Long-Term Discounting: Ethics or Markets?

Mark Freeman

"Are You Interested Or Discounted? Long-term Social Finance"
1st March 2016

CoP21 Paris December 2015

Infrastructure

The Telegraph

19 Nov 2015

Revealed: HS2 'abysmal value for money' at 10 times the cost of high-speed rail in Europe

How are social projects appraised?

Present values

"The NPV is the primary criterion for deciding whether government action can be justified ...Society as a whole, also prefers to receive goods and services sooner rather than later, and to defer costs to future generations "

UK Treasury Green Book, Para. 5.49

Social cost-benefit analysis

Present values

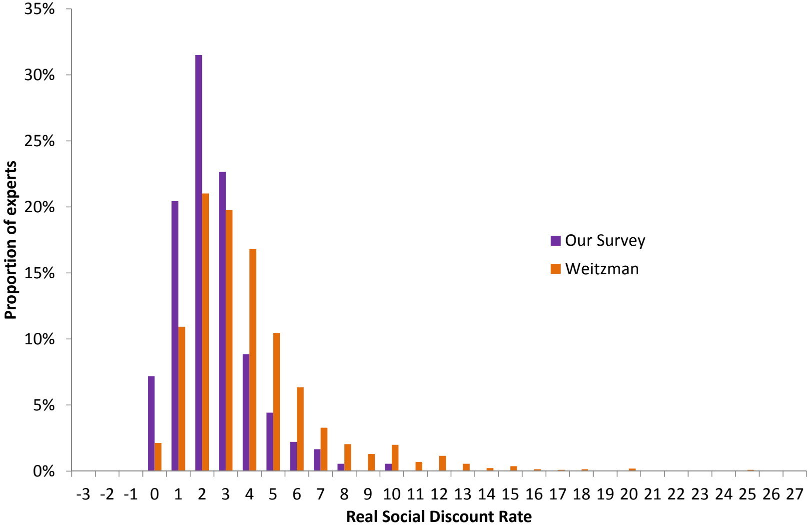
$$\text{Present Value} = \frac{\text{Expected real net benefit at time } t}{(1 + \text{Real discount rate})^t}$$

What is the long-term social discount rate?

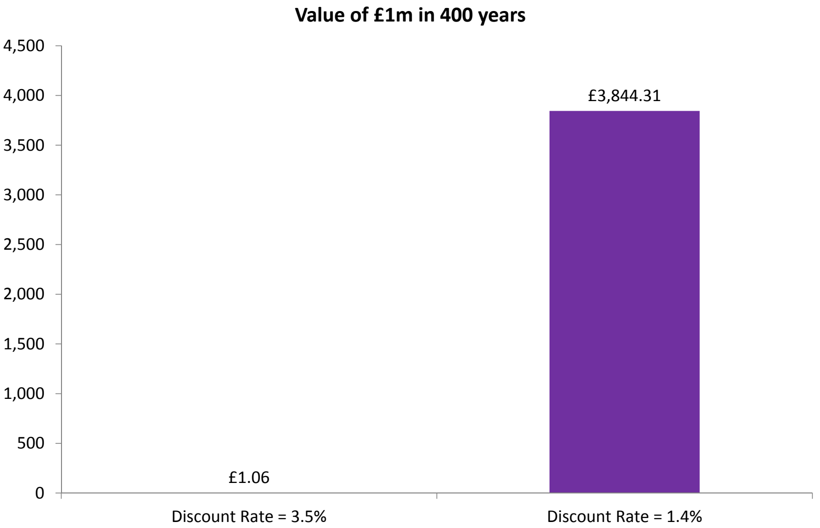
Surveys of expert academic opinion

- Martin Weitzman (Harvard, 2001) received over 2000 responses from Ph.D. level economists
- Three co-authors and I received around 180 responses from international ‘experts’, as defined by their academic publications, on social discounting

The distribution of responses



The sensitivity of policy to discount rates



On intergenerational justice

The Stern Review

"It has long been generally recognised by many philosophers and economists that climate change policy raises several difficult ethical problems, of which intergenerational justice is perhaps the most important

...

