Reviewer's report

Title: Physicians’ choices of dual practices and the effects on labor supply in public hospitals: Results from a register based study.

Version: 2
Date: 24 January 2014

Reviewer: Matthias Nachtnebel

Reviewer’s report:

General comments
I thank and congratulate the authors for sharing this very interesting study. It analyses a substantial data set and stretches over a significant period. The authors rightfully highlight the importance of their study—and related results—based on this data. Findings are both interesting and of policy relevance; particularly for high income countries. I want to apologise in advance if some of my questions might stem from a lack of knowledge and familiarity with the applied statistical analysis rather then from a lack of clarification provided in the manuscript.

- Major Compulsory Revisions

1- Methods, para 3: it’s absolutely not clear to me where the information of debts/loans is coming from. This is a very private and sensitive information- probably not recorded in registry.

2- Methods, para 7: is lagging a variable really the same as an instrument? (I have to apologise if I am mistaken due to lack of knowledge) but to my knowledge an instrumental variable is something different. Also the explanation why the authors did this is not comprehensible to me. Also the statement that this resulted in valid instruments seems to require some justification and belongs probably into the results section

3- Methods, para 7: Did the authors check for remaining endogeneity?

4- Methods, para 10: please explain methodology on private activity- not clear; and where is this variable in the analysis/ models?

It seems as this methodology would rather reflect utilisation of health care then demand. Review grammar

5- Methods, para 10: How about income in the private sector? Where is this variable? Some information on the health market?

6- Methods, para 12: lagged version of DP dummy?? Lagged by what and why?

7- Results, para2: it seems to be of interest to describe private practice and trend as related to policy changes implemented in 2005. Did policies of 2005 actually change the health market? Were for instance different services paid which might also explain DP probability??
8- Results, para 3: Is it possible that DP and Netcapinc are characterised by reverse causation? For instance DP requires private practice which is financed via tax saving long term loan?

9- Results, para 4: it is not obvious to me why you didn’t include specialty in the DP probability model?

10- Discussion, para 4: the authors write that DP in some specialities is probably caused by long wait lists- yet previously they stated that results showed the opposite effect

11- Discussion, para 7: No evidence of increase waiting list?? Contradiction to statement on one page before

12- Conclusions, para 2- Last sentence: the authors write that irrespective of setting it must be governed by transparent and clear rules etc. How is this claim substantiated by results? Authors previously write that Norway has no DP regulation and yet DP is decreasing with the outcome of an increased labour supply. If this is the case that would be rather an argument for no regulation, or am I mistaken?

- Minor Essential Revisions

1- Abstract: Background: also positive implications from dual practice (DP) have been reported.

2- DP is not limited to physicians outside of public hospitals- they can also practice DP within

3- Results: last sentence- not clear; and how does having a baby differ from increase in family size?

4- Background para 2: Throughout the paper it was unclear to me which private settings were actually considered. This issue arise already on page 4 when you talk about DP are physicians employed in ambulant emergency care? Are physicians working at public ED departments—which mostly see ambulant patients—practicing DP?

5- Background, para 6: Again: unclear in which settings private physicians work in Norway; the private sector has no private GPs or specialists outside of hospitals?

Patients who have private insurance/ pay for their own- percentage of health spending?

6- Background, para 6: If the only salary increase was 11% in 1996 and the cited study looked at 93- 97 then inflation will have outweighed this increase

7- Background, para 6: Health care costs are high- how high (% GDP) and for whom? Government, patients?

8- Methods, para 2: Not too clear why you excluded those who worked for less than 2 years?

9- Methods, para 2: Also those whose primary job is outside the public are still practicing DP, or not?
10- Methods, para 2: Here you mention necessary to work outside hospital- but before you mention only hospitals in private sector (see previous comments)

11- Methods, para 6: Hourly wage- does the calculation include extra hours?

