

Managerial practices in innovation: Some ideas about conceptual issues and related measurement

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Background

- Managerial practices are important
 - Manager effects and management styles explain different practices and performance across firms (Bertrand & Schoar, 2003)
 - Using a survey-based measure of management practice, Bloom & Van Reenen (2007) show that
 - most of the variation in the measure is across firms vs industries or countries (56%, 42%, 2%)
 - the measure explains 10-23% of the interquartile difference in TFP across firms

Managerial practices in innovation

- We can only expect that managerial practices are important in innovation as well
- Extant work (not exhaustive)
 - Manso (2011), Azoulay et al. (2011), Ederer & Manso (2013)
 - Lacetera (2009), Sauermann & Cohen (2010), Sauermann & Stephan (2013); Gambardella et al. (2015); Gambardella et al. 2016)

Long-term rewards & tolerance for failure

- Manso (2011)
 - short-term rewards and penalties discourage exploration (broadly defined – innovation, new strategies, ...)
 - need managerial practices that tolerate short-term failures and favor long-term compensation schemes
- Field work and lab experiments find consistent evidence (Azoulay et al., 2011; Ederer & Manso, 2013)
- Anecdotal evidence suggests variation in these practices across firms

Motivation, rewards & incentives

- Implication from Manso and colleagues:
 - pay-for-performance not an ideal practice for creative work (penalizes short-term failures in favor of short-term success – exploitation)
 - Higher executives can be compensated by longer term stock options or similar mechanisms
 - But *for lower level employees* [e.g. researchers] ... *these types of contracts may not be available, since, for example, there may be no verifiable measures of the long-term performance of the employee.* (Manso, 2011, pp.1848-9)
 - If you cannot rely on output (or input) to provide incentives, need other instruments/practices

Autonomy/independence (I)

- It is well established that creative people like independence (Gagnè & Deci, 2005; Bartling et al., 2014) and dislike pay for performance (Amabile, 1996)
- For example, «scientists pay to be scientists» (Stern, 2004) though to a varied extent (Sauermann & Roach, 2014; Agarwal & Ohyama, 2013), and motivation matters for innovation (Sauermann & Cohen, 2010)

Autonomy/independence (II)

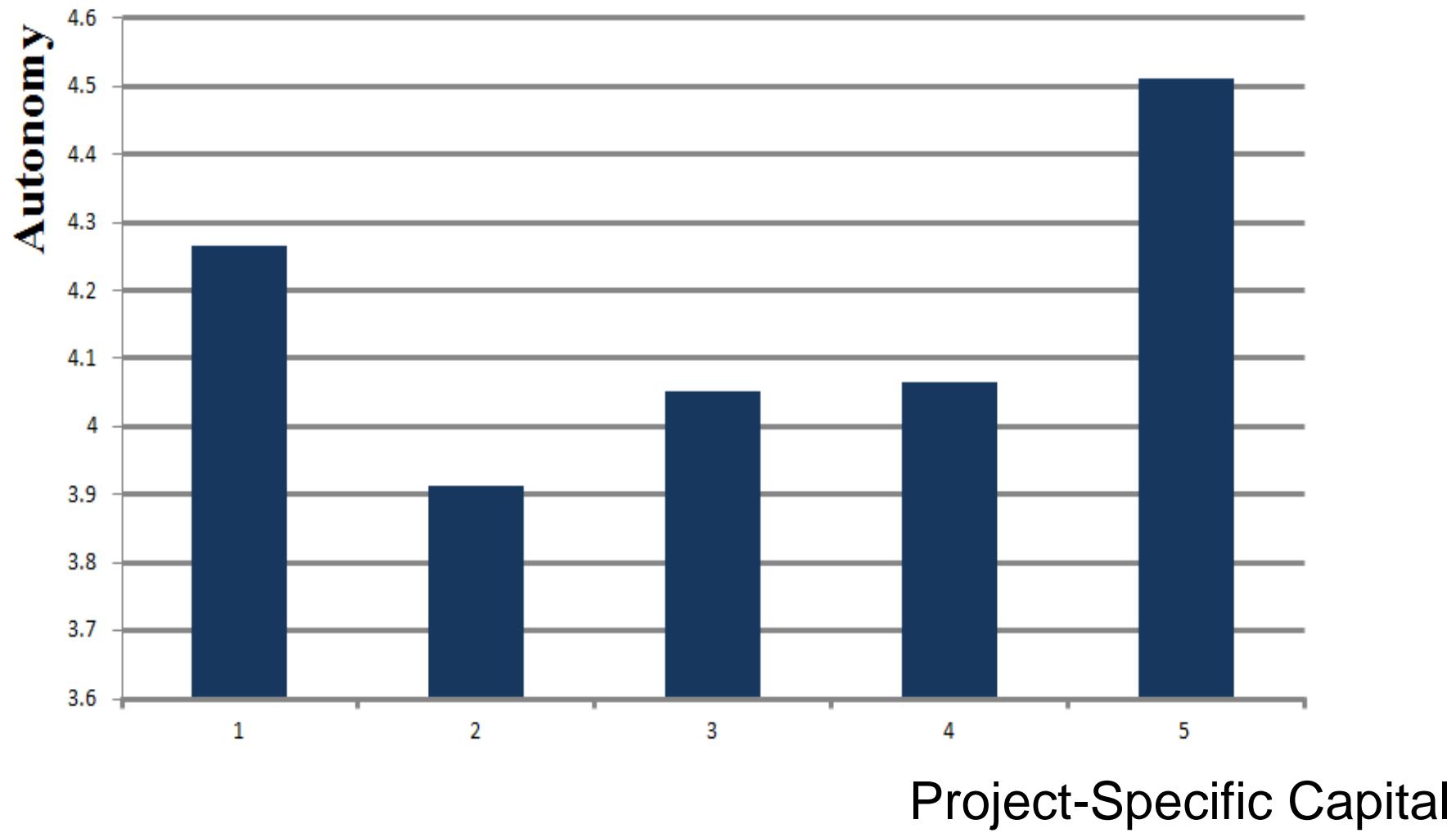
- Lacetera (2009) notes the potential of independence as a managerial tool/practice for innovation
 - *Autonomy ... is a powerful device for increasing scientists' incentives to supply productive effort, ... when their objectives and priorities differ from those of the top management (and are closer to ... their community of peers) (p.566) ...*
 - Shows that firms confer autonomy when they cannot commit with the researcher to keep the project alive (e.g., broader applicability)

Autonomy/independence (III)

- Using the NSF *Scientists and Engineers Statistical Data System (SESTAT)*, Sauermann & Stephan (2013) find that
 - 61% of the S&E in industry value independence vs 51% being satisfied about it, vs 81% vs 78% in academia
- The higher mismatch suggests that there is room to use autonomy as a tool, especially if we cannot use output to provide incentives (Gambardella et al. 2015)

PatVal – Europen patent inventor survey

- Survey of 23k European patent inventors in inventors in 20 European countries + US and JP
- Includes questions about extent of autonomy in the project leading to the patented invention
- When plotted against *project-specific capital* we find a robust U-shape



Source: Gambardella et al. (2016)

Wrap-Up

- All this suggests that
 - Managerial practices in innovation matters
 - There is room for understanding them better
- Collect data (e.g. SESTAT) on practices informed by current theoretical work
 - Tolerance for failure, long- vs short-term rewards
 - Autonomy & related determinants (e.g. PSC)
- Follow a cohort of S&E and their practices?
- Experiments
 - Scenario-based experiments (ask informed parties how they would respond under different scenarios)
 - Field experiments?

Thank you!