Applied Welfare Economics and Agricultural Policy

MSc Course, Humboldt-Universität zu Berlin

by
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in cooperation with
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supported by
Nana Künkel

Applied Welfare Economics and Agricultural Policy

Introduction

1 Principles of applied welfare economics
2 Price policy I
3 Price policy II

4 EU agricultural policy and international framework

Applied Welfare Economics and Agricultural Policy

5 Agricultural policy in transition countries (Wilkin)
6 EU enlargement and accession (Wilkin)
7 Rural finance in development (Heidhues)
8 Structural adjustment policies (Heidhues)

9 **Structural policy**
10 Multiobjective policy analysis

Applied Welfare Economics and Agricultural Policy

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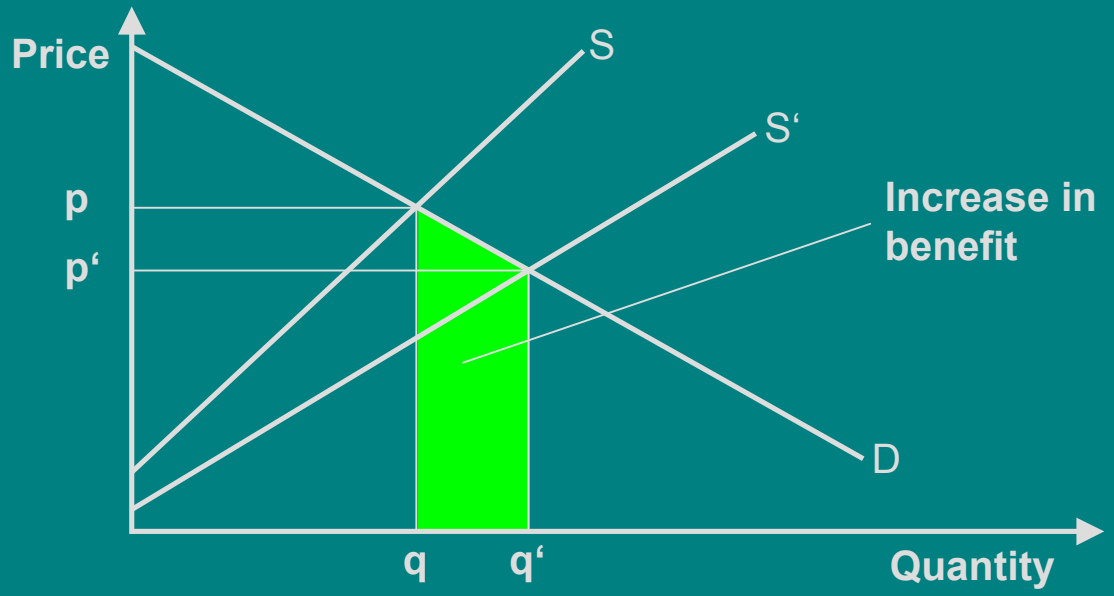
Chapter 9

Structural Policy

Welfare Effects of Structural Policies

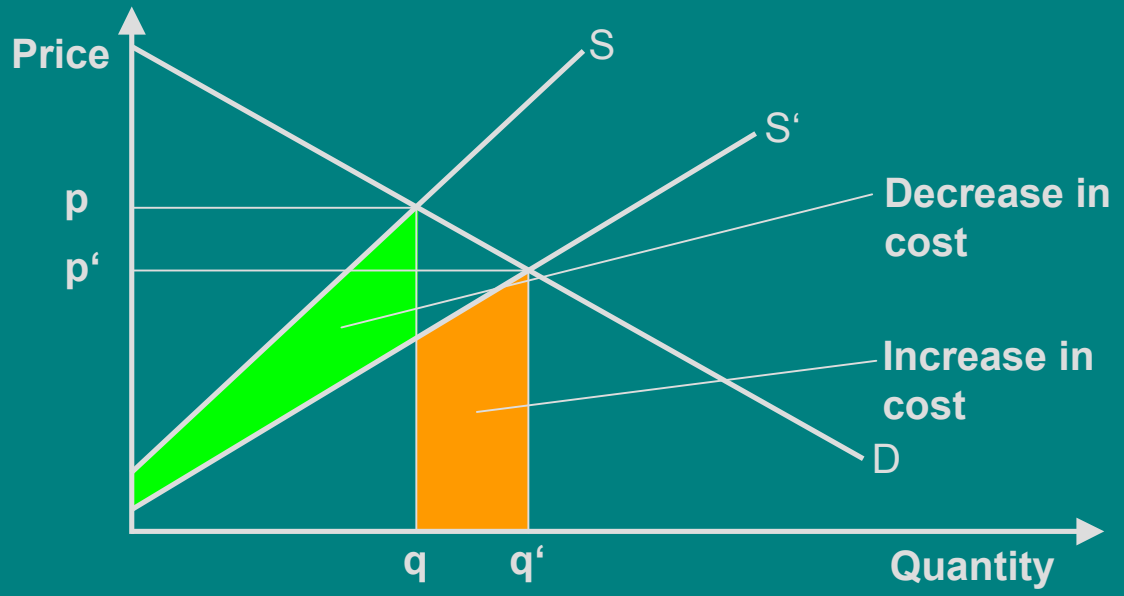
Closed economy



S - Supply curve
D - Demand curve

Welfare Effects of Structural Policies

Closed economy



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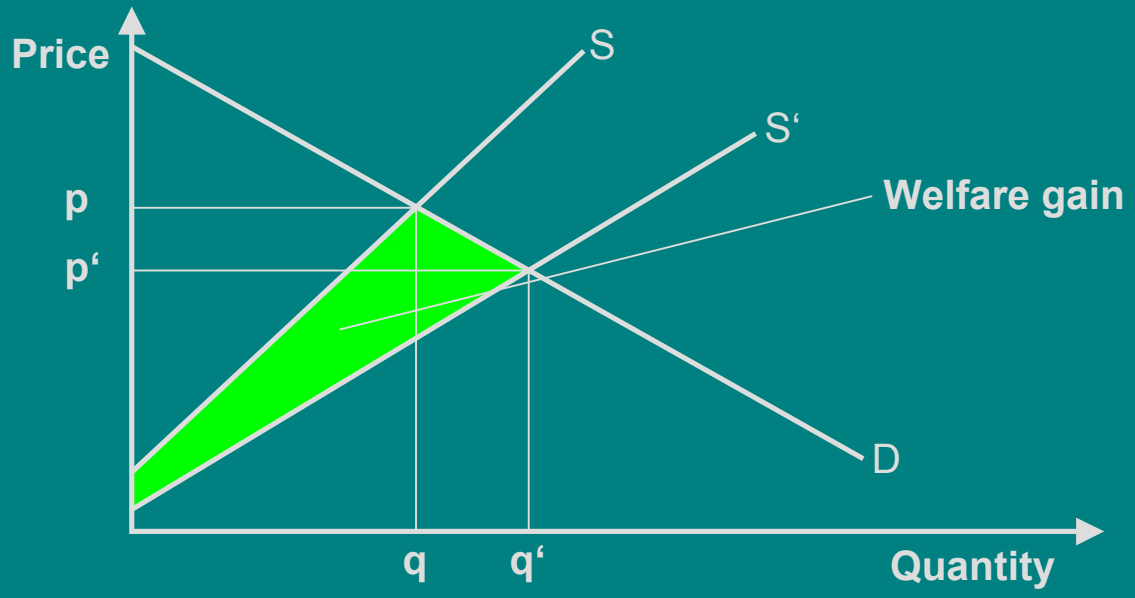

Welfare Effects of Structural Policies

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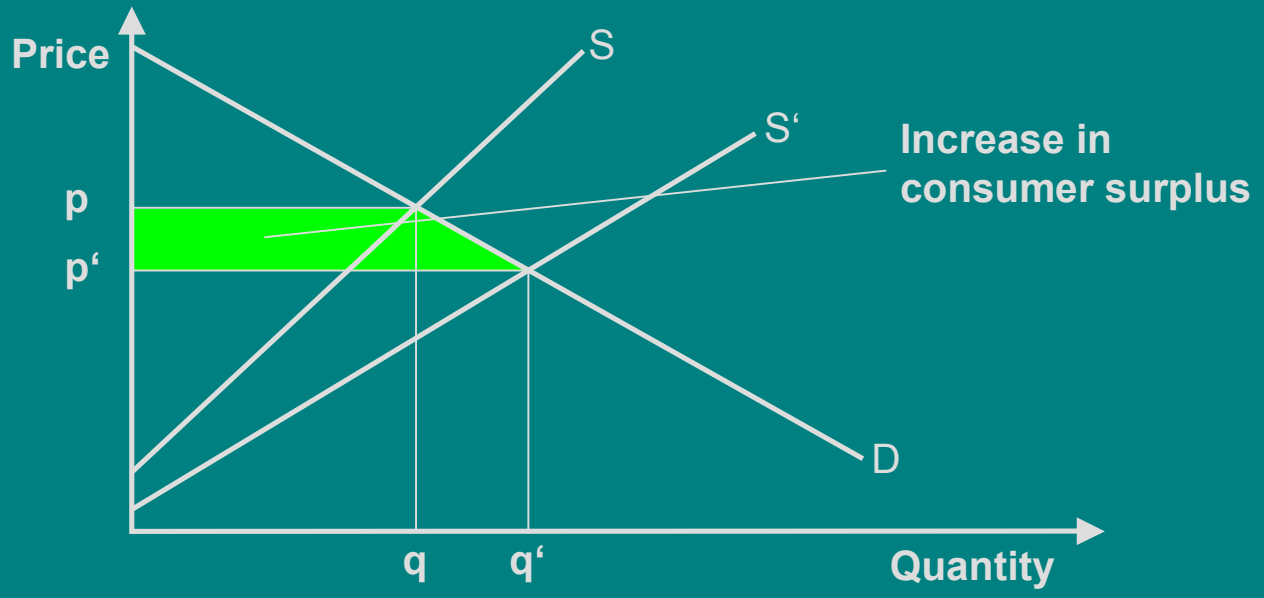

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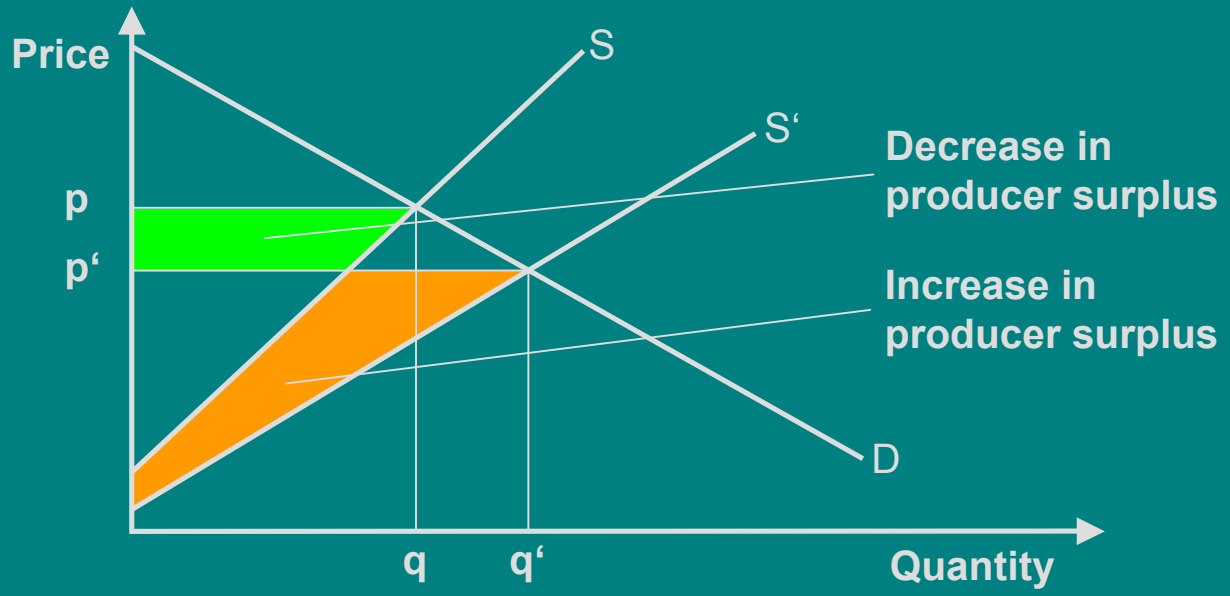

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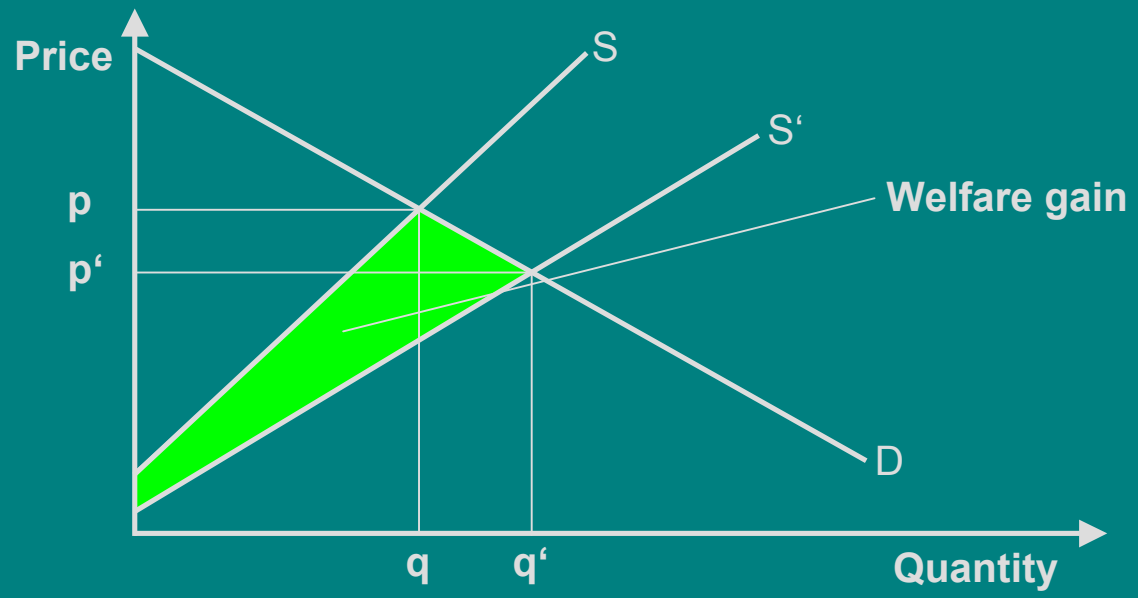
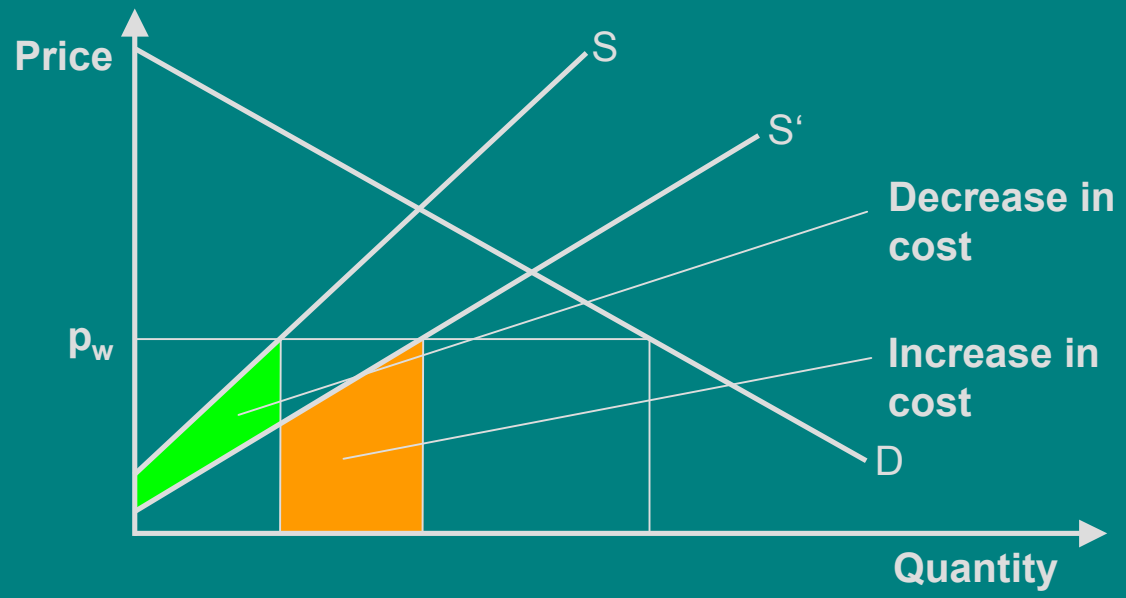


Note:

dW = dB - dC (+) (+) (?)	dW = dCS - dPS (+) (+) (?)