It was entirely appropriate, therefore, that ethics was given explicit and prominent treatment in the Stern Review ... (which) devoted considerable attention to the ethical issues involved in the choice of the discount rate"

Beckerman and Hepburn (2007)

The 'workhorse' ethicial approach

The standard Ramsey Rule

$$\text{Discount Rate} = \text{Time Effect} + \text{Wealth Effect}$$

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Breaking down these effects

Time Effect	Wealth Effect
Impatience	Aversion to Inequality
+ Catastrophe Risk	× Expected Economic Growth

On impatience

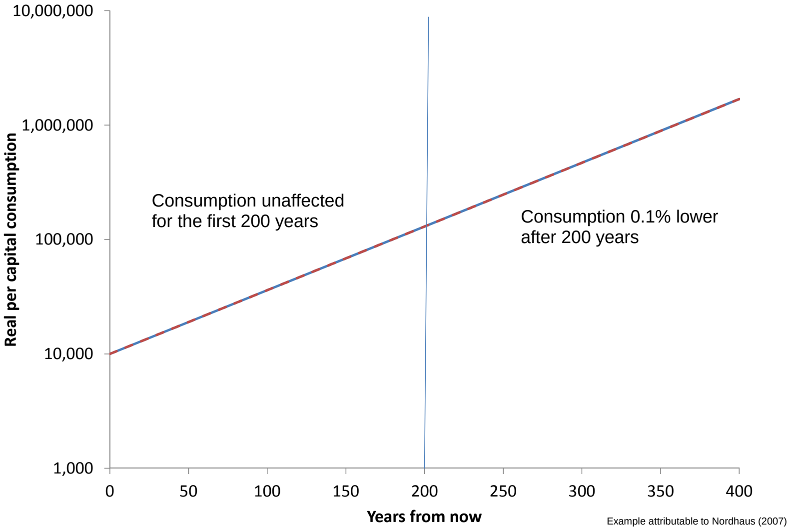
"A very self-interested species"

Calibrating the ethical approach

Two influential calibrations

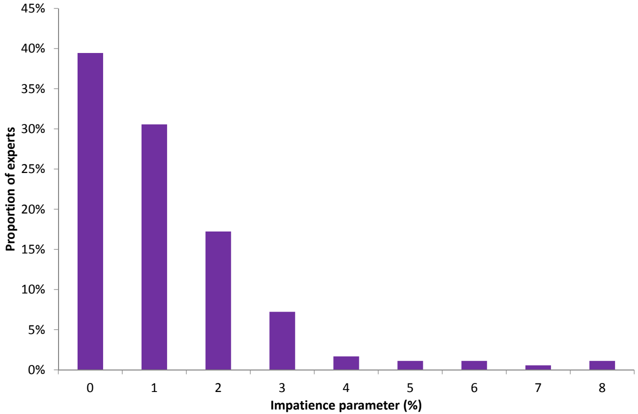
		UK Treasury ($\leq$ 30 years)	Stern Review
	Impatience	0.5%	0%
$+$	Catastrophe	1.0%	0.1%
$+$	(Inequality Aversion	1	1
	$\times$ Expected Growth)	2%	1.3%
$=$	Discount rate	3.5%	1.4%

Should we value all generations equally?



Example attributable to Nordhaus (2007)

Our survey responses on impatience



"There is a 'broad consensus' that impatience should be zero or near-zero" (IPCC AR5)

Jerry Taylor - Cato Institute, 2011

"The Stern Review takes the lofty vantage point of the world social planner, perhaps stoking the dying embers of the British Empire." Nordhaus (2007).

