



ECS Knowledge Centre Executive Training Programme 2013

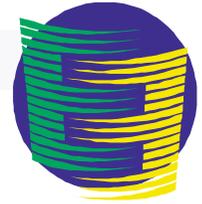
Can ECT help mitigate market failures? 28 Oct 2013

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Contents

- **Pareto Efficiency / Conditions for markets not to fail**
- **What can ECT do to mitigate market failures through each of these conditions?**
- **Other kinds of failures (regulatory failures, state failures)**



Market

- **Definition: Place for trading SCARCE products (=goods and services) and securities**
- **Trade: potentially making someone better (or worse) off than others**
- **Pareto-optimality (Pareto-efficiency): impossible to make someone better off without making at least one person worse off**
- **False interpretation: Pareto optimum = equal distribution of all products and securities**



Pareto-Optimum

- **Welfare theorem (Arrow / Debreu, 1953): a system of free markets will under specific conditions lead to a Pareto-efficient outcome**
- **Conditions:**
 - Perfect competition
 - All products and securities are tradable (i.e. no externalities exist)
 - All agents have perfect information
 - No transaction costs (negligible)
- **Markets not satisfying these conditions are “not efficient” (market failure)**
- **Postulate: public policy makers should intervene if and only if markets fail**



Not market failures:

- Price tendency to decay or to rise
- Too strong competition, too high imports
- Too low wages, insufficient purchasing power
- Poverty, widening gap between rich and poor
- Enterprise failures, bankruptcies
- Speculation

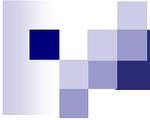
Partial market failure

- Short term price volatility (“stuttering” of the market, no clear price signal to investors)

1) Perfect Competition (PC)



- **No dominant position**
 - No natural monopoly, no natural oligopoly
 - No natural monopsony, oligopsony
- **No individual agent has price-setting power**
- **What does PC mean for prices?**
 - **Should all prices under PC be stable ?**
 - **Should prices under PC evolve gradually to adjust supply-demand balance?**
 - **Can prices under PC be volatile, i.e. does PC allow for any buyer-seller couple of two agents agreeing on a price and quantity to have full price-setting power?**



History of cases (energy)

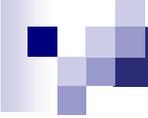


- **Rockefeller, Standard Oil (1880s), resulting in US antitrust legislation (1911)**
 - Ban of cartels and trade-restrictive behaviour
 - Ban of dominating positions
 - Control mergers and acquisitions
- **Terms of trade of developing countries in 1960s (especially oil price);**
 - Slow gradual decay
 - Creation of OPEC
- **Grid industries 1990s:**
 - Natural monopoly = first and last mile
 - Liberalisation of grid industries



ECT role in competition

- **ECT Art. 3: ... generally to develop an open and competitive market**
- **ECT Art. 6 (competition), ICMS reports on de-monopolisation**
- **ECT not requiring TPA in grid industries**
- **Unresolved problem:**
 - **Competition policies are national (US) or regional (EU), not international**
 - **WTO: Competition eliminated from Doha Agenda in 2001**



2) Universal tradability of products and securities

- **All scarce products and securities must be universally tradable;**
 - No taking
 - No externalities
 - All goods must have an owner exercising his ownership rights
- **Exceptions:**
 - Public goods are not tradable
 - Trade of some goods (e.g. drugs) may be restricted in pursuit of non-economic (e.g. public health) objectives



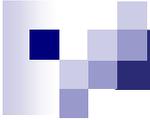
A) No taking

- Basic principle, exists in all civilisations
- Property rights in civil codes
- Role of ECT:
 - ECT Art. 13: protect investor against expropriation (= taking without compensation)
 - Draft Transit Protocol forbids taking (theft) of energy in transit (“non-technical losses”)



B) No externalities

- Definition: externalities (or external effects) are UNPRICED negative or positive effects caused by one agent affecting another agent.
- Most important example: climate change (“the greatest market failure ever”, N. Stern, 2006)
 - Free of charge CO₂ emission (produces climate change as negative effect to future generations)
 - Underpriced/subsidised consumption of fossil fuel & free of charge consumption of atmospheric oxygen (diminishes future generations’ resource basis)
- Principle: Public policy makers have to internalise (=price) external effects



Role of ECT to internalise externalities



- Energy Charter 1991 (Title 1, Objectives): ... to minimise environmental problems, on an acceptable economic basis
- No provision in Treaty
- Instruments: safety regulations, liability legislation, quota allocations, cap-and-trade systems, specific indirect taxes (Pigovian taxes), reducing fossil fuel subsidies, create resource funds for future generations
- Draft Transit Protocol: liability legislation
- In PoW: Major accidents
- Not in ECT: Products dangerous for health (e.g. nuclear waste)



