THE DANISH PESTICIDE TAX
CONTENT, FUNCTIONS, EFFECTS, TRANSFERABILITY

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INTRODUCTION

Denmark – a 30 year-long history of taxing pesticides
Until recent redesign, not great effect
New pesticide tax appears to deliver on promises

Outline:
- Brief introduction to Danish agriculture
- Why tax pesticides – and how
- Design of new Danish tax
- Effects of the tax
- A few concerns
- Transferability?
DENMARK

Pop. 5.7 million
Area 43,000 km²
GDP per capita: 48,400 EUR

- Farmland 61 pct., cereals, fodder, potatoes &...
- World Bank: 1.1% of GDP 2017
- Export of agriculture products: 6% of GDP
- Import of agriculture products 4% of GDP

Source: Ministry of taxation 2017
Copyright: NOAA, TV2 vejret
WHY TAX PESTICIDES?

Prices should reflect externalities caused by use of pesticides

Potential externalities
- Health
- Groundwater and drinking water
- Toxic effects on non-target species and biodiversity

Behaviour change: Higher prices offer incentive to reduce use of pesticides or switch to less harmful products

Source of revenue
Tax bases should target pollutants or polluting behaviour.
Tax rates should reflect environmental cost.

But... tax rate needs to be high enough to achieve behavior change.

Danish pesticide tax up until 2013:
Tax base: The retail price
Tax rates: 54 pct. on insecticides, 33 pct. on herbicides and fungicides

Objective:
50 pct. reduction/treatment frequency.
PESTICIDE PLAN, 2013-2016 (CONT. 2017-2021)

Adopted in June 2012

Most important policy instrument: Revised pesticide tax.
  • tax differentiated according to impact on environment and health of each product, based on a newly developed indicator (PL)
  • Increase in tax rates
  • Revenue returned to farmers through reduced taxes on land

Main objective: Reduction in pesticide load by 40 pct. by 2015/16 compared with 2011.
Based on the Pesticide Load Indicator (PLI) to be reduced to 1.96

Source: Ministry of Taxation 2017
# NEW PESTICIDE TAX DESIGN

<table>
<thead>
<tr>
<th>TAX BASES</th>
<th>TAX RATES</th>
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<tbody>
<tr>
<td>Basic tax</td>
<td>50 kr./kg active substance (6.5 EUR)</td>
</tr>
<tr>
<td>Health</td>
<td>107 kr./kg pesticide pr. unit load index (13.9 EUR)</td>
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<tr>
<td>Environmental effect</td>
<td>107 kr./kg active substance pr. unit load index</td>
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<tr>
<td>Environmental behaviour</td>
<td>107 kr./kg active substance pr. unit load index</td>
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<td>(1 kr. = 0.13 EURO)</td>
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Complex calculation for each pesticide

Average tax rate increased by 125 pct.

Revenue: ≈10\% from basic tax and 30\% from each of load taxes
EFFECTS

Sales:
40% reduction load

USE:
Overall use (TF) +24 pct.
Load (P load/ha) −15 pct.

I.e. substitution towards less harmful substances

Conclusion: tax appears to be working .... enough?
REVENUES

Before 2013: 500M DKK (67M EUR) annually

Expected post tax:
1.1 B DKK without behavioural effect
650 M with a 40 pct. reduction in sales
150 M reimbursed to farmers through lower land taxes, i.e. redistribution

Revenue, realized: about 550 mill. DKK

Revenue: before earmarked, now entered into the general coffers of Ministry
Financing supplementary efforts, including research
POTENTIAL ABERDABEI’S DISTRIBUTIONAL EFFECTS?

- High value crops – increased crop sales prices have outpaced pesticide prices
- A few crops – production area decreased due to production cost increases, but minor

PESTICIDE RESISTENCE
Use of narrower portfolio of products? Resistance?
- Herbicides – increased resistance among grass weeds (but only few weeds)
- Fungicides – increased resistance, but not due to pesticides
- Insecticides – no change

ILLEGAL IMPORTS?
If prices increase, the incentive to cross the border increases…’
Unconfirmed numbers: 2016 – in 2 pct. of 762 farm inspections found illegal substances never allowed in DK
(Source: The Danish Society for Nature Conservation, based on preliminary EPA reports, 2017)
TRANSFERABILITY

Generally, higher use of pesticides in Germany, so possibly low hanging fruits? Broader portfolio of products, greater room for substitutions?

But issues to consider:

Tax design
- Need data and expertise to devise proper tax base
- Need tax rate high enough – political will?
- Know your farmers: what drives their decisions and what obstacles to price adjustment
- Other policy instruments necessary, possibly financed by tax revenue

Process
- Involve stakeholders in process - provide input and increase acceptance
THE PESTICIDE LOAD INDICATOR

For all commercial products, a pesticide load (PL) is calculated and expressed as the PL per unit commercial product (kg, litre or tablet).

Three elements:
- Human health indicator
- Ecotoxicology indicator
- Environmental fate indicator

(see e.g. Kudsk et al. 2018)
REFERENCES


World Bank https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS