

21B: International competition and the Porter hypothesis

- Purpose/objective
 - ▶ illustrate the international competition aspects of environmental regulations
 - ▶ review and discuss the Porter hypothesis -- and show that it does not hold in general

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Outline and introduction

- Topics in lecture
 - ▶ (freer) trade and environmental impacts?
 - ▶ international competition
 - ▶ Porter hypothesis
- Trade impacts
 - ▶ empirical background
 - ▶ trade impacts must be seen in a GenEq framework (key: endogenous prices)
- Backdrop:
 - ▶ trade assigns production to where it can take place at the highest expected profits
 - ▶ firms compete, not countries (Krugman)

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Trade and the environment (1)

- Textbook understanding: international trade is beneficial (comparative advantage arguments):
 - ▶ ... because it assigns production to low cost providers
 - ▶ ... low cost providers are low cost partly because they use less resources
- ... but it is not so simple
 - ▶ as a "rule" - externalities are not priced ⇒ many environmental issues have limited impacts on costs and hence also on firms' competitiveness
 - ▶ many environmental problems / externalities are trans boundary ⇒
 - ➔ location does not matter: climate
 - ➔ location matters: upstream/downstream issues

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... trade and the environment (2)

- Political economy aspects
 - ▶ expect **well functioning democracies** to weight environmental aspects (mining of national environment) against trade benefits
 - ➔ ... but delayed information on environmental damages (cfr. DDT, PCBs, asbestos, etc.)
 - ▶ ... less well functioning societies more prone to "environmental mining":
 - ➔ lack of democratic control
 - ➔ skewed ownership of resources / missing property rights
- No uniform conclusion on trade and the environment in real world settings
 - ▶ ... although in an idealized world: trade should benefit the environment

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Firms compete, not countries

- Misconception: countries compete
 - ▶ reality: firms compete, but their "economic frame conditions" influence their ability to compete
- A country that uses lax env. policies to increase the competitiveness of their industries
 - ▶ subsidizes selected industries and exports (= consumers in other countries) at the expense of their own population
- Pro's and con's of hidden subsidies in the form of lax environmental regulations
 - ▶ Pro: may increase economic growth which in turn leads to more to distribute (= higher welfare for the public later)
 - ▶ Con: runs the risk of mining their environment so that important environmental qualities are lost

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... firms compete ... (2)

- Current trade agreements open for sanctions on exporters who clearly receive a "subsidy" through lax environmental regulations
- Impact of sanctions \Rightarrow lax regulations less likely:
 - ▶ sanctions in the form of an extra import tax will reduce import volumes \Rightarrow remove "advantage" of export industries
 - ▶ proper env. regulations (emission taxes or auctioned emission TP) would increase tax revenues to the exporting country (revenues that otherwise would be lost)
- Countries with "proper" national env. policies
 - ▶ can sanction countries without such policies
 - ▶ opens for (short term) reduction in labor taxes or other distortionary taxes, cfr. double-dividend debate

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Empirical background (1)

- The observed impacts of stricter env. regulations on employment or GDP are quite small
 - ▶ few env.regulations to date have been very stringent
⇒ other factors of production (labor, technology (= access to know how), access to markets) matter more
 - ▶ ... all though some weak evidence of recent impacts
 - ▶ may change more with Kyoto/climate issue
- The impact of relaxed environmental regulations
 - ▶ subsidize exports or firms at the expense of domestic (consumer/voter) well-being (utility)
- History (internationally or in Norway) :: when unemployment increases or GDP growth declines, other issues than the environment tend to dominate the agenda

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... empirical background (2)

- The double dividend argument
 - ▶ only weak form exists ⇒ environmental regulations must cost
 - ▶ [but that we already knew, because if they did not cost anything, they should already have been implemented = consistent with an economic understanding of equilibria]
- The "environmental Kusnetz curve" :: as people become more wealthy, env. goods relatively more demanded
 - ▶ ... but no empirical evidence that the environment is a luxury good (Kristrom and Riera, ERE '96)
 - ▶ theory points to 2 opposite effects: (a) poor people depend more on nature e more care taken, and (b) rich people demand more env. goods and services in absolute terms