C) All scarce goods to have owner

- Effect of ownership: e.g. dishes in restaurant
- Property of produced goods (agriculture, industry, infrastructures): exists
- Question: who owns natural goods (resources)?
 - lithosphere (land, minerals)
 - hydrosphere (sweet water, oceans)
 - atmosphere (air, wind)
 - biosphere (living organisms, biodiversity)
- Exception of (free) sunshine



Role of ECT on ownership of natural resources

- Art. 18: Sovereignty over natural resources
- Question: Is Art. 18 only applicable to lithosphere?
- How can it be interpreted so as to include hydrosphere, atmosphere, biosphere?



D) Public goods

- Special case of non-tradable positive externality
- Characteristics:
 - Impossible to exclude active or passive free riders (consumption is “non-excludable”) AND
 - Consumption by one agent does not affect consumption by others (“non-rivalrous”)
- Examples of public goods:
 - Fundamental and applied Research, Development, Dissemination (RDD) on (low carbon) technologies;
 - Energy Security
- Can not be sold on markets, hence their production needs special financing systems



Role of Energy Charter in financing public goods

- ECT is itself a public good
(intergovernmental treaty financed by system of contributions)
- Instruments for financing the production of public goods:
 - system of contributions (e.g. tax) proportional to income or wealth
 - Patent protection (for applied research)



E) Restricted markets

- Acknowledgement that non-economic objectives exist: Public morals, Human, animal or plant health, national artistic or archaeological treasures, conservation of exhaustible natural resources, emergencies (short supply), essential security interests (arms and ammunitions)
- Role of ECT: Applies relevant WTO law
 - GATT Art. XX and XXI;
 - WTO Agreement on Technical Barriers to Trade (TBT agreement)



3) Perfect information

- **Information asymmetry distorts markets**
 - 1929 financial crash caused in part by insider trading
 - 1934: US enacts insider trading legislation
- **1990s: Information asymmetry on durable goods markets (e.g. energy equipment goods)**
 - Energy efficiency labels of equipment
 - Smart grids, smart cities, smart metering
- **Sustainability labels (production method)**
 - Agricultural bio-labels
 - Electricity labelling



Information-efficient markets

- **1970s: Efficient market hypothesis, E. Fama,**
- **All prices reflect all available information;**
 - All agents have rational expectations (anticipations) of future events
 - No agent can outperform the market, unless he has unpublished (insider) information
- **In reality: few billionaires outperform market**
- **Principal-agent problem (Akerlof-Spence-Stiglitz, Nobel price winners, 2001)**
 - Relationship between insurance and insured
 - Relationship between boss and delegate



ECT contribution to information

- **ECT Art. 20, Transparency**
- **Possible contribution in the future:**
 - **Energy efficiency labels on energy equipment**
 - **Electricity labelling**
 - **Smart grids, smart metering, smart cities**



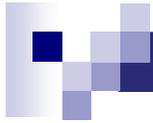
Regulatory failures

- **Regulatory failure: a kind of state failure**
- **Inefficient regulation**
 - California electricity crisis, 2000 - 2001
 - Drought and low hydropower production
 - Liberalising final consumer prices
 - regulation setting price caps on retail energy
- **Rolling blackouts**
- **Bankruptcy of PG&E (utility), difficulties of Southern California Edison**
- **Contribution of Energy Charter: develop and disseminate best practices**



