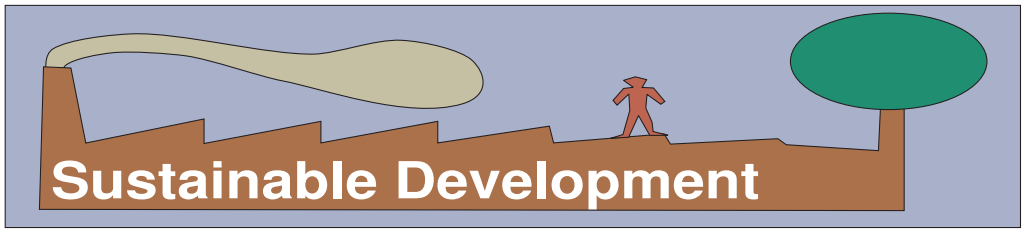

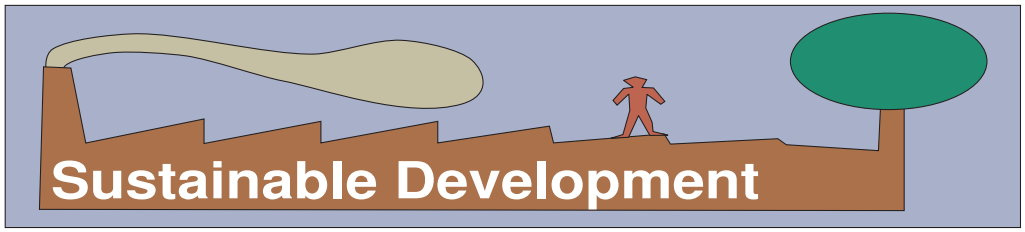

Concluding lecture

Competition for status: Intro

Question

Question

Are we sacrificing leisure time, and damaging the environment, driven by competition for status?

Question

Are we sacrificing leisure time, and damaging the environment, driven by competition for status?

And is this phenomenon increasing in importance over time?

Anecdotal evidence

Lots of evidence that we make choices based on trying to affect how others perceive us.

Anecdotal evidence

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Take a look at Charles et al., 2009, QJE.

Anecdotal evidence

Lots of evidence that we make choices based on trying to affect how others perceive us.

Take a look at Charles et al., 2009, QJE.

$u = f(c)$!?

Anecdotal evidence

Anecdotal evidence

Anecdotal evidence

We don't need a paper in QJE to tell us that some forms of consumption are positional.

Anecdotal evidence

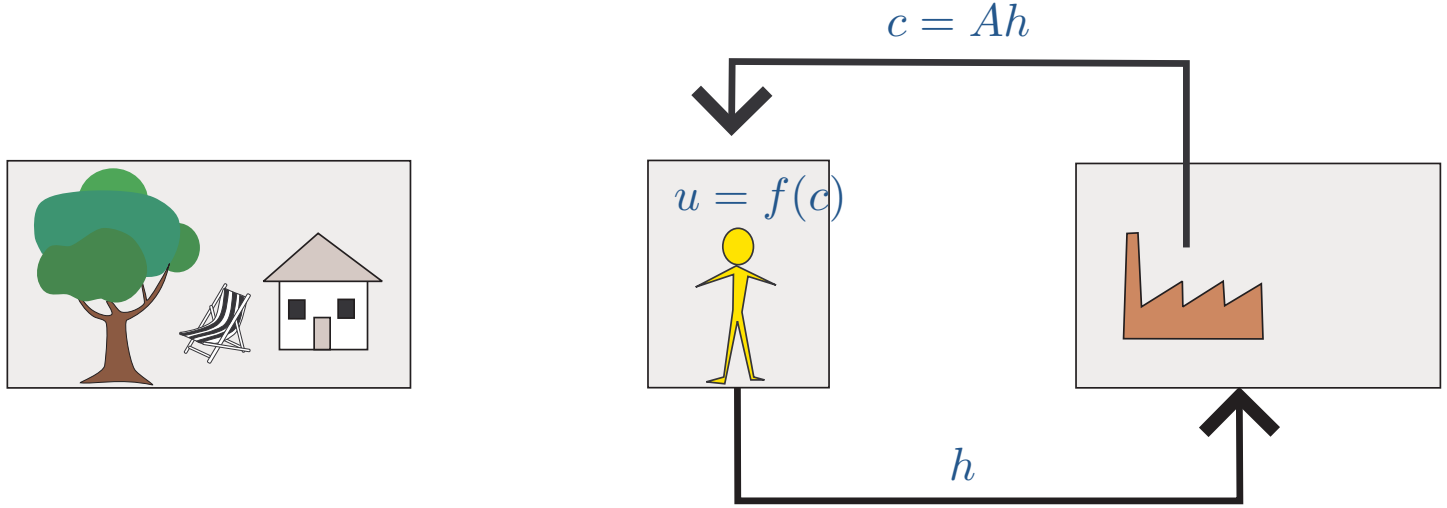
Anecdotal evidence

Pure pleasure...

Anecdotal evidence

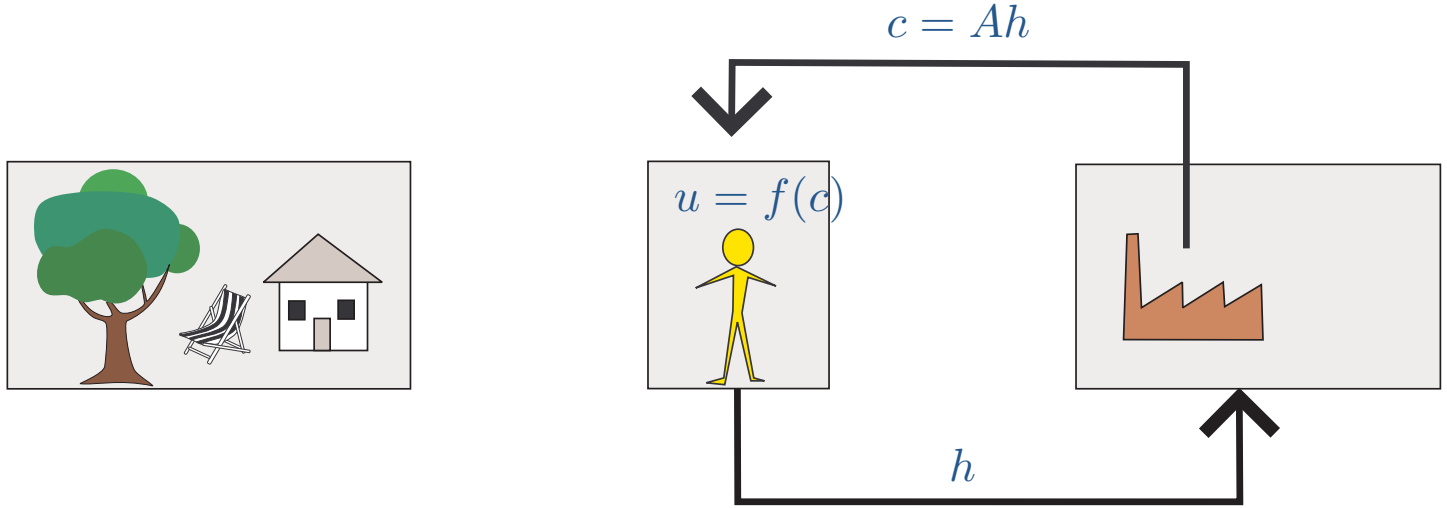
Building a conceptual model

Building a conceptual model



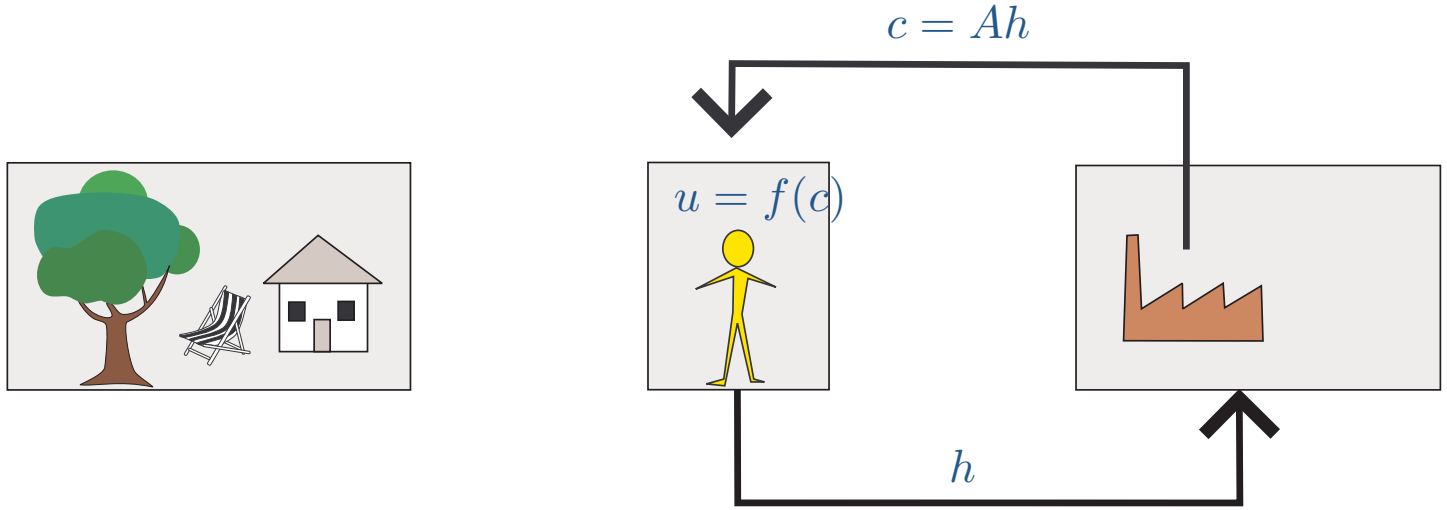
Building a conceptual model

Exogenous growth, $\dot{A}/A = g$.



Building a conceptual model

Environmental quality...



Building a conceptual model

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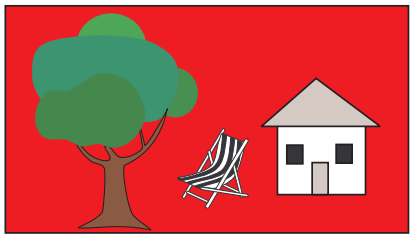
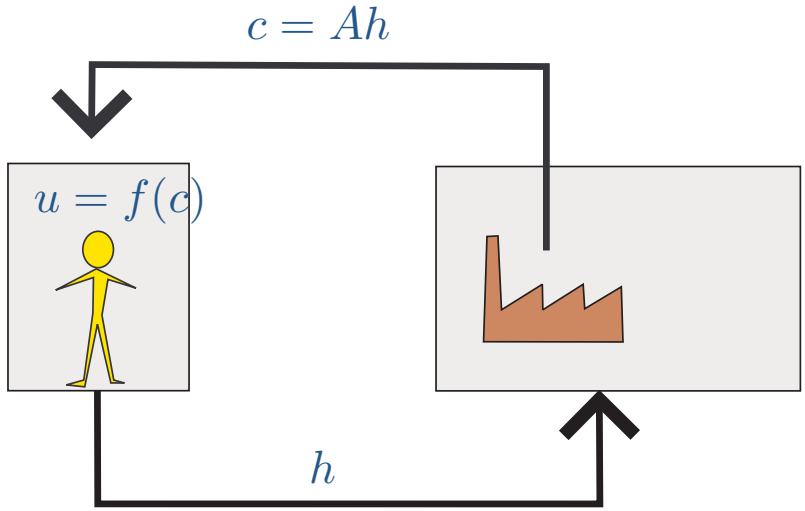
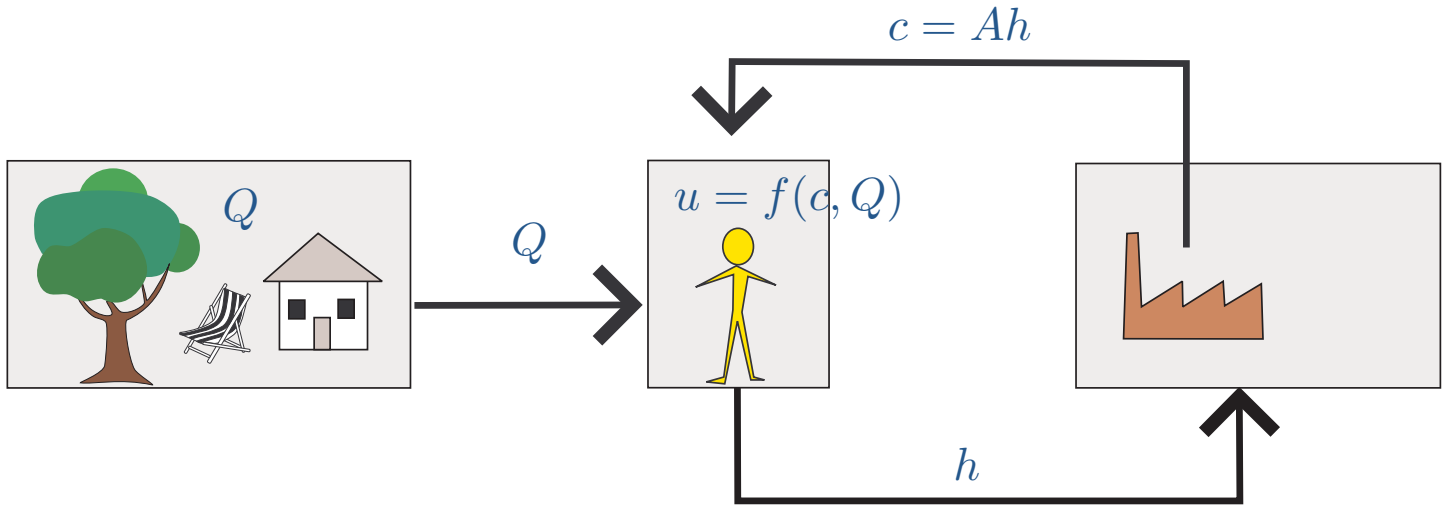




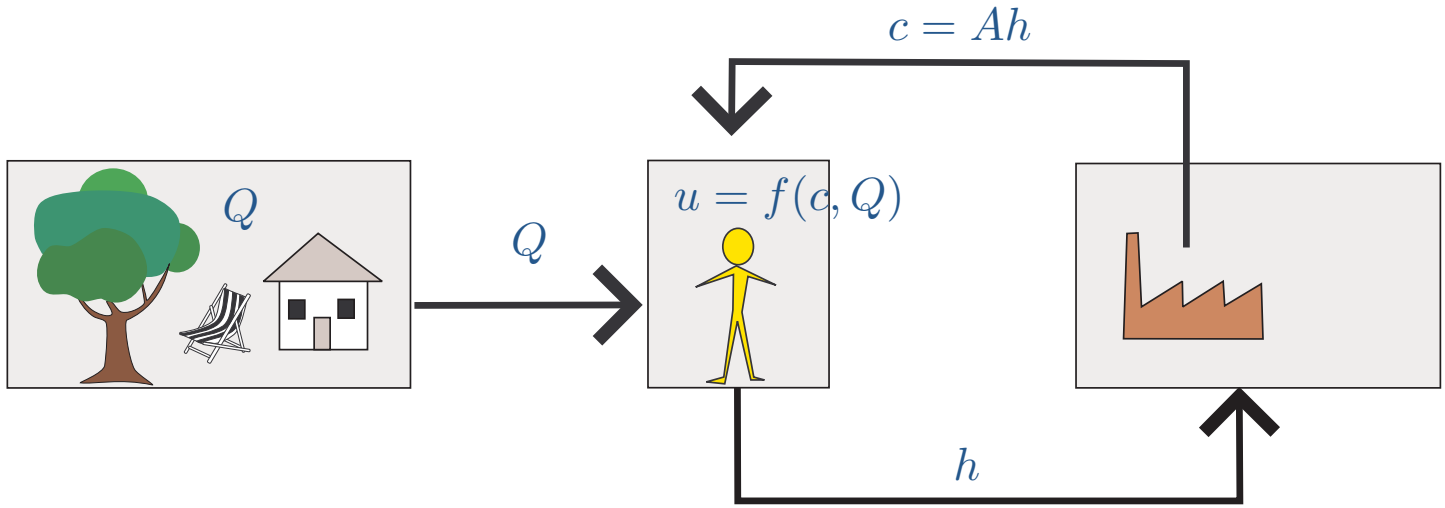
Building a conceptual model

Environmental quality...



