Is the rebound of digitalisation unavoidable?

Anton Brucherseifer

Digitalisation and the Rebound Effect Seminar, HS2020

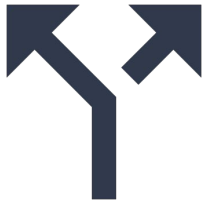
How to Save the Environment?

improve energy-efficiency of your product

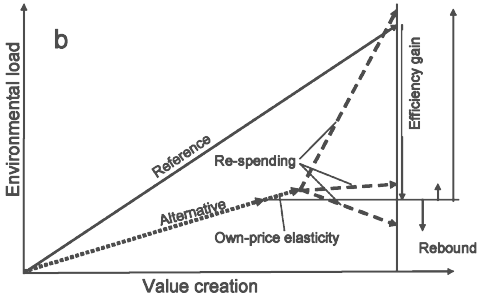
product becomes cheaper

more and more people start buying your product

Outline



Side Effects

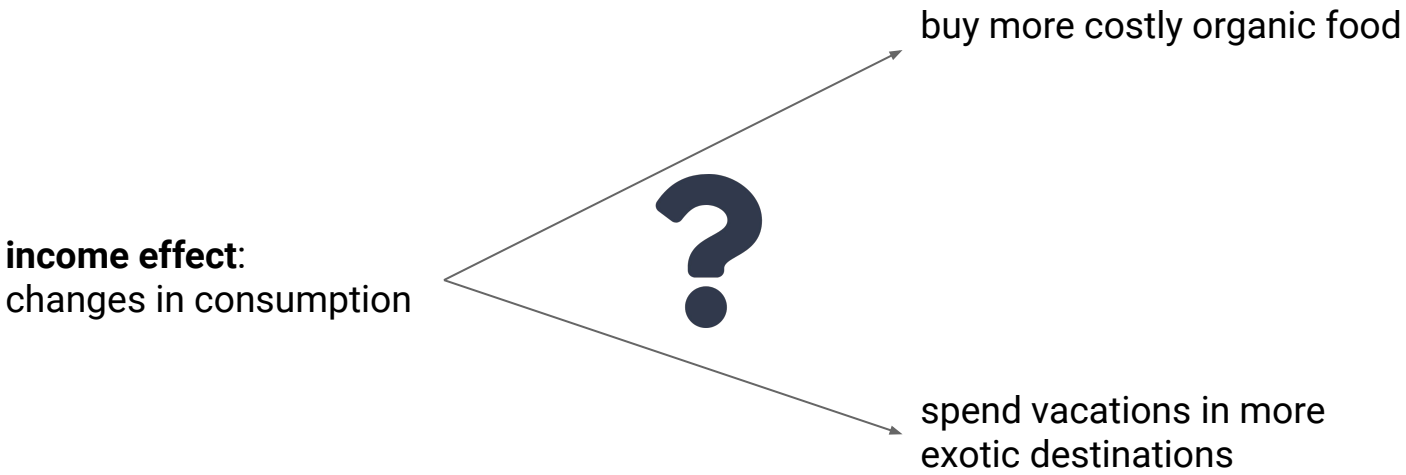


Sociology

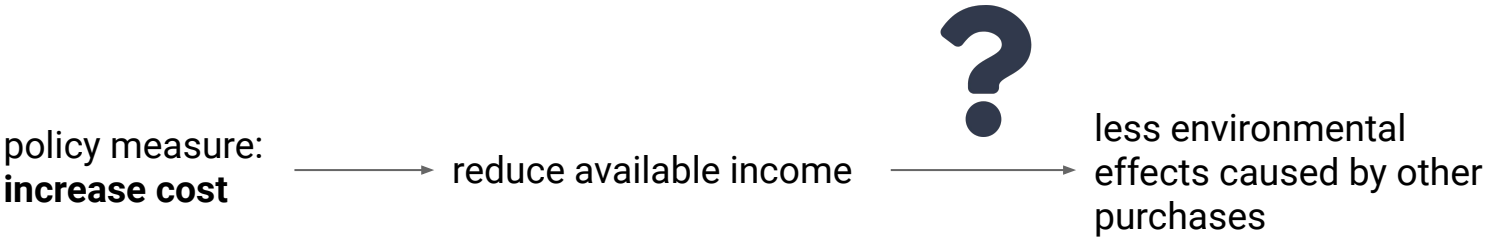
Policies

Side Effects

Side Effects: Example 1



Side Effects: Example 2



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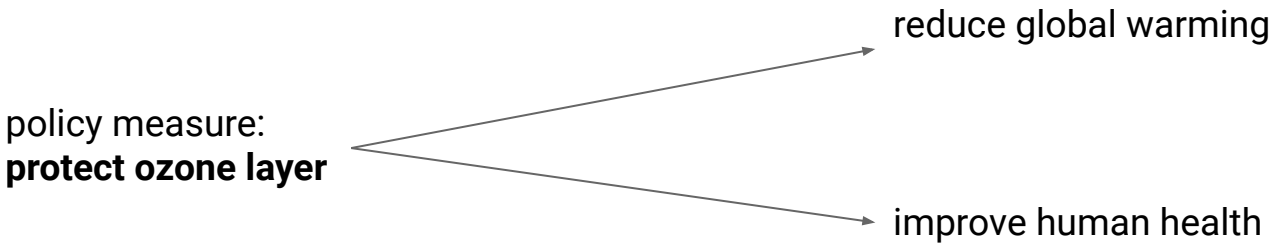
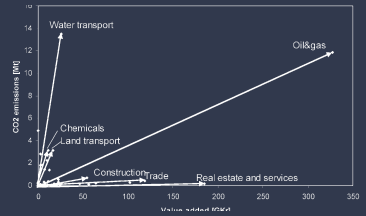
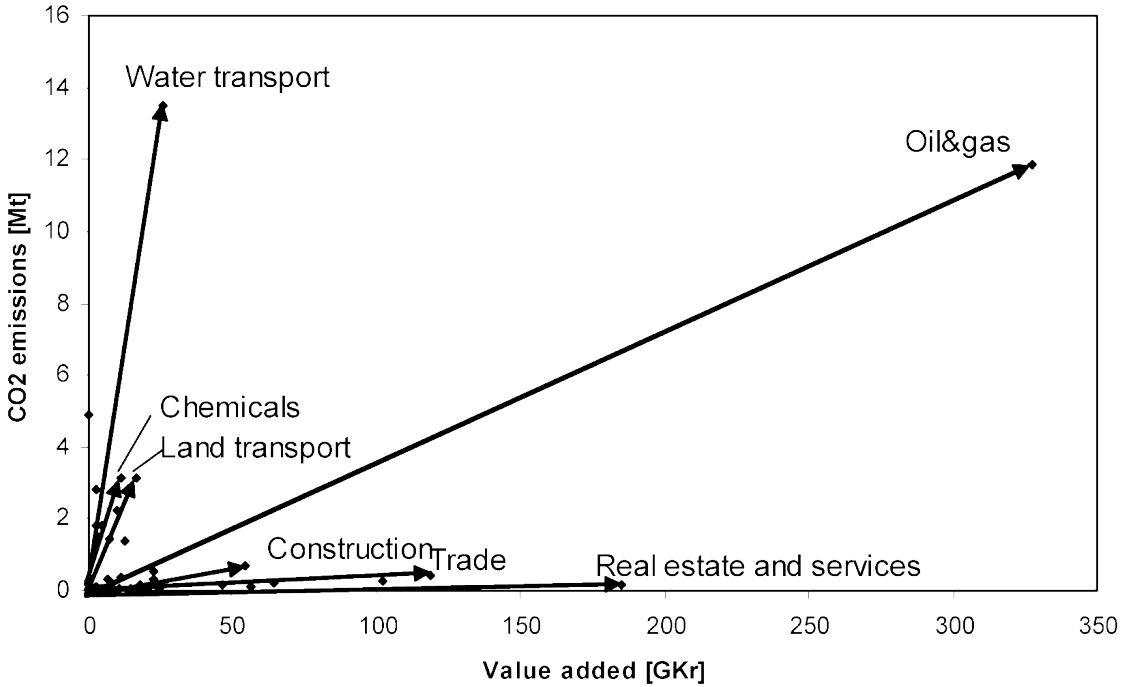
Side Effects: Example 3



