

Discussion of “Does Gender Affect Work?” by
Hegde and Raj and
“Knowledge Spillovers and Learning in the
Workplace” by Frakes and Wasserman

Megan MacGarvie

Questrom School of Business and NBER

Great opportunity to read two closely related and fascinating papers

- One about differences between male and female work styles and how they change as workers rise through a hierarchy
 - Women do “higher quality” (aka slower, more methodical) work, especially once they have been promoted
- The other about work styles in groups and how they are influenced by peers
 - Examiners’ grant rates correlated with those of their peers, especially at the beginning of their careers
- Both papers are very careful and scrupulous (even a female examiner at GS-15 would like them)
- Lots of potential impact both within and outside patent research community
- Tend to raise similar questions so I’ll discuss in parallel

Can you say more about post-grant review?

- We don't care about grant rate per se; rather, undue leniency
- HR includes data on:
 - Decision Appealed = application rejection was appealed at USPTO's Board of Patent Appeals and Interferences (BPAI).
 - Decision Revised or Reversed on Appeal = examiner decision was revised or reversed following appeal.
- Perhaps the most direct measures of evaluation quality...yet they are not really emphasized by HR and not used by FW
- Can you get data from PTAB?
 - Even if you don't use it as an outcome variable, use it to validate the outcomes used in this paper...which are most predictive of reversals or invalidations?

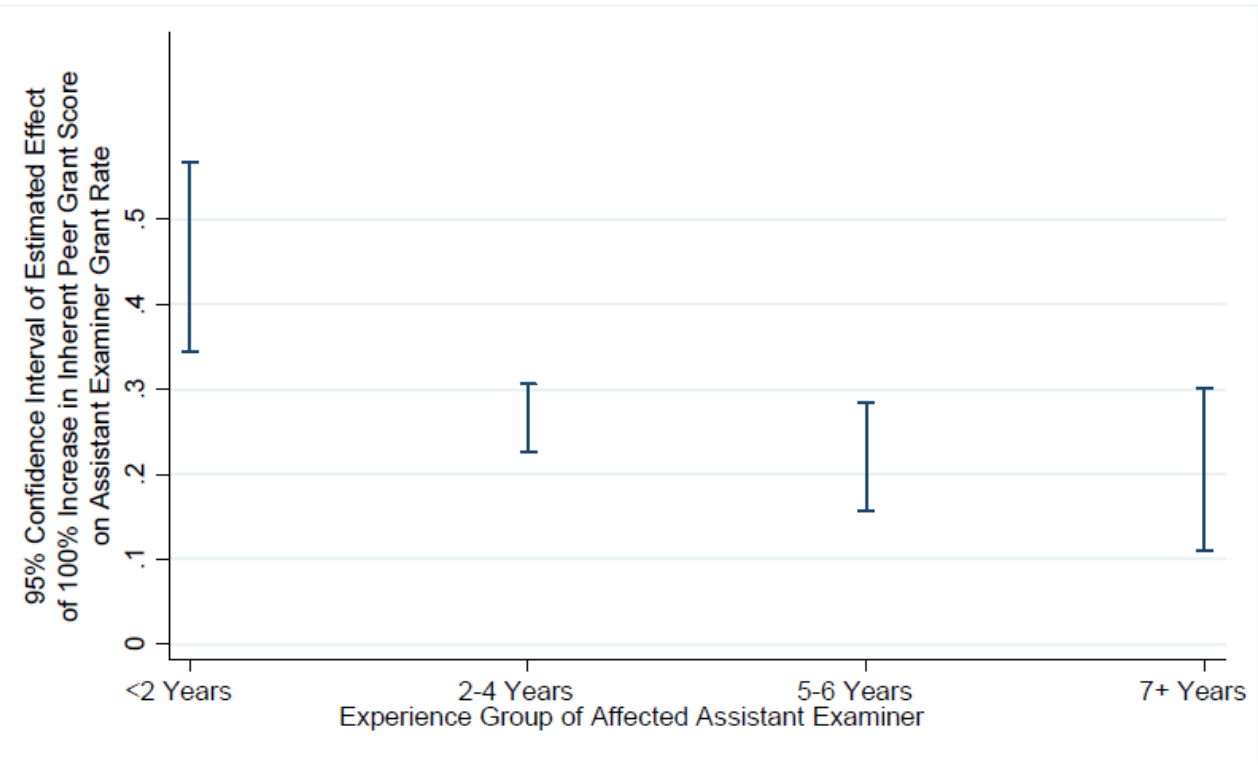
FW: Calculating Peer influence based on average of the lifetime grant rates for all examiners in the same Art-Unit-by-year cell as the application

- Why use the mean and not the median?
- What about variance in grant rates?
- Maybe you want a deviation from mean scaled by variance within an art unit over time
- What is the role of art unit team size?
 - Larger impacts of outliers in smaller groups
- What is the impact of variation in uncertainty/complexity across art units?
 - More peer learning in software than in hammers?
- Because so much of increase in grant rate is mechanical as people are promoted, should you control for highest grade reached by peers?
 - What if everyone in your art unit quit after the first few years?

Experience, Selection and Attrition in FW

- FW focus on behavior of examiners at GS-13 and below
 - Does “balanced panel” mean you keep only people who stay at GS-13 or less for 6 years?
- Interpret smaller coefficients at higher experience levels as evidence that most learning takes place early in careers
- Alternative interpretation: people who conform to expected grant rate early on get promoted above GS-13 level faster

FIGURE 2
EFFECT OF INHERENT PEER GRANTING TENDENCIES ON ASSISTANT EXAMINER GRANT RATE, BY YEARS OF EXPERIENCE OF THE AFFECTED ASSISTANT EXAMINER



Notes: this figure presents the results of the coefficients estimated in Column 8 of Table 3.

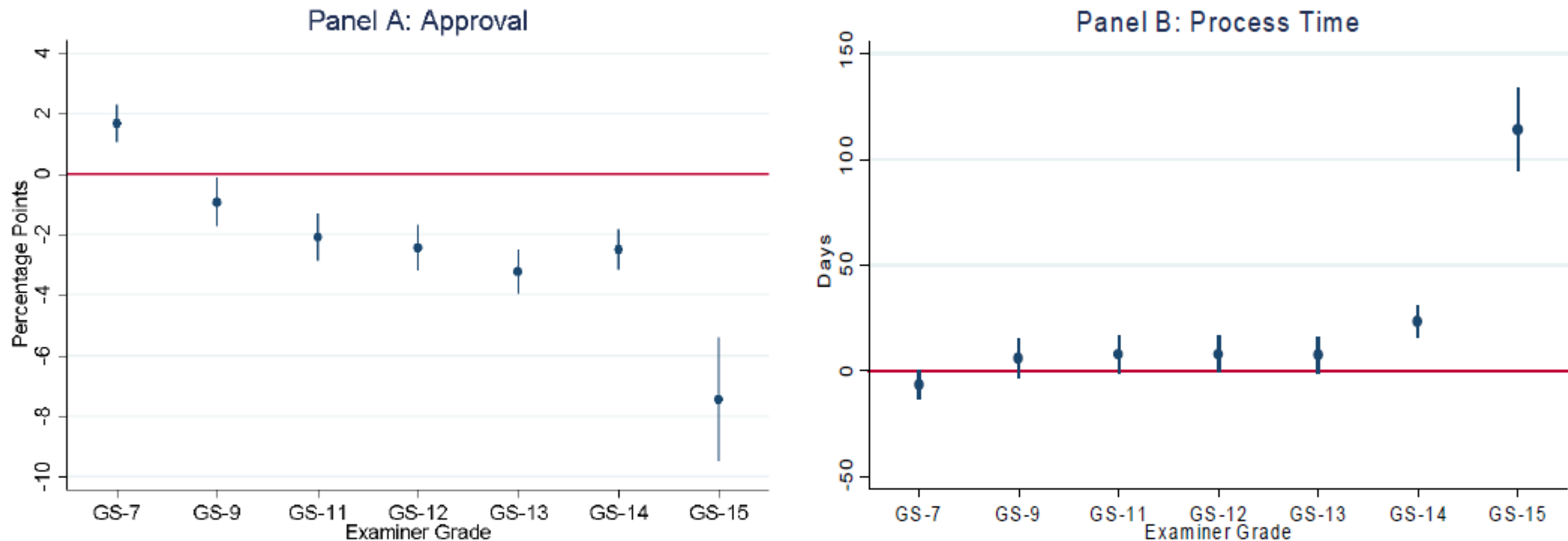
Experience, Selection and Attrition in HR

- Higher patent approval rate associated with promotion (Lemley and Sampat 2012, Frakes and Wasserman 2017)
- HR: women scrutinize patents more, take longer to review
- This seems to imply that:
 - women will be less likely to be promoted
 - The female gap will narrow as we move up GS grades
- Instead, female gap is widening with pay grades, especially at very top
- Are women entering at higher grades on average than men?

