Economic Growth and Climate Policy

Annual Conference of the European Association of Environmental and Resource Economists,
25 June 2015, Helsinki, Finland

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Outline

1. Is continued economic growth *feasible*?

2. Is continued economic growth *desirable*?

3. Are our investments on the right track?

4. Conclusions
The fossil fuel jackpot!

Edenhofer et al. 2012
Anthropogenic pressures on the Earth System have reached a scale where abrupt global environmental change can no longer be excluded.
We’re not on track, not even close.

Decomposition of the change in total annual CO₂ emissions from fossil fuel combustion by decade and four driving factors.
Green Growth to the rescue?

Can we keep up economic growth and still protect the environment?
Green Growth is not well defined as a concept and empirical evidence is missing...

...so could degrowth be the easier route to emissions reductions?
Degrowth is at least conceivable as a new post-materialistic lifestyle in industrialized countries...

...but how should this be put into practice in poor countries?
What does degrowth mean for income distribution?

...and the US would have to degrow by about 80%

If global income were distributed equally...

US: 49'000

SSA: 1'400

LAM: 10'000

If global income were distributed equally...

... developing SSA could increase per-capita GDP seven-fold ...

LAM would remain at the current level...

US: 10'000

SSA: 10'000

LAM: 10‘000

(Source: WDI 2012)

GDP per capita in current US$
Higher economic growth has to be compensated by higher energy and carbon intensity improvements.

Own calculations based on results from Kriegler et al. (2012)
Technological differences due to economic growth

Higher economic growth requires more **efficiency improvements** and **renewables**.
Limiting global warming to <2°C requires reducing carbon intensity of GDP (CO$_2$/US$) by ~4-7% per year. Degrowth might achieve reductions by 2%...

... but where should the other roughly 2-5% come from?
A degrowth strategy would reduce these risks indirectly, at best...

...and it would be expensive. We have to distinguish the *ends* that a policy should achieve from its *means*.
What do sensible climate policies look like?

- Carbon pricing (e.g. carbon tax, emissions trading)
- Technology policies (e.g. feed-in tariffs, R&D subsidies)
- Insurance schemes against technological risks
- Land-use management (land taxation)

If all environmental goals can be reached and technological risks addressed by appropriate policy instruments, why deliberately slow down economic growth?
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Is continued economic growth desirable?

What do critics of materialism say?

- Conspicuous consumption
- Consumer manipulation through advertising
- Stress, risk of depressions
- Loss of meaning
- ...


Growth is no end in itself...
...but it could serve to increase well-being.
But, what is well-being?
Concepts of well-being

• **Economics:** Well-being is the *realisation of preferences.*
  – **Liberalism:** You should get what you want.

• **Social psychology:**
  – **Life satisfaction („happiness“):** *Subjective judgement* of personal well-being
  – **Meaning:** *Subjective judgement* of the meaning of one’s life

• „Happiness“ and „Meaning“ are different: humans often decide not to chose what makes them happy, because:
  – They have other goals in life than being happy.
  – They want to be happy, but make the wrong choices.
Easterlin paradox: proven for US, but disputed for other countries (Easterlin et al. 2010, Stevenson and Wolfers 2008)
What is the relation between happiness and income?

Two relevant psychological effects:

State competition

• Comparing income to other members of society
• Maximizing happiness would require taxation, that would decrease growth. Why? Because there is an externality.
• Liberalismus not unconditionally

Familiarization (Adaptation)

• Wrong prediction of one’s own familiarization with new things, e.g., consumption goods
• Maximizing happiness would require taxation, that would decrease growth. Why? Because familiarization does not leave people happy, growth is dysfunctional
• No reason for taxation from liberal point of view

Loss of meaning not through income, but secularization!

Quelle: Oishi und Diener (2014)
Hence, growth might not be desirable per se, but there is no reason to restrict economic growth directly...

...and we need to think about how we define social welfare in the first place instead – or more technically: How can we define the social welfare function?
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The climate problem at a glance

Resources and reserves to remain underground until 2100 ((median values compared to BAU, AR5 Database))

<table>
<thead>
<tr>
<th>Resource</th>
<th>With CCS [%]</th>
<th>No CCS [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>70</td>
<td>89</td>
</tr>
<tr>
<td>Oil</td>
<td>35</td>
<td>63</td>
</tr>
<tr>
<td>Gas</td>
<td>32</td>
<td>64</td>
</tr>
</tbody>
</table>

Source: Bauer et al. (2014); Jakob, Hilaire (2015)
The Globalization Paradox: A trilemma

Golden cage

Hyper-Globalization

Global Federalism

Democracy

Compromise of Bretton-Woods

National sovereignty
Lack of social investments in infrastructure?

Well-being in the broader sense

Private capital
Health system
Education system
Transport Infrastructure
Natural capital

Investments in public infrastructure

Relevant capital for well-being

Finite resources:
Determination of rate of extraction
Scarcity rent à la Ricardo

Renewable resources:
Determination of use
Regulation of use generates benefits

(Partial) Appropriation of resource-rents
(Taxation, state property, etc.)

Jakob and Edenhofer (2014)
Revenues from carbon pricing

Total cost of closing gaps in electricity, water, sanitation, ICT, and roads

450ppm scenario with national carbon prices (no re-distribution)
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Conclusions

• Continued economic growth seems feasible, at least from the perspective of climate change mitigation, provided that externalities are properly addressed.

• Economic growth cannot be a goal in itself. But it could help to reach desirable goals (e.g., happiness, prosperity...).

• Public policy should not primarily be concerned with growth, but with welfare.

• Different members of society do not necessarily have to agree on a definition of welfare. But they have to agree on how to manage common pool resources and common property regimes.
The central question for economic policy is not growth, green growth, or degrowth, but whether there is over- or underinvestment in common pool resources!