The E2 Vector





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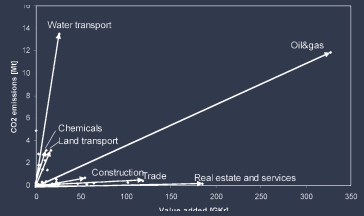
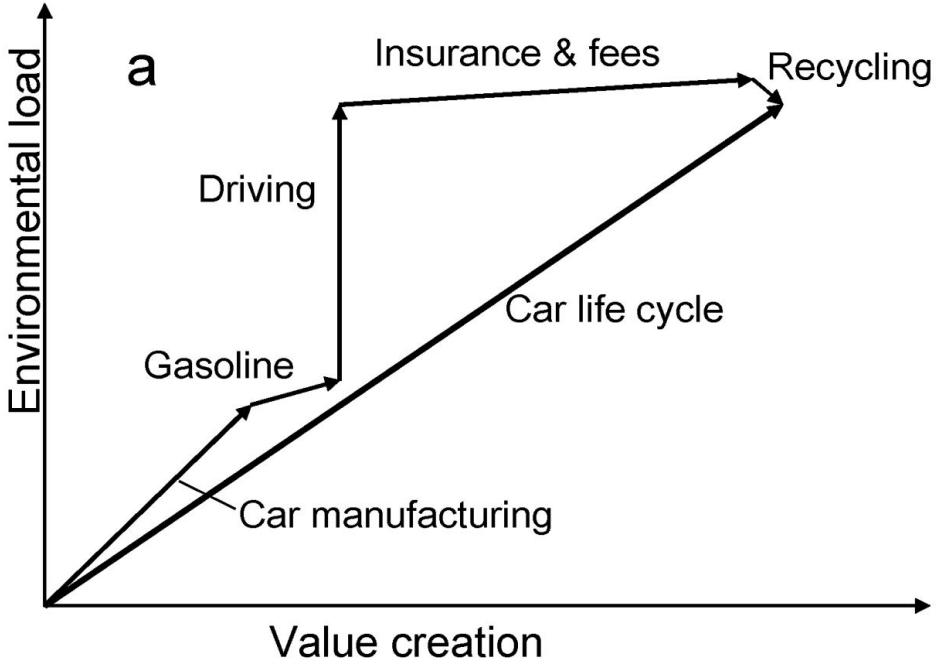
The E2 Vector (Car Example)





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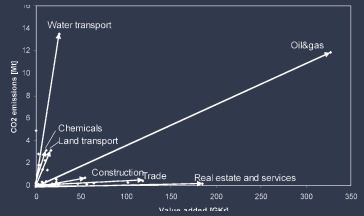
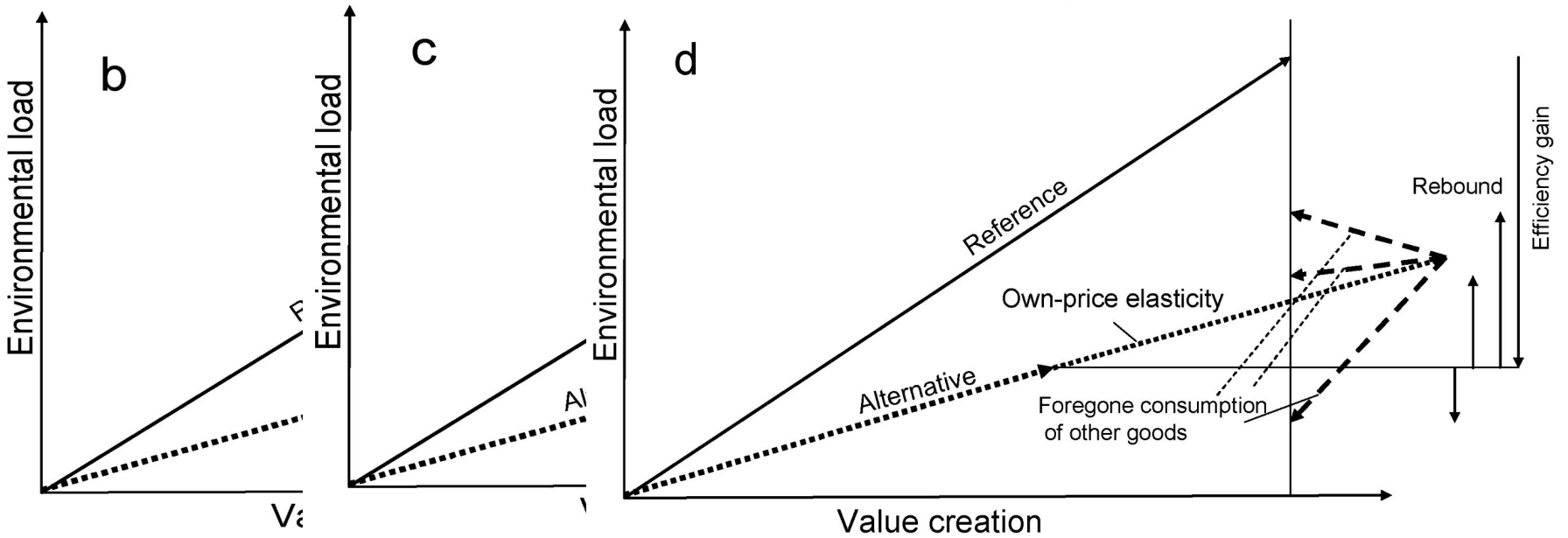
The E2 Vector on Rebound Effect