Welfare Effects of Structural Policies

Import country



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Welfare Effects of Structural Policies

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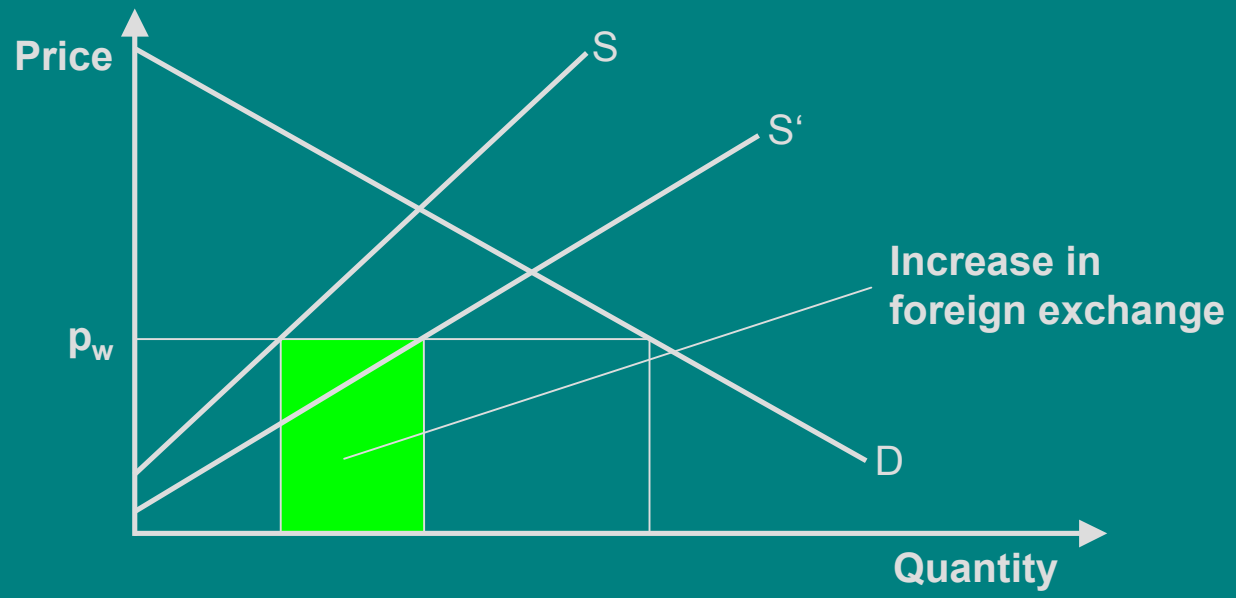

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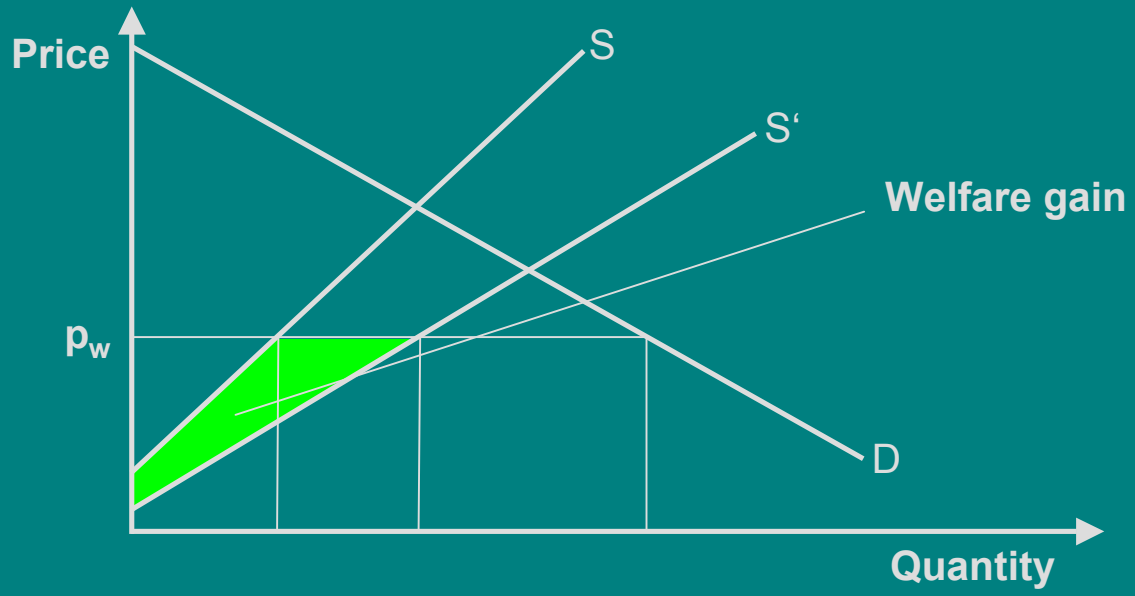

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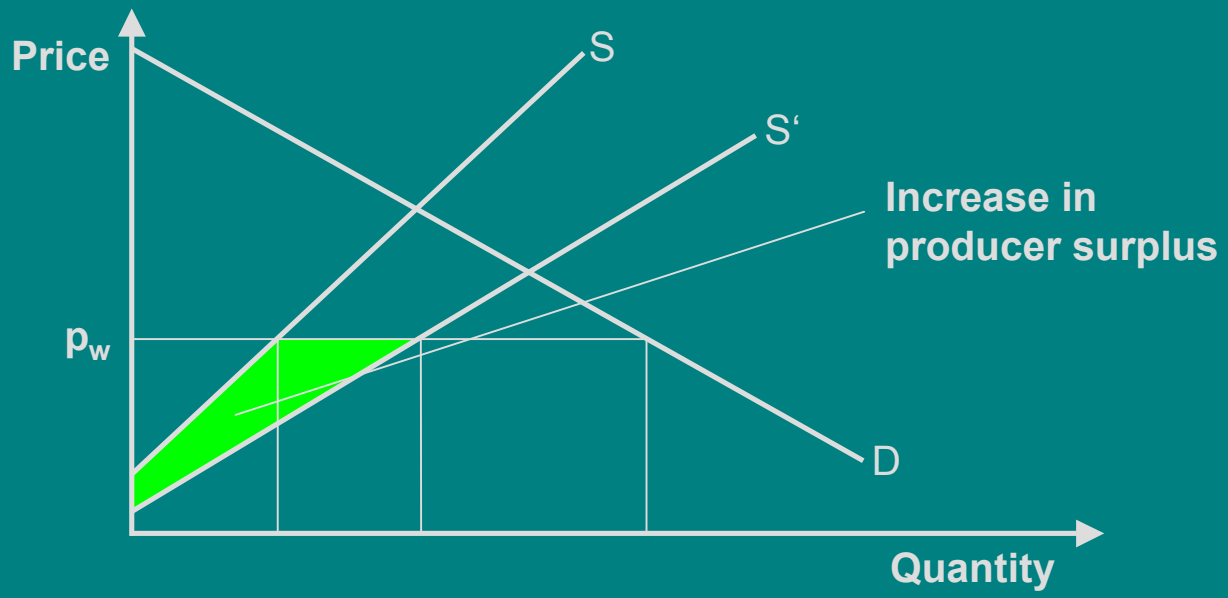

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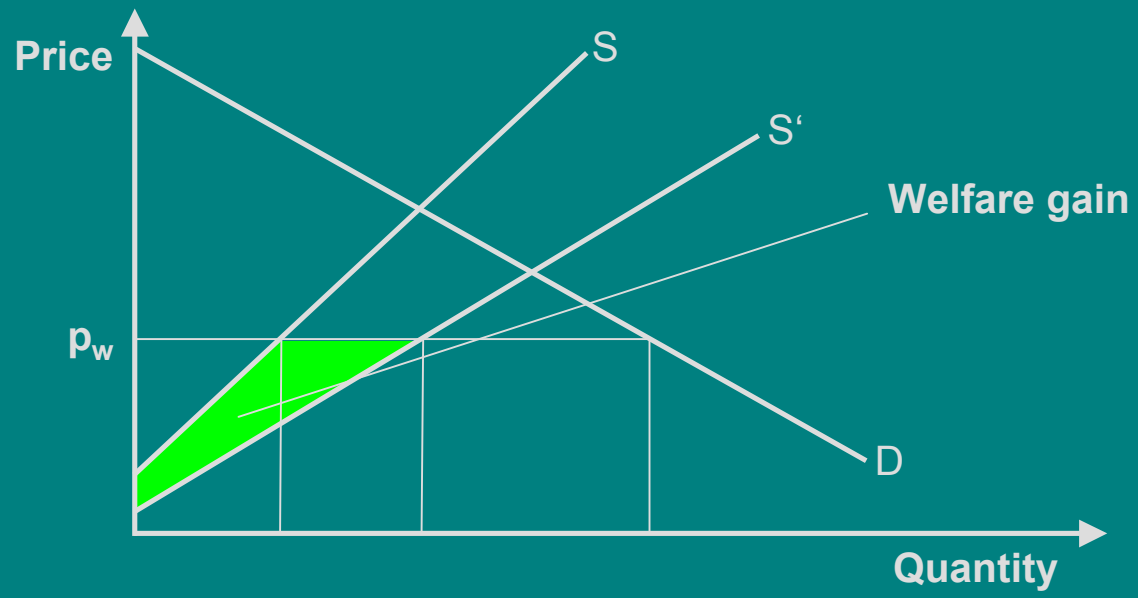
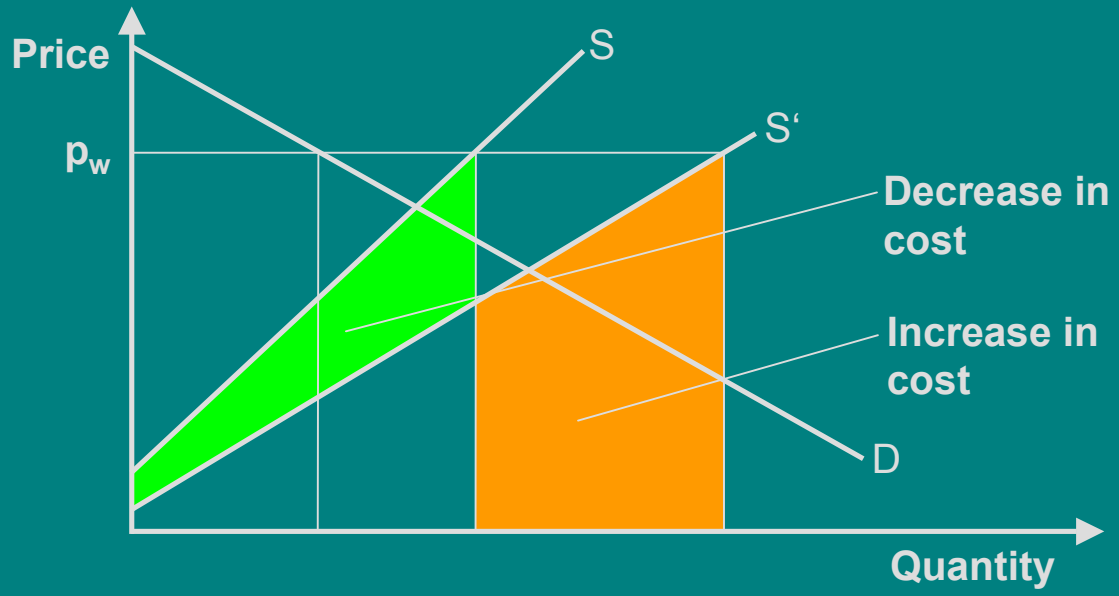


