

Organising general practice in Denmark: issues and solutions

Professor Dorte Gyrd-Hansen

Institute of Public Health - Health Economics Research Unit,
University of Southern Denmark

& Danish Institute for Health Services Research

& ACERH, University of Queensland

The Danish health care scene

- National health care service
- Financed via income taxes
- User charges on dentistry, medicine, physiotherapy (but not on most GP services)
- No charge for specialist services *if* referral from GP

Organisation of general practice in Denmark

- 3673 GPs in Denmark
- 2200 practice unit
 - ◆ 1.7 GPs per unit on average
- List system
- Free choice of GP (within 15 km)
- Possibility of closing access when 1600 on list (max 2540)
- Reimbursement: mixed remuneration: per capita (approx 30%) and fee for service (approx 70%)
- Fees are negotiated at national level

Organisation of general practice in Denmark

- General practices are run as private practices
- A little more than 1000 GPs are organised as solo practices
- Partnership practices entail sharing of patient lists and income

Reform tools available for general practice

- Those aiming at changing GP behaviour through **financial incentives**.
 - ◆ Has been subject to a wide range of studies (see e.g. Dusheiko, 2006 Sarma, 2009, Wyke, 2003 for recent analyses - or Scott 2000 for an overview)
- Those aimed at the **organization** of general practice:
 - ◆ Encouragement to form larger practices and to exploit returns to scale (Giuffrida, 1999 ;Staat, 2003;Staat, 2006;Wensing, 2006)
 - ◆ Incentives to employ non-physicians as substitutes for GPs (Laurant, 2005;Thurston, 2002)

Present and future challenges in Denmark

- Structural lack of GPs and expectations of a general lack in the future due to...
- Increasing demand for health services in general and GP services in particular
 - ◆ accentuated by a move of chronic patients from hospital ambulatory care to general practice
 - ◆ ...and greater focus on life style and prevention
- GP exodus (average age is high)
- Difficulties in attracting GPs to remote and more deprived areas

Political agenda

- A push for larger shared practices on the grounds that this
 - ◆ Increases cost sharing
 - ◆ Increases the use of assistant personnel (only 48% of practices employ nurses today)
 - ◆ Allows task shifting
 - ◆ Gives flexibility in working hours
 - ◆ Allows GP to specialise
- Other issues being discussed:
 - ◆ The introduction of a pay for performance scheme (the Danish GP Association is pushing for it)

Research questions

(Acknowledgement: Kim Rose Olsen)

- Are larger practices more cost-effective?
(due to cost sharing)
- Do larger practices increase productivity?
(is productivity per GP increased?)
- How are nurses used today?
(do they complement or substitute GP activities?)
- Does the remuneration system provide disincentives for practicing in deprived areas?
(does it affect number of patients on list; and is revenue affected?)

Study 1: Are larger practices more cost-effective?

Ongoing work by Kristensen T, Olsen KR, Pedersen KM

- A comparison of costs and output using 2006 cross sectional data from
 - ◆ Detailed cost data collected from 327 GP units (a sample)
 - ◆ The annual survey of general practice which includes GP unit descriptives (FTE GPs, nurse hours etc)
 - ◆ Data from the National Health Service register (all GP activities registered)

Study 1: Are larger practices more cost-effective?

Methods

- Output index measure includes subgroups of GP activities: consultations, laboratory tests
- Each output was calculated by the activity level per physician multiplied by the NHS tariff for each service (= “production value”)
- Costs included costs not associated with activity levels in the short run (capital costs, employed labour costs)
- Analysed using stochastic frontier analysis and assuming a quadratic short run cost function

Study 1: Are larger practices more cost-effective?