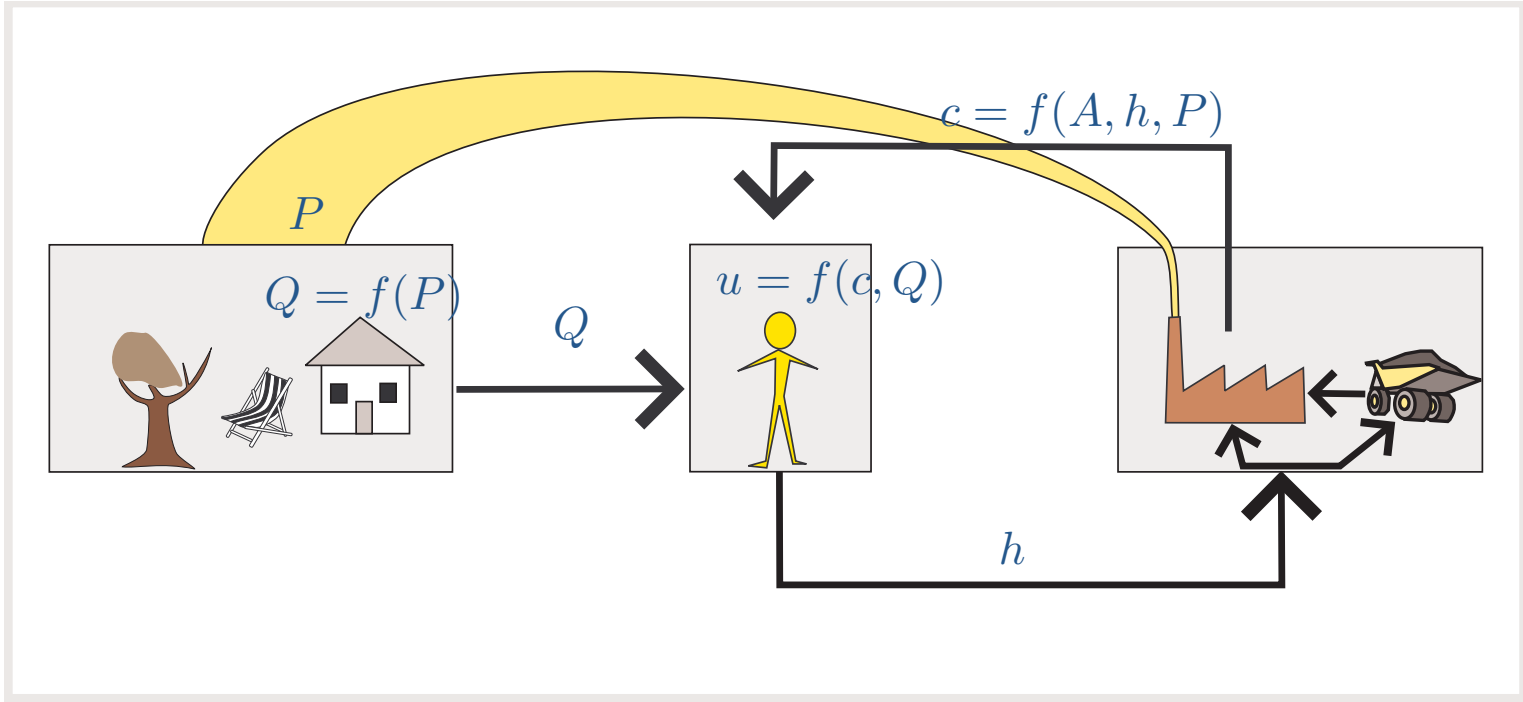
Building a conceptual model

. . . and pollution



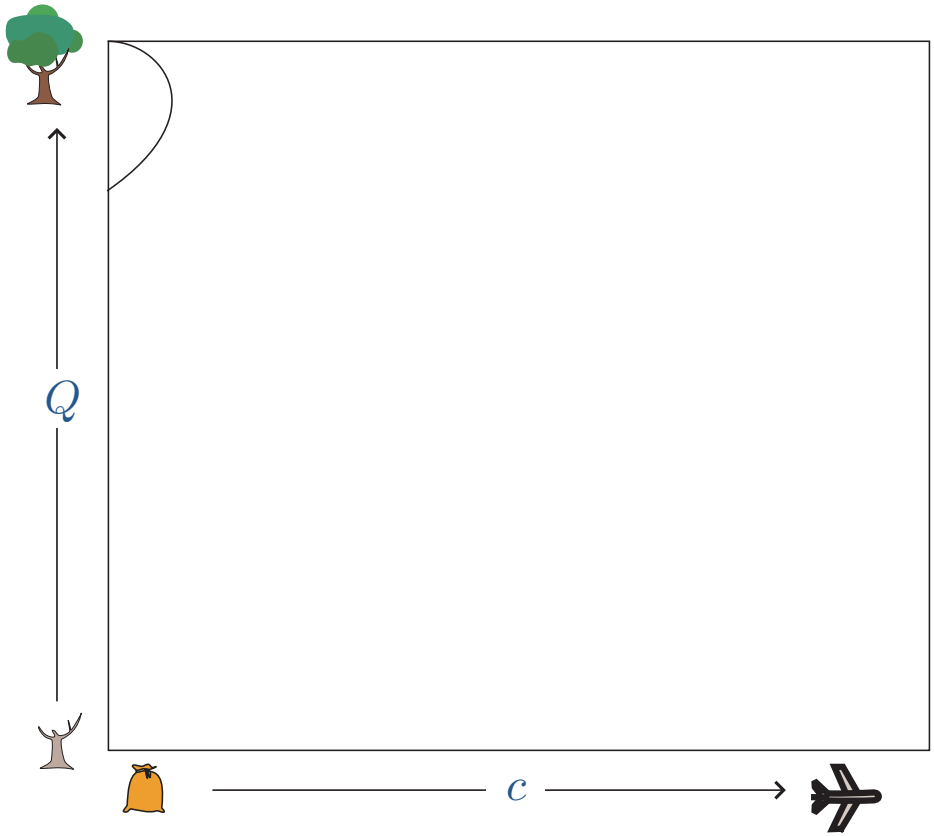
Building a conceptual model

. . . and pollution



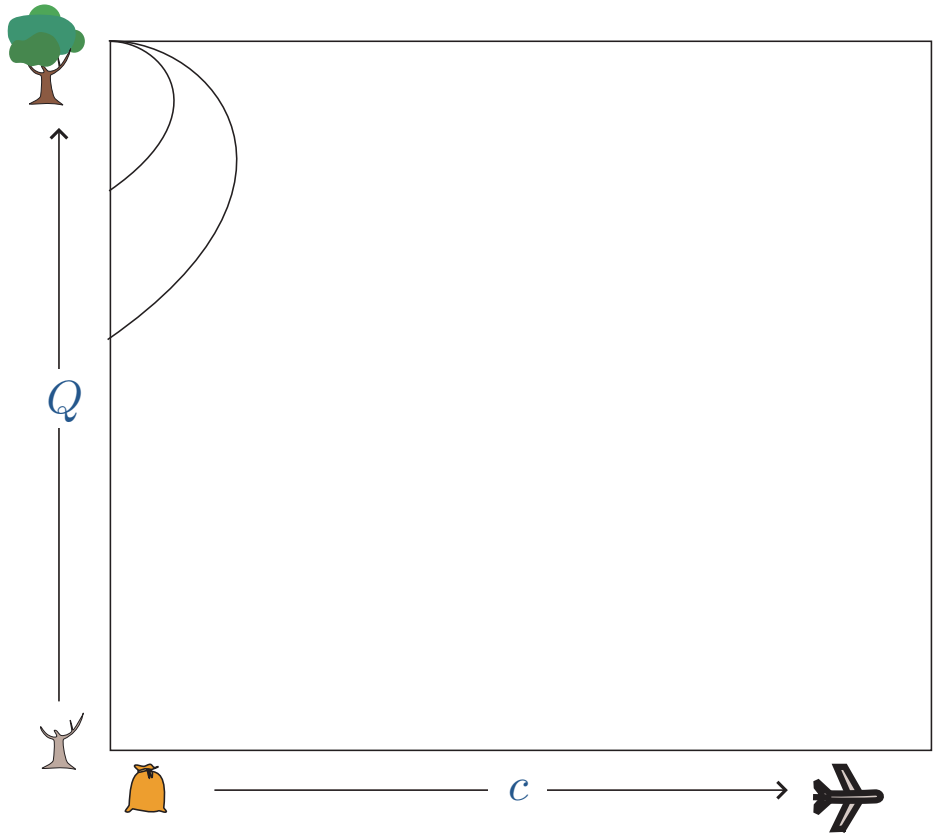
Building a conceptual model

PPFs with increasing A



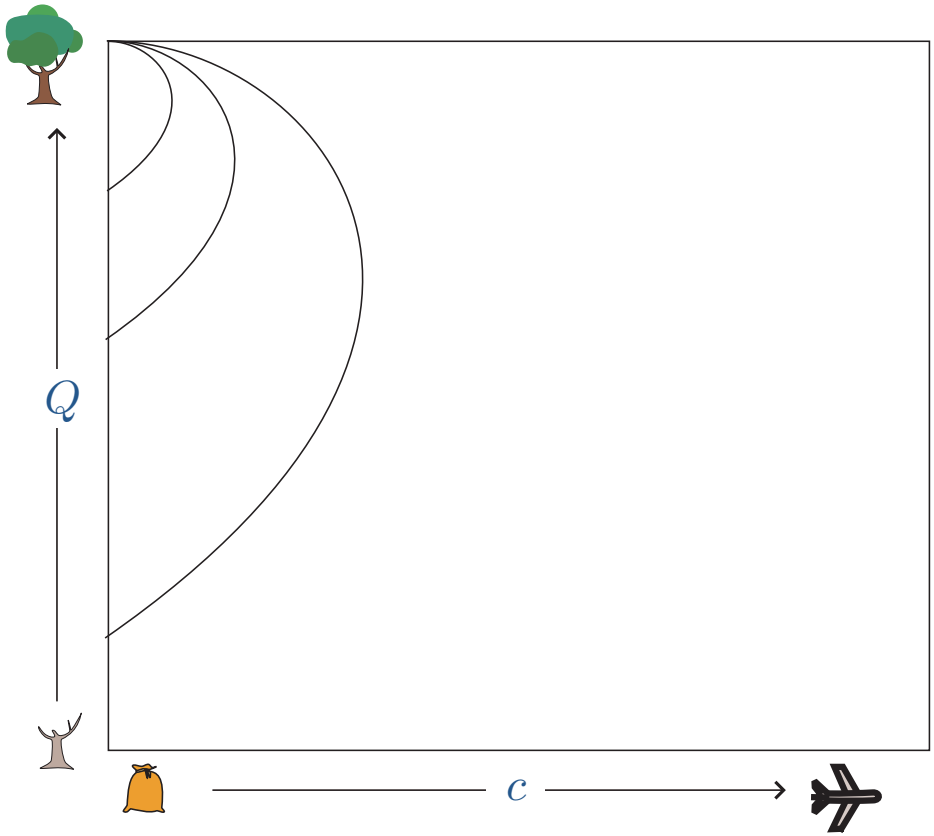
Building a conceptual model

PPFs with increasing A



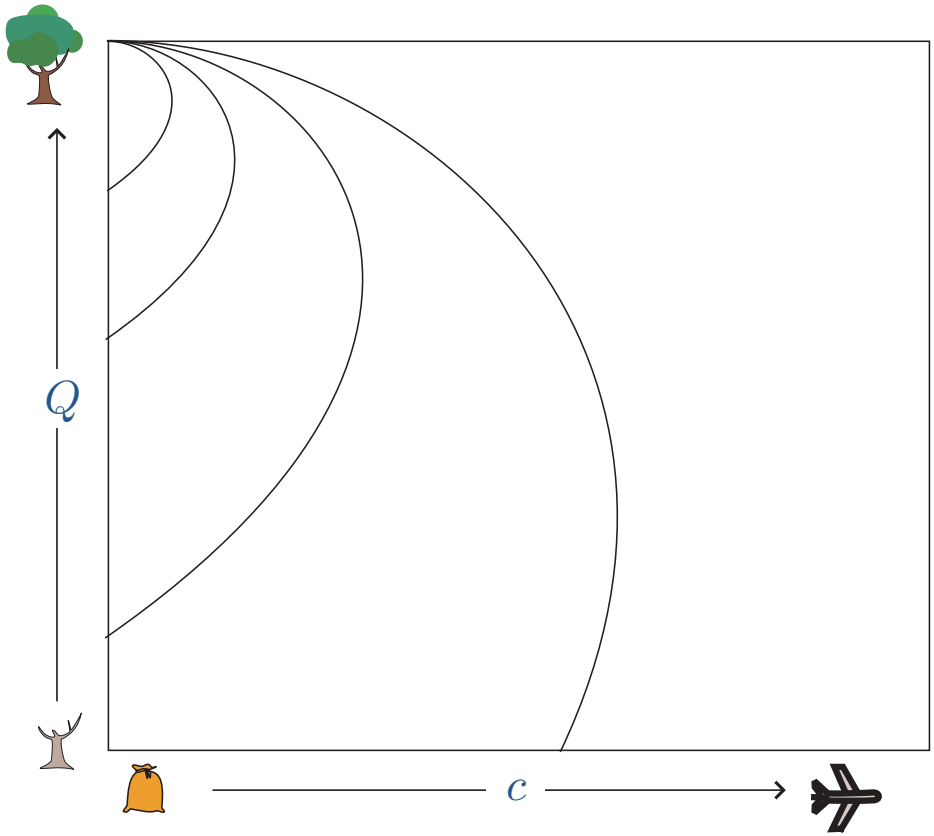
Building a conceptual model

PPFs with increasing A



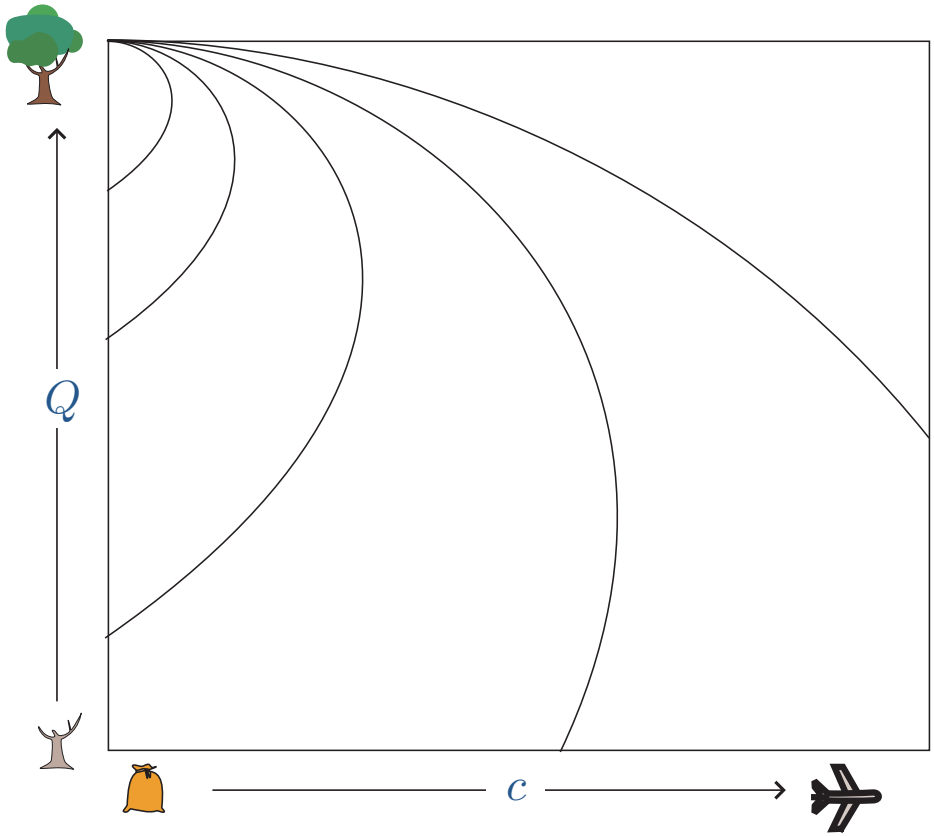
Building a conceptual model

PPFs with increasing A



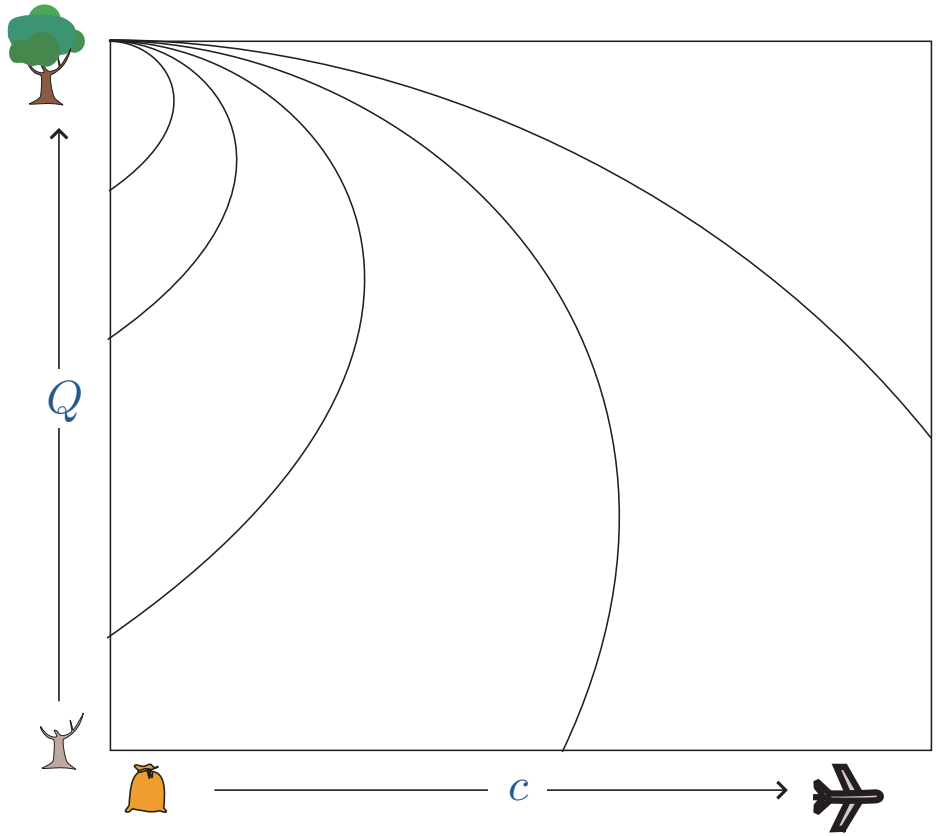
Building a conceptual model

PPFs with increasing A



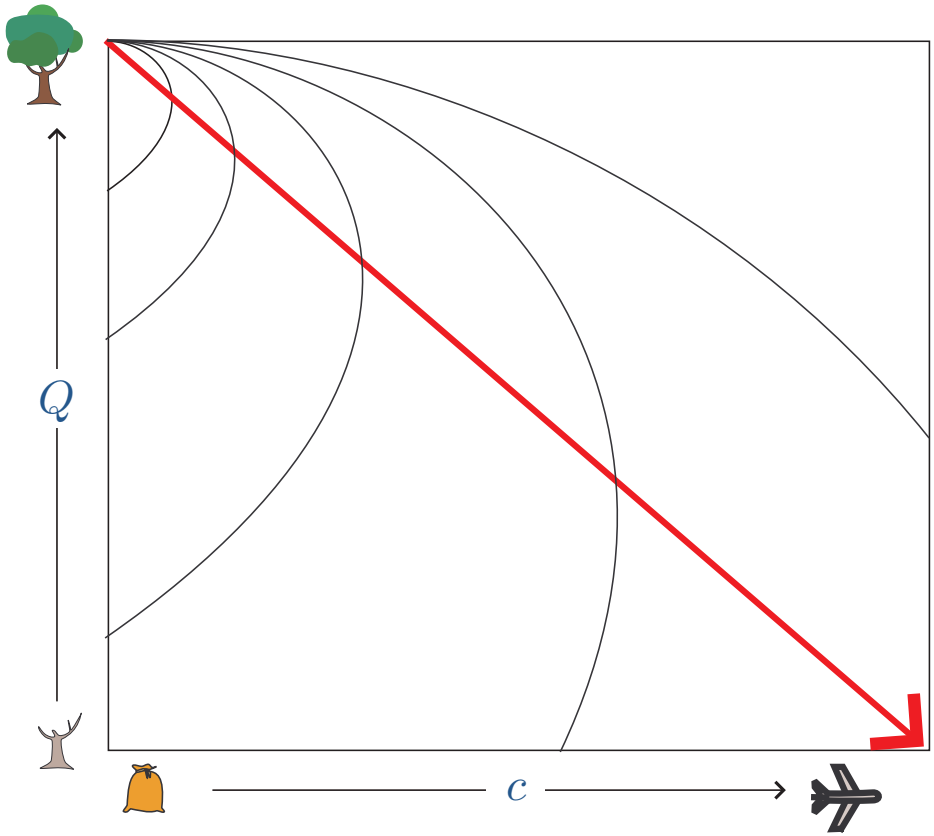
Building a conceptual model

Laissez faire



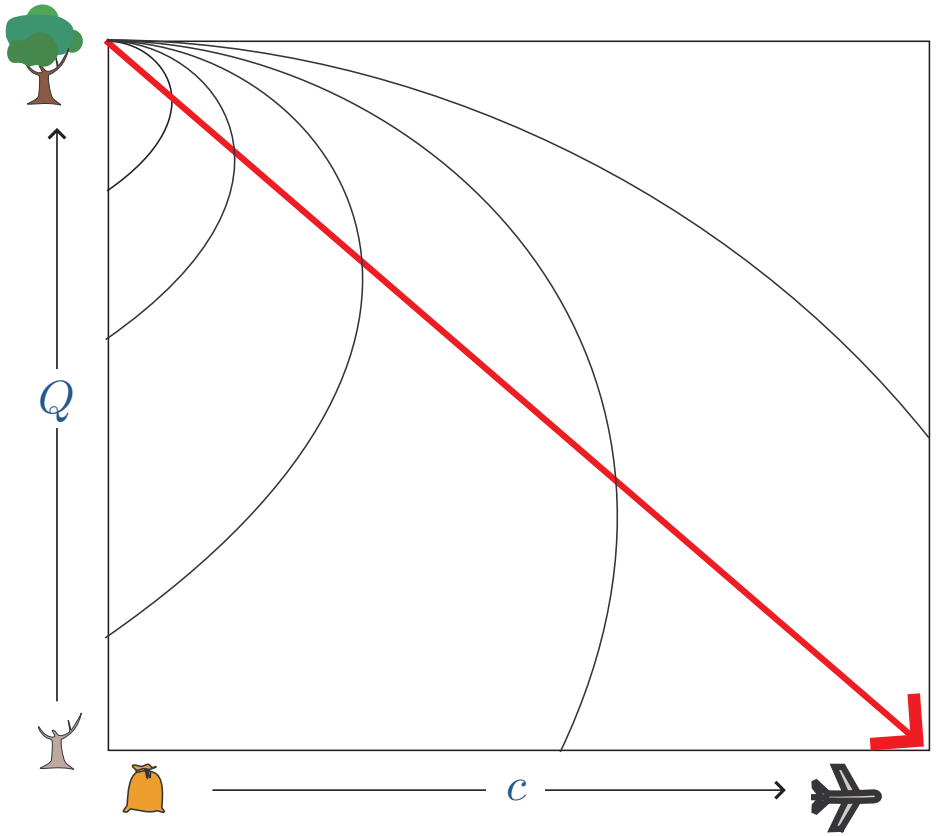
Building a conceptual model

Laissez faire



Building a conceptual model

First best



Building a conceptual model

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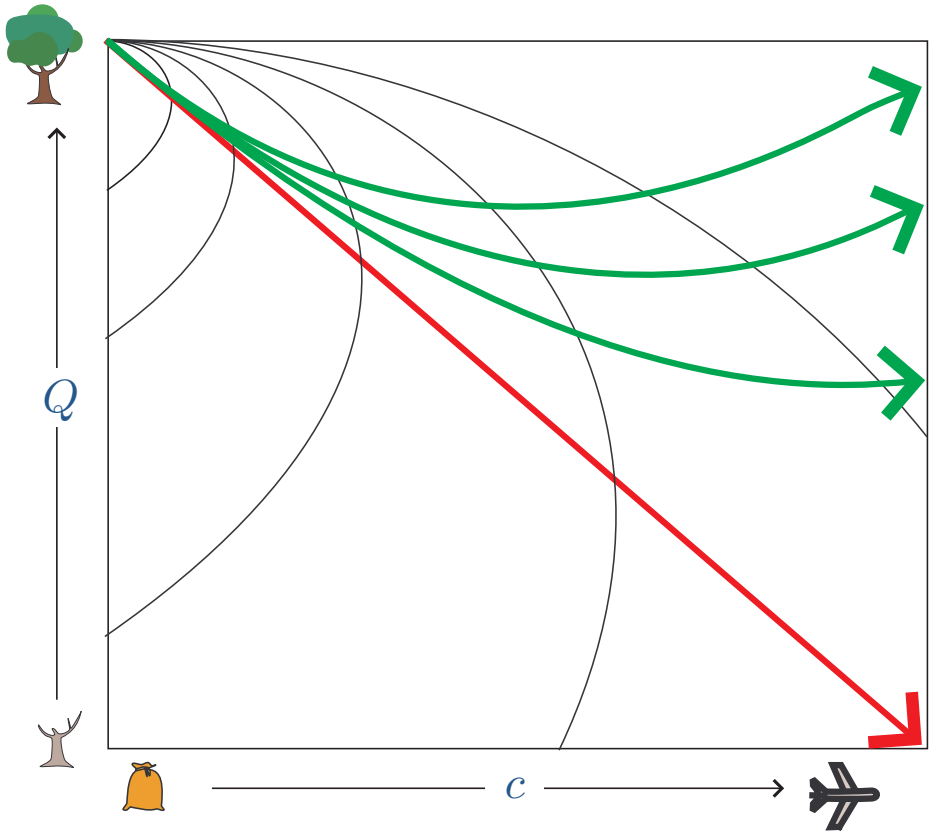
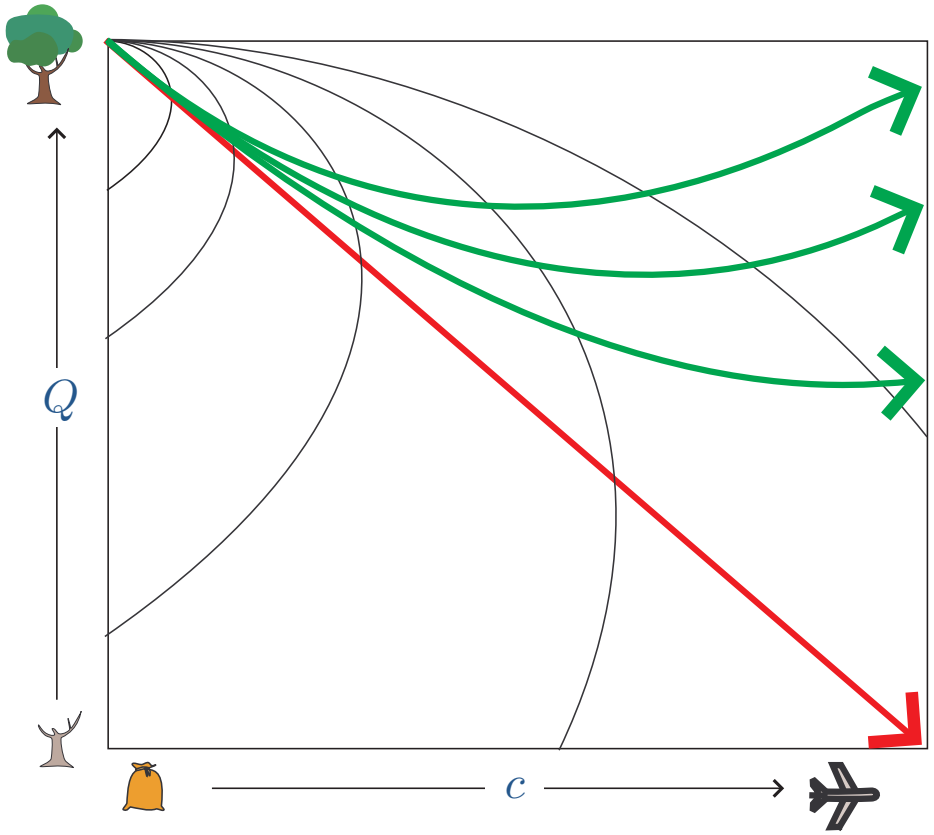


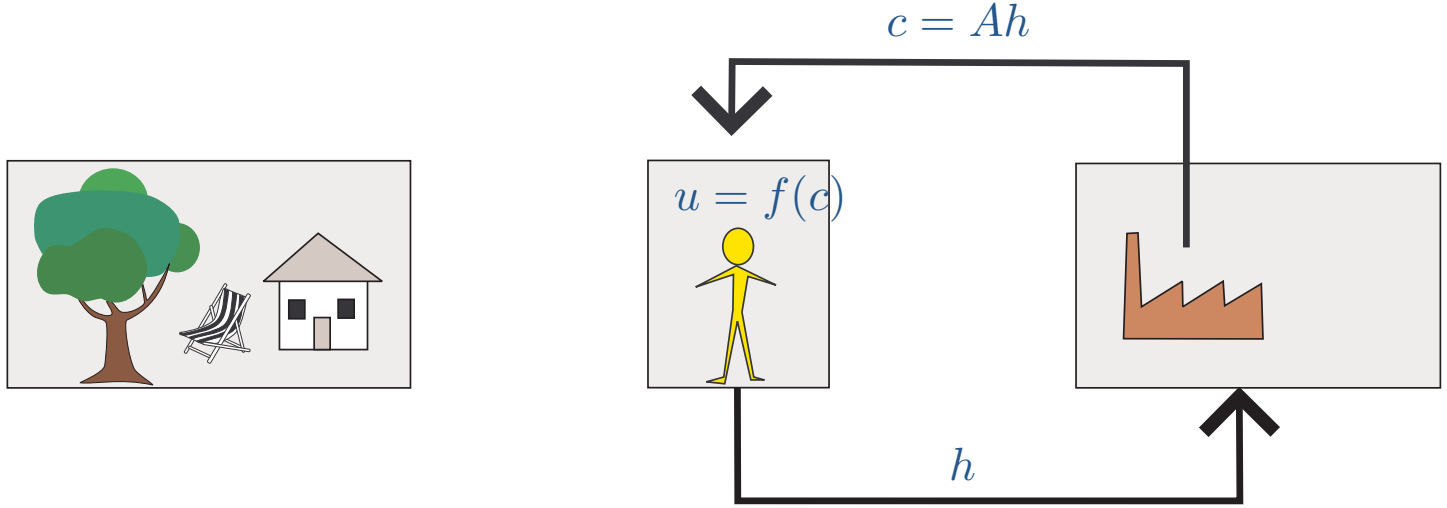
Building a conceptual model

First best



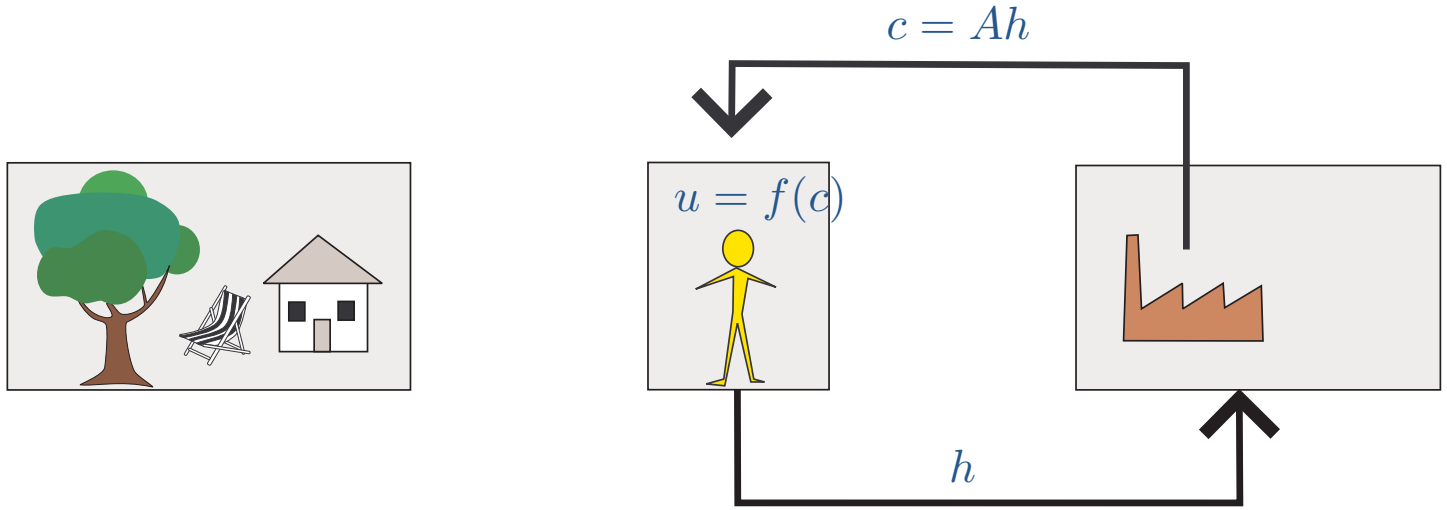
Hart (2020) EER, following: Grossman/Krueger (1995) QJE; Stokey (1998) IER; Smulders (2006).

