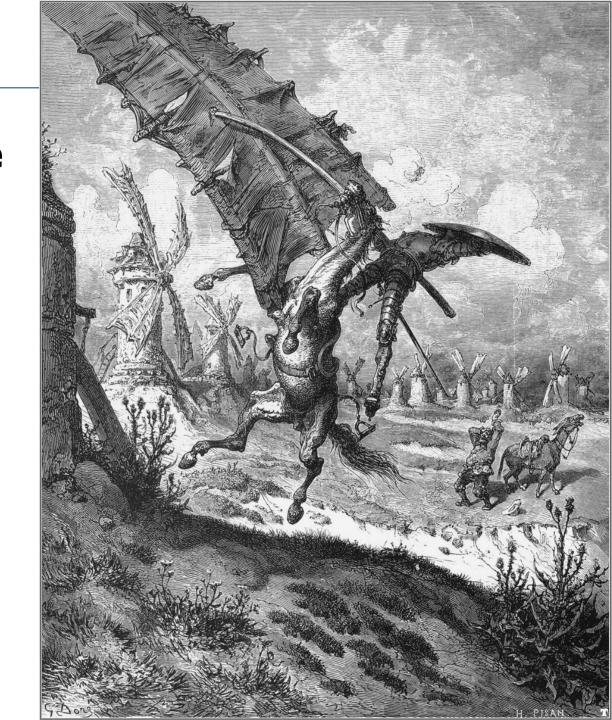
# What if Climate Policy is about Leadership?

Toxa conference, Vigo, June 25, 2012 Gunnar S. Eskeland, Sparebanken Vest Chair, Environmental Economics, NHH/SNF

## Globale problems require global solutions:

So what on earth is Europe (or Norway) doing?

Don Quixote de la Mancha, tilting at the windmills, Castillan planes, 17th century (Cervantes had sold the rights in advance, 1604).





#### **Motivation: some figures**

- Say some rich countries, with a fifth of world emissions
  - cut these by five percent during 2008 through 2012, or
  - eliminate these in the course of fifty to a hundred years.
- What do you think happens?
  - The classical (economist) answer is: nothing
- Three effects fill the gap
  - Other countries would anyway grow faster, their emissions too
  - Carbon leakage, in various guises, fill the gap
  - Freerider induced emissions, too



## This essay: What if climate policy is about leadership?

- A crowd is gathered in the fall, north of a mountain range
- A person rises, and says we shall cross the mountain pass tomorrow, winter is approaching
- Many of us, perhaps all, choose to follow.
- What is it, in this person, in what she does, that makes us follow?

#### Traditional economics approach

- You follow because if you don't you'll regret it
- There is commitment to some 'punishment scheme'
- It has to be negative, since it is 'ex post'
- If you don't join now, you'll regret it, since it will cost you more later on...

I am after something more voluntary, endogenous following defines leadership, more like charismatic leadership, perhaps.

In practice, I think the abover approach is lacking in credibility.



## More concretely: What could leadership be?

- i. Suppose Europe (or Norway) does something alone until 2030
- ii. This something entices India (or USA) to do something similar, to follow
- iii.Call something leadership
- iv. What is something?

# Freerider problem, a breakdown (public goods provision)

1: Classical: Upon your voluntary unilateral provision, provision by others fall

## Freerider problem, breakdown

2: For environmental problems, and some others
Via price for emission intensive tradables (steel, cement), emissions increase from other providers

## Freerider problem, breakdown

3: For climate problem, effect via world fossil prices, others increase their use of fossil fuels, thereby their emissions

## Freerider problem, a breakdown

4: For climate problem, an expectation of future climate policy induces a race to capture diminishing fossil rents, accelerating extraction, (Sinn's green paradox)

# Leadership: what is it that leadership is not?

#### Climate problem as a planning problem:

 Emissions in this century (Norway, Rest of Europe, USA or South

$$e = \sum_{i=N,E,U} \sum_{t=2000}^{2100} e_{i,t}$$

$$Min \sum_{i=N,E,U} \sum_{t=2000}^{2100} \frac{c_t(e_{i,t})}{(1+r)^t} s. t. e \leq \bar{e}$$

#### =>i)

<u>Cost effectiveness now, in North, across sectors, technologies, alternatives</u>

$$c_{0,j,N}=c_{0,k,N}$$

#### =>**ii**)

Vi are all Europeans (or ETS)

$$c_{0,j,N}=c_{0,k,E}$$

#### **=>iii)**

Don't miss cheap options in the South (CDM and southern trees)

$$c_{N,j,0}=c_{U,j,0}$$



## =>iv)

We started early

$$c_{N,j,t} \geq \frac{c_{N,j,t+1}}{1+r}$$

## But first, let us be fair and return to the assumptions behind CES (cost eff sol)

• Velg en tabell:

$$egin{array}{cccc} e_{N,2011} & e_{E,2011} & e_{U,2011} \ e_{N,2012} & e_{E,2012} & e_{U,2012} \ e_{N,2100} & e_{E,2100} & e_{U,2100} \ \end{array}$$

$$Min \sum_{i=N,E,U} \sum_{t=2000}^{2100} \frac{c_t(e_{i,t})}{(1+r)^t} s. t. e \leq \bar{e}$$



#### **Assumptions: a)**

$$\frac{\partial e_j}{\partial e_k} = 0, \frac{\partial c_j}{\partial e_k} = 0, j \neq k$$
 No department

No dependence across sectors, alternatives, technologies

#### Assumptions; b)

$$\frac{\partial e_{j,N}}{\partial e_{j,U}} = 0, \frac{\partial c_{j,N}}{\partial e_{j,U}} = 0$$

No dependence across countries

#### Assumptions, c)

$$\frac{\partial e_{N,j,t+delta}}{\partial e_{N,j,t}} = 0, \frac{\partial e_{U,j,t+delta}}{\partial e_{N,j,t}} = 0$$

No cause and effect, in any way, along the axis calle time!