Note:

dW = dB - dC + dFE (+) (const.) (?) (+)	dW = dPS + dCS (+) (+) (const.)

Welfare Effects of Structural Policies

Export country



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Welfare Effects of Structural Policies

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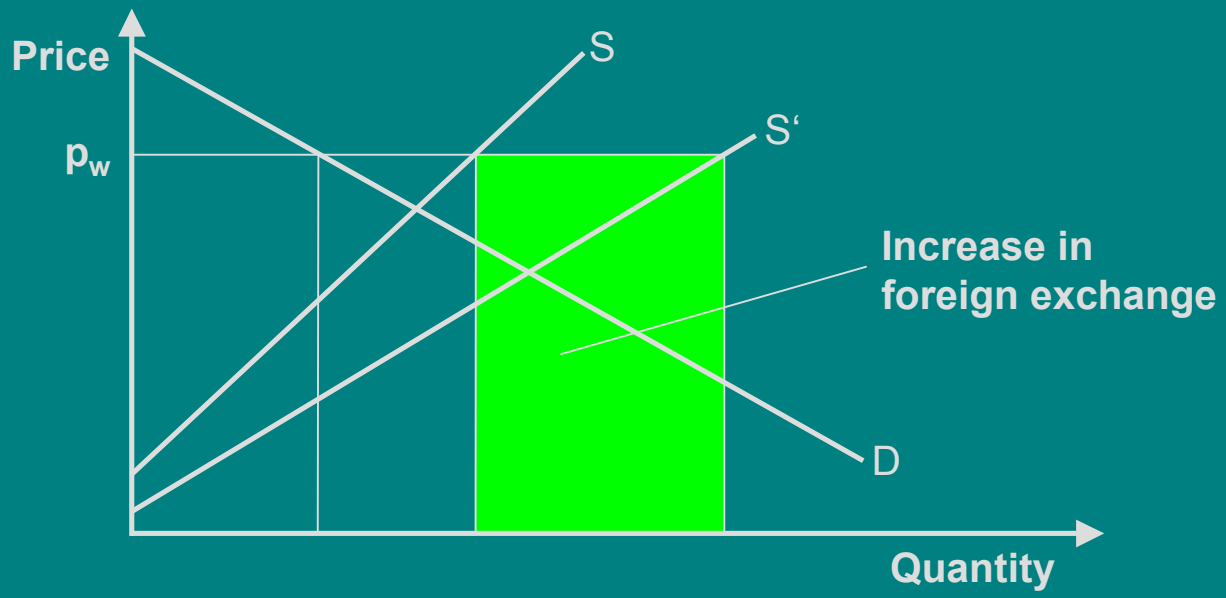

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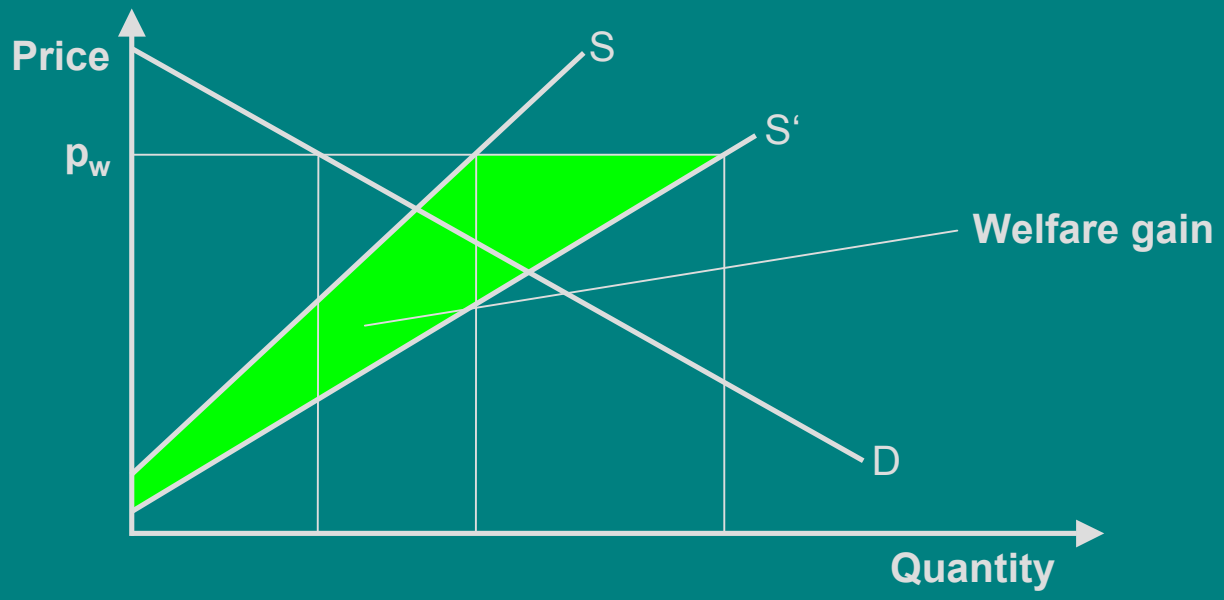

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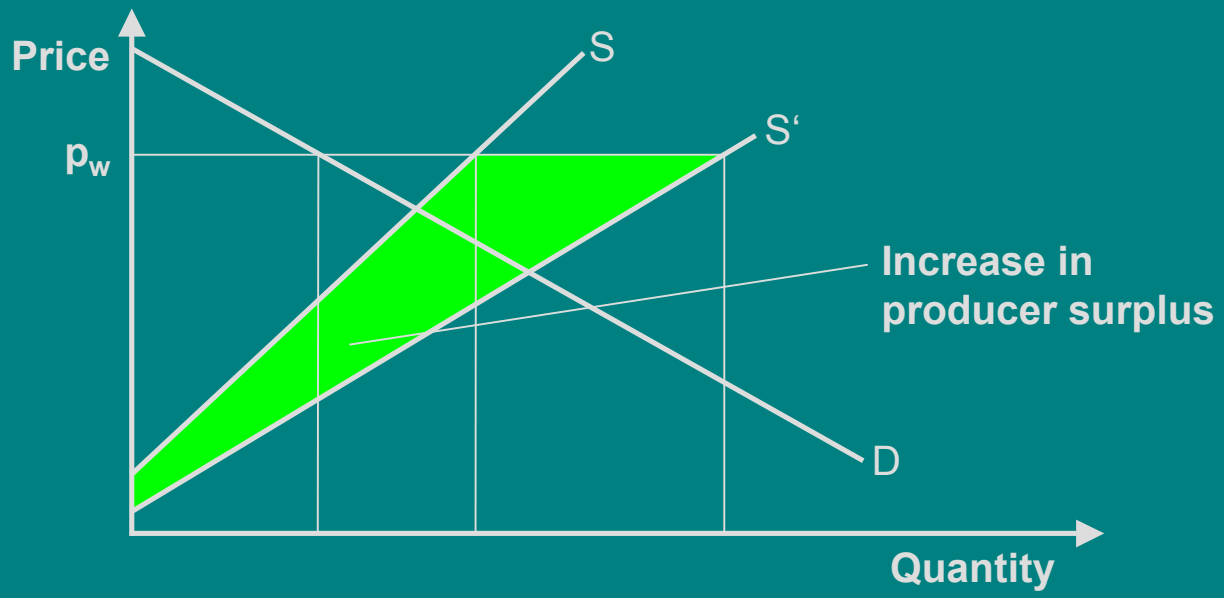