Building a conceptual model



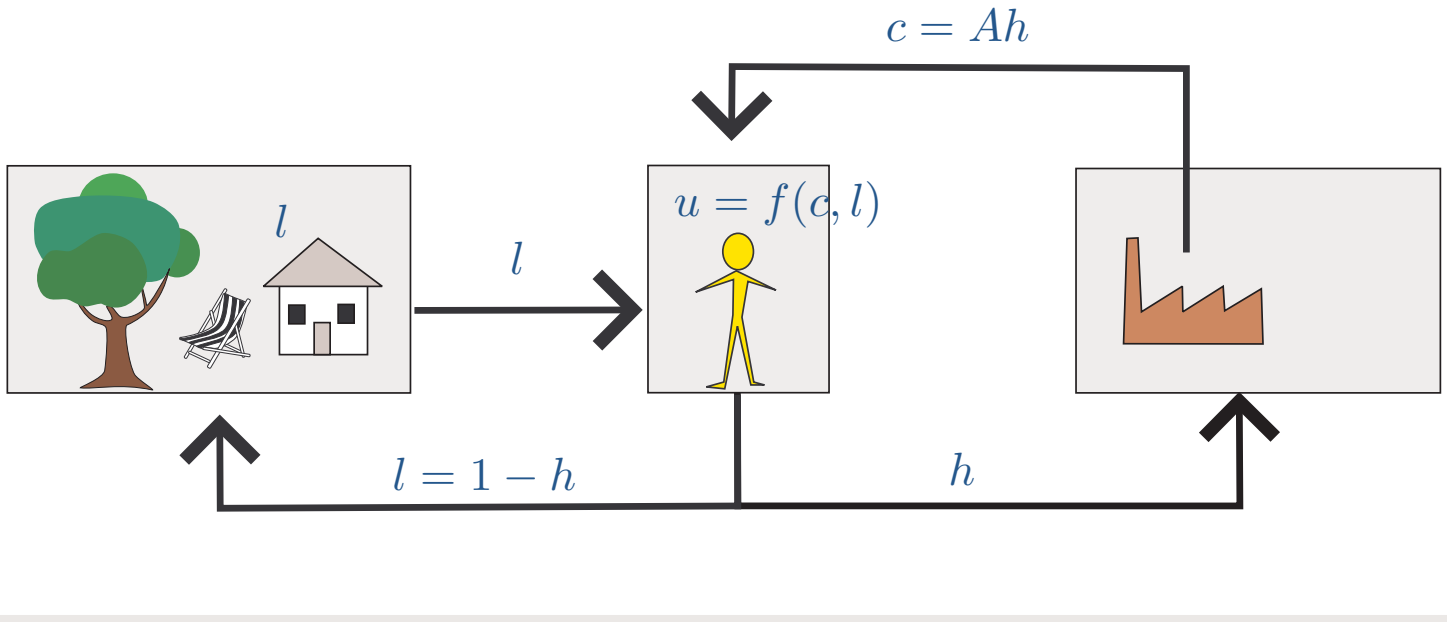
Building a conceptual model

Leisure



Building a conceptual model

Leisure

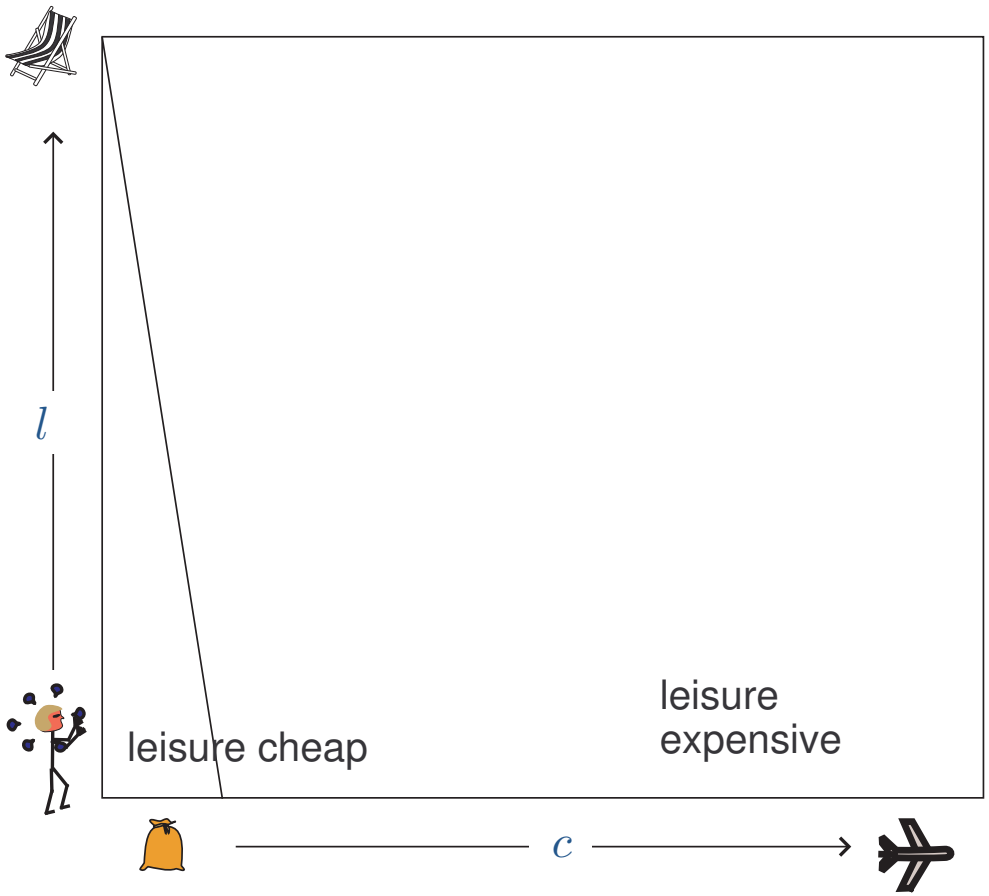


Building a conceptual model

Household budget constraints

Building a conceptual model

Household budget constraints



Building a conceptual model

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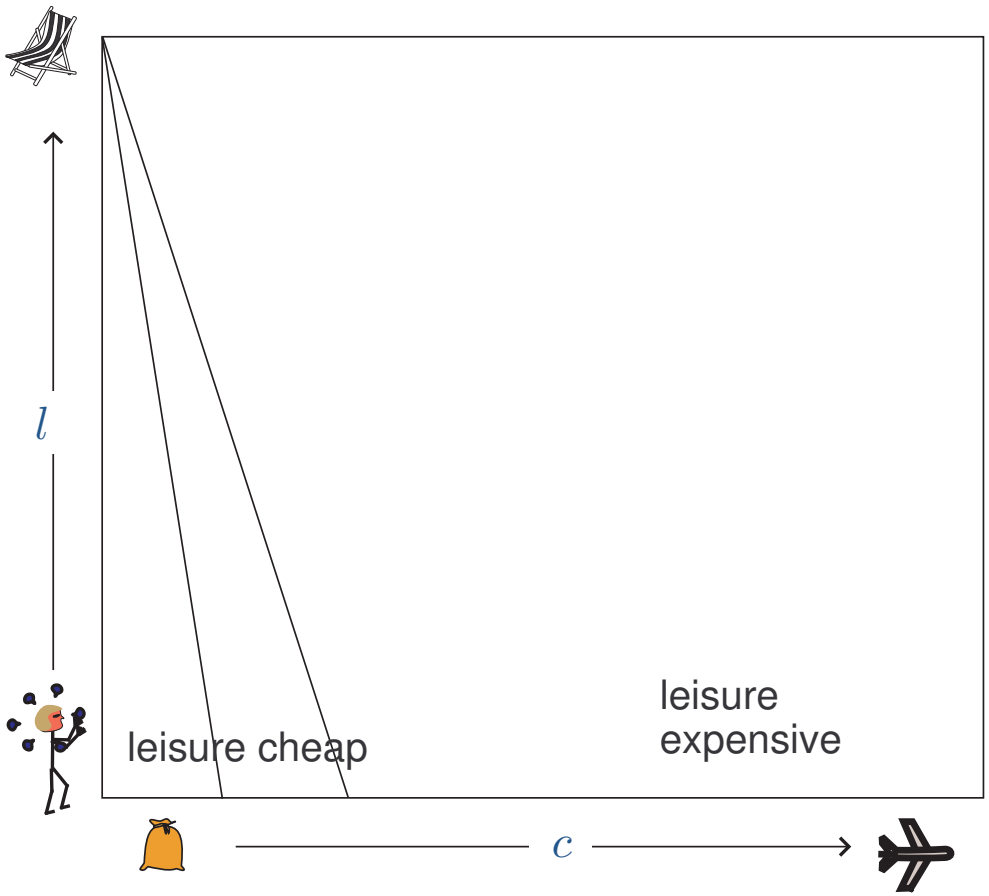

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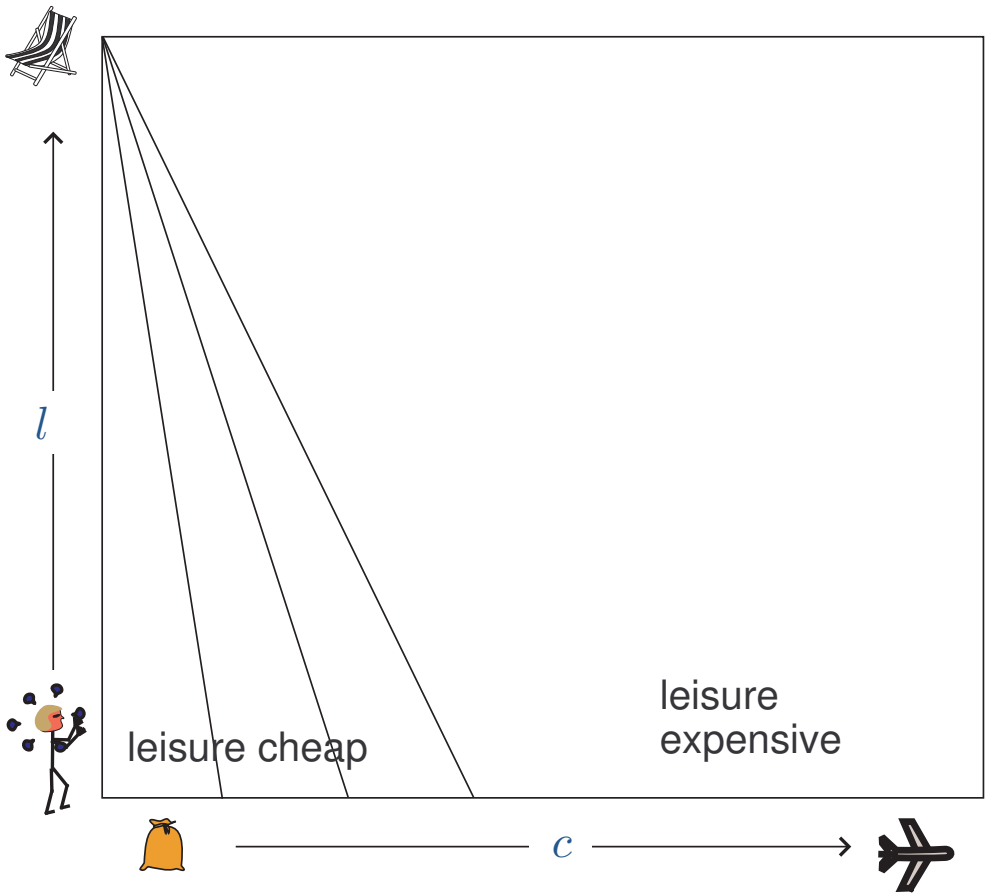

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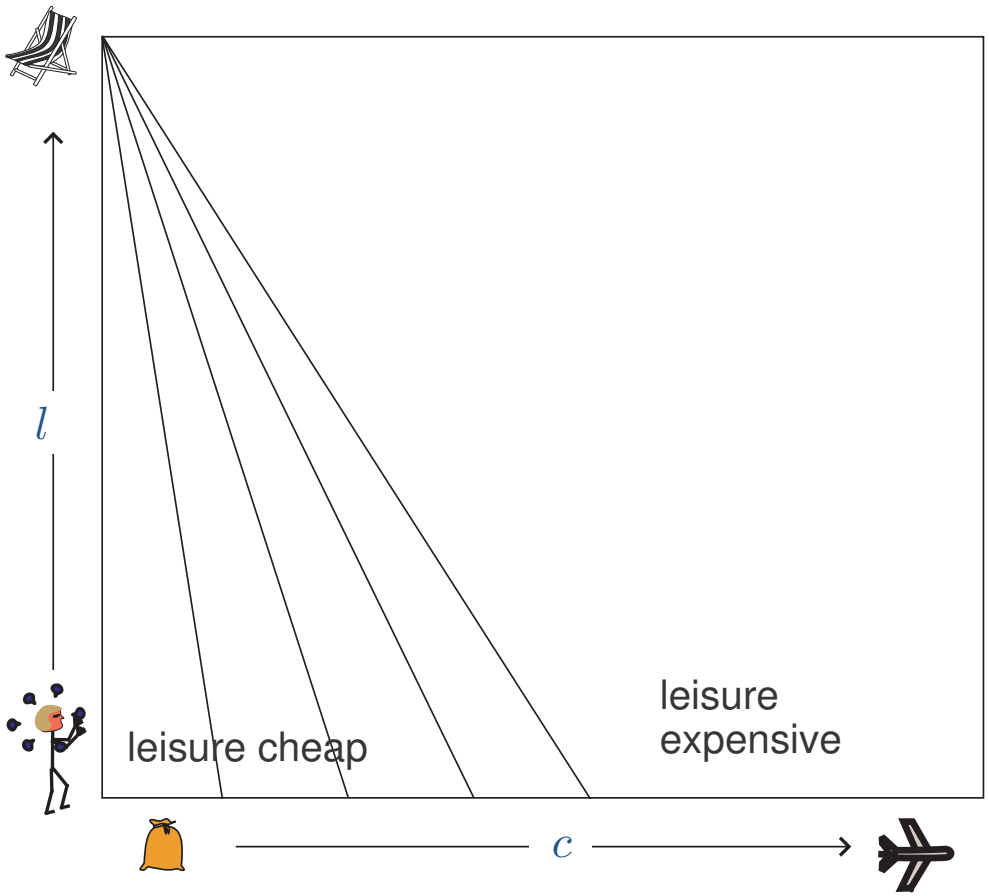

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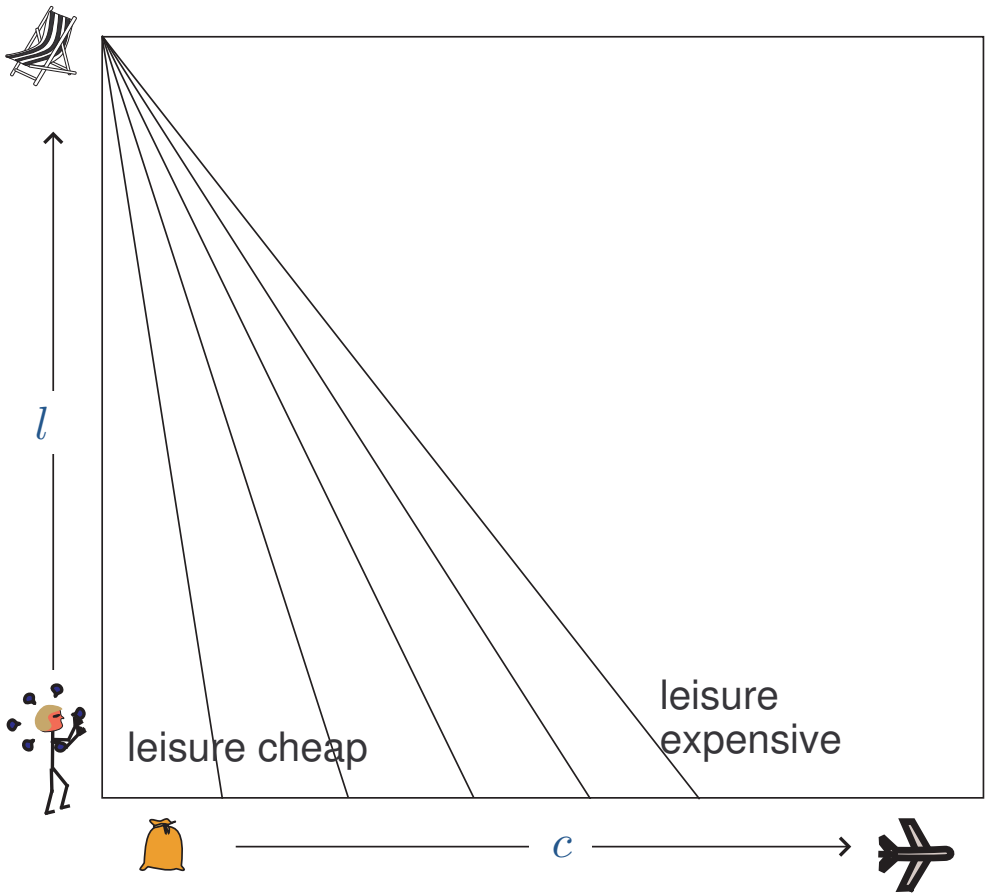

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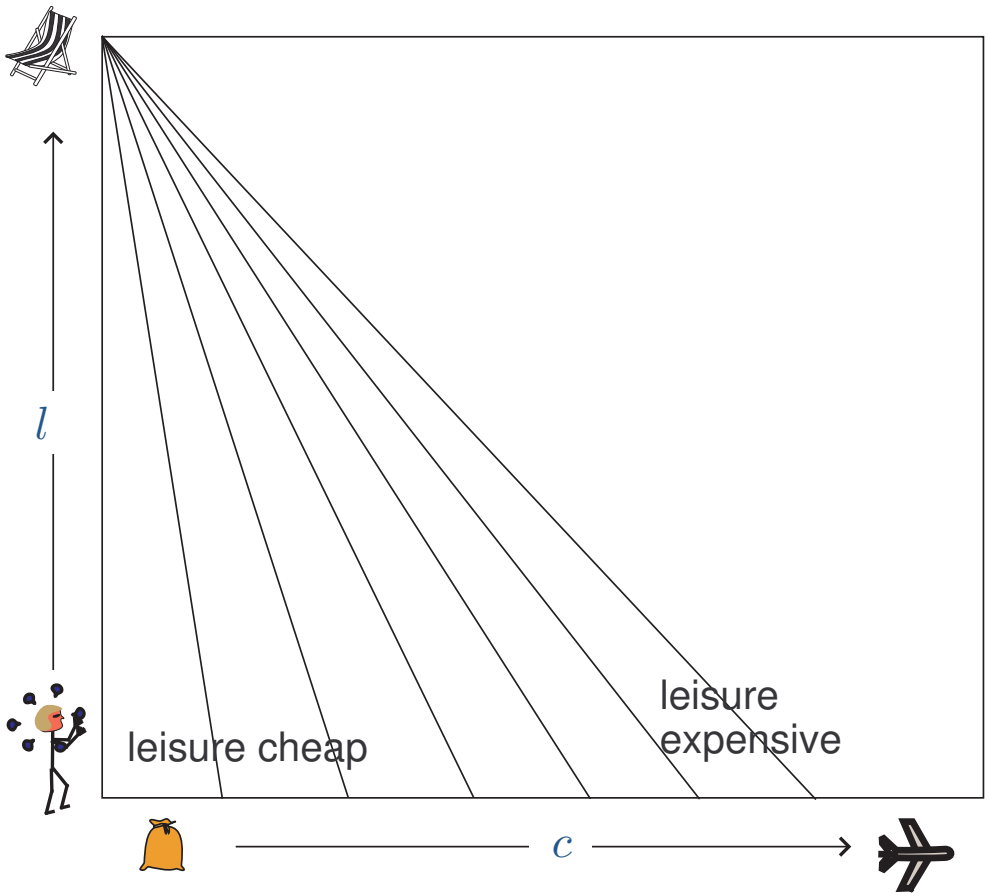

Building a conceptual model

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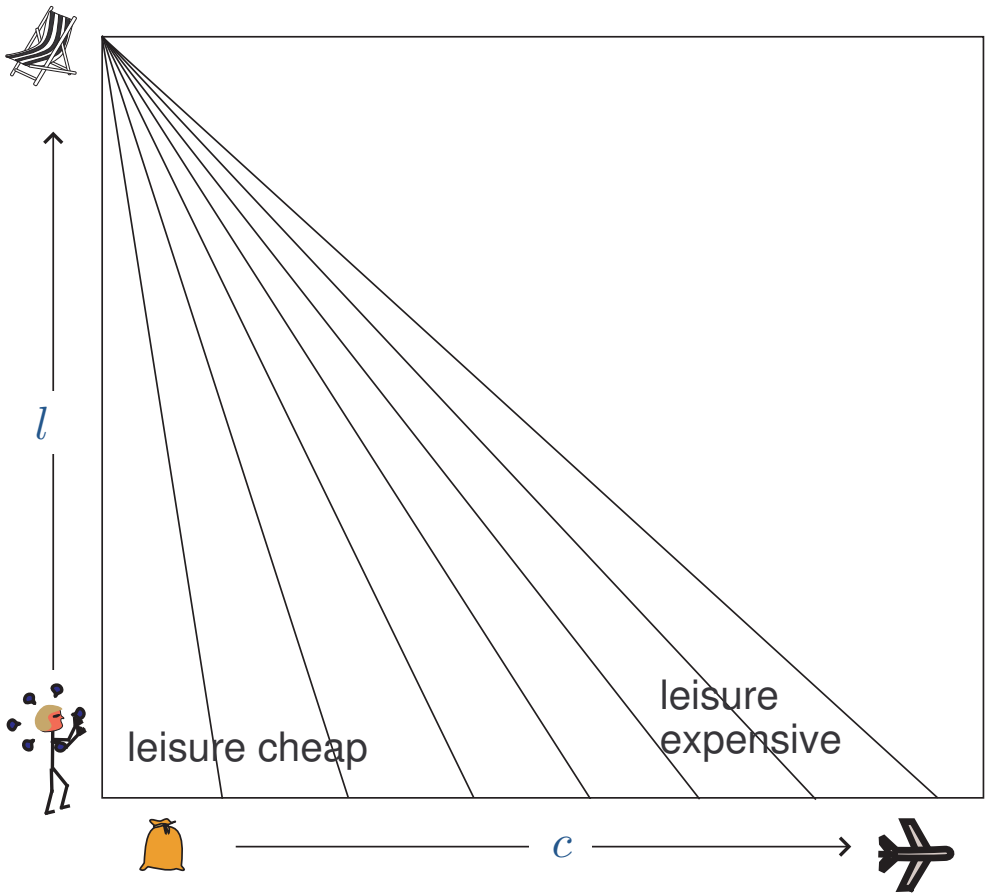

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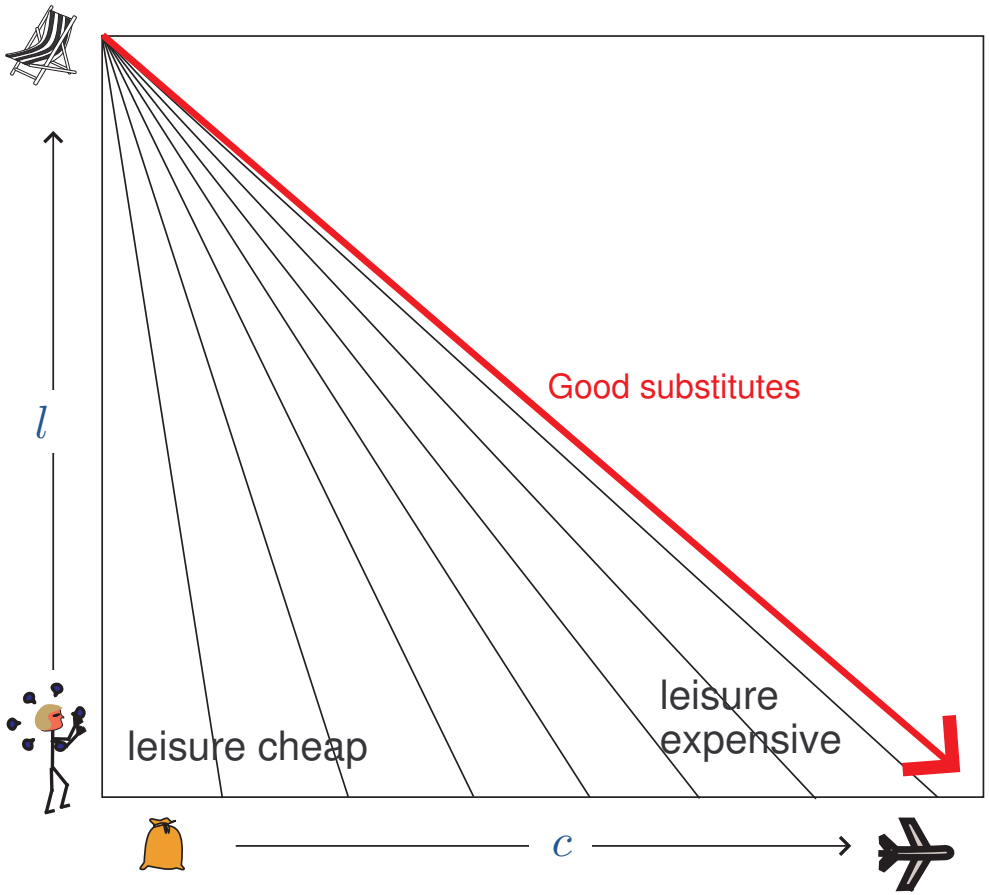

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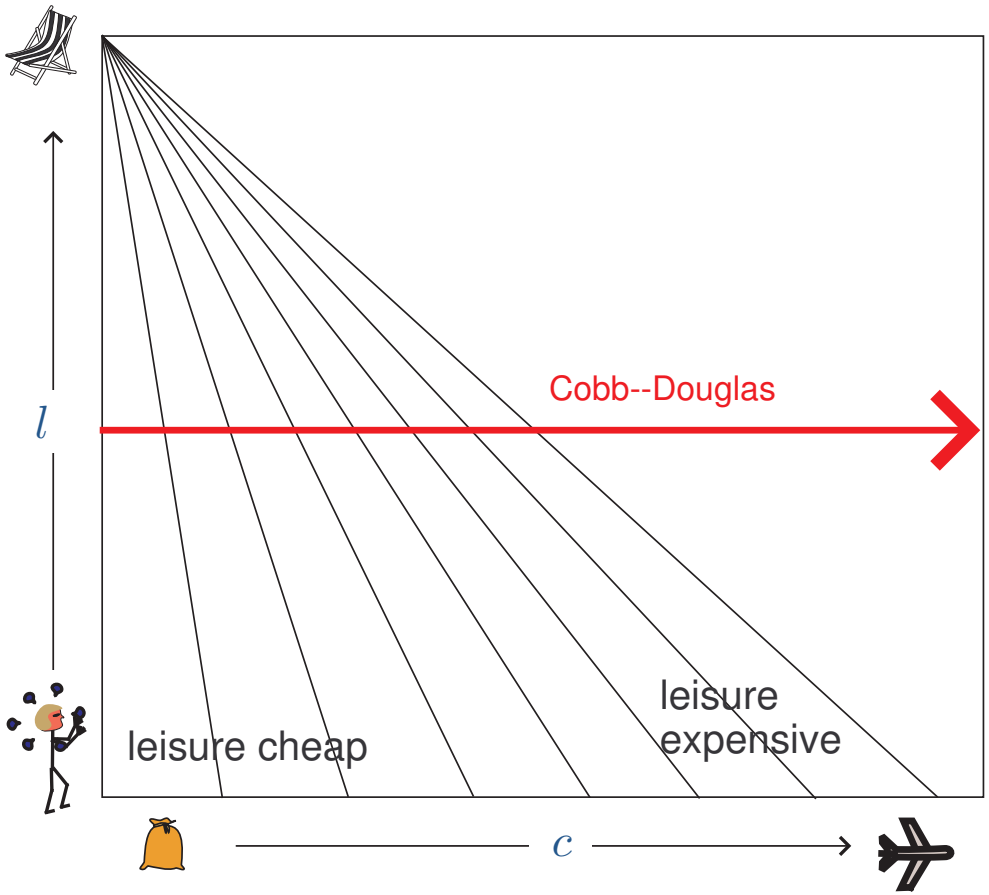

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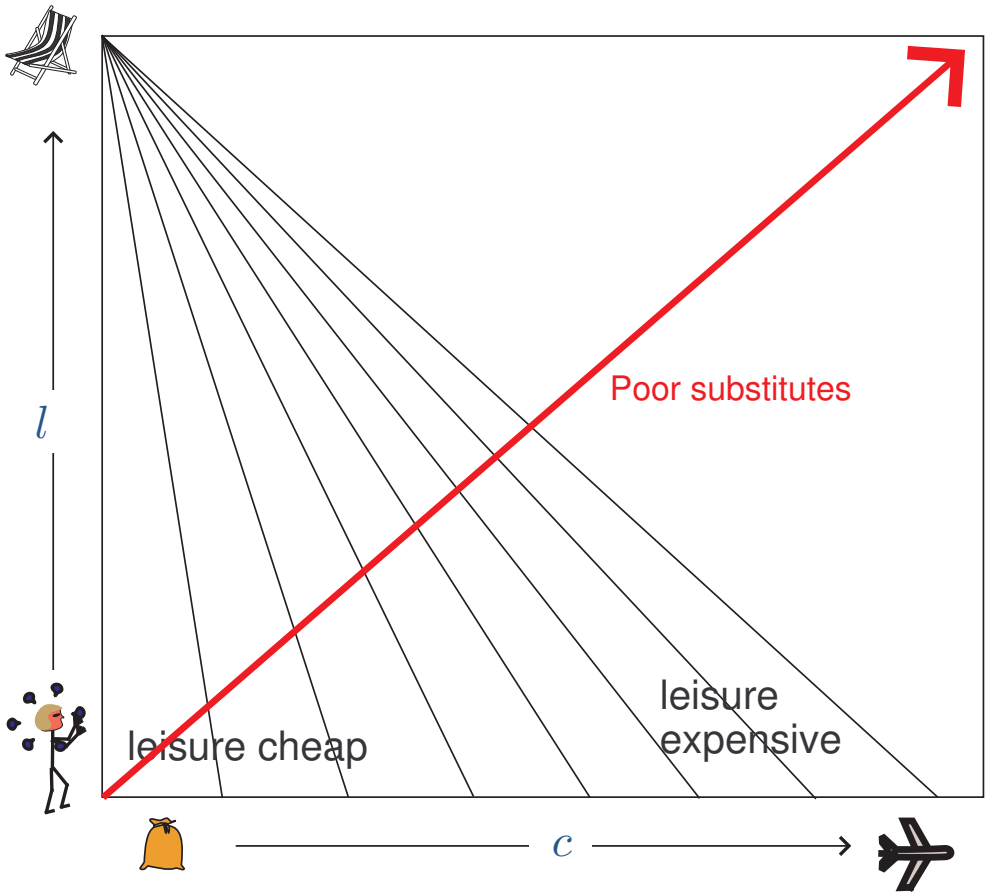
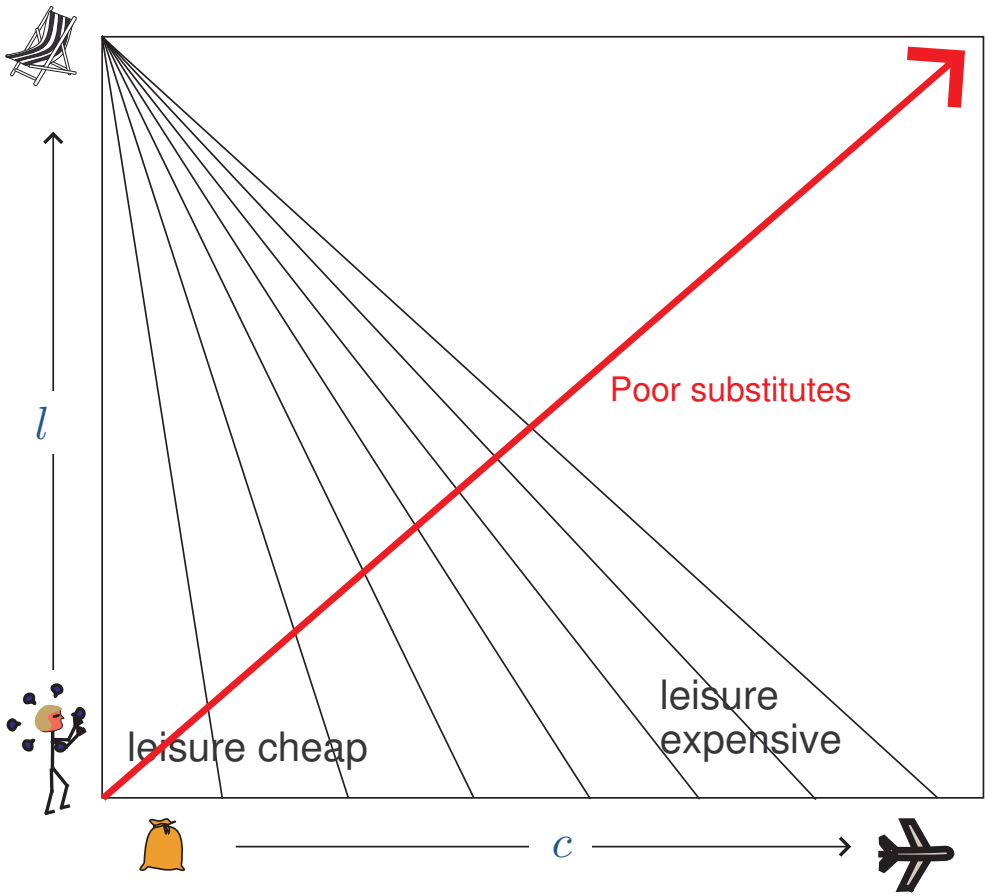


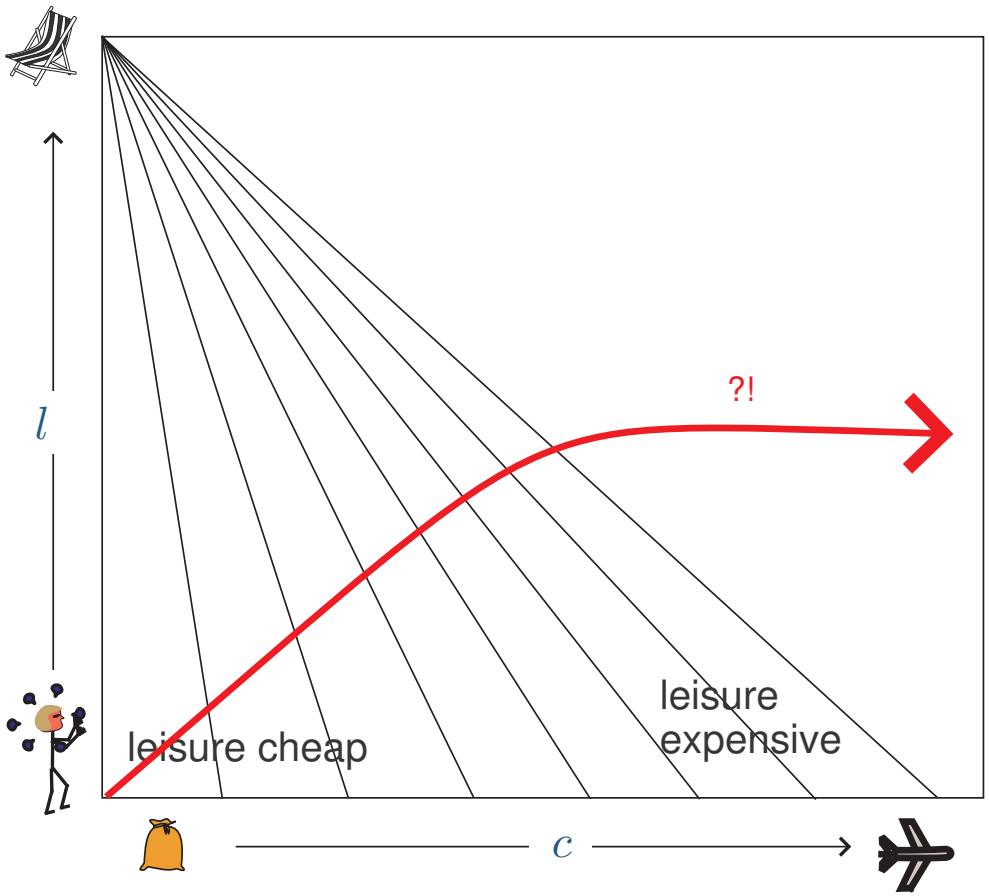
Building a conceptual model

But over the last 30 years ...



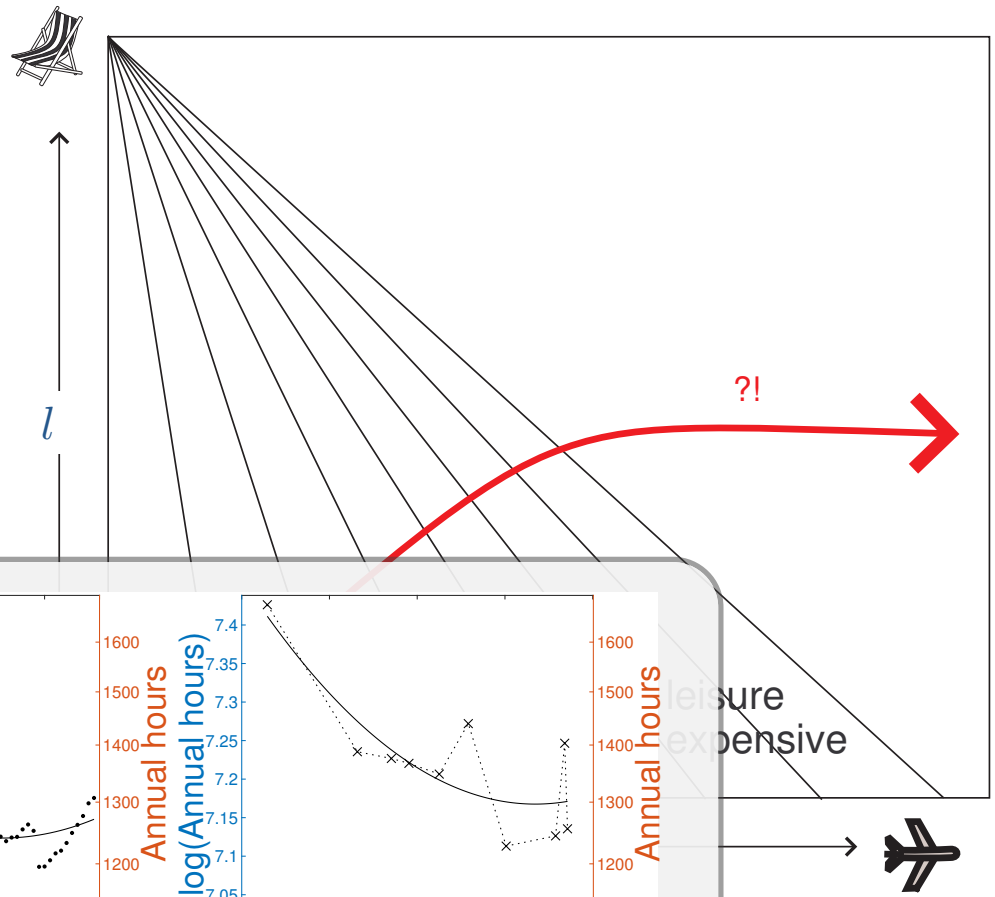
Building a conceptual model

But over the last 30 years ...



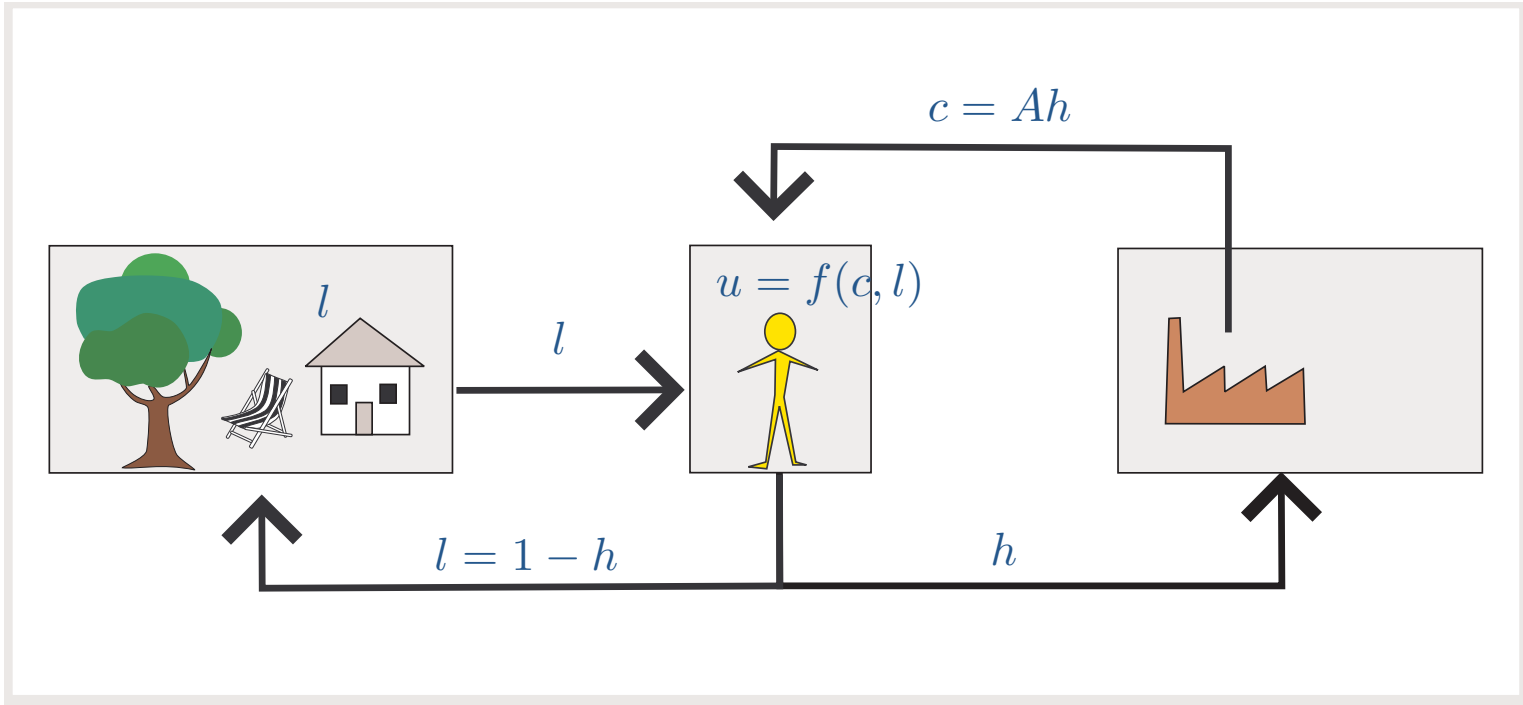
Building a conceptual model

But over the last 30 years . . .



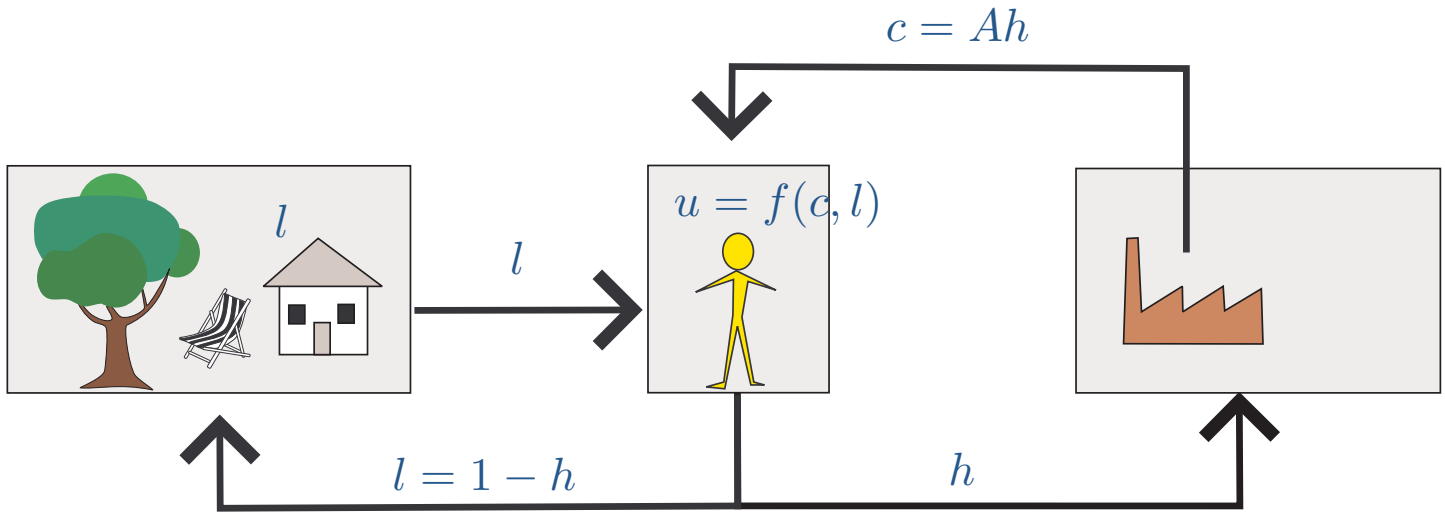
LHS, time-series for G7. RHS, cross section, 81 countries, popn deciles by productivity.

