

Opportunity costs of financing health care (and other public) expenditure



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Acknowledgements

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- ***All opinions, errors and omissions are my own***

Discounting under a 'social decision making' perspective

“Budget allocation and the revealed social rate of time preference for health”

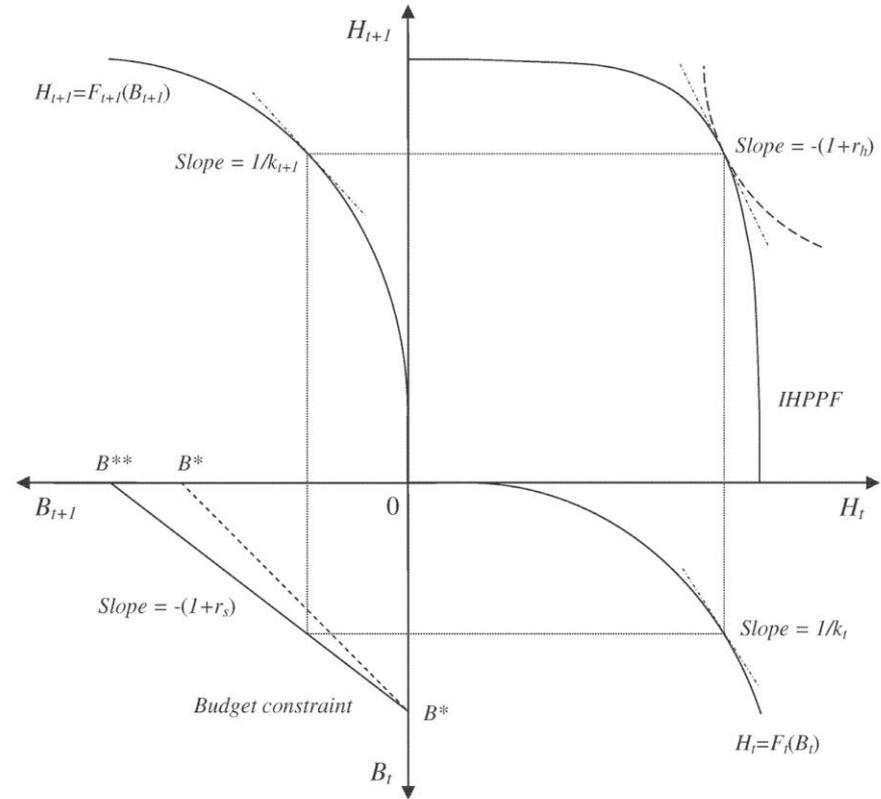


Figure 3. Budget allocation and time preference for health

The social rate of time preference for health

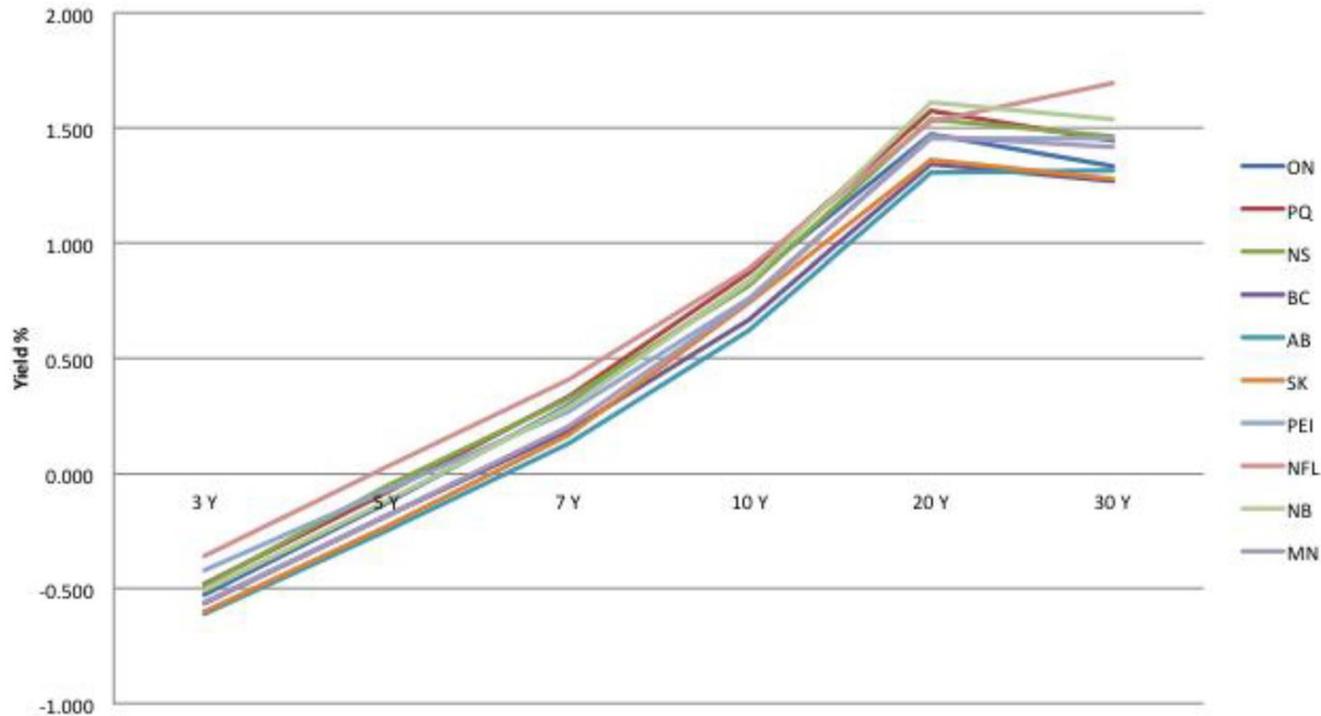
- The **social rate of time preference for health** may be estimated from:
 - **g_k : The real rate of growth in the cost-effectiveness threshold**
 - Numerous determinants, including changes in the **health budget** and in the **marginal productivity of the health system**
(Paulden *et al.* 2017. *Medical Decision Making* 37:264-276)
 - **r_s : The real rate of interest faced by the ‘higher authority’**
 - May be estimated from the **real yield on bonds** issued by the ‘higher authority’ that funds the health system, and which **mature over the relevant time period**