Results

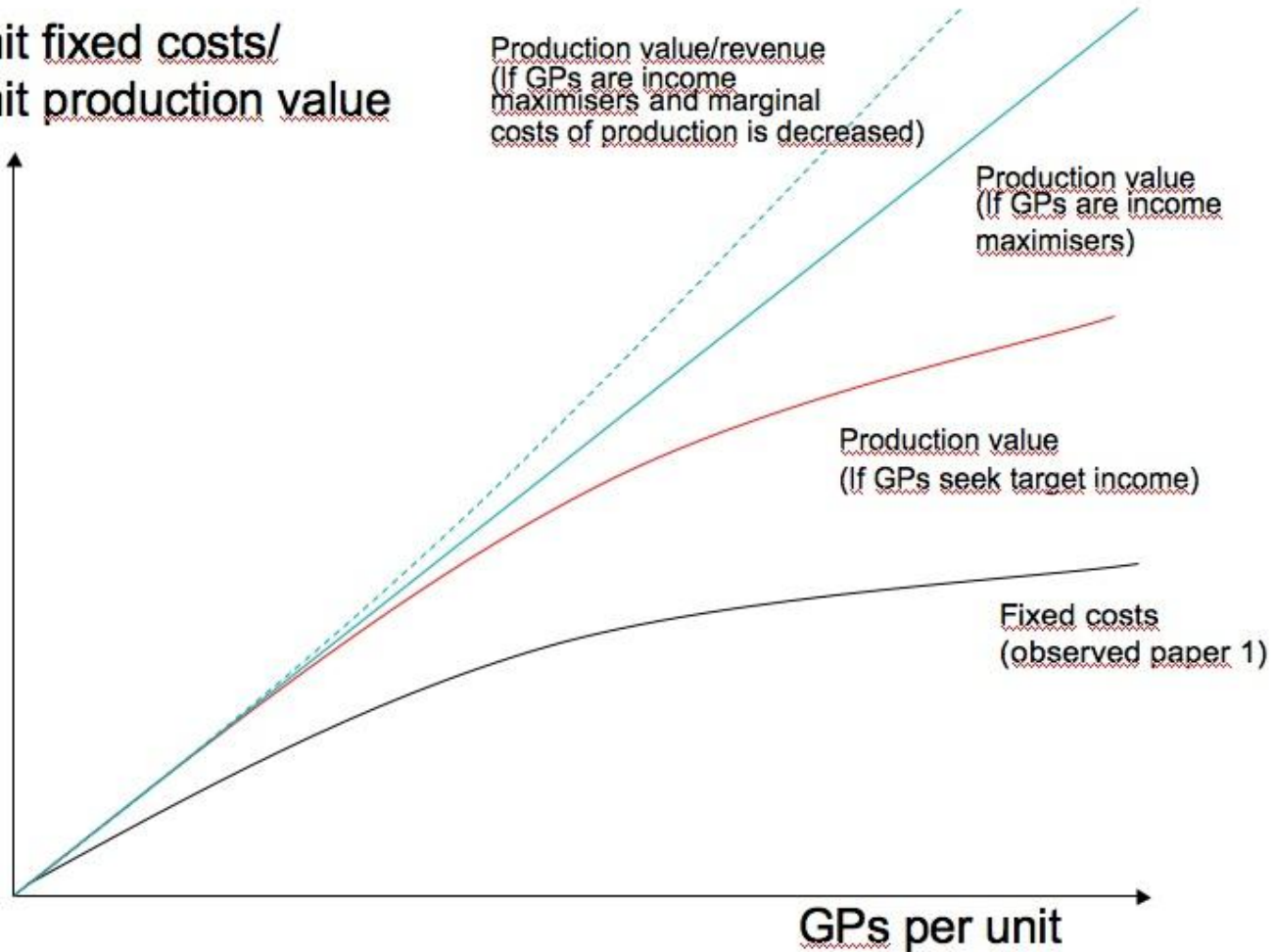
- An increase in total costs of 0.4% is associated with an increase of 1% in total value of production
- Increasing cost effectiveness (or profit margins) as GP practices increase in size (as measured by costs)
- There is no clear relationship between number of FTE GPs per unit, but linear relationship is a good approximation
- Hence, larger units (as measured by number of FTE GPs) are more cost-effective
- Optimal size: 5-6 GPs

Study 1: Are larger practices more cost-effective?

Conclusions (and discussion hereof)

- "Good idea to merge solo or shared practices into larger practices as advocated by authorities"
- Economies of scale does not necessarily entail returns to scale
- Perspective? Alignment of incentives?
- Cost effectiveness versus profit margins
- Incentives aligned if GPs are income maximisers....

Unit fixed costs/
Unit production value



Study 2: Do larger practices increase productivity?

Work in progress by Olsen KR et al

- Primary aims of the study:
 - ◆ to assess whether an increase in practice size (measured by input) results in a more than proportional increase in productivity per input factor (GP)
 - ◆ to assess the input elasticity between GPs and nurses in production of primary care services
 - ◆ to estimate the level of efficiency and the potential determinants of variation in efficiency

Study 2: Do larger practices increase productivity?

Data

- A nationwide unique complete dataset consisting of all Danish general practices is used thus avoiding issues of selection bias
- Output variables are from the National Health Service register from 2006 (number of office visits & value of production)
- From the annual survey of general practice: information about the number of FTE GPs and weekly nurse hours

Study 2: Do larger practices increase productivity? Methods

- Stochastic frontier analysis controlling for exogenous variables (e.g. patient case mix)
- We subsequently allow the efficiency level (the individual GPs distance to the frontier) to be a function of a set of endogenous variable -using the Batese & Coelli (1995) estimator
- Exogenous factor: patient case mix is controlled for by applying the DADI index

Controlling for case-mix in general practice: The DANish Deprivation Index (Vedsted, 2009)

Table 1: Parameters and weights in the complexity index

Parameter	Weight
Share of 20-59 year old patients that have been unemployed in more than half a year	0.100
Share of 25-59 year old patients without commercial education	0.125
Share of 25-65 year old patients with low disposable income	0.100
Share of 18-59 year old patients on transfer income	0.100
Share of 0-16 year old children in families with low income	0.150
Share of immigrants and descendants from non western countries	0.250
Share of patients above 30 year of age living alone	0.075
Share of patients above 70 years of age with a low level of disposable income	0.100
Total	1.000

Source: Vedsted, P. & Sørensen, T.H. (2009) (13)

Study 2: Do larger practices increase productivity?