Building a conceptual model



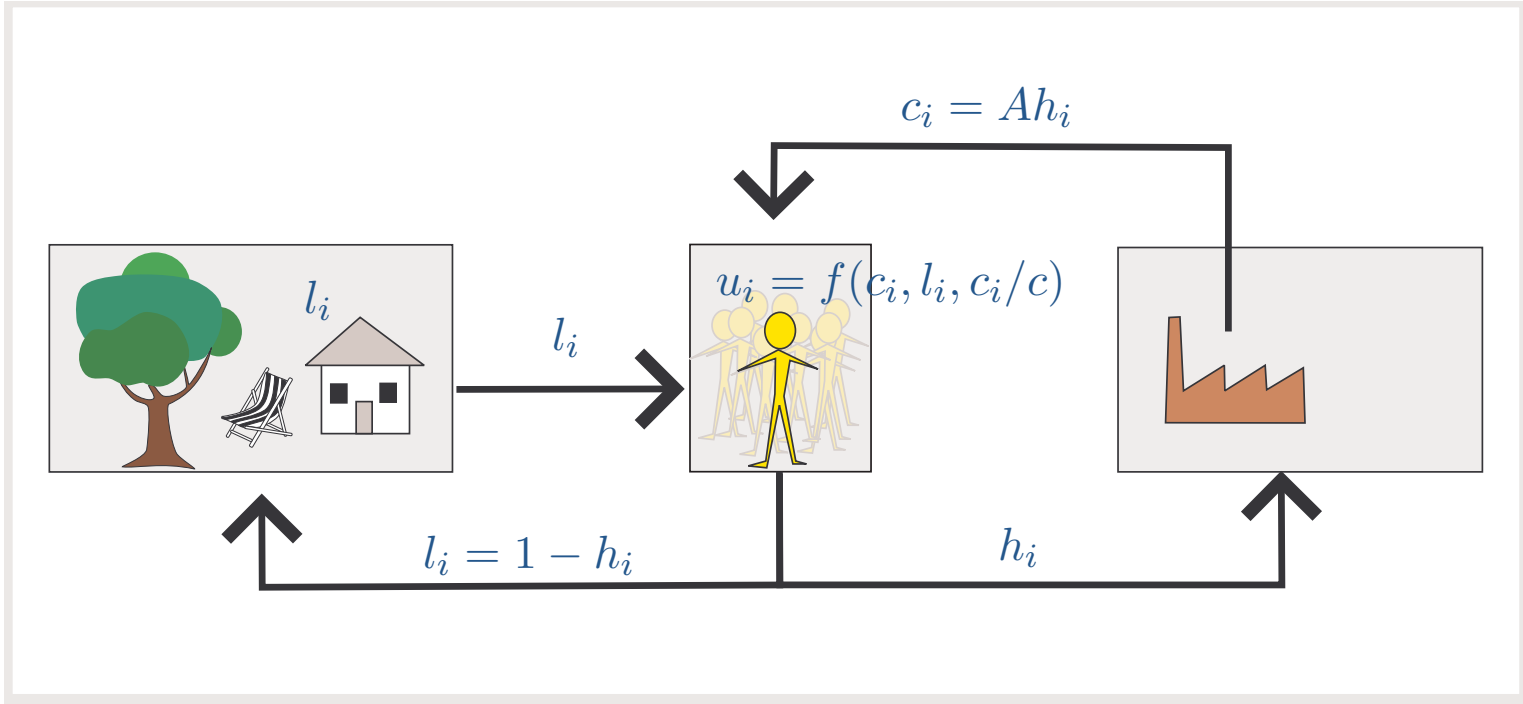
Building a conceptual model

Relative consumption



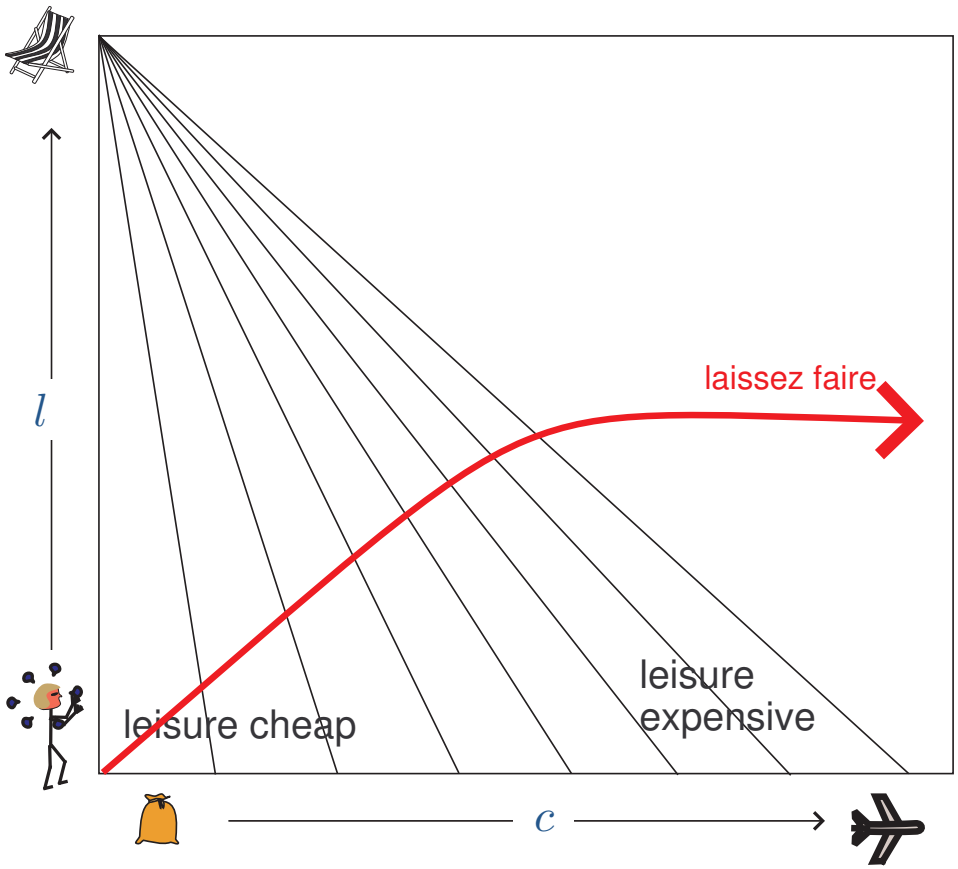
Building a conceptual model

Relative consumption



Building a conceptual model

Relative consumption



Building a conceptual model

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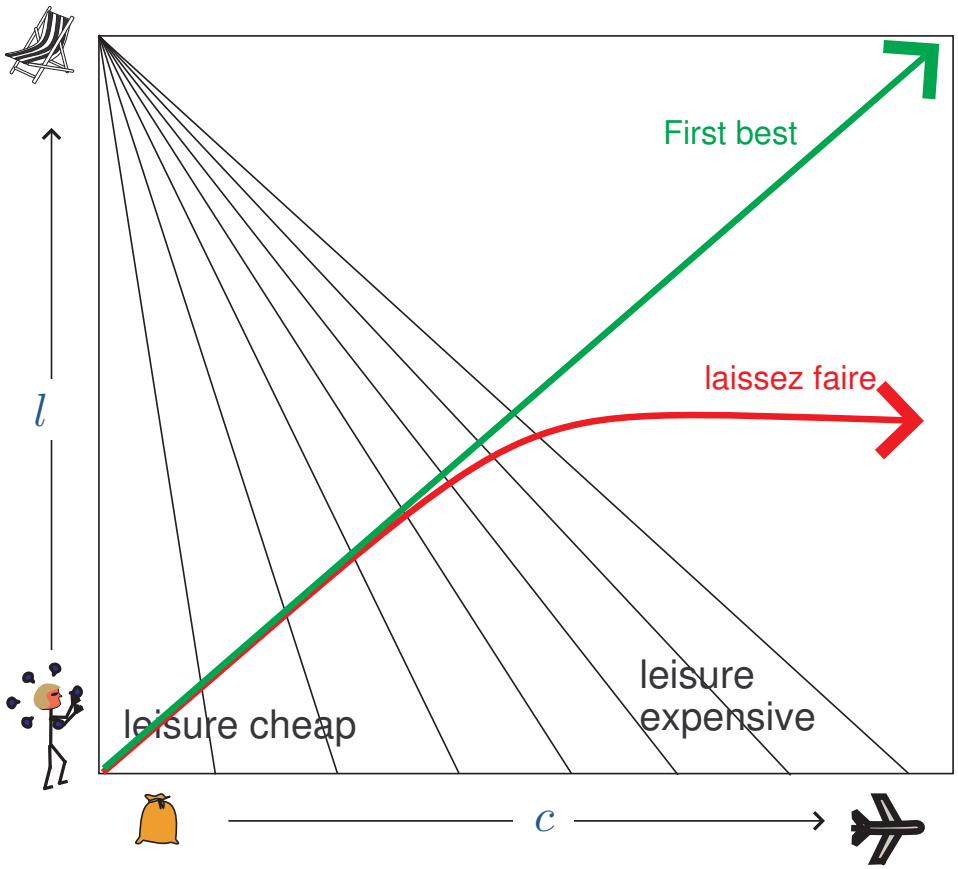
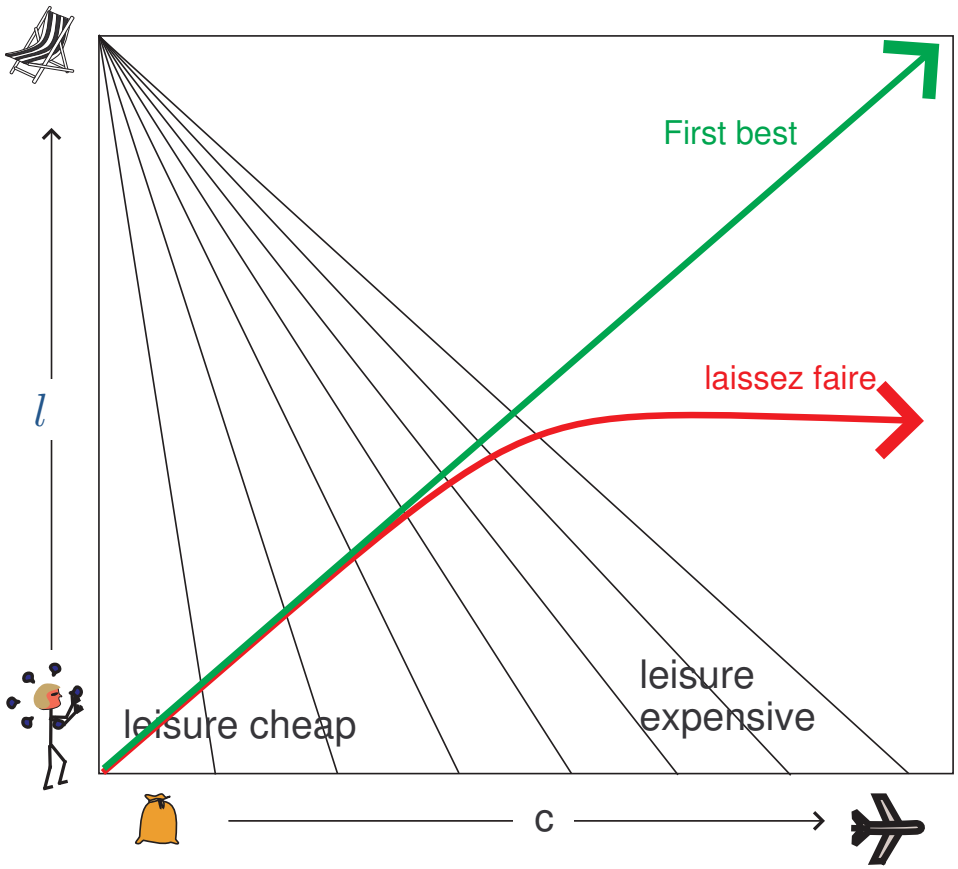


Building a conceptual model

Relative consumption



Implications:

- Labour supply;
- Optimal taxation;
- Environment;
- Consumption patterns.

Competition for status: Environment

Pollution flows: Scale, technique, composition

Pollution flows: Scale, technique, composition

There are three channels through which consumption externalities might affect environmental damages:

- Scale effect (labour supply);
- Technique effect (through stronger preference for environmental quality);
- Composition effect (shift to pollution-intensive goods).

I claimed that consumption externalities lead to oversupply of labour and hence a scale effect driving up pollution flows.

What about the technique effect?

Literature

Literature

Interaction between status effects and environmental policy

Not much but see for instance Howarth (1996) Ecol Econ.

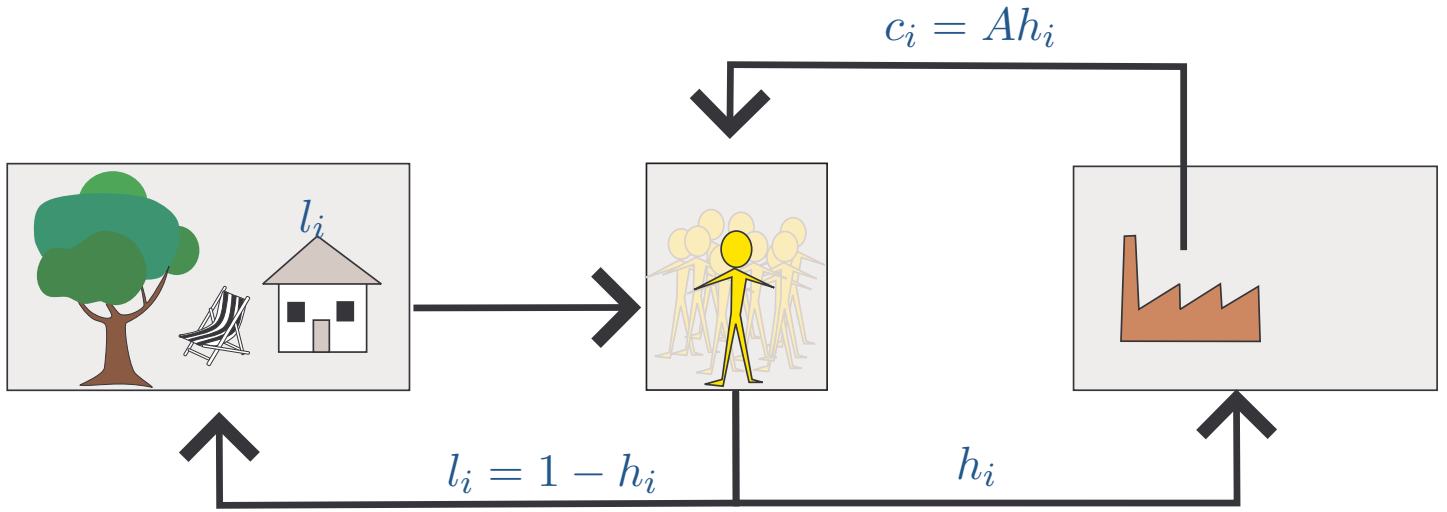
The model without composition effects

The model without composition effects

Back to the baseline model . . .

The model without composition effects

Back to the baseline model . . .

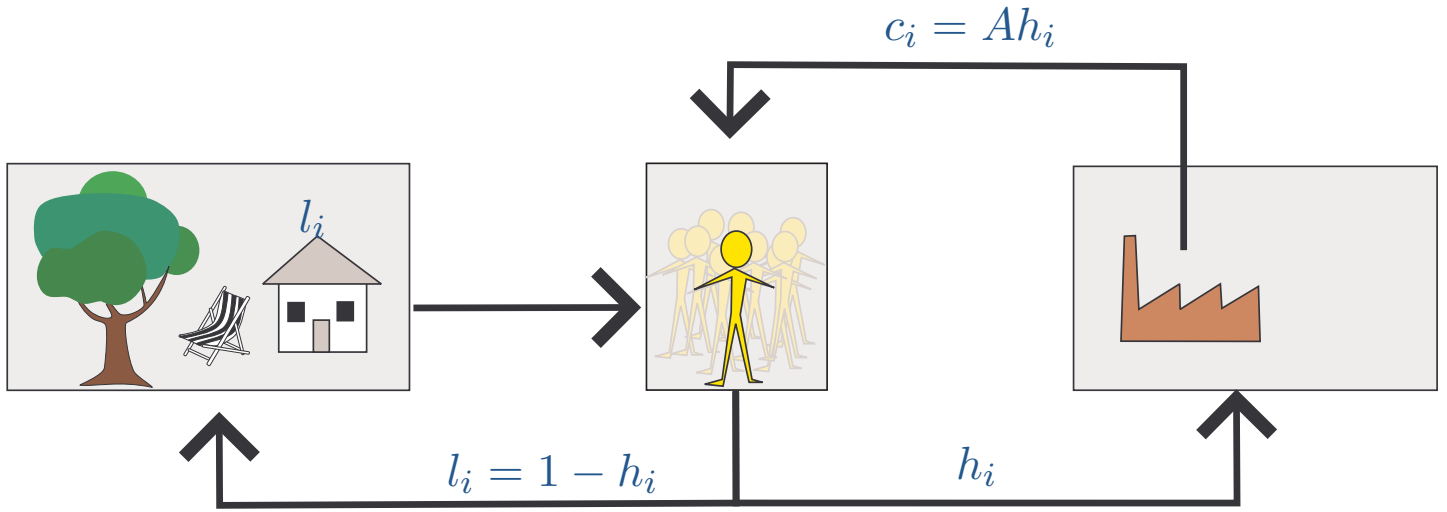


$$c_i = Ah_i$$

$$u_i = \left[l_i^{(\epsilon-1)/\epsilon} + \beta_c c_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} \right]^{\epsilon/(\epsilon-1)}$$

The model without composition effects

Back to the baseline model . . . and add resource use and associated pollution flows . . .



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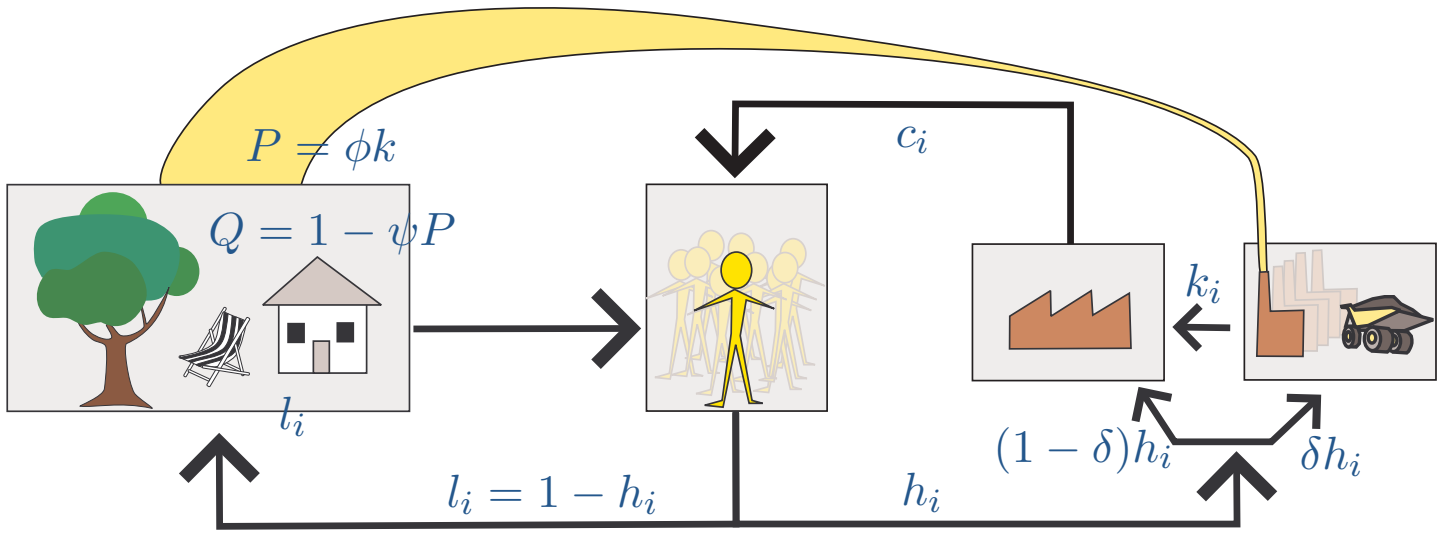
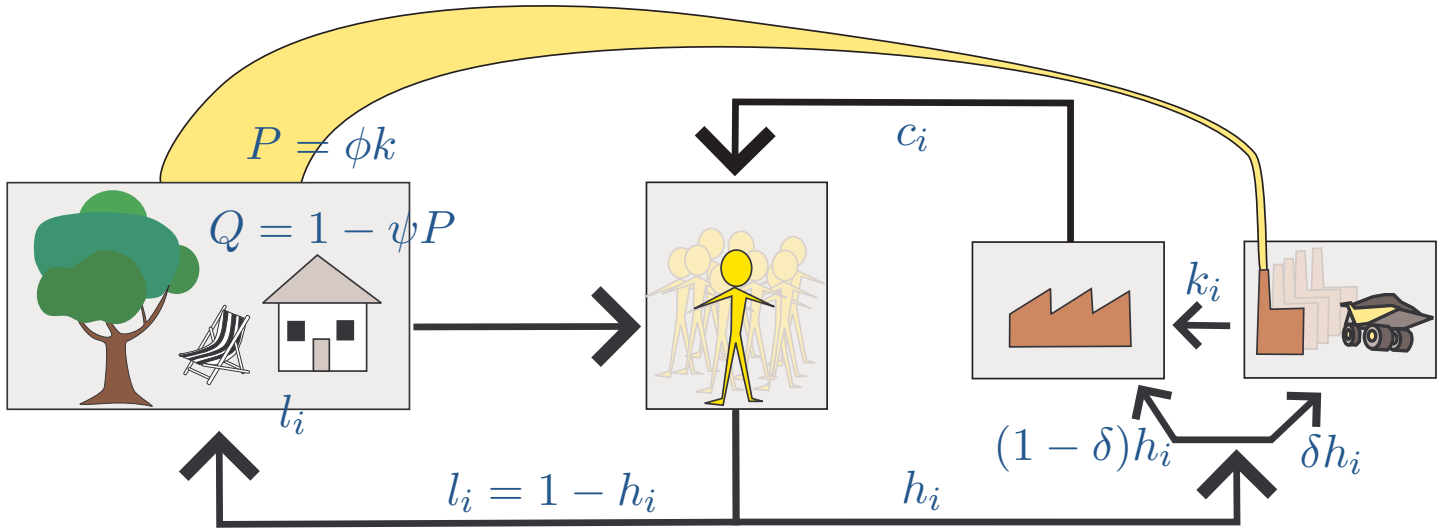


$$c = Ah\left[(1-\gamma)(1-\delta)^{(\eta-1)/\eta} + \gamma\delta^{(\eta-1)/\eta}\right]^{\eta/(\eta-1)}$$

$$u_i = \left[l_i^{(\epsilon-1)/\epsilon} + \beta_c c_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon}\right]^{\epsilon/(\epsilon-1)}$$

The model without composition effects

Back to the baseline model . . . and add resource use and associated pollution flows . . . but stick with a single good.



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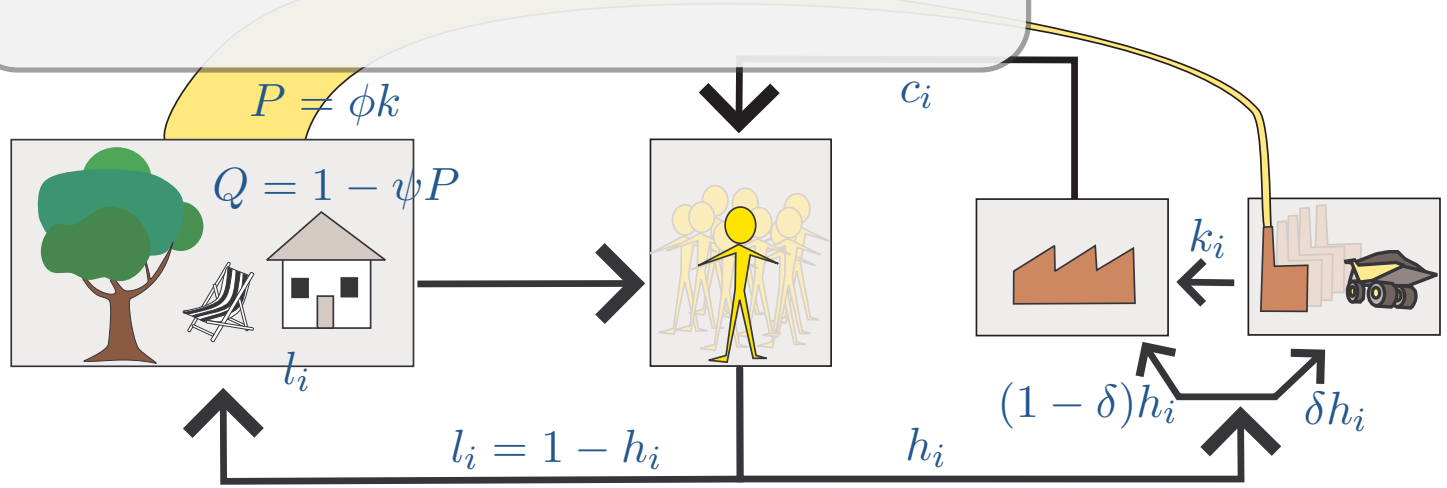
The model without composition effects

- Final goods are produced using labour $(1-\delta)h$ and energy k, where $k = A\delta h$.
- The production function is CES, elasticity η.

Back to the baseline model . . . and add resource use and associated pollution flows . . . but stick with a single good.



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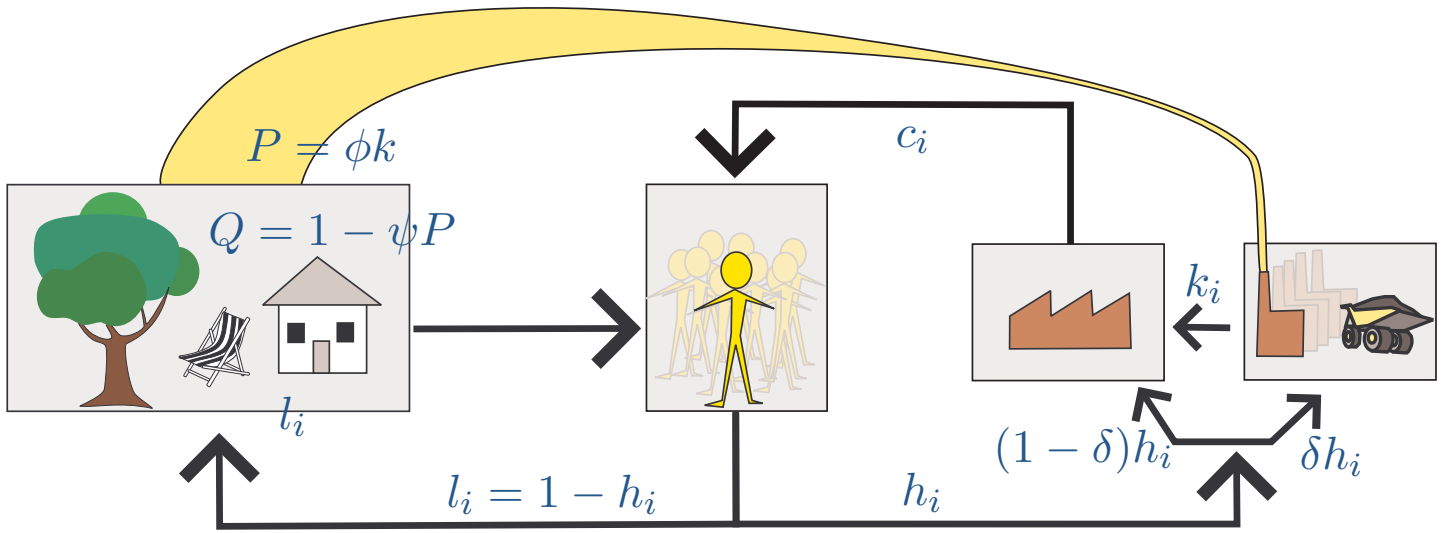
The model without composition effects

- Pollution is linear in energy use.

Back to the baseline model . . . and add resource use and associated pollution flows . . . but stick with a single good.



$$c = Ah\left[(1-\gamma)(1-\delta)^{(\eta-1)/\eta} + \gamma\delta^{(\eta-1)/\eta}\right]^{\eta/(\eta-1)}$$

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Social planner (internal):

$$\mathcal{L}_P = \left\{ \beta_c c^{(\epsilon-1)/\epsilon} + l^{(\epsilon-1)/\epsilon} + \beta_s + \beta_q (1-\psi P)^{(\epsilon-1)/\epsilon} \right\}^{\epsilon/(\epsilon-1)}$$
$$+ \mu \left[A(1-l) \left(1-\delta\right)^{1-\gamma} \delta^{\gamma} - c \right] + \nu \left\{ P - \delta\phi A(1-l) \right\};$$

Social planner (internal):

$$\mathcal{L}_P = \left\{ \beta_c c^{(\epsilon-1)/\epsilon} + l^{(\epsilon-1)/\epsilon} + \beta_s + \beta_q (1-\psi P)^{(\epsilon-1)/\epsilon} \right\}^{\epsilon/(\epsilon-1)} + \mu \left[A(1-l)\left(1-\delta\right)^{1-\gamma} \delta^{\gamma} - c \right] + \nu \left\{ P - \delta\phi A(1-l) \right\};$$

Regulated market (internal):

$$\mathcal{L}_M = \left\{ \beta_c {c_i}^{(\epsilon-1)/\epsilon} + l_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon} \right\}^{\epsilon/(\epsilon-1)} + \mu \left\{ w(1-l_i) + \sigma c + \tau P - (1+\sigma) c_i \right\}.$$

Social planner (internal):

$$\mathcal{L}_P = \left\{ \beta_c c^{(\epsilon-1)/\epsilon} + l^{(\epsilon-1)/\epsilon} + \beta_s + \beta_q (1-\psi P)^{(\epsilon-1)/\epsilon} \right\}^{\epsilon/(\epsilon-1)} + \mu \left[A(1-l)\,(1-\delta)^{1-\gamma}\,\delta^{\gamma} - c \right] + \nu \left\{ P - \delta\phi A(1-l) \right\};$$

Regulated market (internal):

$$\mathcal{L}_M = \left\{ \beta_c {c_i}^{(\epsilon-1)/\epsilon} + l_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon} \right\}^{\epsilon/(\epsilon-1)} + \mu \left\{ w(1-l_i) + \sigma c + \tau P - (1+\sigma) c_i \right\}.$$

Proposition 1. *Optimal regulation:*

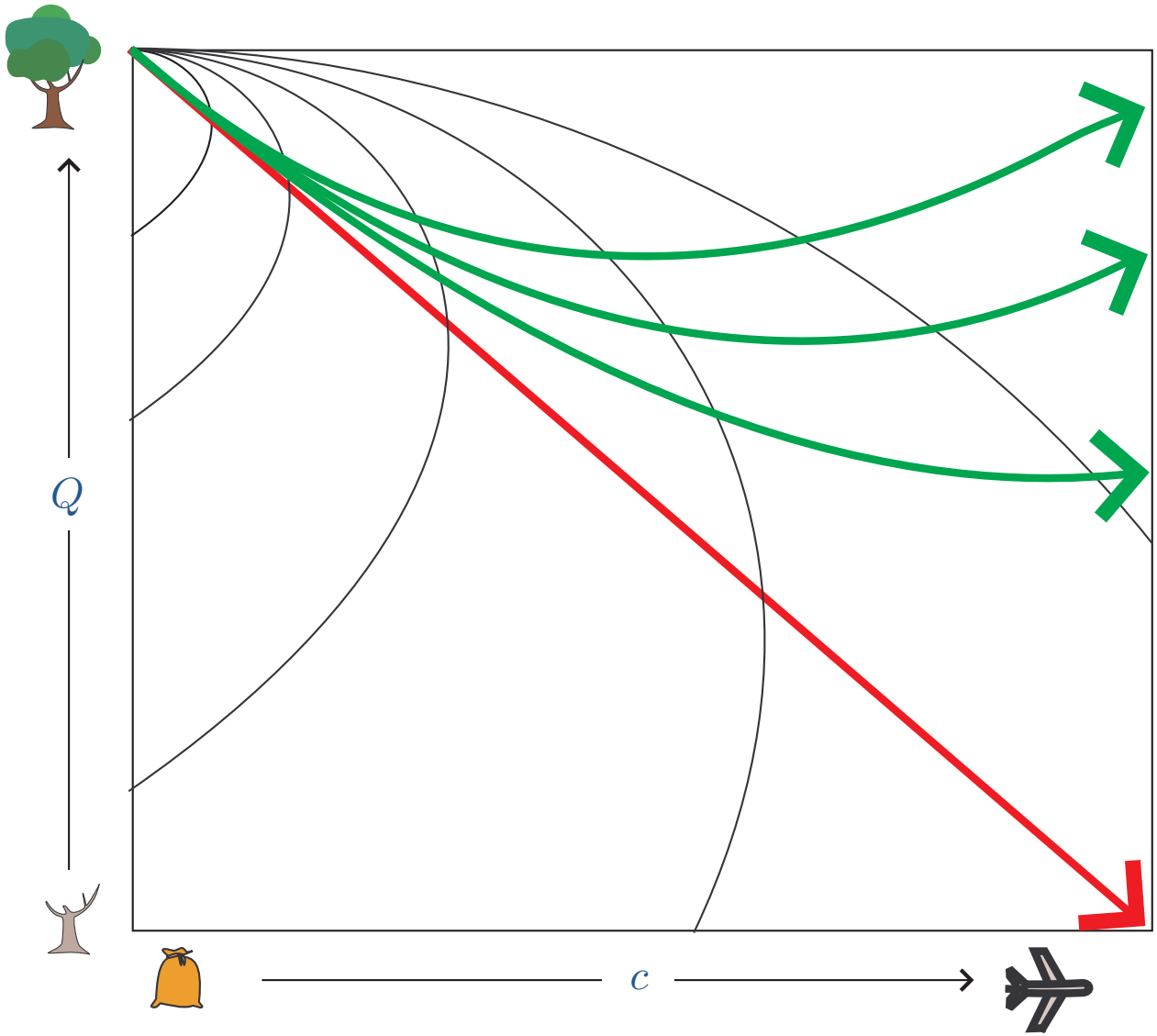
$$\sigma^* = \frac{\beta_s}{\beta_c} (c^*)^{(1-\epsilon)/\epsilon}$$

and

$$\tau^* = \frac{\beta_q}{\beta_c} \psi \left(\frac{c^*}{1-\psi P^*} \right)^{1/\epsilon}.$$

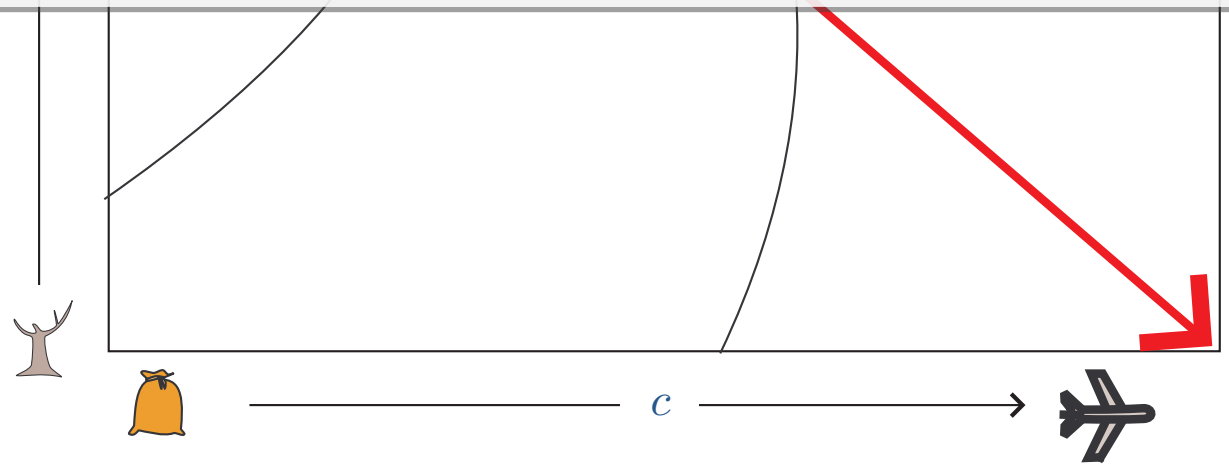
Interaction?