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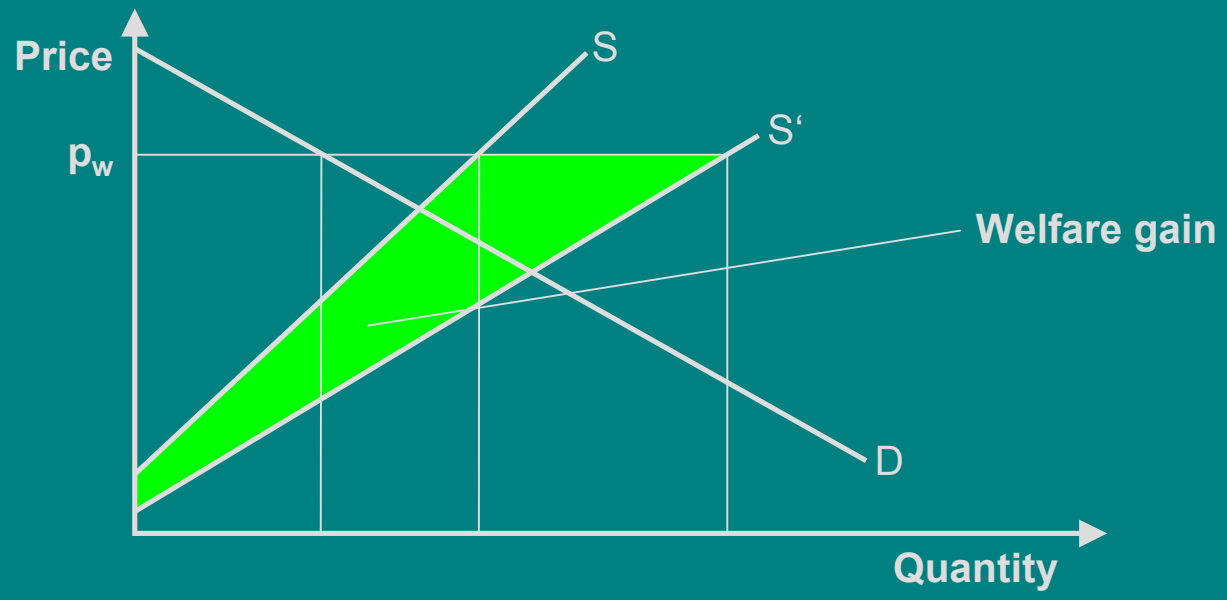


Note:

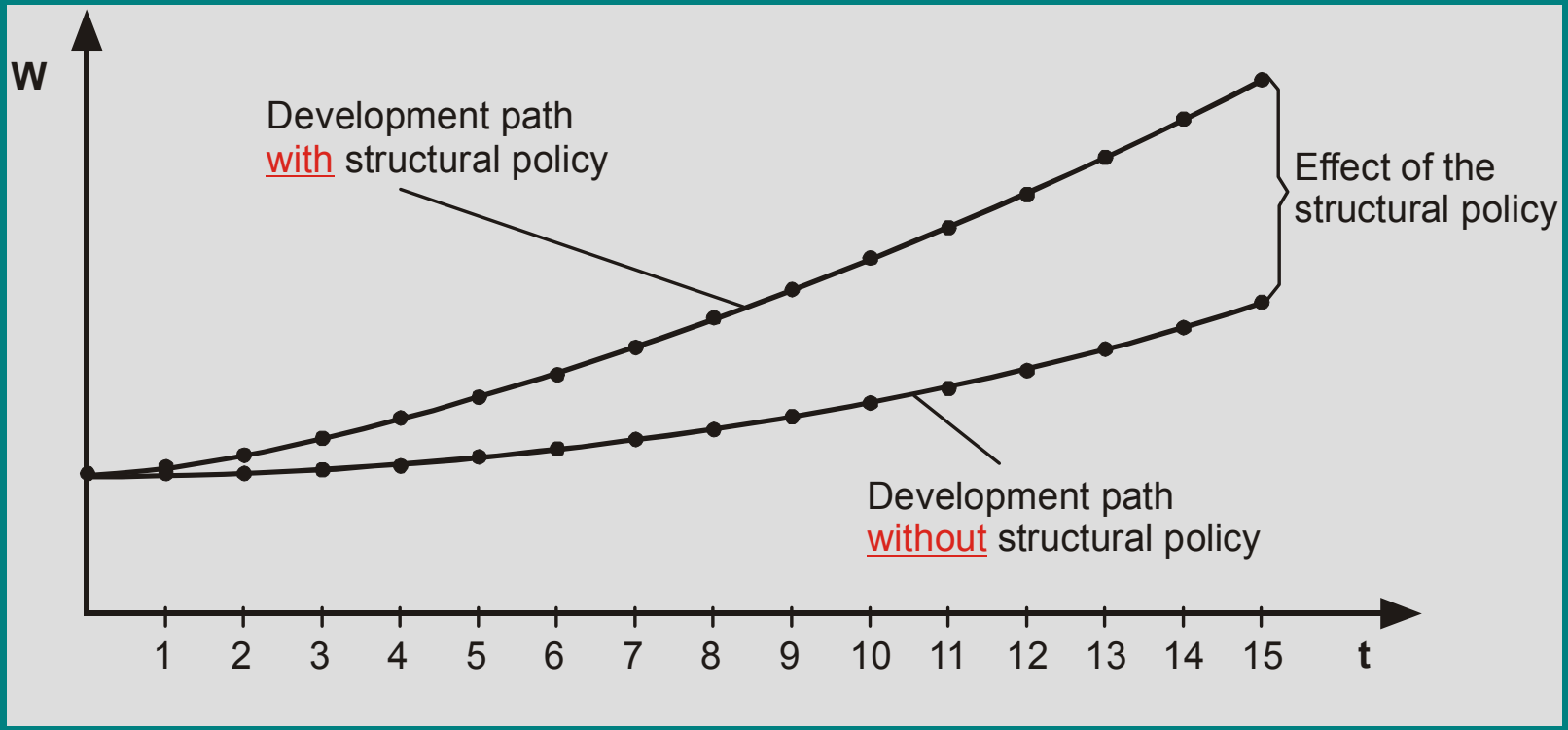
dW = dB - dC + dFE (+) (const.) (?) (+)	dW = dPS + dCS (+) (+) (const.)

