful, but are not strictly necessary, and may not work in circumstances where the institutional framework does not promote a well-functioning economy or in places where well-functioning firms find it difficult to prosper, what is the appropriate level of compensation? I do not know, for I am a mere economist and this is a question of fairness and justice and effectiveness that is outside my competency. I look forward to seeing how the results unfold and merely hope that the people involved will accurately record what they think, what they do, and how it all works out so that future economists can learn from their experiences.

Appendix – Commission

OFFICIAL

Wai 863, #3.27
Wai 814, #3.13
Wai 1489, #2.3.1

WAITANGI TRIBUNAL

Wai 863
Wai 814

CONCERNING

the Treaty of Waitangi Act 1975

AND

the Wairarapa ki Tararua Inquiry

AND

the Tūranganui a Kiwa Inquiry

MEMORANDUM-DIRECTIONS COMMISSIONING RESEARCH

1. Pursuant to clause 5A of the second schedule of the Treaty of Waitangi Act 1975, the Tribunal commissions Dr Andrew Coleman, Economist, to prepare a written report providing a critique of the economic evidence on compensation for prejudice suffered by the claimants before the Wairarapa ki Tararua and Tūranganui a Kiwa Tribunals in the current remedies phases.
2. The report will address but is not limited to the following matters:
 - (a) the theoretical and methodological approaches employed by the authors;
 - (b) the use of the evidence advanced in support of the authors' conclusions; and
 - (c) the cogency of the analysis and of the conclusions reached.
3. The report will not address the calculation of the compensation set out in clause 3 of Schedule 1 of the Crown Forest Assets Act 1989, as the Tribunal panels are satisfied with the evidence already before them.
4. The commission ends on 3 May 2019, at which time one copy of the final report must be submitted for filing with the Tribunal in unbound form, together with indexed copies of any supporting documents or transcripts. An electronic copy of the report should also be provided in Word or Adobe Acrobat PDF format. Any appended data tables may also be provided in MS Excel format.
5. The report will be received as evidence and placed on the records of inquiry of the Wairarapa ki Tararua and Tūranganui a Kiwa inquiries. The author may be cross-examined at a hearing on 13 and 14 May 2019.
6. The Registrar is to send copies of this direction to all those on the notification lists for the remedies phases of Wai 863, the Wairarapa ki Tararua Inquiry, and Wai 814, the Tūranganui a Kiwa Inquiry, as well as:

Dr Andrew Coleman
Chief Historian, Waitangi Tribunal Unit
Manager Inquiry Facilitation, Waitangi Tribunal Unit

Senior Facilitator(s) for the Wairarapa ki Tararua and Mangatū (Gisborne)
Remedies inquiries, Waitangi Tribunal Unit
Solicitor General, Crown Law Office
Director, Treaty Settlements Rōpū, Te Arawhiti Office of Treaty Settlements
Chief Executive, Crown Forestry Rental Trust
Chief Executive, Te Puni Kōkiri

DATED at Wellington this 24th day of April 2019



Judge C M Wainwright
Presiding Officer
Wai 863, the Wairarapa ki Tararua Inquiry

WAITANGI TRIBUNAL

DATED at Hamilton this 24th day of April 2019



Judge S Te A Milroy
Presiding Officer
Wai 814, the Tūranganui a Kiwa Inquiry

WAITANGI TRIBUNAL