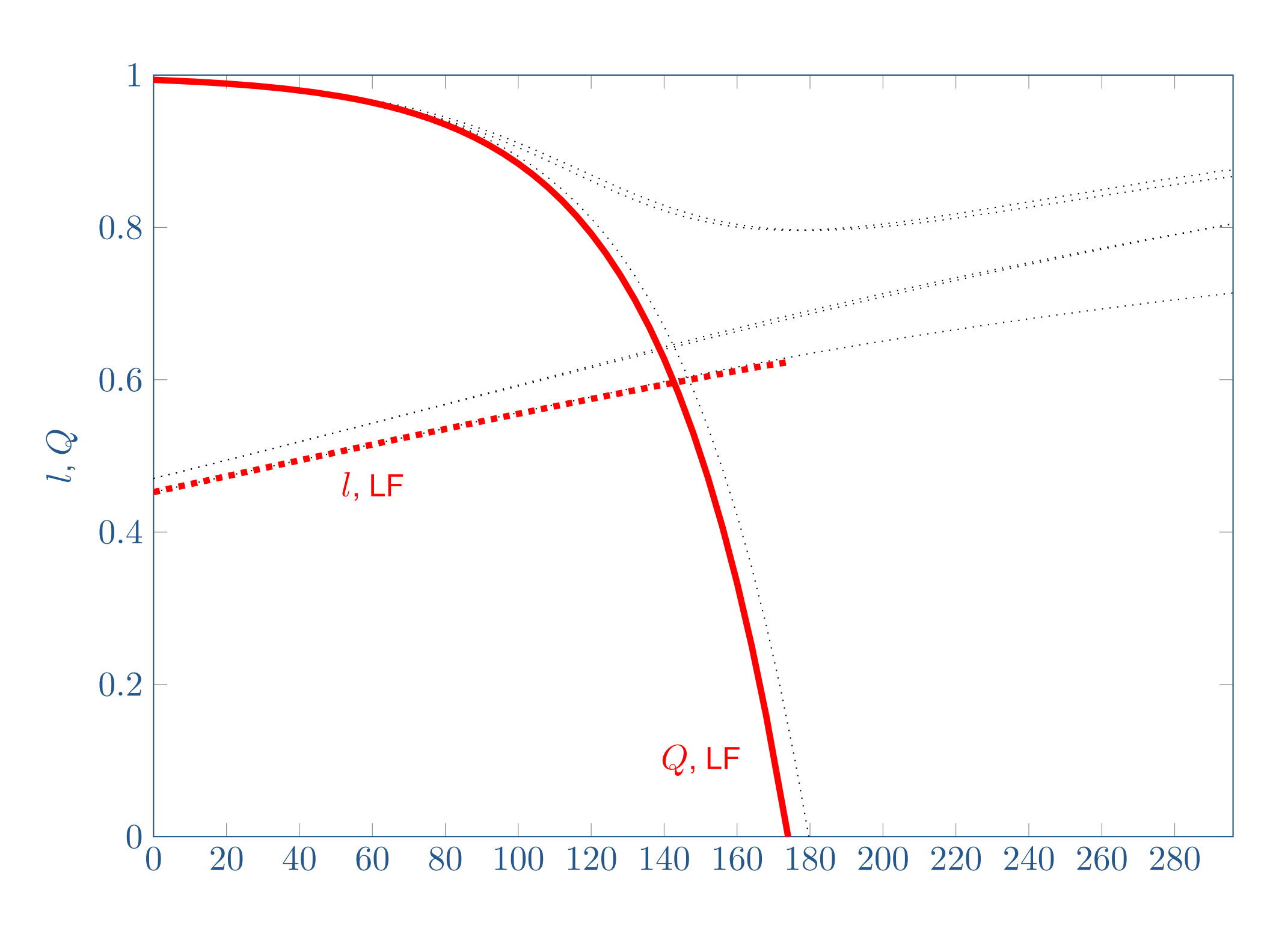
Interaction?



Interaction?

- Households trade off environmental quality and consumption.
- Household flexibility is captured by ϵ: low ϵ, low flexibility.
- Firm flexibility is captured by η, the elasticity of substitution between labour and energy; low η, low flexibility.
- If $\epsilon < \eta$ then inflexible consumers demand, and get, higher environmental quality as their income increases. *Whether or not they oversupply labour!*

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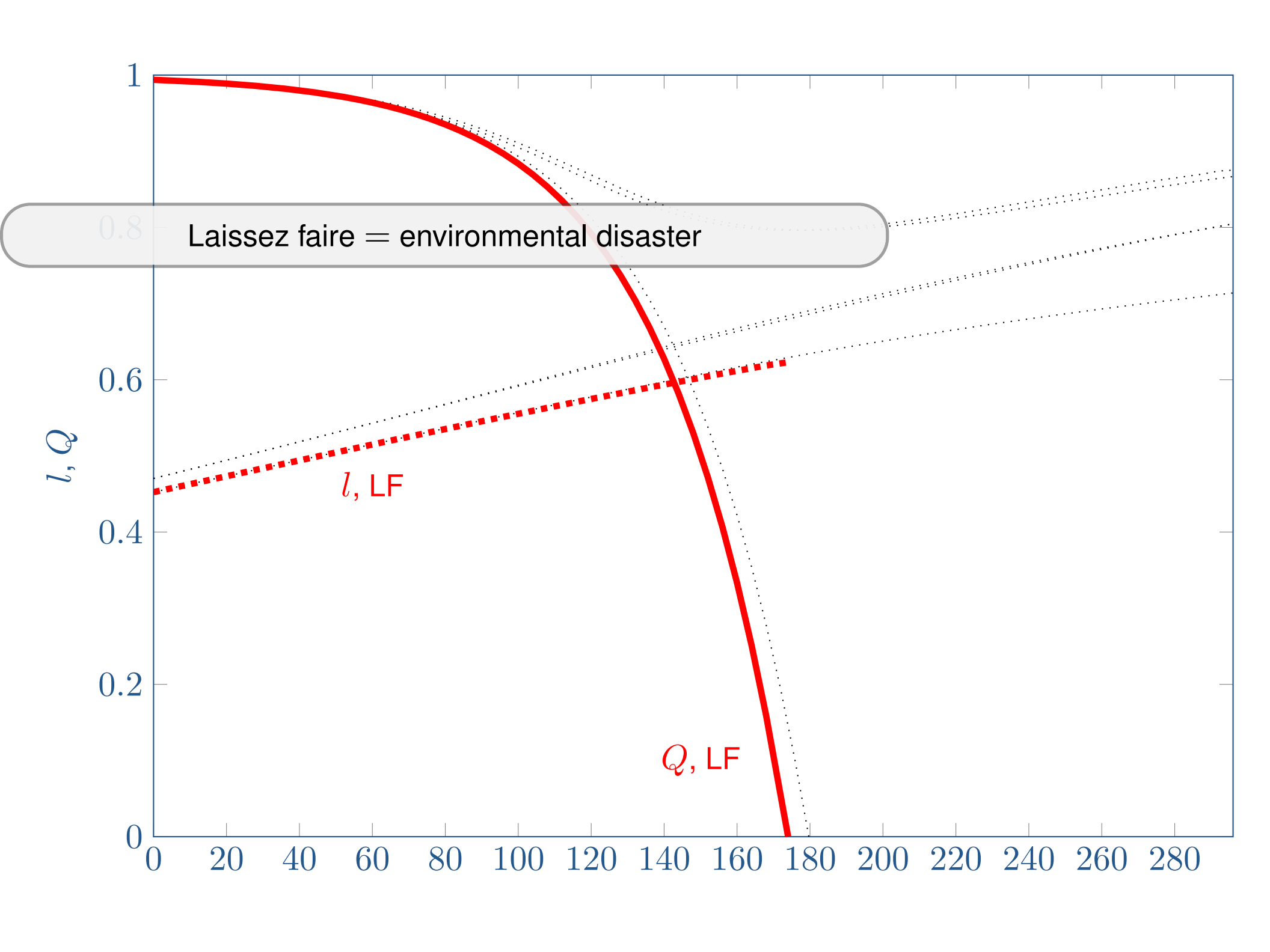
Laissez faire = environmental disaster
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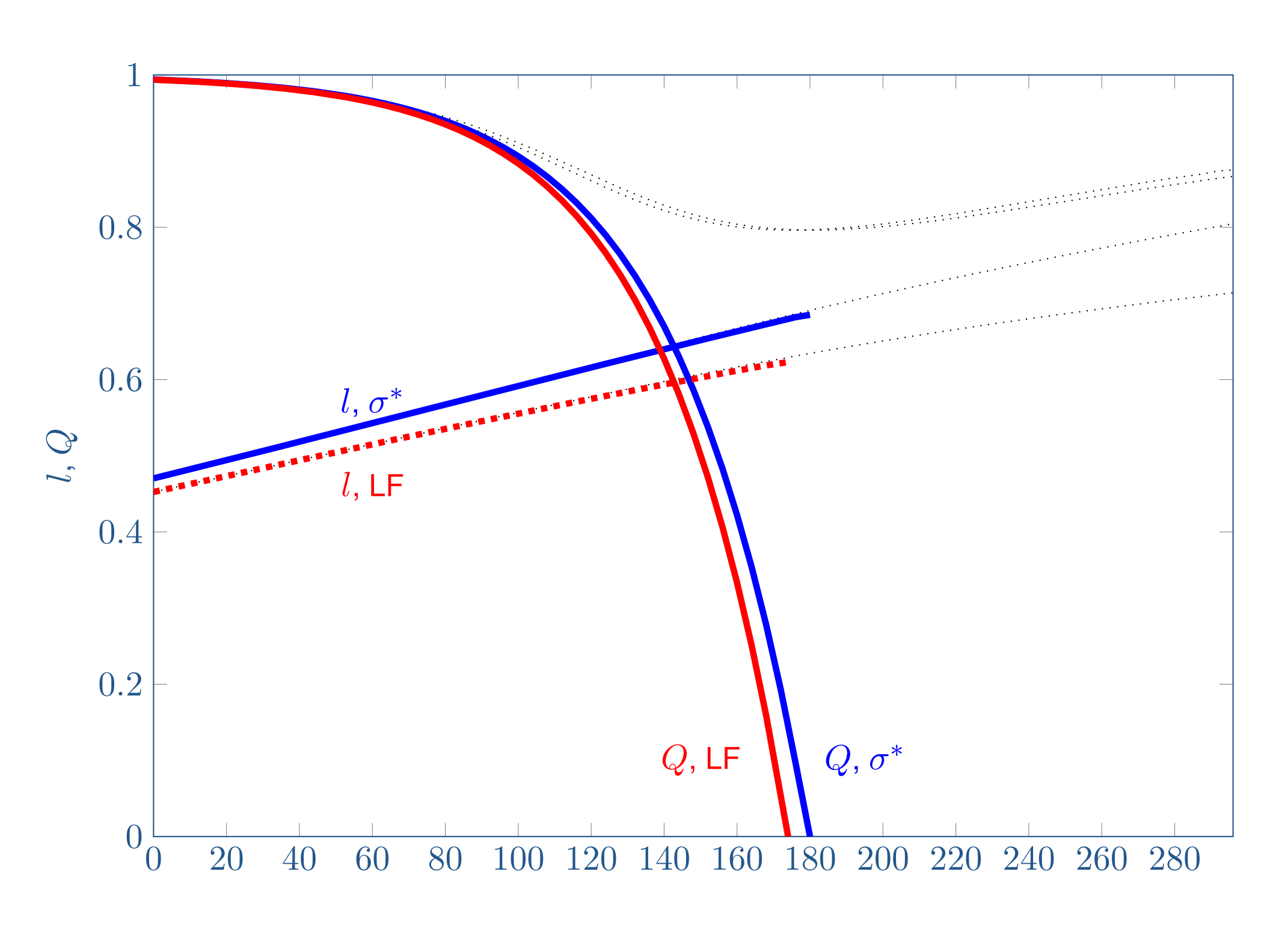
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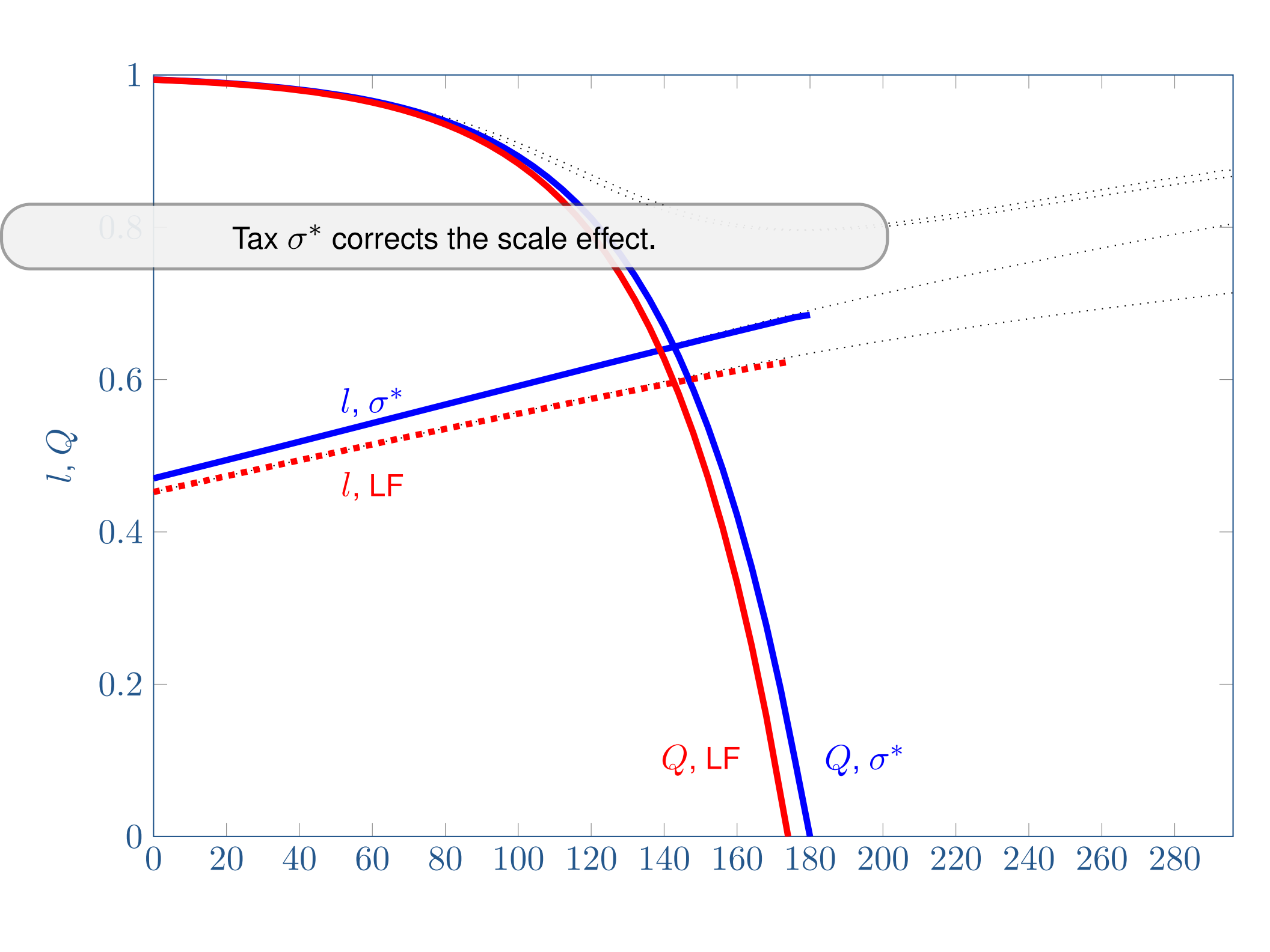
Tax σ^* corrects the scale effect.
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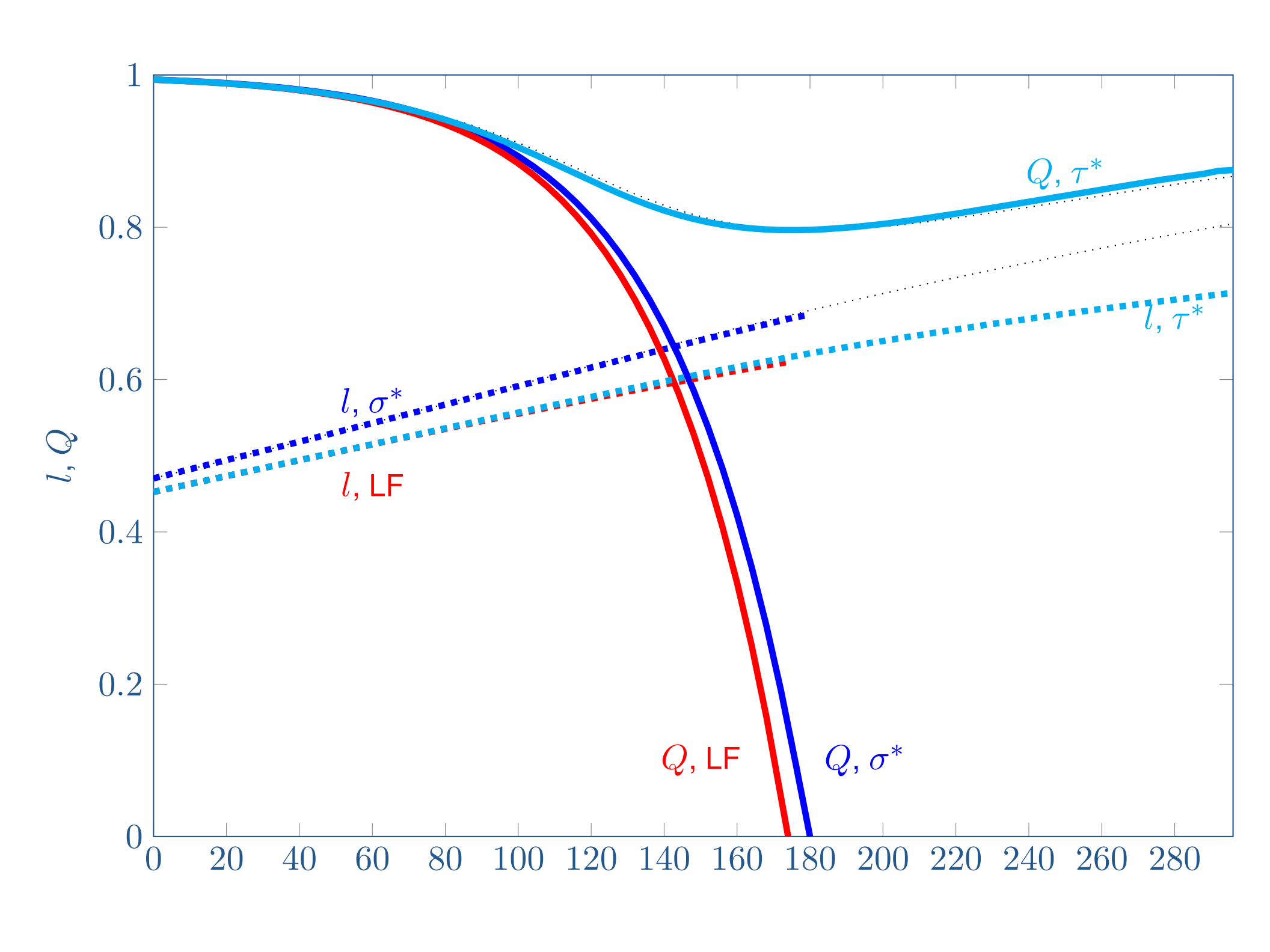
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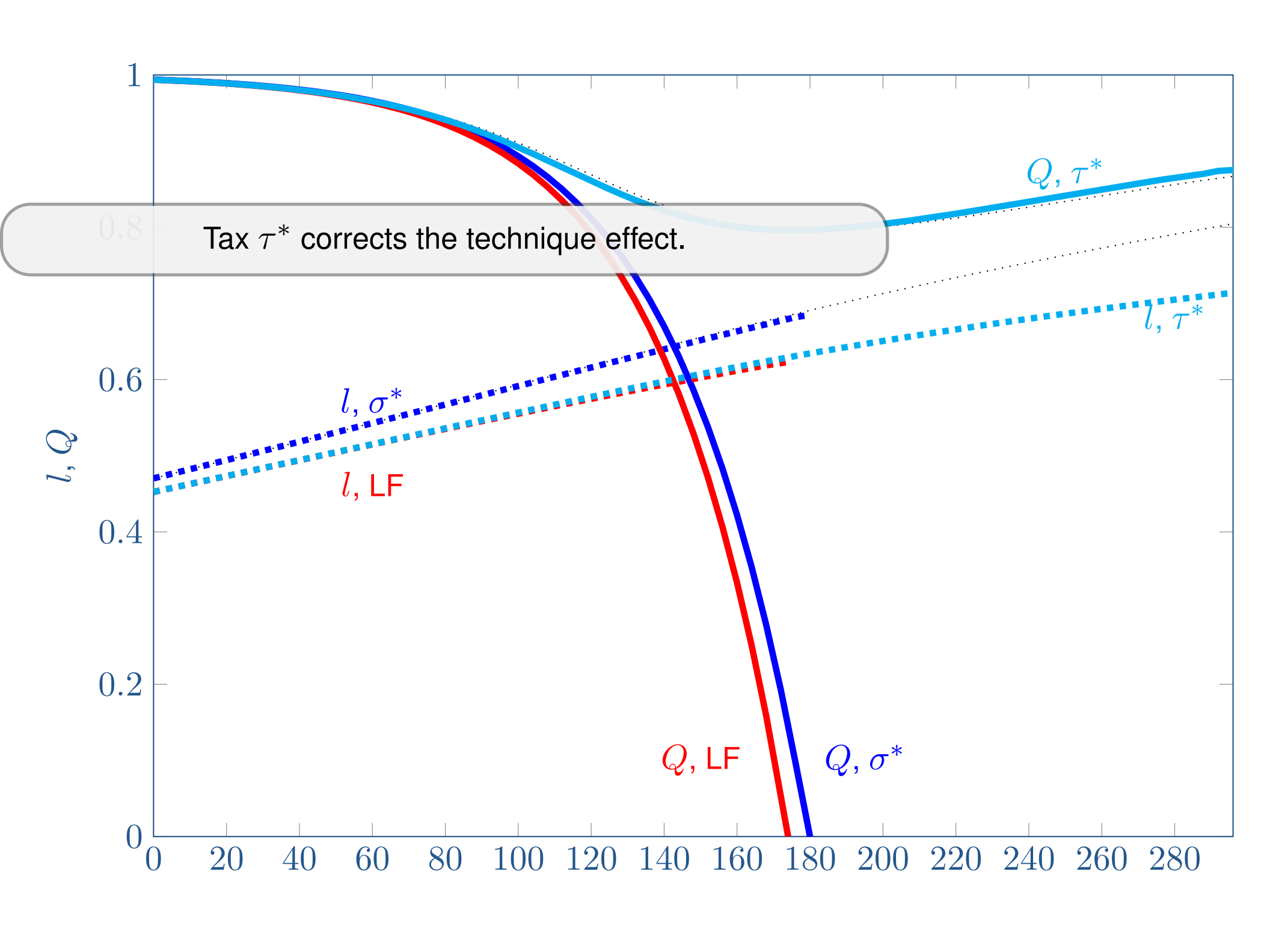
Tax τ^* corrects the technique effect.
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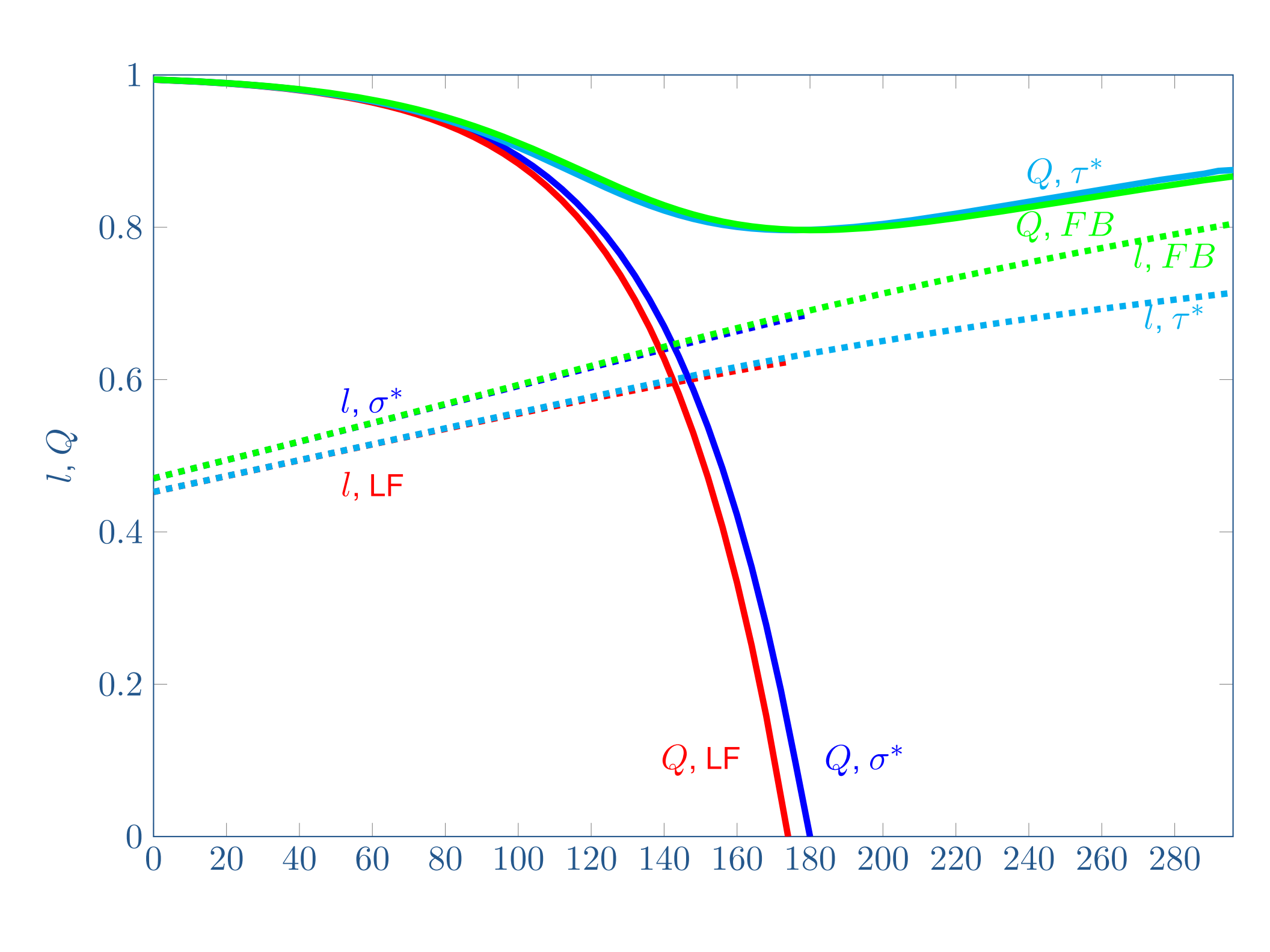
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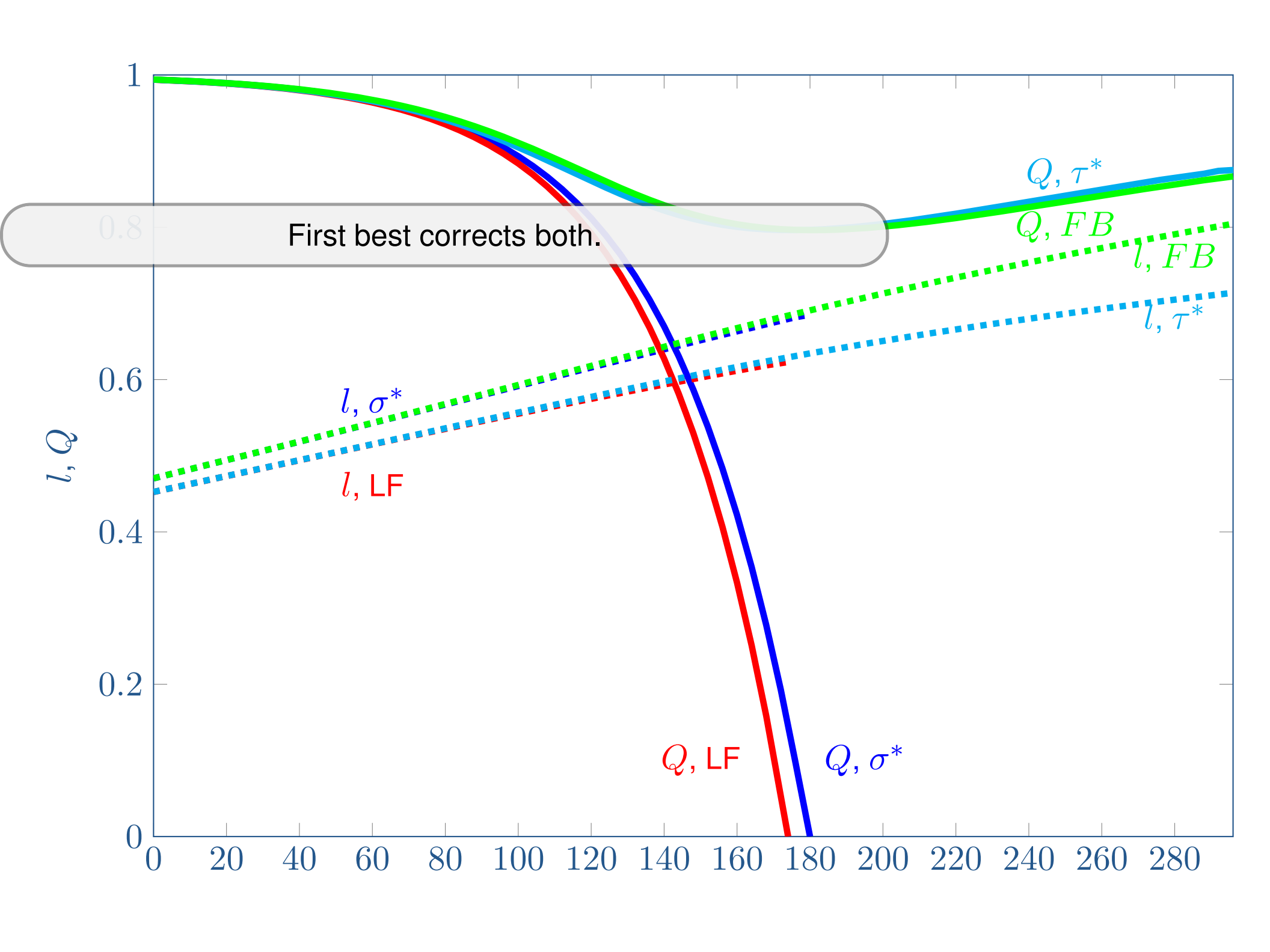
First best corrects both.
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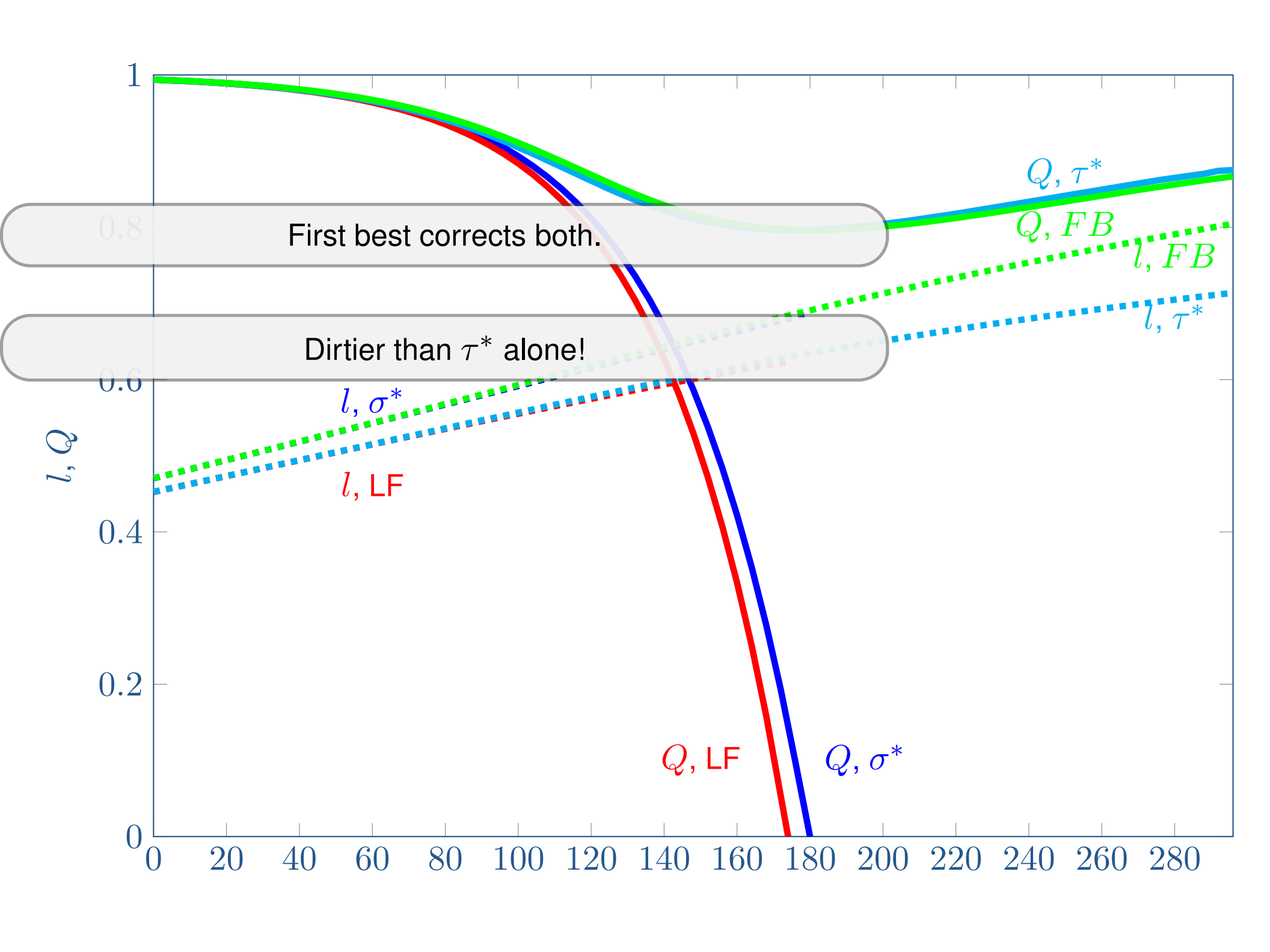
First best corrects both.
Dirtier than τ^* alone!
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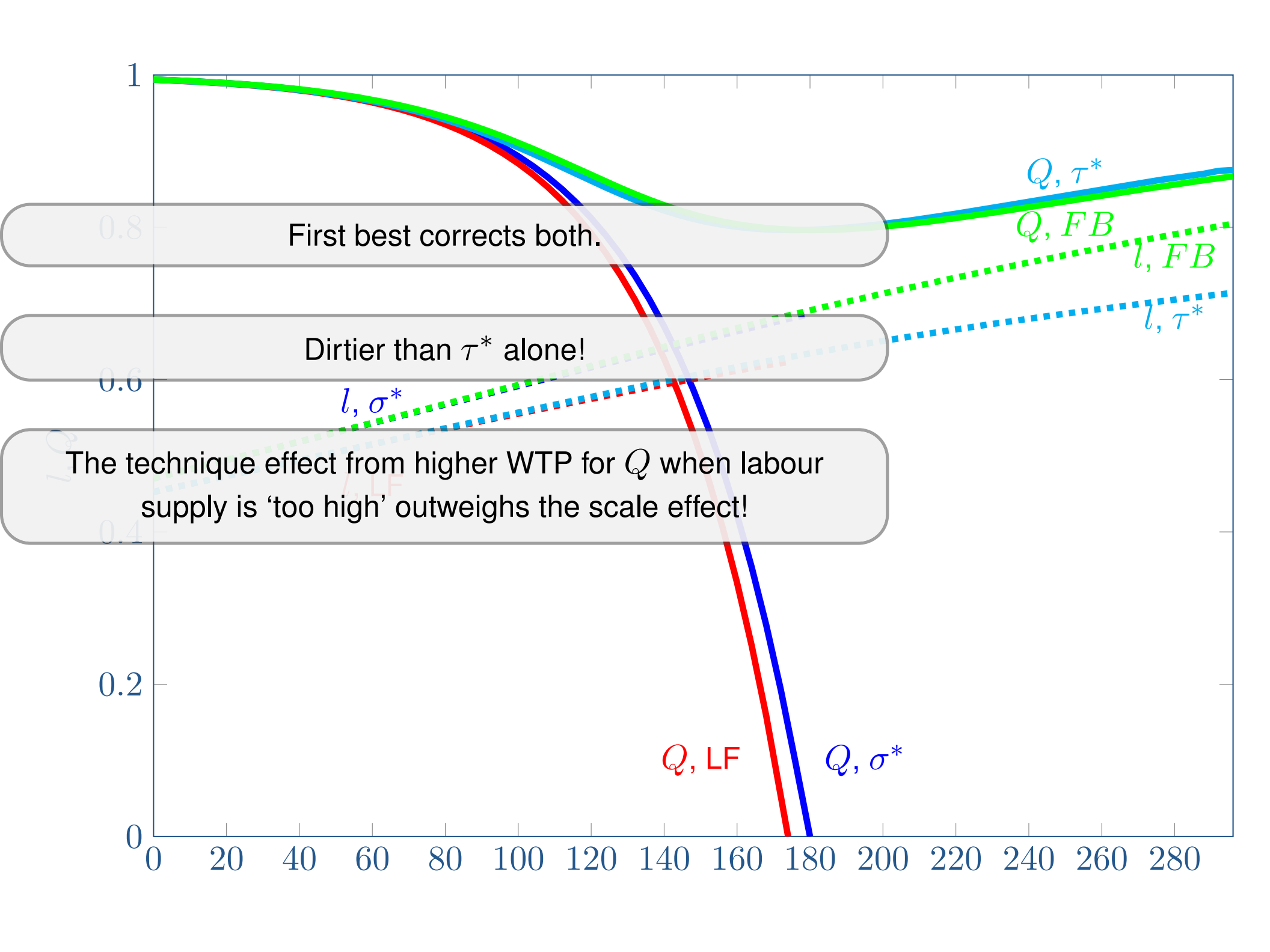
First best corrects both.
Dirtier than τ^* alone!
The technique effect from higher WTP for Q when labour supply is 'too high' outweighs the scale effect!
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Adding composition effects