Welfare Effects of Structural Policies

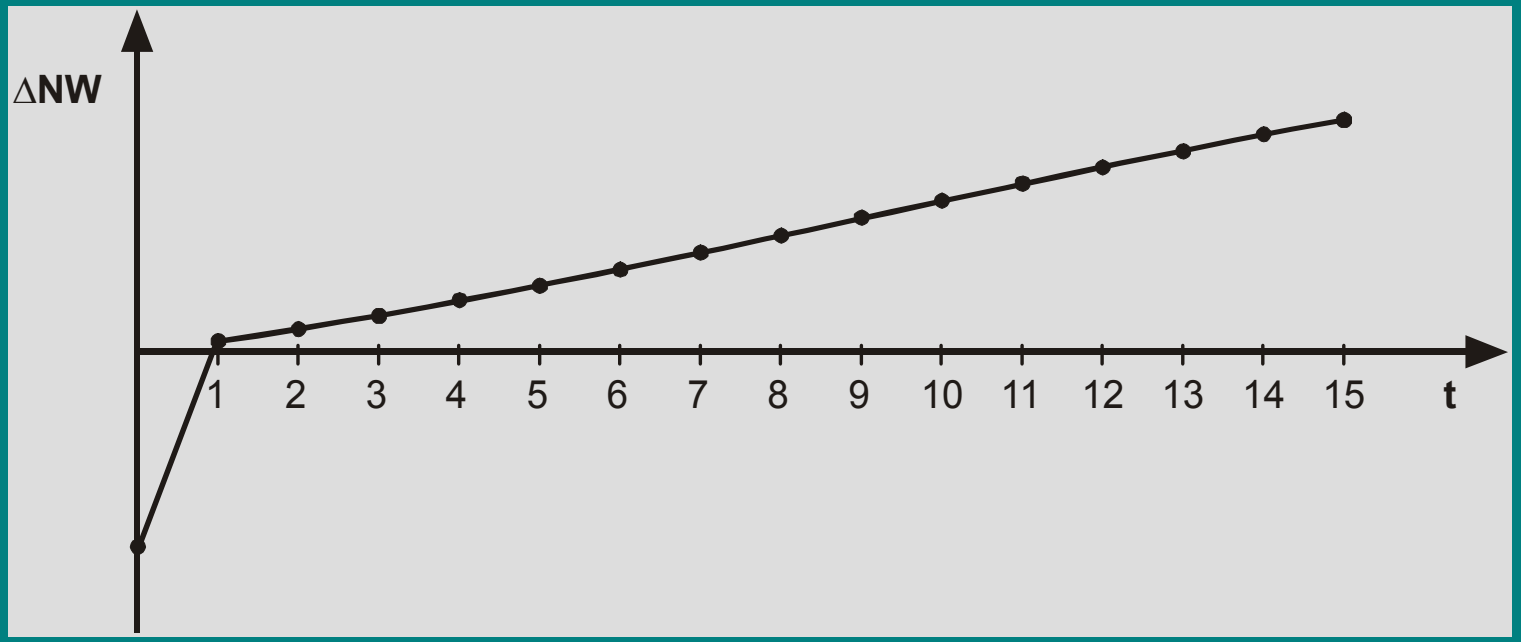
Some questions

- Should government support structural change?
- Do the farmers benefit from structural policies?
- Trade and structural policies
- „Reverse“ structural policy

Welfare Effects of Structural Policies over Time



Welfare Effects of Structural Policies over Time



Welfare Effects of Structural Policies over Time

$$PV = \sum_{t=0}^{n} \frac{1}{(1+i)^t}(\Delta NW_t)$$

$$\sum_{t=0}^{n} \frac{1}{(1+I)^t}(\Delta NW_t) = 0$$

PV - Present value (of net welfare effects of the structural policy)

i - Interest rate

I - Internal rate of return

W - Welfare

NW - Net welfare

Cost-Benefit-Analysis of Extension Services

- How does extension affect production?
- What is the welfare effect of the supply curve shift?
- How can the welfare effect be calculated in a cost-benefit context?
- What about alternative policies?
- What about other goals persued?

Optimal Structural Policies

$$\max L = p_1^w \cdot q_1(e_1) + p_2^w \cdot q_2(e_2) + \lambda\left[\bar{e} - e_1 - e_2\right]$$

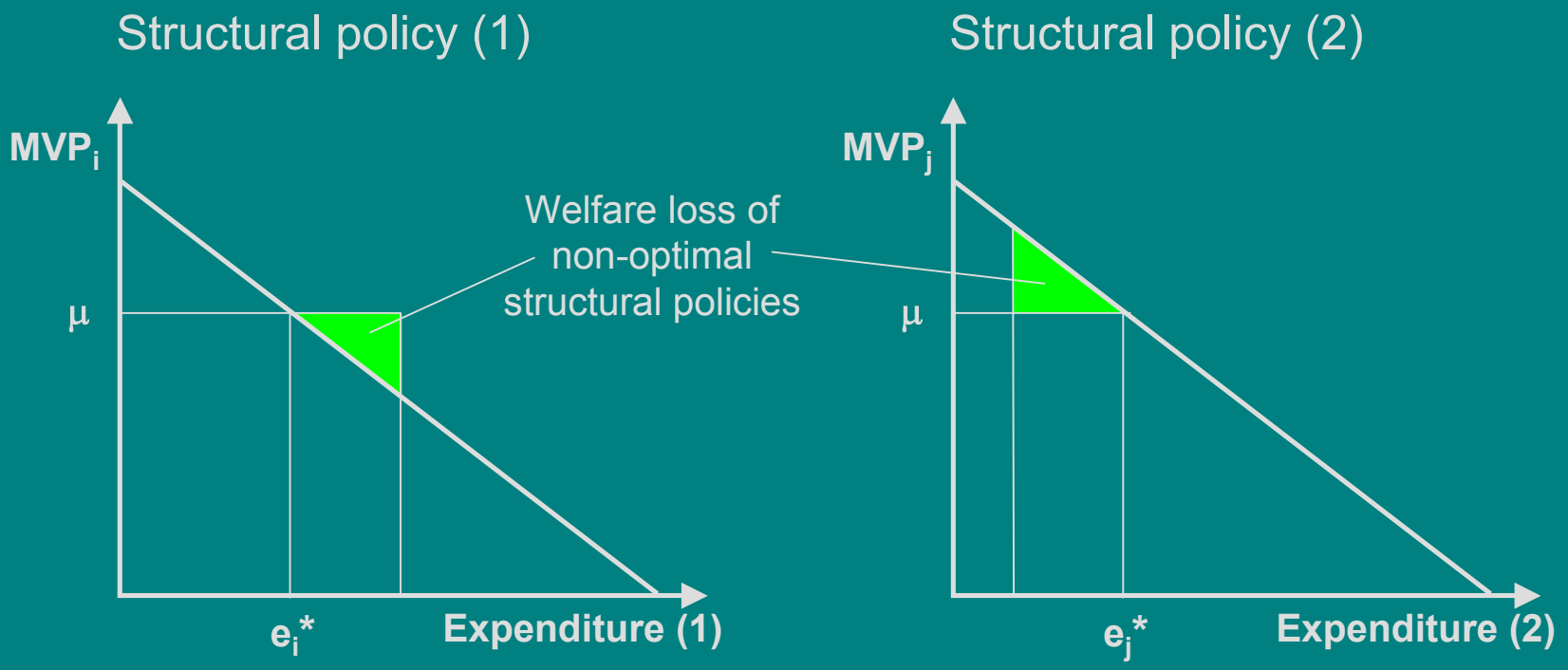
$$\Rightarrow \boxed{p_1^w \frac{\partial q_1}{\partial e_1} = p_2^w \frac{\partial q_2}{\partial e_2}} = \lambda$$

with p_i^w - world market price

q_i - production quantity

e_i - government expenditure

Optimal Structural Policies



MVP - Marginal value product
μ - Shadow price of expenditure for structural policies

Optimal Structural Policies

The parity approach

$$p_i^w \frac{\partial q_i}{\partial e_i} = p_j^w \frac{\partial q_j}{\partial e_j}$$

$$p_i^w \frac{\partial q_i}{\partial e_i} \frac{e_i q_i}{q_i e_i} = p_j^w \frac{\partial q_j}{\partial e_j} \frac{e_j q_j}{q_j e_j}$$

$$p_i^w \varepsilon_i \frac{q_i}{e_i} = p_j^w \varepsilon_j \frac{q_j}{e_j}$$

$$\frac{v_i \varepsilon_i}{e_i} = \frac{v_j \varepsilon_j}{e_j}$$

with p_i^w - World market price
q_i - Production quantity
e - Government expenditure