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Policy Measures against Rebound Effect

Policy Measures against Rebound Effect

- mostly concerned with resource and energy efficiency
- efficiency increased
- but absolute environmental pressure still rises

technological improvements **<** increases in population and consumption

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Case Study: Rebound Effect as a Policy Issue in the European Union

- searching for the term “rebound effect”
  - treaties, international agreements, legislation and preparatory acts
- total 35 acknowledge rebound effect
- first mentioned time in 1996, then increasingly
- only 6 legal acts recommend policy to mitigate rebound effect
- no policy action yet

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3 Rebound Mitigation Strategies

more efficient

greener

consume less

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3 Rebound Mitigation Strategies

improve energy intensity [kWh / CHF]

e.g. more efficient fuel

problem: additional rebound effect

improve emission intensity [CO_2 / kWh]

e.g. enforce renewable energies as electricity source

problem: limited by technology

downsize individual consumption

e.g. reducing working hours

problem: only wealthy people have enough financial security

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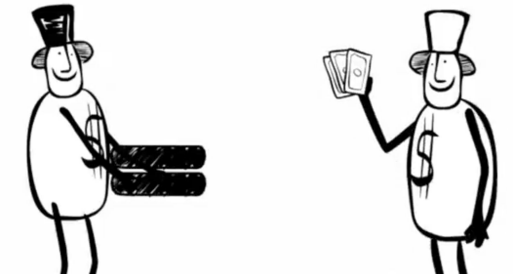
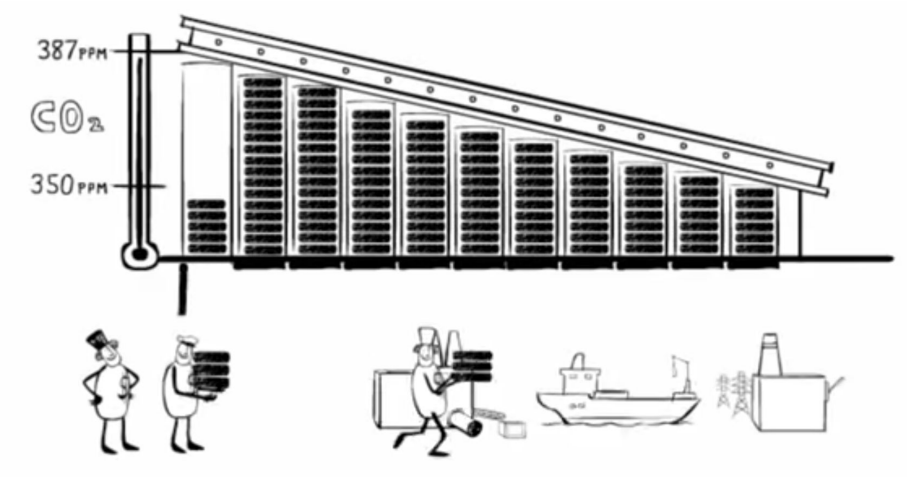
Cap-and-Trade Systems