Adding composition effects

Complex!

Hart (2018). We shift to energy-intensive goods as GDP rises.

Heffetz (2011), REStat, we shift to visible goods as income rises.

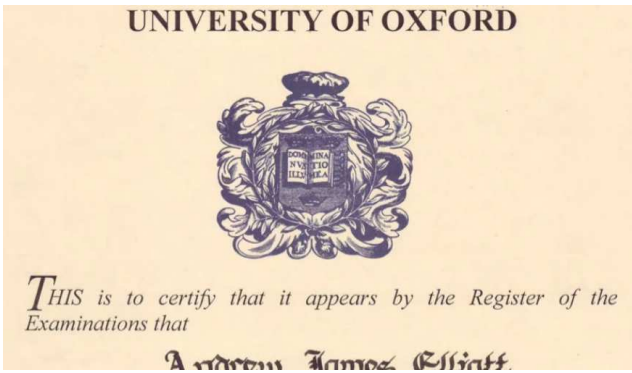
Sager (2019) EnergyE. Energy intensity slightly declining across expenditure distribution, but households shift towards energy-intense goods as GDP rises.

High degree of positionality for housing and cars, e.g. Alpizar et al. (2005).

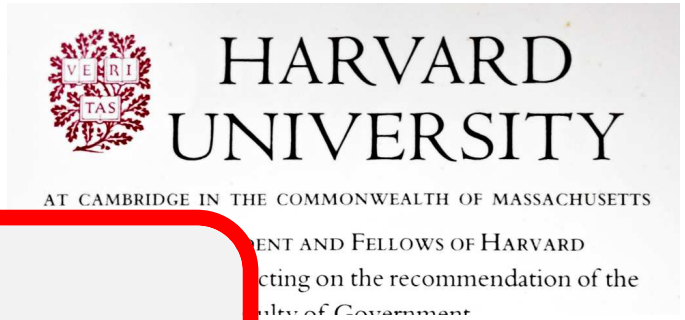
Inequality $\Rightarrow$ need to signal status $\Rightarrow$ high carbon emissions, e.g. Jorgenson et al. (2017).

Fraja (2009). Energy intense = status, result of evolutionary selection pressure to demonstrate control over resources.

Income distribution

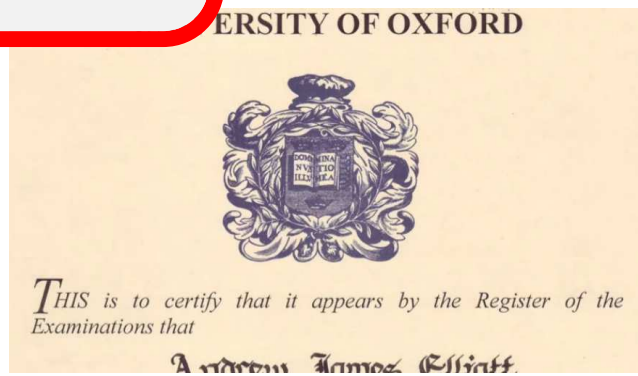


Societal income

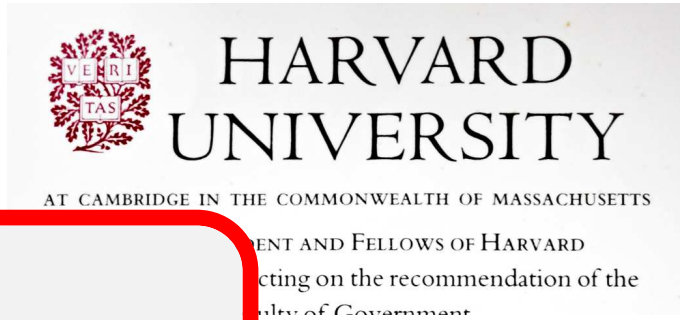


To do:

Capture the essentials of these processes in the model.



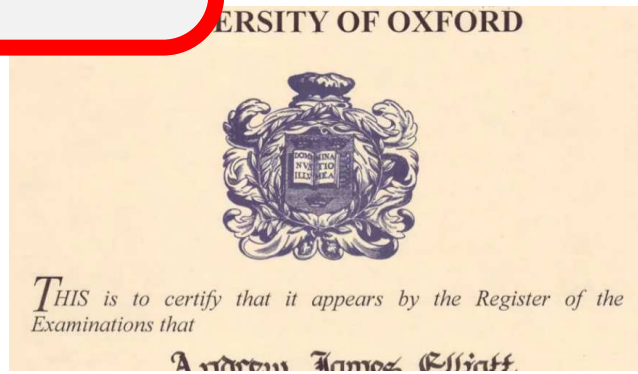
Societal income



To do:

Capture the essentials of these processes in the

For now, something a lot simpler!

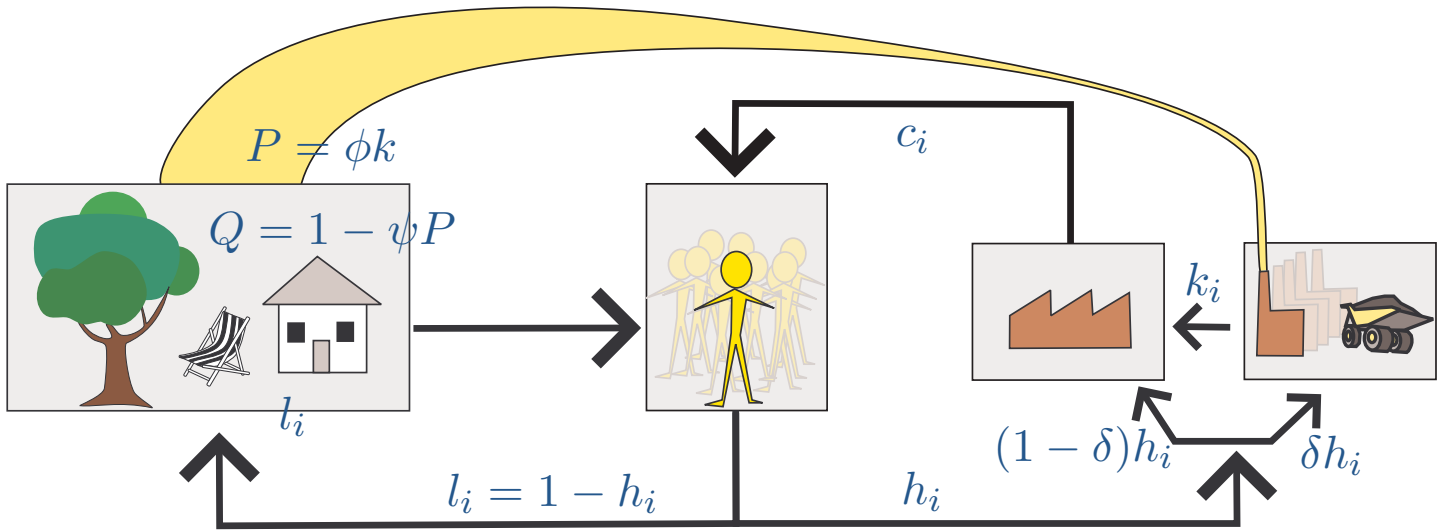


Societal income

The model in which energy consumption = status

The model in which energy consumption = status

Start with baseline model . . .

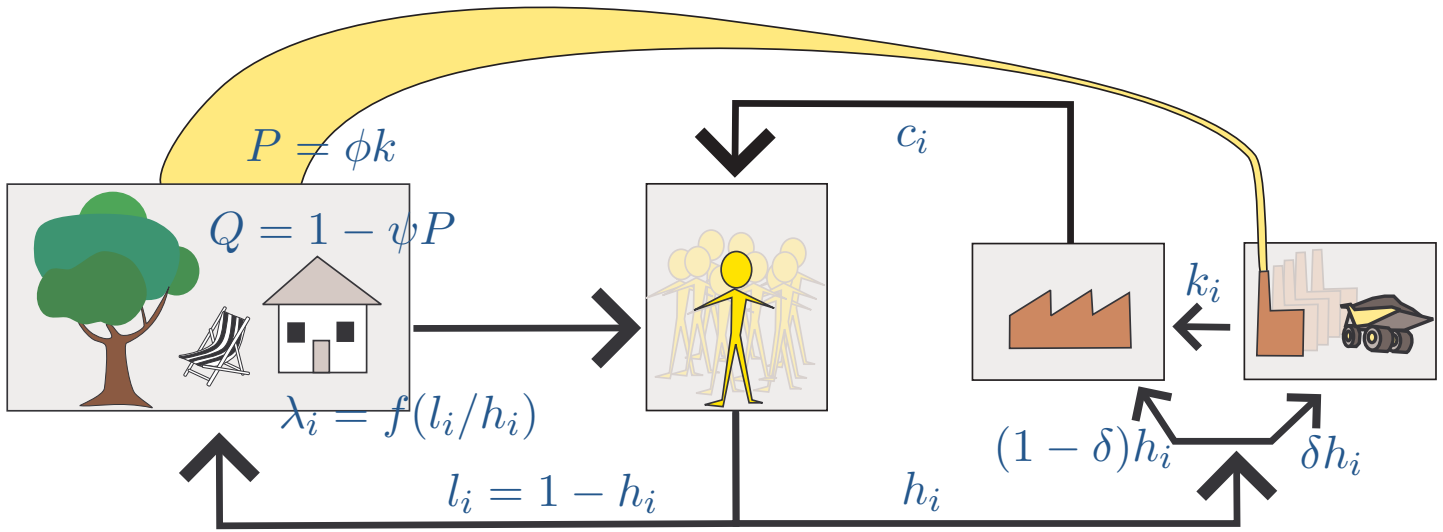


$$c = Ah\left[(1-\gamma)(1-\delta)^{(\eta-1)/\eta} + \gamma\delta^{(\eta-1)/\eta}\right]^{\eta/(\eta-1)}$$

$$u_i = \left[l_i^{(\epsilon-1)/\epsilon} + \beta_c c_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon}\right]^{\epsilon/(\epsilon-1)}$$

The model in which energy consumption = status

Start with baseline model . . . simplify by assuming Cobb–Douglas production . . .