12- Methods, para 6: How is the claim substantiated that it is the overtime wage that predicts DP? And actually does it even matter? If the extra time wage is a percentage of the normal wage than it should not matter (if the percentage is constant for all physicians)

13- Methods, para 8: The paragraph on DRG weights belongs, at least partly, into the discussion and not methods section. The DRG methodology as average over all physicians in a hospital seems questionable- actual workload will vary substantially (and probably also significantly) between specialties

14- Methods, para 10: I have some difficulties to grasp the exact meaning of the sentence “When using these variables they turned out mutually redundant (collinear?- results) in a cohort??”

15- Methods, para 11: NetcapInc appears first in statistics- in contrast to other variables which are shortly explained

16- Methods, para 11: As I understand the only ‘area’ variable eventually included was waiting time- or am I mistaken?

17- Methods, para 12: please clarify what is the ‘most preferred analysis’?

18- Results, para 2: again, where is variable for private income?

19- Discussion, para 1: In face of all the strengths of the analysis I can’t see how the study was ‘prospective’?

20- Discussion, para 1: What about market changes (see previous comments)- for instance # of physicians supply in public and private sector overall

21- Discussion, para 2: ..in a system that has not banned or regulated DP.. the regulatory context should b also briefly described in the introduction

22- Discussion, para 2: the proportion of physicians engaging in DP and NOK first mentioned in discussion- not too clear why not

23- part of analysis and results. I would recommend not introducing additional results in discussion section. How is the increase of private DRG activities following 2007 explained? It is in addition a bit confusing to put all the various pieces together. The percentage of physicians engaging in DP decreased over study period- yet private DRG activities increased following 2007 and payment per private (DP) physician stayed more or less the same. What is the conclusion from this? Wouldn’t be one possible explanation that simply the number of newly graduating physicians exceeded by far the need in the private sector?

24- Discussion, para 2: is it really the mere introduction of the 1996 salary policy that caused the change? The probability of DP depends on the absolute amount of the (extra)wage- maybe it actually only has an effect above some threshold level?

25- Discussion, para 6: Not clear: This may indicate ..should be analysed in a cohort and not separately?
26- Discussion, para 9: not clear- Norwegian working time regulations have been constraint?
27- Limitations, para 1: where /which variable includes income from other medical work?
28- Conclusions, para 2: the statement on developing countries (better low middle income): regulation may be unsuccessful due to improved access to health care? If this is the case why should anyone try to ban it? It might not contribute to improved access and yet banning might still be unsuccessful due to weak regulation.
29- there are multiple spelling and grammar mistakes throughout the manuscript- I have not included all of them in my review but I would recommend a careful editing before resubmission

- Discretionary Revisions

1. Background, para 1: What is the difference between brain drain from public to private and lack of key personnel?
2. Background, para 1: Other negative impacts relate to important health service outcomes such as equity, quality of care, etc.
3. Background, para 1: What is unnecessary access?
4. Background, para 1: Who are other health-related providers?
5. Background, para 3: How are long waiting lists resulting in DP? I assume you suggest they act as incentive for physicians to engage in DP as there is an unmet need from paying patients?

By saying many studies in countries with low salaries- does this refer to low income countries?

7. Background, para 4: Optimal resources is not very specific
8. Background, para 5: multiple spelling and grammar mistakes
9. Background, para 6: Again: salary increase only to tackle brain drain to private hospitals? Not outside settings?
10. Background, para 6: Physicians’ salaries probably compare almost everywhere favourably to general population- important also for the conclusion section
11. Background, para 7: 3rd last line: and more to have a more precise?
12. Background, para 8: Half-finished sentence before methods section.
13. Methods, para 2: The mentioned 18888 physicians- are these all who held a
public position- then say so.
14. Methods, para 4: again ambulant emergency care
15. Methods, para 12: Section on Norwegian hospitals belongs to introduction
16. Discussion, para 3: What is more than their fair share?
17. Discussion, para 7: maybe better not to say “Our” dual practitioners
18. Discussion, para 9: Is the paragraph on normalising work hours relevant?
19. Limitations, para 1: and so
20. Conclusions, para 2: Instead of ‘believe” I would suggest hypothesise (or similar)

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare not to have any competing interests