- set a ceiling on a given pressure
- companies can buy and sell the right to pollute
- focus on the desired goal
  - e.g. limit CO_2 emissions
- claimed to be “immune to rebound effects”
- requires: impossible to shift to other sectors & locations





David Font Vivanco, René Kemp, Ester van der Voet: How to deal with the rebound effect? A policy-oriented approach
illustrations: https://www.youtube.com/watch?v=pA6FSy6EKrM&t=150

Other Policy Pathways

- cap-and-trade systems
- ecotaxes
- awareness, information and moral suasion
- price regulation
- subsidies
- education in business
- technology & innovation
- new business models

Conclusion

- important to understand social changes -> what people do with saved money
- rebound effect is not enough to describe secondary effects
- policies must be designed carefully
- consider a broad range of side effects
- much more research required

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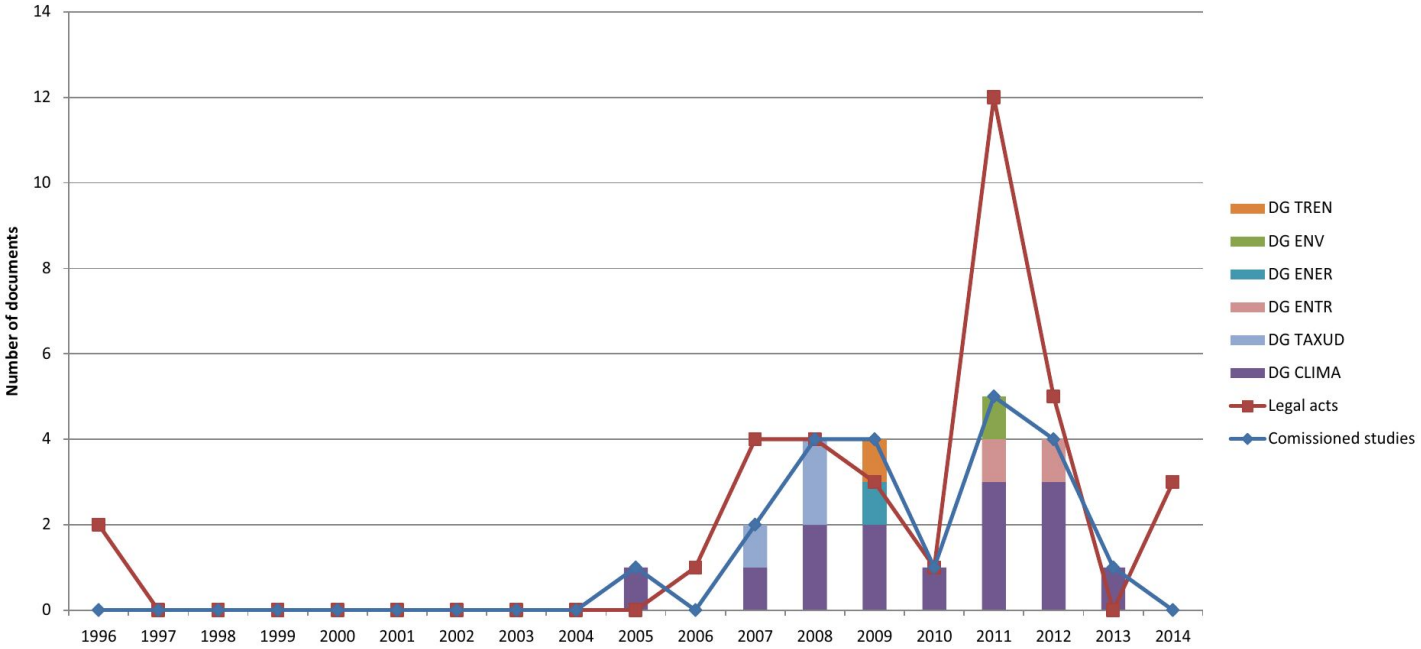
Thank You

Let’s start the discussion!