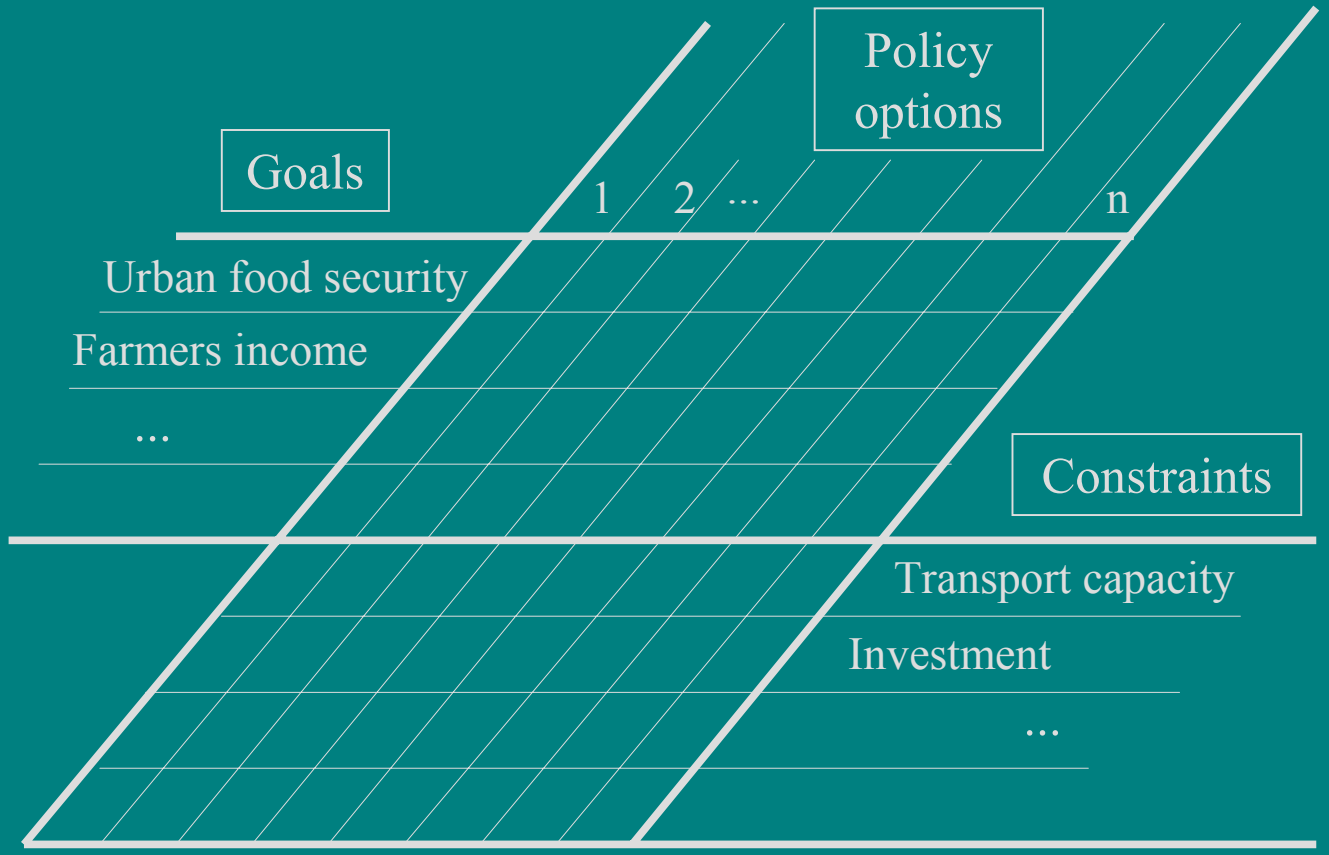
ε - Production elasticity

v - Production value

For $\varepsilon_i = \varepsilon_j$ → $\frac{e_i}{e_j} = \frac{v_i}{v_j}$ or $\frac{e_i}{v_i} = \frac{e_j}{v_j}$

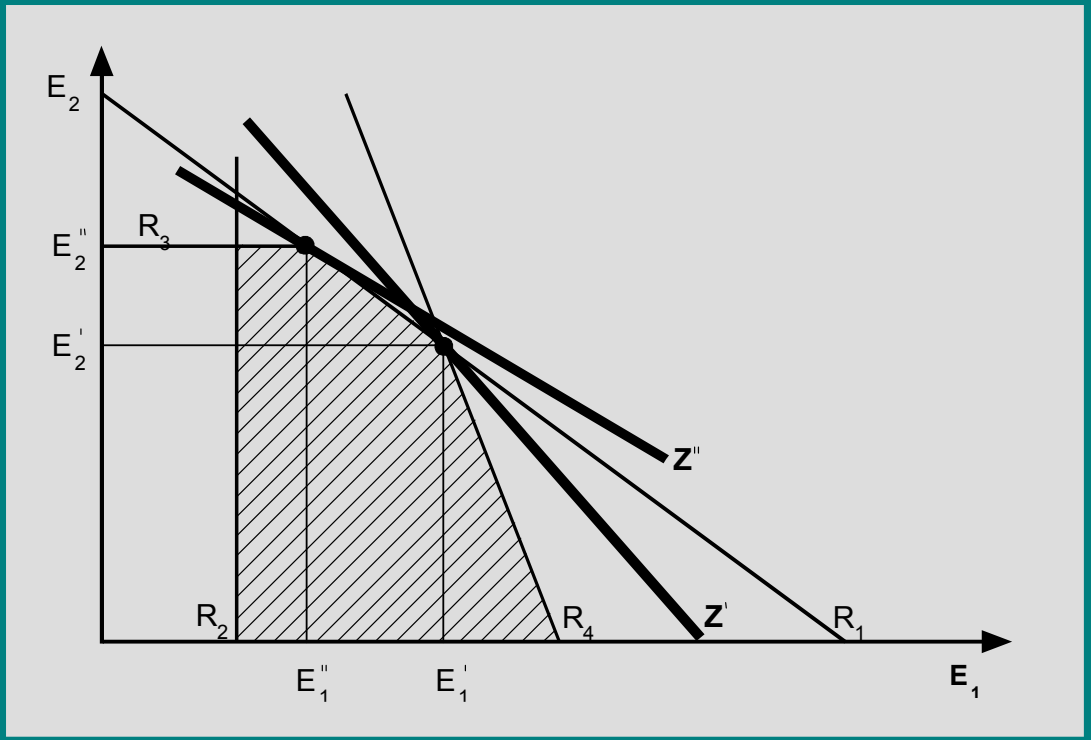
Optimal Structural Policies

Mathematical programming



Optimal Structural Policies

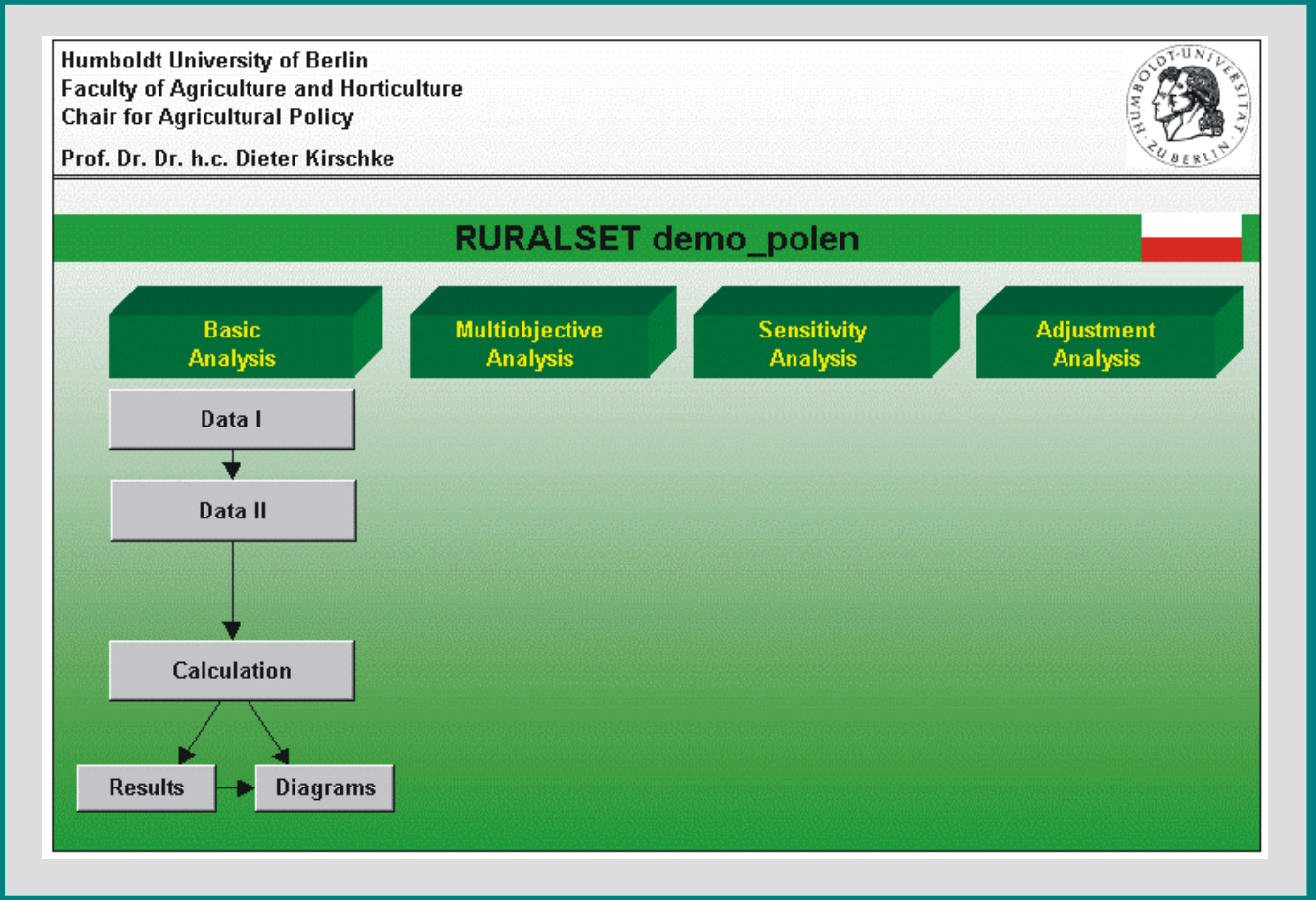
Mathematical programming



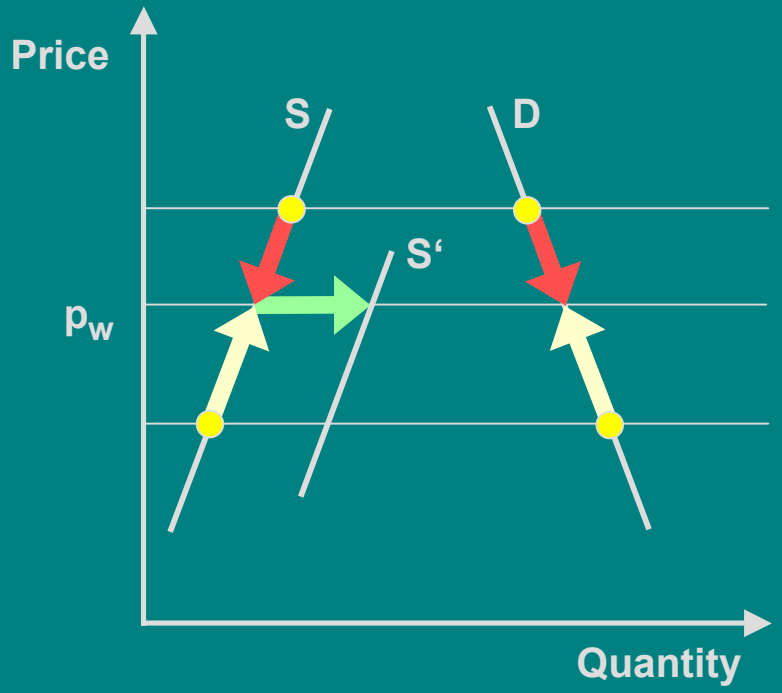
Quelle: Kirschke, D.; Jechlitschka, K. (2002): Angewandte Mikroökonomik und Wirtschaftspolitik mit Excel

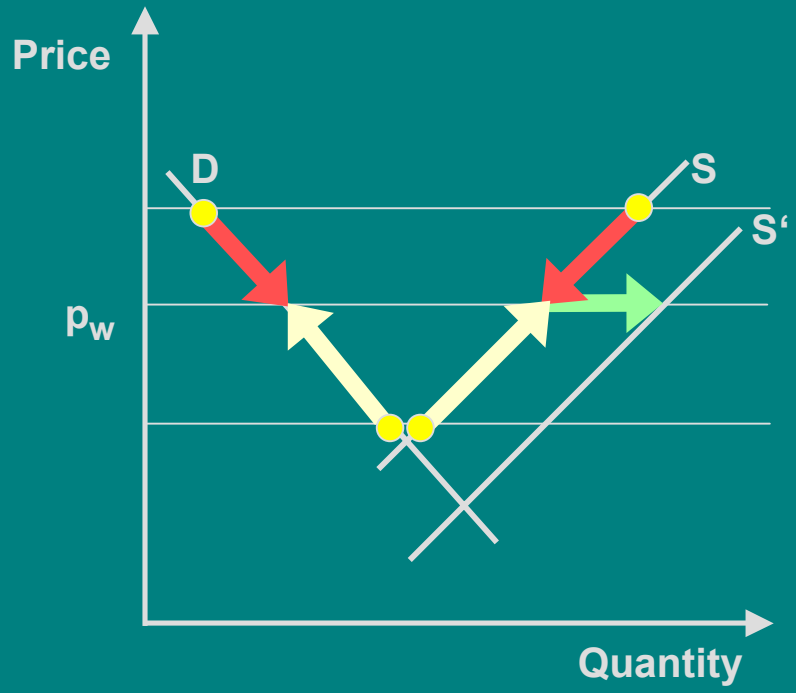
Optimal Structural Policies

Interactive Programming Approach



Supporting Agriculture by Price and Structural Policies

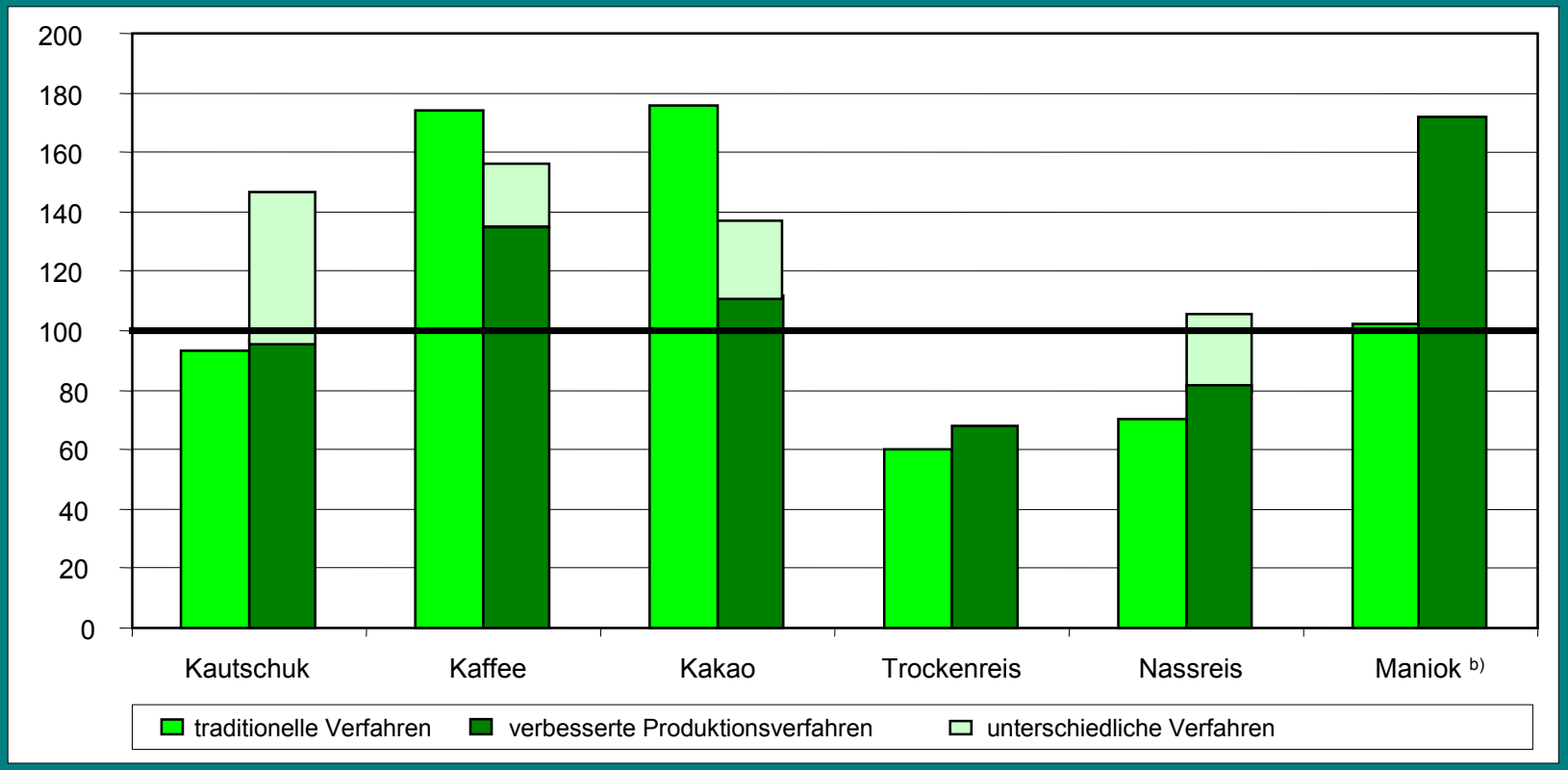




Agro-ecological zones and land use in Liberia, 1980

Productivity reserves in Liberian small-scale agriculture

- Foreign trade value [a] in % of domestic resource use, 1982 -



a) Lieferung Monrovia. b) Kostenbewertung auf der Grundlage des Arbeitseinsatzes
Source: Kirschke (1985)

Literature

*Alston, J.M.; Norton, G.W., Pardey, P.G. (1995): *Science under Scarcity : principles and practice for agricultural research evaluation and priority setting*. Ithaca: Cornell University Press, 40-65

*Corden, W.M. (1997): *Trade Policy and Economic Welfare*. 2nd ed. Oxford: Oxford University Press

Kirschke, D.; Häger, A.; Jechlitschka, K.; Wegener, S. (2004): *Co-financing implications for regional policy-making: A case study for the agri-environmental programme in Saxony-Anhalt.* HU Berlin, Landwirtschaftlich-Gärtnerische Fakultät, DFG-Forscher-gruppe 497 (SUTRA-Working Paper 5) (http://www.agrar.hu-berlin.de/sutra/workingpaper/wp5/wp5.pdf)

Kirschke, D.; Jechlitschka, K. (2002): *Angewandte Mikroökonomik und Wirtschaftspolitik mit Excel*. München: Vahlen

Questions

1. Compare welfare and distributional effects of structural policies in a closed and an open economy!
2. Outline the principle of optimal structural policies!
3. Describe mathematical programming approaches for designing optimal structural policies!
4. Should price and structural policies be guided by a self-sufficiency perspective?
5. Discuss some options for the development of the agricultural sector in a sub-humid West-African country!