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The Porter hypothesis (1)

- Porter Hypothesis : Properly designed environmental policies can trigger innovation and productive gains that may lead to an absolute advantage over non-regulated firms
- Conditions for PH to be valid - regulations must
 - a. create maximum opportunity for innovation
 - b. foster continuous improvement (rather than looking at certain technological solutions)
 - c. leave little room for uncertainty (remark: uncertainty reduces firms' willingness to invest ⇒ rules/regulations predictable and stable)

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... the Porter hypothesis (2)

- Variants of PH - "winners"
 1. firms supplying regulated firms with technology benefit (non-controversial)
 2. competitiveness of domestic regulated firms is relatively better than of foreign unregulated firms that adopt regulations later (builds on a first-mover advantage that may not hold unless other countries later apply some environmental regulations)
 3. Absolute costs of regulated firms go down (highly questionable)

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... the Porter hypothesis (3)

- Arguments against form 3 (absolute competitive advantage) of PH
 1. any regulation that is binding cannot increase profits (follows from Lagrange/Kuhn-Tucker in operations research)
 2. conflicts with economic intuition that firms have better knowledge on own costs and technological possibilities than the regulator (if 2 where to hold, this conflicts with the absence of arbitrage condition)
- While forms (1) and (2) may emerge if environmental regulations are well designed, form (3) will not take place under standard information assumptions

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... the Porter hypothesis (4)

- Arguments in favor of PH
 1. organizational failures within firms hinders firms from seeing business opportunities (bounded rationality/-incomplete info.)
 2. "sticky technology" (Johansen's putty-clay framework): changing technology takes time, and firms may continue using "old technology" too long (counter argument: breaks with absence of arbitrage condition)

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... the Porter hypothesis (5)

- Much anecdotal evidence (= cases/examples) in favor of PH where environmental regulations have opened new markets and profit opportunities for single firms
- ... but empirical tests (= econometric analysis :: see for example Jaffe *et al* 1995) have found little of PH **economy wide** effects. Possible reasons:
 - ▶ the constrained/unconstrained argument (that we started the course with)
 - ▶ PH presupposes efficient/optimal regulations ... if existing environmental regulations do not meet this criterion, one should not expect to find support for the PH (= circular argument reason :: the premise not met ⇒ wide spread impact unlikely to be present)

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Summary (1)

- Trade arguments - mixed on the environment
 - ▶ political economy aspects appear to be of increased importance/relevance
 - economic growth in some countries fueled by exports "subsidized" by lax national environmental regulations (China / Indonesia)
 - ▶ idealized: trade is beneficial for the environment, but in real world setting: mixed impacts
- Firms compete, not countries
 - ▶ subsidizing economic activity with "mining" the environment leads to a welfare loss, all other things equal
 - ▶ ... but the increased economic activity may increase the tax base, and hence scope for governmental programs (education, health +++)
 - ▶ countries faced with a difficult optimization problem

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... summary (2)

- Empirical evidence is weak of lax env. regs yielding benefits domestically (... but some recent indications this is about to change - climate/Kyoto)
- Porter hypothesis
 - ▶ form 3 cannot hold
 - ▶ form 2 may hold if information structure is changed (from std. economic notion to bounded rationality)
- Policy challenge:
 - ▶ all env. policy costs \Rightarrow env. considerations costs
 - ▶ find environmental regulations with the least undesirable distortions on the economy = least cost solutions
 - ▶ ... incorporate unknown future damages (option values)

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Concept questions

- Trade and environment
 - ▶ basic economic interpretation: if externalities are fully internalized (= correctly priced), there is no trade-environment conflict
 - ▶ discuss in light of Coase
 - ▶ discuss in light of the emergence of multinational firms
- Porter Hypothesis
 - ▶ the second point (slide 10 on "PH winners") may hold
 - ▶ which implications does this have for the formulation of environmental policy

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