Discounting Future Impacts discussion points

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Discounting not always the answer

- Time trajectories of different key model input parameters should be **explicitly modelled**
- All model outputs should be **converted to consumption** values
- Discounting then only applied to **time preference for consumption**
- *Methodologically sound and elegant theoretical proposal*

Indian context (1/2)

- Government expenditure typically focussed on those **below poverty line** (BPL)
- 29.5% of population BPL (**363 million people**) in 2011/12
- In terms of health care the focus is on **inpatient** hospital care
- Inpatient care typically results in outpatient and drug costs that are paid **out of pocket**

Indian context (2/2)

- India has **29 states** / union territories
- Each **state has own budget** supplemented by central government budgets
- State per capita **GDPs vary widely** from 7,300 USD in Goa to 910 USD in Manipur – India overall 1,700 USD
- Demographics, mortality rates, disease prevalence etc. basically **everything varies by state**

Can we apply this in India?

	Equivalent consumption effects across countries or jurisdictions		
	Country *A*	**Country *B***	**Country *C***
Effects in period t	$v_{h,t}^{A}\left[\Delta h_t^{i}-\frac{\Delta c_{h,t}^{A}}{k_{h,t}^{A}}\right]-\left[\Delta c_{c,t}^{A}+k_{c,t}^{A}.\Delta c_{h,t}^{A}\right]$	$v_{h,t}^{B}\left[\Delta h_t^{B}-\frac{\Delta c_{h,t}^{B}}{k_{h,t}^{B}}\right]-\left[\Delta c_{c,t}^{B}+k_{c,t}^{B}.\Delta c_{h,t}^{B}\right]$	$v_{h,t}^{C}\left[\Delta h_t^{C}-\frac{\Delta c_{h,t}^{C}}{k_{h,t}^{C}}\right]-\left[\Delta c_{c,t}^{C}+k_{c,t}^{C}.\Delta c_{h,t}^{C}\right]$
Net present value	$\sum_{t=1}^{T}\frac{v_{h,t}^{A}\left[\Delta h_t^{A}-\frac{\Delta c_{h,t}^{A}}{k_{h,t}^{A}}\right]-\left[\Delta c_{c,t}^{A}+k_{c,t}^{A}.\Delta c_{h,t}^{A}\right]}{\left(1+r_c^{A}\right)^{t}}$	$\sum_{t=1}^{T}\frac{v_{h,t}^{B}\left[\Delta h_t^{B}-\frac{\Delta c_{h,t}^{B}}{k_{h,t}^{B}}\right]-\left[\Delta c_{c,t}^{B}+k_{c,t}^{B}.\Delta c_{h,t}^{B}\right]}{\left(1+r_c^{B}\right)^{t}}$	$\sum_{t=1}^{T}\frac{v_{h,t}^{C}\left[\Delta h_t^{C}-\frac{\Delta c_{h,t}^{C}}{k_{h,t}^{C}}\right]-\left[\Delta c_{c,t}^{C}+k_{c,t}^{C}.\Delta c_{h,t}^{C}\right]}{\left(1+r_c^{C}\right)^{t}}$
Global net present value	$\sum_{t=1}^{T}\frac{v_{h,t}^{A}\left[\Delta h_t^{A}-\frac{\Delta c_{h,t}^{A}}{k_{h,t}^{A}}\right]-\left[\Delta c_{c,t}^{A}+k_{c,t}^{A}.\Delta c_{h,t}^{A}\right]}{\left(1+r_c^{A}\right)^{t}}+\sum_{t=1}^{T}\frac{v_{h,t}^{B}\left[\Delta h_t^{B}-\frac{\Delta c_{h,t}^{B}}{k_{h,t}^{B}}\right]-\left[\Delta c_{c,t}^{B}+k_{c,t}^{B}.\Delta c_{h,t}^{B}\right]}{\left(1+r_c^{B}\right)^{t}}+\sum_{t=1}^{T}\frac{v_{h,t}^{C}\left[\Delta h_t^{C}-\frac{\Delta c_{h,t}^{C}}{k_{h,t}^{C}}\right]-\left[\Delta c_{c,t}^{C}+k_{c,t}^{C}.\Delta c_{h,t}^{C}\right]}{\left(1+r_c^{C}\right)^{t}}$		

Ref: Claxton 2017 - Accounting for the timing of costs and benefits in the evaluation of health projects relevant to LMICs

India specific observations (1/2)

- Every parameter likely to **vary by state**
- Those who benefit (BPL) distinct from those who bear costs (tax payers) – each group have **very different values** for key parameters
- Explicitly specifying different consumption values of outcomes (e.g. health) for different states and different population groups within states not **politically tenable**

India specific observations

- Opportunity cost parameters will have to capture the **complex mix of payers**
- Adding in **further sectors** will rapidly increase number of parameters
- Need to make sure we capture consequences of **change in OOP** resulting from policy ($K_{c,t}$?)
- Lots of parameters need to be estimated in settings where **data is limited**

Conclusion

- Elegant **theoretical** model
- Real world application to **multi-sector** intervention in LMIC setting **without UHC** and with **multiple payers** will require a somewhat more complex model
- Plausible **default parameters** suggested – would be interesting to see how far they get around limited data in real example

Final thoughts

- None of these challenges are specific to discounting
- Clearly presented methodology for discounting highlights key BCA parameters and their time trajectory
- Perhaps paper could focus more on how to capture time variation in parameters