Male/female difference in approval rates very small, except at extremes of GS grades

(also, shouldn't you be adding the coefficients on interaction terms to the G-7 coefficient?)

Figure 4: Estimated Effect of a Female Examiner on Likelihood of Approval and Total Process Time by Examiner Grade



Most of the action coming from GS-15, but only 2.1% of patents reviewed there...and promotion hurdle appears substantially higher for women

Table A2: Patent Applications by Examiner Grade and Examiner Gender

Examiner Grade	Percent of All Applications Examined at Grade	Percent Female Examiners at Grade
GS-7	6.4%	29.6%
GS-9	8.6%	29.1%
GS-11	9.5%	29.9%
GS-12	11.2%	31.1%
GS-13	16.2%	31.6%
GS-14	46.0%	25.3%
GS-15	2.1%	19.5%
Total	100.0%	38.7%

Percent of reviewed by examiner grade and the percent of applications reviewed by female examiners within a grade. The 1

Who are these women at GS-15?



- “we find that female examiners express their distinct work preferences more upon receiving signatory authority status”
 - Alternatively, women promoted to this level may be more strongly selected than women at lower levels
 - Is this the treatment effect of signatory authority or the higher hurdle?
- Do a separate analysis of promotion to GS-15 level
- Tell us more about patents examined at the GS-15 level
 - More complex and controversial? Higher value?
 - If so, could examiner pay grade be a new measure of patent value?
- “Examiners hired prior to 2002—at a time in which the philosophy of the Patent Office was one characterized by a very permissive granting style—tended to exhibit higher grant rates throughout their careers.” (Frakes and Wasserman 2016)
 - Is it possible that the women at GS-15 are disproportionately likely to have been promoted after 2002?



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Flexible work schedules and selection

- Women with families may be differentially attracted to work at USPTO by flexible work schedule, telework arrangement, etc.
 - Results may reflect differential selection of more qualified women
 - NOT something innate about female psychology
- Can you control for educational background?
 - Highest degree
 - Rank of program
 - Law degree as opposed to engineering?
 - LinkedIn has detailed information on skills
- What is the role of the telework policy studied by FW?
- How do results generalize to contexts beyond government?

Questions for FW raised by HR

- Do telework results hold after controlling for gender?
- Do examiners learn more from peers who are similar to or different from them?
 - Homophily in gender, ethnic origin and educational background
 - People who were in the same class in patent examiner “bootcamp”

Implications beyond patent examination

- These papers have the potential to contribute quite a lot to literature outside the patent community
 - Work to maximize relevance for these readers
- Inherent gender bias in pure output-based incentive schemes?
 - Literature on promotion and low-promotability tasks (e.g. Babcock et al. 2017)
- Peer review of scientific articles and grants
 - Does blinded review prevent learning from the styles of other reviewers?
 - There may be unanticipated negative impacts of requiring greater representation of women on review panels and editorial boards

Is this the right unit of observation/are standard errors correct?

- Application level vs. examiner-year level
- HR: fixed effects and clustering at the art-unit-by-subclass-by-year level
- FW: art-unit-by-year fixed effects; cluster at art unit level
- Art unit level seems intuitively more appropriate
 - Both papers: discuss logic for clustering choice at greater length

How large/important are these differences?

- HR: Female examiners are 0.6 percentage points less likely to approve a patent (unconditional mean prob = 67.3%)
- FW: Ten percent increase in peer lifetime grant rate → 2.5 percentage point increase in examiner grant rate
- Lemley and Sampat (2014): grant rate increases by about 5 ppt from 2-4 years' experience to 5+ years' experience