Problems with a market-based approach

Many criticisms

- Driven by personal considerations, not intergenerational justice
- Markets influenced by the wealthy
- Future generations have no say
- Market frictions and imperfections

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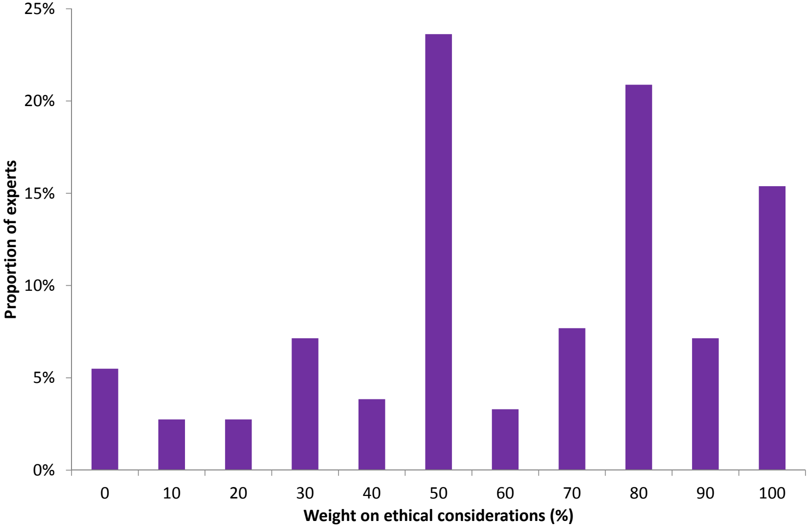
Markets may not resolve our problems

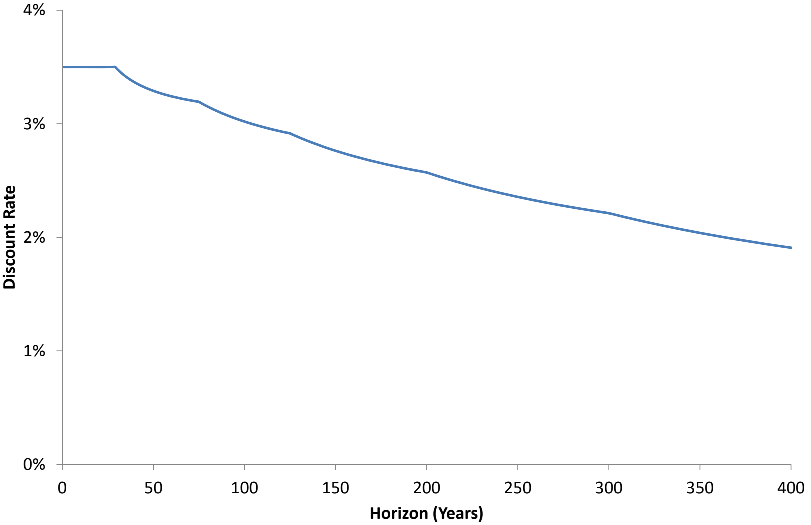
"There is no market-determined rate that we can read off to sidestep an ethical discussion."

Stern (2008)

Our survey responses on importance of ethical issues



The Treasury does not discount the long-term at 3.5%



Should we incorporate risk into the discount rate?

US Guidance

"In general, variations in the discount rate are not the appropriate method of adjusting net present value for the special risks of particular projects."

Circular 94A (Revised), Para. 9d.

International guidance (simplified)

Country	Method	Risk-free rate	Declining?	Risk Premium?
US	Markets	3%	No	No
(Carbon)	Markets	5%	No	Yes
	Various	2.5%	Influence	Yes/No
Dutch	Markets	0%	Influence	3% Sector specific
France	Ethics	≤2.5%	Yes	Increasing and Project specific
Norway	Ethics	≤ 4%	Yes	Decreasing
Germany	Ethics	1%–1.5%	Influence	No
UK	Ethics	≤ 3.5%	Yes	No

Source: OECD (2015), Greenstone et al. (2013), Dutch Ministry of Finance

Conclusion

Little consensus

There is little consensus in both academia and policy circles over many issues of social discounting

- Whether the rate should be driven by ethics or markets
- Whether we should weigh all future generations equally
- Whether the discount rate should be time-horizon dependent
- Whether the discount rate should reflect risk
- Whether any risk premium should be project or sector specific

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This matters

The policy attractiveness of intergenerational projects is hypersensitive to the discount rate chosen.