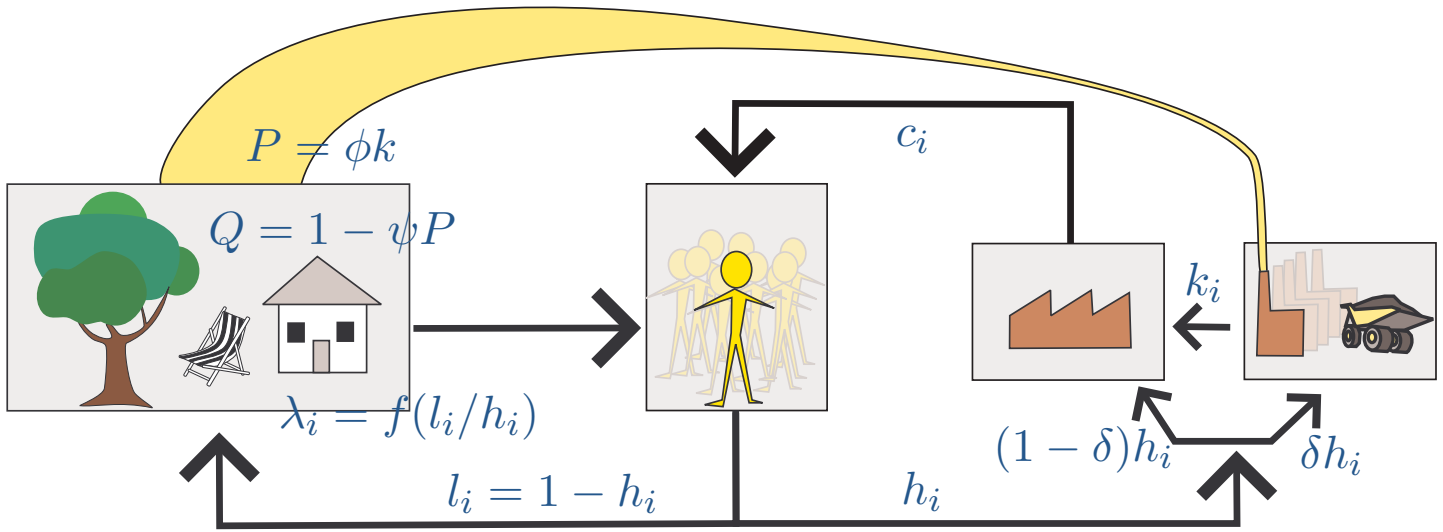


$$c = Ah(1-\delta)^{1-\gamma}\delta^{\gamma}$$

$$u_i = \left[l_i^{(\epsilon-1)/\epsilon} + \beta_c c_i^{(\epsilon-1)/\epsilon} + \beta_s (c_i/c)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon}\right]^{\epsilon/(\epsilon-1)}$$

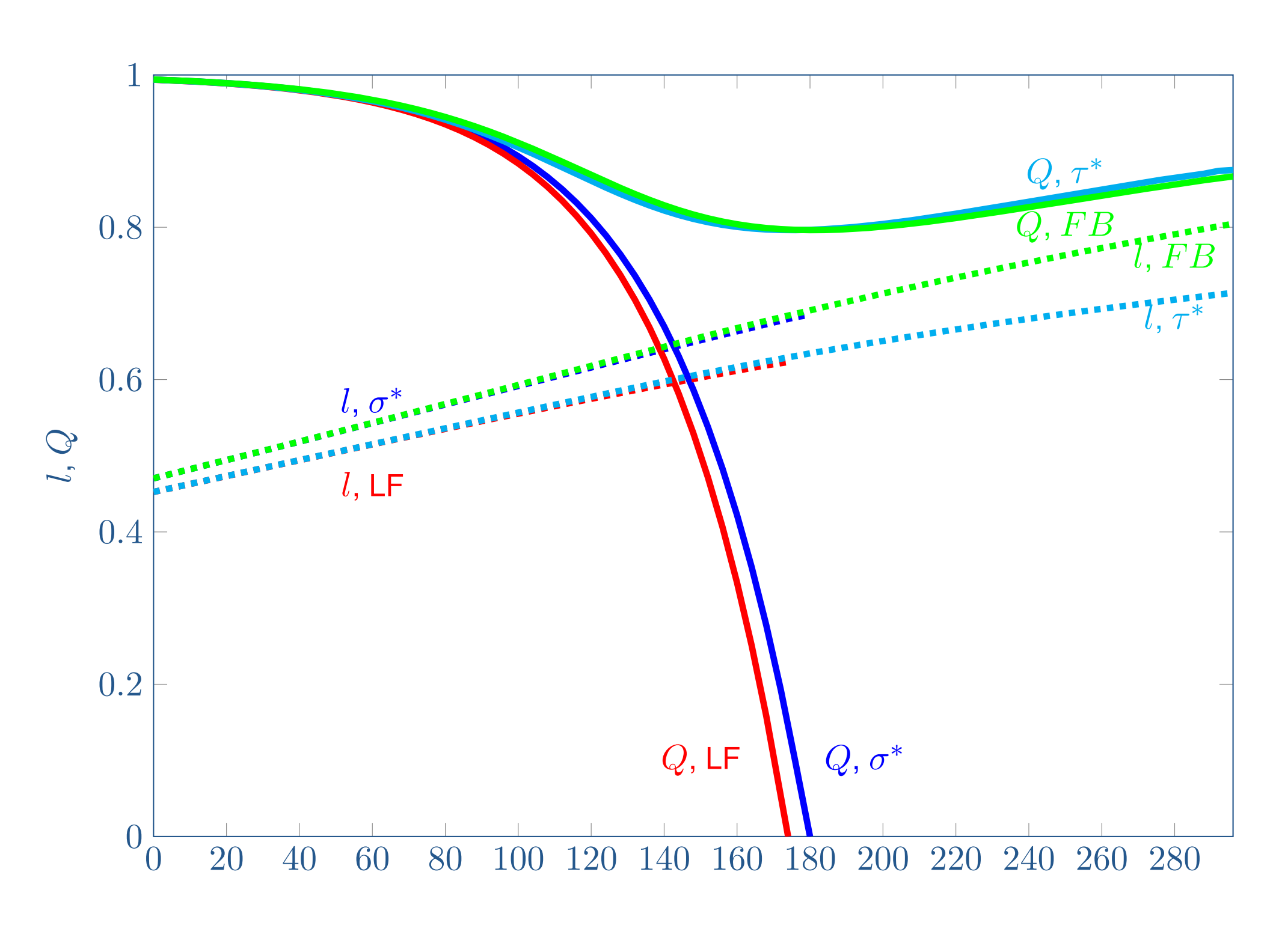
The model in which energy consumption = status

Start with baseline model . . . simplify by assuming Cobb–Douglas production . . . and let k_i/k be the status term.



$$c = Ah(1-\delta)^{1-\gamma}\delta^{\gamma}$$

$$u_i = \left[l_i^{(\epsilon-1)/\epsilon} + \beta_c c_i^{(\epsilon-1)/\epsilon} + \beta_s (k_i/k)^{(\epsilon-1)/\epsilon} + \beta_q Q^{(\epsilon-1)/\epsilon}\right]^{\epsilon/(\epsilon-1)}$$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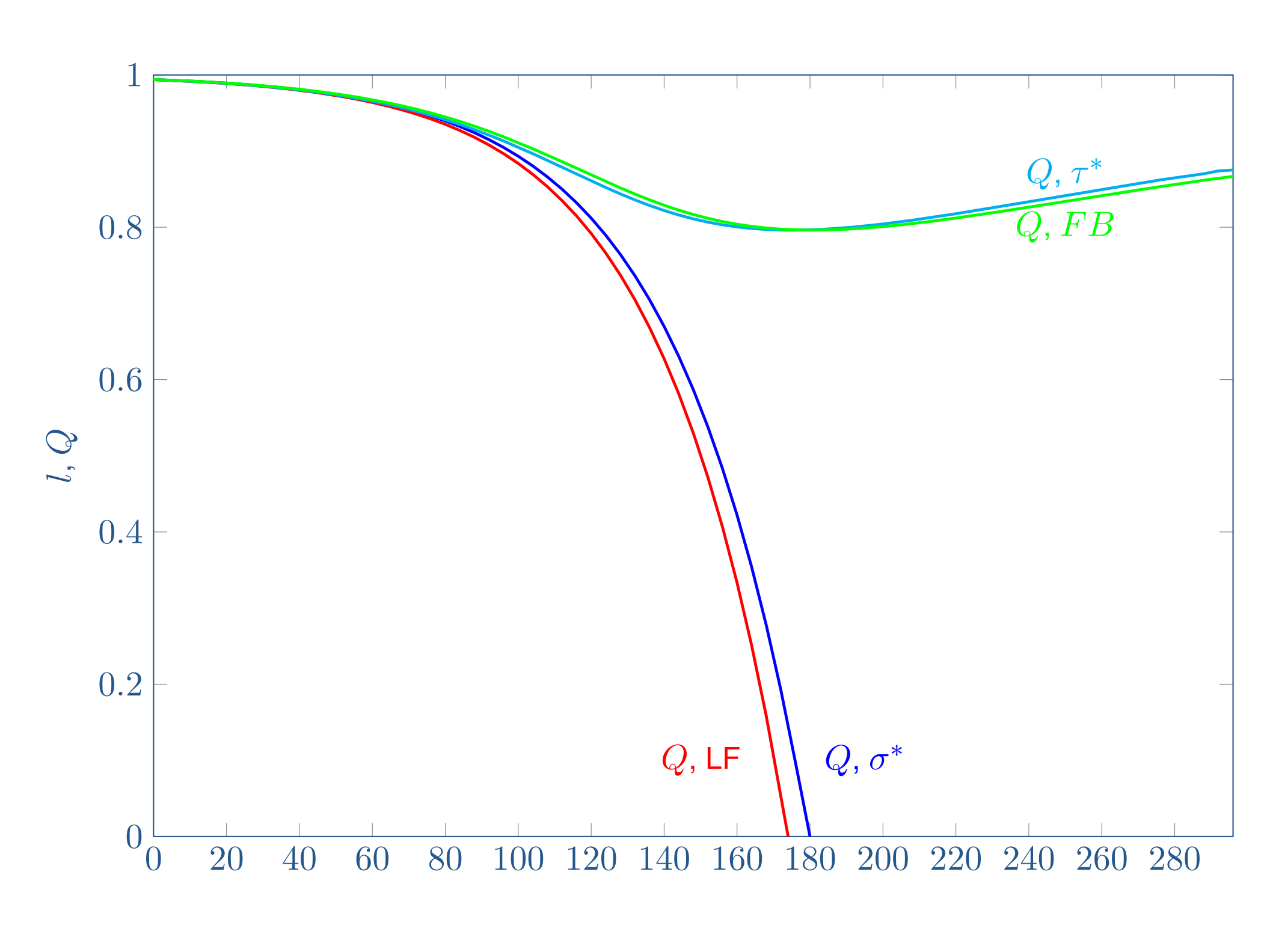
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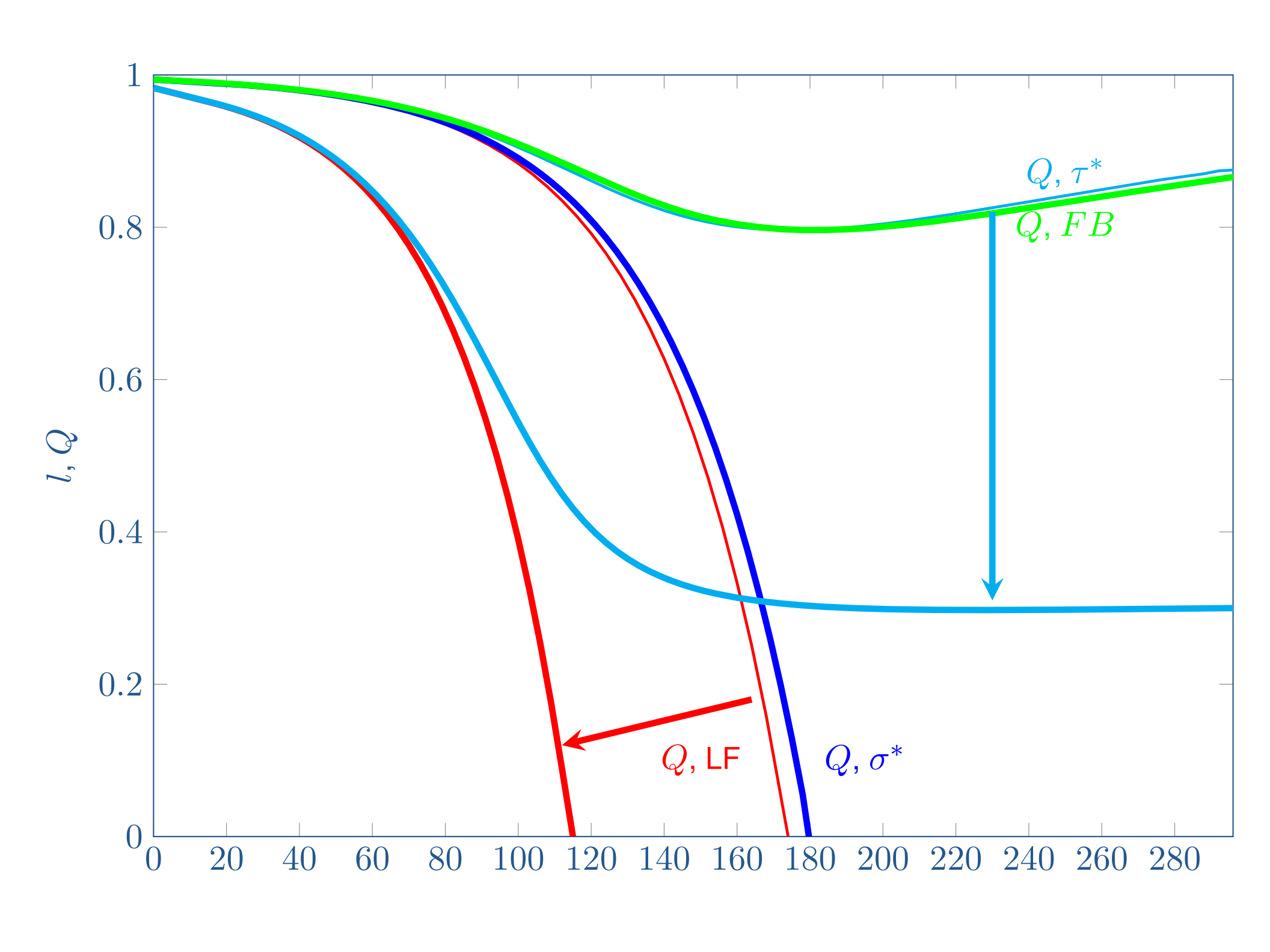
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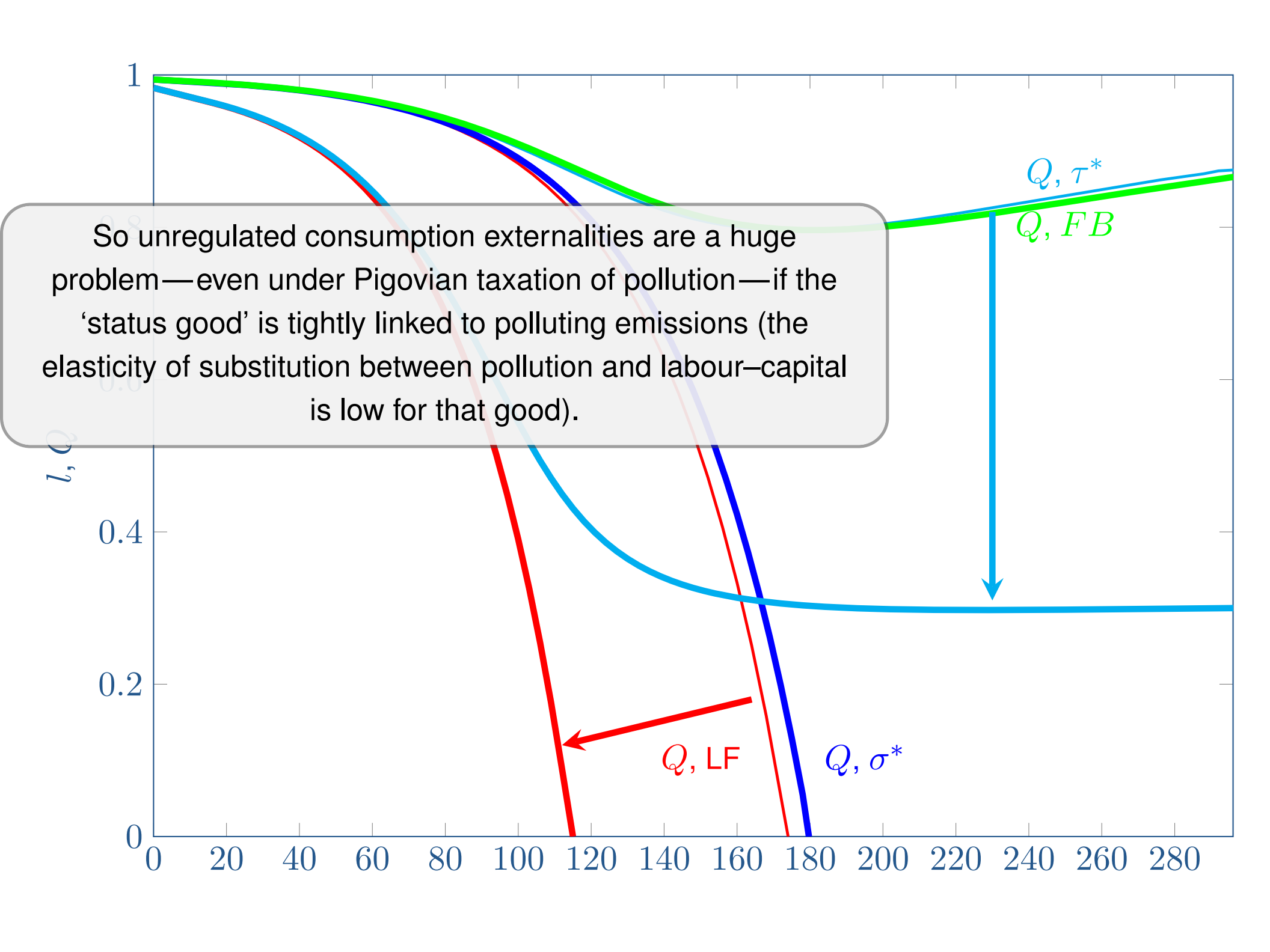
So unregulated consumption externalities are a huge problem—even under Pigovian taxation of pollution—if the 'status good' is tightly linked to polluting emissions (the elasticity of substitution between pollution and labour–capital is low for that good).
Q, τ^*
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Summary

Consumption externalities can open an increasingly large wedge between optimal labour supply (approaches zero) and laissez faire labour supply (constant).

But oversupply of labour may actually be *good for the environment*, because the scale effect may be outweighed by a technique effect driven by Pigovian pollution taxes.

But if consumption externalities drive a *composition effect* towards definitely dirty goods they are (very) bad for the environment.

Summary

Consumption externalities can open an increasingly large wedge between optimal labour supply (approaches zero) and laissez faire

Assume our choices are driven by a 'status game'.

- If it is 'zero sum' we should coordinate on goods that actually raise utility (leisure?).
- In any case, we should coordinate on choices that do not damage public goods (leisure!).

Alternative approach

- Why do we work so hard?
- Competition for status through consumption? Or our urge ‘to strive and not to enjoy’ (Keynes)?
- This puts an even more intense focus on environmental damages from production.

Alternative approach

Assume we only engage in production to keep ourselves amused.

- Then the least we can do is to ensure that the process does not damage public goods such as environmental quality.

Is unsustainability sustainable?

Options

Options

Assume that the following statement is true.

- We are getting richer and healthier, but trashing the planet.

Given the above, consider the following two hypotheses.

1.
   - We rely on services provided by the planet, and by trashing the planet we are destroying the planet's ability to provide these services in the future.
   - Therefore, if we carry on trashing the planet the loss of these services will lead to us getting poorer and sicker.

2.
   - We are adaptable and ingenious.
   - Therefore we can carry on both trashing the planet and getting richer and healthier, indefinitely.

Options

Now assume that you care about the planet, and would like to help redress the balance between the pursuit of material wealth and care of the planet. What to do? Consider the following two strategies.

1. Find evidence for hypothesis 1, or try to convince others of its veracity.
2. Persuade others to care too: either more about the planet, or less about material wealth!

There are of course other strategies. For instance:

3. Demonstrate that the system (e.g. 'global capitalism') is going to crash anyway. So we might as well slow it down gently and save the planet at the same time.

The first strategy is fine as long as hypothesis 1 holds. But what if it doesn't?

Options

The planetary boundaries framework defines a safe operating space for humanity based on the intrinsic biophysical processes that regulate the stability of the Earth System.

For the first time in human history, we need to relate to the risk of destabilising the entire planet. Just because we are not seeing a collapse today doesn't mean we are not subjecting humanity to a process that could lead to catastrophic outcomes over the next century.

Strategy? Author?

Options

The planetary boundaries framework defines a safe operating space for humanity based on the intrinsic biophysical processes that regulate the stability of the Earth System.

For the first time in human history, we need to relate to the risk of destabilising the entire planet. Just because we are not seeing a collapse today doesn't mean we are not subjecting humanity to a process that could lead to catastrophic outcomes over the next century.

Steffen, Richardsson, Rockström *et al*'s article in *Science*, 2015.

Options

We take it for granted, the world that we love—and we're destroying it so quickly. The light of dawn on the prairie. The silvery flash of fish in a stream. The cry of a hawk over a forest. Everybody has their own idea of the beautiful, and we'll surely miss it when it's gone.

Strategy? Author?

Options

We take it for granted, the world that we love—and we're destroying it so quickly. The light of dawn on the prairie. The silvery flash of fish in a stream. The cry of a hawk over a forest. Everybody has their own idea of the beautiful, and we'll surely miss it when it's gone.

Big World, Small Planet. Rockström and Klum, 2015.

Options

[People are] persuaded to spend money we don't have, on things we don't need, to create impressions that won't last, on people we don't care about.

Strategy? Author?

Options

[People are] persuaded to spend money we don't have, on things we don't need, to create impressions that won't last, on people we don't care about.

Tim Jackson, TED talk.[1]

[1] https://www.ted.com/talks/tim_jackson_an_economic_reality_check/transcript.

Lessons from historical adaptation

Lessons from historical adaptation

The regulated market economy has shown a remarkable ability to adapt and react to crises when they arise, including environmental crises.

On the other hand, we know that environmental crises may often have far-reaching consequences for nature, and sometimes for human welfare. And when the consequences are *only* for nature, not a lot tends to get done. Consider for instance the Baltic Sea, or bird populations in Europe.

Finally, there are examples of civilizations that have collapsed, apparently due to environmental collapse. E.g. Easter Island. What lessons are there here? E.g. Brander and Taylor (1998).

Financial and other crises

Financial and other crises

We know that financial crises—especially large-scale ones across many countries—typically have severe and long-lasting effects.

But such a crisis does not signal the death-throes of capitalism, the collapse of the system under the weight of contradictions.

We know why the recent global financial crisis occurred, and we know why recovery from it is so slow. The reason is the lack of confidence in the future which is widespread among agents, a lack of confidence which is rational for each individual in the knowledge that everyone else lacks confidence. It is a gigantic coordination problem, the solution to which is either some massive shock (such as WW2 in 1939) or gradual, inch-by-inch progress.

Distribution

Distribution

Who suffers from environmental crises?

And who pulls the strings?

Uncertainty and future crises

Uncertainty and future crises

So the global economy will very likely be able to keep going as it has up to now, for decades or even centuries to come. Growing, triggering environmental problems and even catastrophes, and then solving them. All the while, the space for the non-human or 'natural' world is likely to be circumscribed ever-more by our thirst for consumption, consumption of everything from food to wilderness experiences.

‘Green’ consumerism contra environmental policy

'Green' consumerism contra environmental policy

Green consumerism is a tricky business. One problem is rebound. If you don't consume one thing, but your income is unchanged, you will consume something else instead, or invest in capital which may be just as bad. It is an impossible task for individual consumers to weigh up the environmental effects of their actions.

We need consumers to elect politicians who enact laws which (a) lead to external effects being internalized in the prices of goods (in borderline cases), and (b) lead to highly damaging or unnecessary practices being banned (in black-and-white cases). A recent example of the latter is the ban on incandescent light bulbs in both the US and the EU.

Get prices right!

Values

Values

We also need to update our moral codes and social norms to cope with an interconnected world in which each individual has the power to cause tiny amounts of damages to billions of other people, for instance through actions leading to the release of global pollutants.

What gives utility? This is to a large extent determined by social norms, which can change rapidly! Here each individual can play a role by affecting those around them.

How we can affect social norms is not the subject of this course, but what we have done in the course is show the importance of households' choices, driven by their utility functions.

Technological change is important, but won't solve everything on its own. Pricing externalities is even more important, but if we don't care about nature, or future generations, correct pricing will still lead to bad outcomes for . . . nature and future generations.

Alpizar, F., Carlsson, F., Johansson-Stenman, O., 2005. How much do we care about absolute versus relative income and consumption? Journal of Economic Behavior & Organization 56, 405–421.

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