**What is the real rate
of interest faced by the
'higher authority'?**

Empirical evidence from Canada

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- The **Canadian Agency for Drugs and Technologies in Health (CADTH)** recently updated its **discounting methodology** for economic evaluations
- Funded research into the **theoretical and empirical basis** for discounting
- Difficulty: Canada has **10 provinces**, *each* with its **own health care system**, and *each* of which **issues bonds** to finance government spending
- Implication: There are 10 *different* ‘higher authorities’, 10 *separate* estimates of g_k and r_s , implying **different discount rates for each province**
- Valentina Galvani (University of Alberta) estimated **real bond yield curves** for each province, based upon **nominal yield data** and **expected inflation**



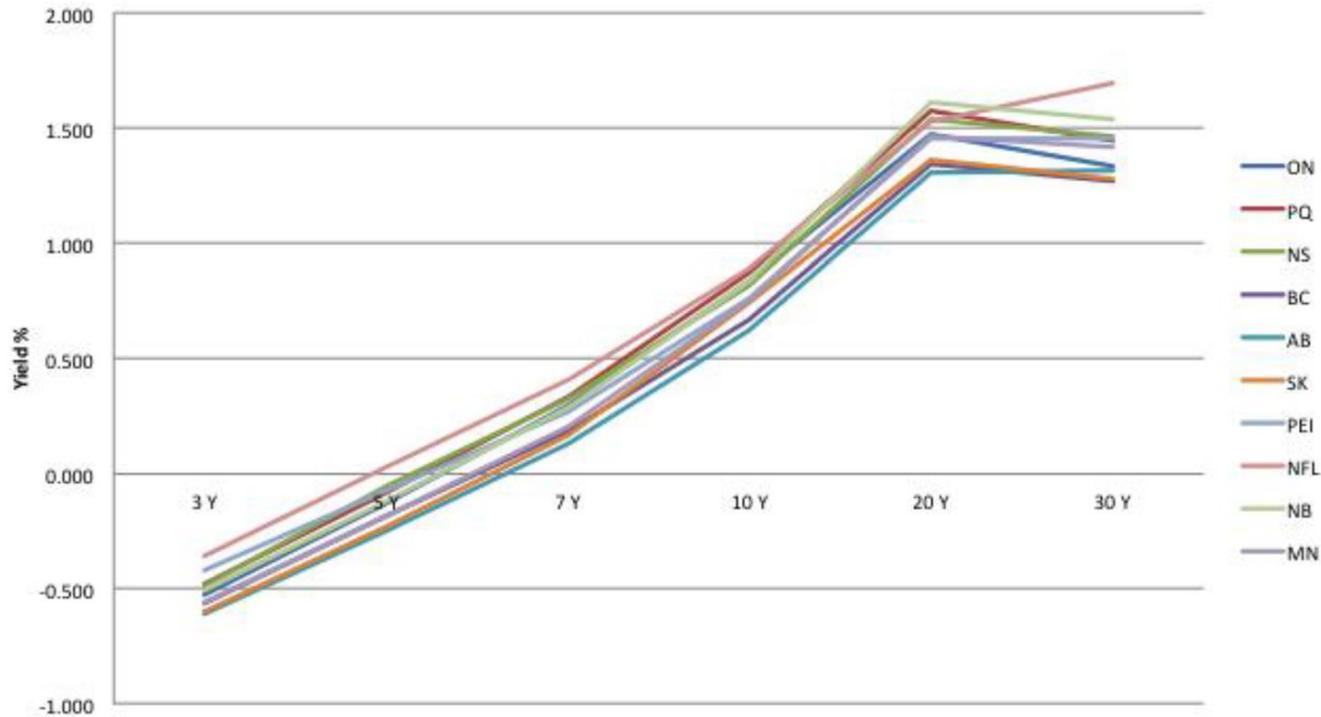
Real provincial bond yields (adjusted using Bank of Canada 2% inflation target)

Challenges

- Estimation
 - **g_k is difficult to estimate** - estimates of **k** exist for UK and Australia, but **no robust estimates of g_k exist for *any* jurisdiction**
 - **r_s is easier to estimate** - data publicly available in many jurisdictions
- Implementation
 - If g_k is *non-zero*, need **differential discounting** - already implemented in several jurisdictions (Netherlands, Belgium, UK before 2004)
 - If r_s is *time-varying* and *differs by province*, need **different discount rates for each province that vary over time** (not 'constant' rates)

CADTH's approach

- Focus on **simplicity** while remaining **theoretically justifiable**
 - In absence of **evidence of g_k** , but with reasons to believe the threshold might be either *increasing* (growing budget over time) or *decreasing* (improving marginal efficiency), **pragmatic assumption that $g_k=0$**
 - Differences in r_s *between provinces* are small (< 0.5%), so are **ignored**
 - Variance in r_s over time (reflecting changes in real yields with maturity) **also ignored** - single estimate of **1.5%** representing *long term rate*
 - Implies *single, constant, common* discount rate of **1.5% per annum**
 - Time-varying discounting may be considered in sensitivity analyses



Real provincial bond yields (adjusted using Bank of Canada 2% inflation target)

The US Office of Management and Budget (OMB) approach

- The **Office of Management and Budget** has used **time-varying** discount rates, based upon **real bond yields**, since 1992 (and possibly earlier) (*Circular A-94, Appendix C, Revised November 2016*)
- The **entire schedule** of discount rates is updated **annually**
- As of November 2016, the following “*real interest rates on Treasury Notes and Bonds of Specified Maturities (in percent)*” are used “*for discounting constant-dollar flows, as is often required in cost-effectiveness analysis*”:

3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
-0.5	-0.3	0.0	0.1	0.5	0.7

The importance of ‘perspective’

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- The discounting methodology outlined in this presentation is relevant under a ‘**social decision making**’ perspective on social choice
- It is **theoretically distinct** from the ‘**social rate of time preference**’ (SRTP) and ‘**social opportunity cost of capital**’ (SOC) approaches
- Important not to *conflate* ‘**welfarism**’ and ‘**social decision making**’
- If a ‘social decision making’ perspective is considered **appropriate**, but this discounting methodology is considered **too complex**, it is preferable to find *pragmatic ways* to implement this methodology rather than ‘falling back’ on methodologies that are *only* appropriate under a ‘welfarist’ perspective

Simple hypothetical example

Suppose the **real interest rate is 3%**
and that **growth in k is 1%** per annum

This implies that the **social rate of
time preference for health is 2%**

Now consider another two strategies:

Consider two strategies:

Strategy C costs \$100 in year 1 and

Strategy 100 costs \$100 in year 1 and

provides **100 units of health in year 2**

Strategy D costs \$100 in year 1 and

Strategy 100 costs \$100 in year 1 and

provides **100 units of health in year 2**

The **social rate of time preference for**

health is 2%, the **interest rate is 3%**, the

decision maker is indifferent

The **present values** are the same *only*

if the **discount rate on *beats* is 32%**

(i.e., equal to the **real interest rate**)

minus the **growth rate in k**)

Summary

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- Discounting under a **social decision making** perspective requires estimates of **growth in k** and the **real rate of interest** faced by the higher authority
- The first is **difficult to estimate** and may be *positive* or *negative*
- The second is **easier to estimate** but the resulting estimates **vary over time**, reflecting **varying yields for bonds with different times until maturity**
- Our work estimating **real yields for Canada** is currently used by CADTH
- The US OMB uses a **time-varying discount rate** based upon **real yields**

Matters for discussion

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- What is the *appropriate perspective on social choice*?
- Does the **real yield on bonds** represent the *relevant real interest rate* faced by the higher authority that funds the health care system?
 - Observation: countries with sovereign wealth funds (e.g. Norway) may be able to invest at a **higher rate of return** than the real yield on bonds
 - However, there may be **barriers** to transferring resources between the health care system and the sovereign wealth fund, so the rate of return within the sovereign wealth fund might not be the *relevant* interest rate
 - What is the **real rate of return** on resources **that might otherwise have been spent within the health care system**?

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Any questions?