Results

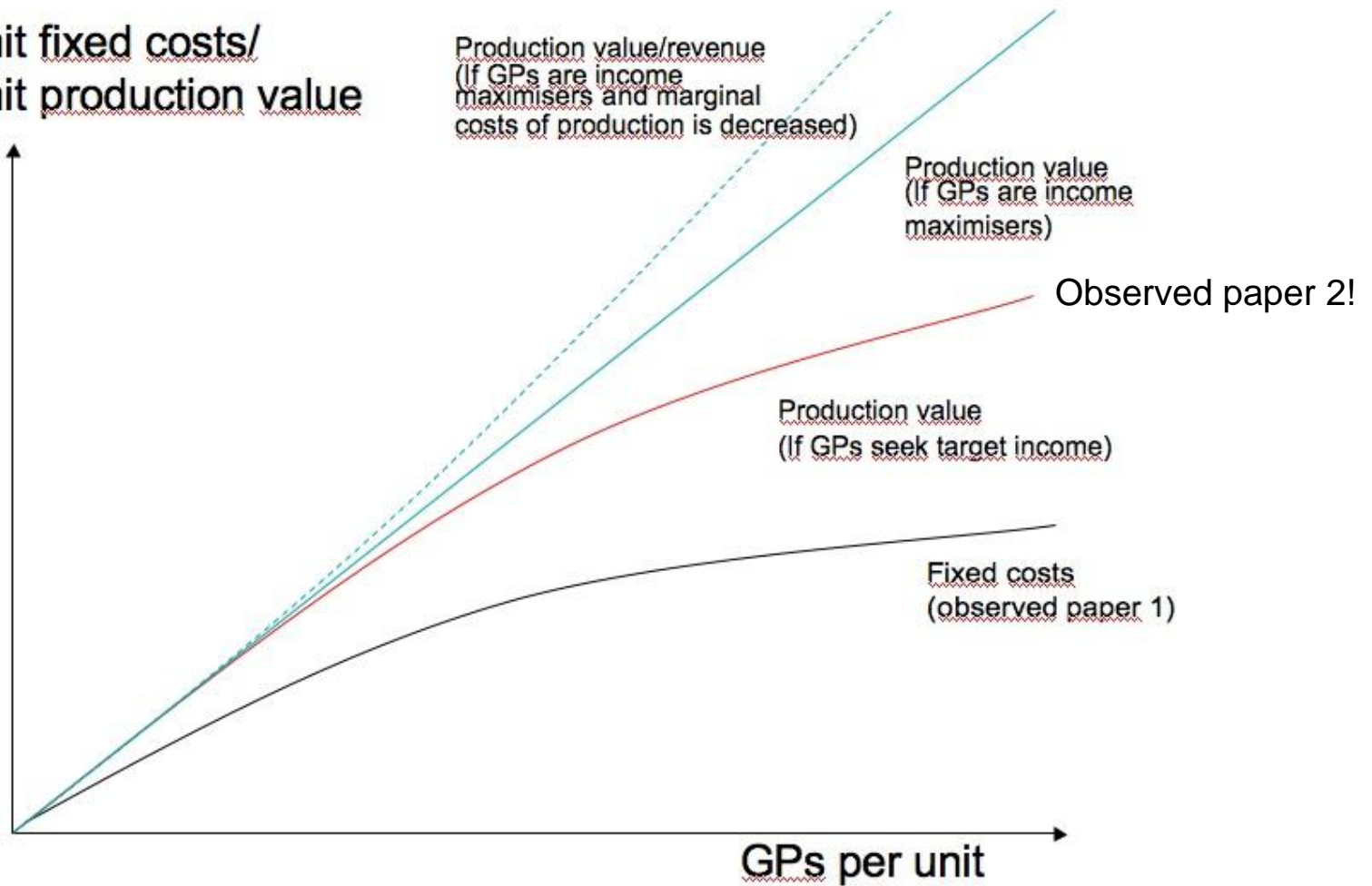
- The mean level of efficiency was around 0.85 and list size was the most important determinant of variation in efficiency levels (irrespective of output measure)
- Interestingly, determinants of efficiency depended on output measure (production value versus office visits)
- If office visits applied as output: female GPs and older GPs less efficient
 - ◆ Such an effect was not present when output was production value (where all types of services are considered)

Study 2: Do larger practices increase productivity?