#### So, no:

time axis, influence, cause and effect, consequences no relations?

There is basically no *influence* in what I have called the planning problem. So we shall admit that when we discuss its implications (and cost-effectiveness in particular)

Perhaps Hans-Werner Sinn is right: What on this globe is Europe doing?

(well, some would say not to worry: not much!)

The 'table', the figures are clear:

If some countries, some sectors, restrain emissions in some early years, it has no consequence for the climate unless through *influence* on global emissions in this century. In other words: other countries, other years...

Let us admit: economists' advice on climate policy – and we have been heard - is devoid of (not informed by) perspectives on leadership.

 Cooperation in economics: Well studied, but little understanding of how cooperation arises.

What we have is warnings about freeriding, and thereby warnings against unconditional and unilateral voluntary action.

In my view: both cooperative and noncooperative game theory fail to bite: economic theory is both pessimistic and agnostic about cooperation.

Leadership, cont'd: If India were to be inspired by *something* to start reducing its emissions (in 2030): what would be India's questions?

#### My take:

- have you done it?
- what did it cost you?
- can I do it?
- why should I?

Obviously, negotiations and policy till now has focused on the last, incentives question. Equally obviously, it is vastly deficient.

#### Leadership in economics

- Lessons from experiments in public good provision
  - Let one person move first. You'll observe a 'contagion effect': if she gives much, others give more than they otherwise would.
  - Let the 'leader' be rewarded for being the leader. If the reward is very big, the contagion effect is smaller.
  - Norms, inference of norms, creation of norms, are amongst the interpretations of this fenomenon.

(Mathias Sutter w coauthors, various publications, Moxnes and van der Heijden, 2003)

#### Leadership in economics

- Leaders emerge either by making sacrifices or through leading by example
  - The mechanism is that they signal they know their followers (better than their followers, in fact)
  - Leading by example: Leader has private information of productivity in public goods game.
  - Conveys this information in equilibrium by choosing high contribution.
  - Structure may give value to information being held privately

Hermalin, AER, 1998 Koman, Stegeman and Hermalin, 2007



#### Leadership in economics

- Repeated play and evolution of norms
  - Inference from observed outcomes
  - Prominent players lead to social norms of high or low cooperation (in coordination games)
  - Acemoglu and Jackson, 2011



## Leadership, cooperation: my speculations, answers to India, 2030

- Have you done it: Yes, in fact, I have (Sweden)
   Significant own emission reductions (emission free towns, Svalbard; emission free aluminum, fertilizer, hydropower, transport).
- Did it cost you something? Yes, but nothing prohibitive. I am fine. I feel I get something else for it.
- Can I do it? Yes, some now. More to come. You can do a lot, including growth, growth in energy, mobility. And you and I have been exploring this together, through joint projects.
- Why should I? Well, look around, We know each other well. We are not that different. You realize this is the way things are going. There is nothing crazy about this. Isn't a norm developing?



#### **Expectations, Leadership**

- Leadership: will European and Norwegian policy be influenced by leadership internationally?
  - If so:
    - Greater weight on R&D and technological change
      - If you had doubts, you can cut emissions
    - Emphasis on own emissions, in nonleakage sectors, buildings and transport, power generation, renewables
    - Cooperation in the south beyond CDM and beyond forests: green development (many countries, and multilaterald development cooperations, is already here, some times badly)



#### Ledership: themes

- Freeriding problem: not so important early in mitigation
- Not so important for nonlarge regions, nonlarge emission reductions
- Carbon leakage: important, but not so important for nontraded sectors (transport, power, buildings, cities), technological change
- Entice followers: 3d strengthening: broader participation & partnership, deeper reductions, longer duration (r&d)
- Empathy, equality, understanding, compassion, voluntary action, rather than incentives, penalties
- Norms at an early stage: leadership: might it be lead by example?



#### **Kipling on Climate Policy**

We are of one blood, you and I To know a foreign country, you've got to smell it

The strength of the pack is the wolf, the strength of the wolf is the pack
The silliest of women can lead a clever man, but it takes a clever woman to lead a fool



## Political leadership (know the game, feel their pain; Hermalin)

Winston Churchill (nothing to offer you but blood sweat and tears...)

Mohandas Ghandi (led a goat in leash, when approaching british king to ask for India's independence

Nelson Mandela (18 years, Robben Island) Jack Kennedy (Ich bin ein Berliner)

Kipling: we are of one blood, you and I



#### **Military leadership**

Sun Tsu: knowledge of the terrain, the enemy. High regard for his men, their losses.

Djengis Khan (every man independent, prepared to survive alone, mobile), Niccolo Machiavelli. Learn from history, make your calculations, colonize your possessions