Rebound Effect in EU Legal Acts



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3 Rebound Mitigation Strategies

Recognition in policy design

Broader definitions and toolkit

Benchmarking tools

Consumption information
Identity signalling
Standardisation

Autonomous frugal behaviour

Targeted eco-innovation

Energy/carbon tax

Bonus-malus schemes

Cap and trade schemes

Rebates and subsidies
Product service systems

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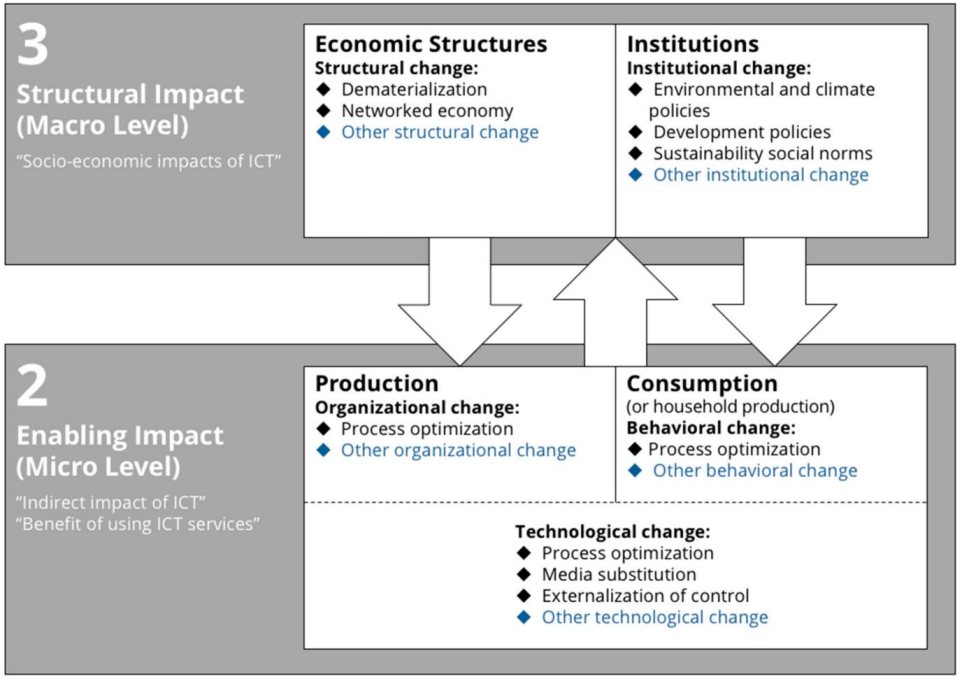
Life-cycle / Enabling / Structural Impact (LES)



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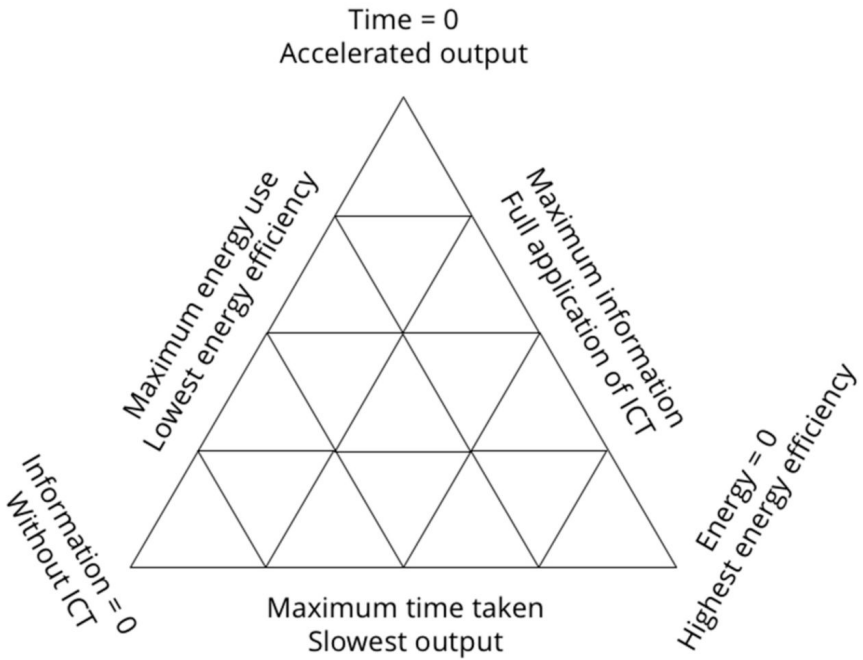
The Mutual Substitutability of Time, Energy and Information



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