Results

- There is a tendency towards increasing returns to scale indicating that increases in inputs (GPs) will result in a more than proportional increase in output when moving from 1 to 2 GPs.
- In contrast, practices with more than 2 GPs show a tendency of negative returns to scale
- Nurse time does not appear to substitute GP time in the production of services (as indicated by Hicks elasticities)

Unit fixed costs/
Unit production value



Study 2: Do larger practices increase productivity? Discussion

- Study 1 suggests that profit margins increase when GP units are larger
- Study 2 suggests that productivity does not increase when GP units are larger - on the contrary: for units > 2 GPs demonstrate negative returns to scale
- The results indicate that GPs may reduce effort when target income is met
- So perhaps larger and more cost-effective practices is not the best way of increasing GP productivity?
- Shirking in GP partnership? As suggested by e.g. Gaynor and Gertler (1995) and Conrad et al. (2002)

Study 3: Does the remuneration system provide disincentives for practicing in deprived areas?

Work in progress by Olsen KR

- Objective: To assess how patient heterogeneity affects list size and income of GPs operating under a mixed remuneration scheme such as the Danish
- Data on solo practices only
- We control for GP characteristics (gender and age) as well as external factors such as density of GPs and specialists in the municipality

Study 3: Does the remuneration system provide disincentives for practicing in deprived areas?

Data

- Data on list size, income and the age and gender of the physician from the National Health Service register
- List size is measured as the number of citizens enrolled on the GP list
- Revenue is measured as the sum of per capita and fee for service payment from the health insurance

Descriptive data; solo practices

Table 2: Summary statistics – solo practices (N=1,039)

Variable	Mean	Standard deviation	Minimum	Maximum
List size (per full time equivalent physician)	1,598	359	577	3,887
Total income	1,598,968	447,163	475,506	4,350,879
Income from per capita fee	466,096	104,608	171,264	1,133,588
Income from fee for service	1,110,425	366,505	239,939	3,422,259
GP age	55	7	36	76
Sex (woman)	0.25	0.43	0	1
Practice personnel (weekly hours)	36	23	0	161
Participate in education of new GPs	0.29	0.46	0	1
GP density in municipality (GPs per 1,000 inhabitants)	6	1.1	1.2	13.7
Specialist density in municipality	2.5	1.7	0	6.4
Hospital in the municipality	0.66	0.47	0	1
Complexity index (range [10;100])	33	10	11	76

Study 3: Does the remuneration system provide disincentives for practicing in deprived areas?

Results

- We find that patient complexity (measured på DADI) reduces both list size and revenue
- One less patient on the list decreases revenue with around 1,000 DKK (\$A 205) - revenue from fee-for-service does not compensate for the loss in per capita income
 - ◆ Higher patient complexity - more time per consultation?
- Female GPs, although list size does not vary significantly across gender, on average earn 70,000 DKK (\$A 14,250) less per annum than male GPs
- A mixed per capita and fee for service remuneration system does not fully compensate practices with more complex patients.

Study 3: Does the remuneration system provide disincentives for practicing in deprived areas?

Discussion

- Possible caveats:
 - ◆ Endogeneity issue? Do GPs who focus less on attaining high revenue self-select to practice in deprived areas?
 - This possibility cannot be disconfirmed - BUT we observe no association between observed GP characteristics and patient complexity
 - ◆ Does decrease in revenue actually entail a decrease in net income? What if costs are lower in deprived areas?
 - This would mainly be housing costs - which only constitute 10% of total running costs

Policy implications

- The general perception (amongst politicians) is that:
 - ◆ Large practices will partly solve the GP constraint problem due to economies of scale, and increased use of personnel who can substitute GP activities
 - ◆ There is no economic disincentive for operating in deprived areas

Policy implications

- The presented research suggests that :
 - ◆ Larger practices ARE more cost effective
 - ◆ BUT this does not necessary lead to increased productivity per GP
 - ◆ Higher net income incurs less GP effort?
 - Has been seen before (UK pay-for-performance)
 - Or are we just observing self-selection at present date, which will not be observed if a general shift towards larger practices takes place?

Policy implications

- Nurses do not substitute GP activities. GPs appear to be protective of their job description
 - ◆ Norm changes necessary?
- List size was a predictor of productivity:
 - List size a relevant policy instrument? A push for more patients on lists?
 - Tailored according to patient complexity?
- There is a financial disincentive to operate in deprived areas
 - ◆ Suggestion: Case-mix adjustment of per capita payment ?