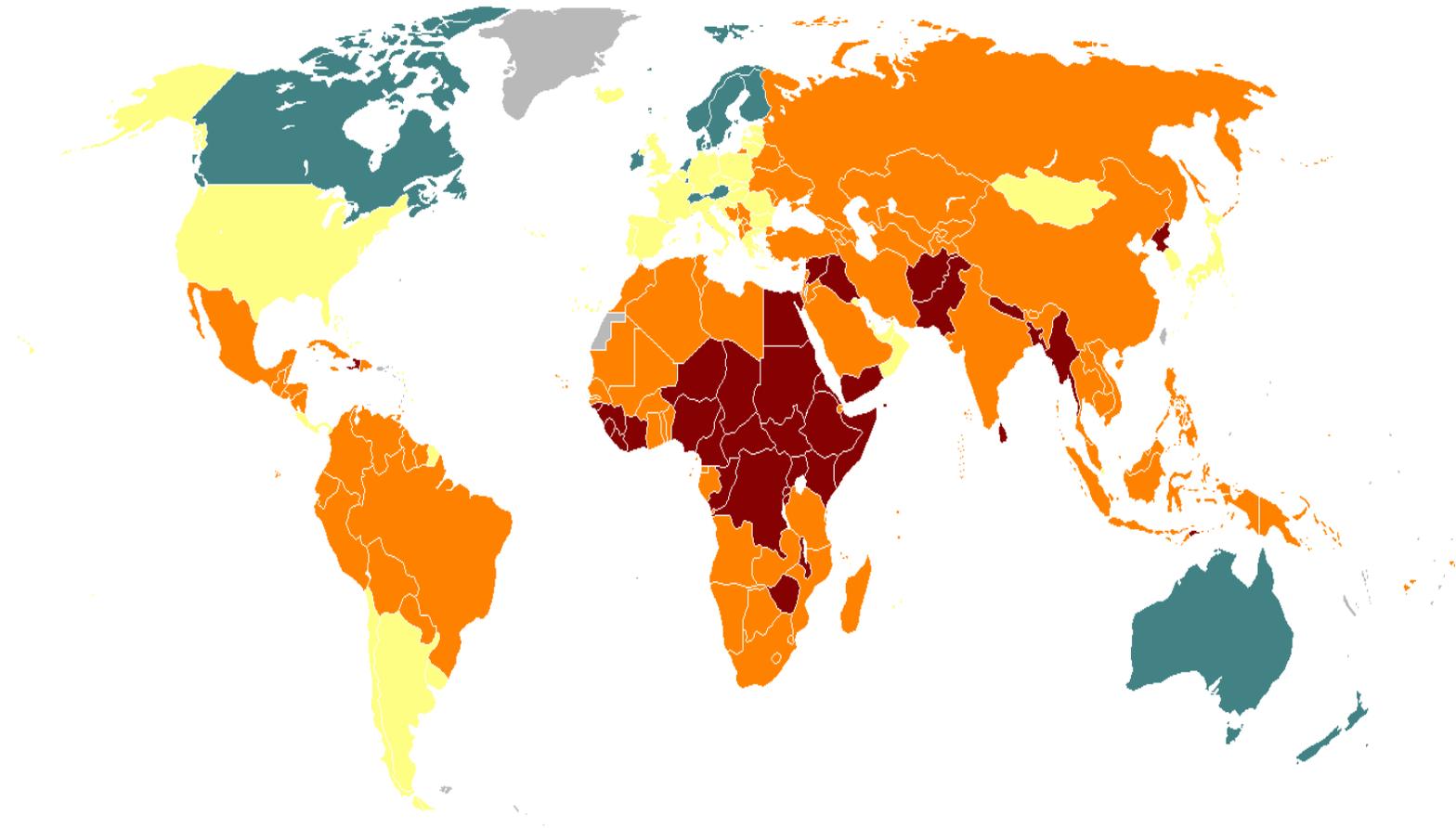
State failure

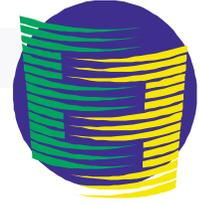
- **State failures: see as example: Failed States Index (*Fund for Peace and Foreign Policy*) comprising 12 indicators:**
- **3 social indicators: demography, victimisation of population groups, brain drain**
- **2 economic indicators: group based poverty, sharp GDP decline**
- **6 political indicators: criminalisation of state, deterioration of public service, violation of human rights, “praetorian guards”, fragmentation of elites, military interventions**
- **Contribution of Energy Charter: Minimal legal framework in a difficult political context**



Failed states atlas

Foreign Policy, 2012





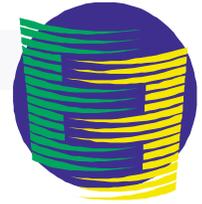
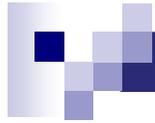
Conclusions (1)

- Energy sector was **historically** at the heart of the first modern market failure (Rockefeller, Standard Oil, 1890s)
- Market failures of actuality in **today's** energy policies: liberalisation of grid industries
- Market failures of high importance for **tomorrow's** energy policies: sustainability policies
- Academic research on market failures still poor (little consensus) and strongly influenced by political moods; market failures to be seen jointly with regulatory failures and state failures
- Recent and future research: Externalities and Information asymmetry, price volatility



Conclusions (2) on ECT

- ECT is at heart to address some fundamental (older) types of market failures:
- Expropriation (ECT Art. 13), Forbid Taking (dTP)
- Competition (ECT Art. 6), De-monopolisation (ICMS, blue book)
- **ECT Could do more in the following (newer) fields:**
- Externalities (internalisation of external costs, determining sovereignty and ownership principles for natural resources outside lithosphere, improving sustainability)
- Information asymmetry (electricity labelling, equipment labelling, smart grids, smart cities)



Thank you for your attention

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Common rules for global energy security